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Surgical Site Infections and Hand Hygiene Discharge Teaching

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Surgical Site Infections and Hand Hygiene Discharge Teaching

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NURS 653: Internship

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Abstract

Problem: During the span of a nine-month period, the PACU of a perioperative unit in an acute care hospital in the East Bay Area saw an incidence of 13 surgical site infections (SSIs). SSIs have been associated with negative patient health outcomes, diminished quality of life, and increasing healthcare costs.

Context: The PACU consisted of 20 beds and a competent staff of registered nurses, medical assistants, patient care technicians (PCTs), and management staff. It served mostly adults from diverse backgrounds receiving elective and emergent surgeries.

Intervention: A *Standardized 3-Step Hand Hygiene Discharge Teaching* model with nurse self-audits for every surgical patient with a surgical incision aims to improve the consistency of hand hygiene education provided during discharge for the patient to be able to care for their surgical incision at home. The anticipated outcome is a decrease in SSIs.

Measures: The outcome measure for this project is the rate of SSI occurrences per 1000 patient days. The process measure is the percentage of PACU nurses completing the nurse self-audit sheet. The balancing measure includes the change of adding the nurse self-audit sheet and whether it is indirectly causing negative implications on other processes within the microsystem

Results: After implementing the proposed intervention, it is anticipated that this acute care hospital will experience a significant decrease in SSIs with a 70% compliance rate of self-audit completion by the PACU nurses.

Conclusion: Practicing proper hand hygiene is the simplest, least expensive and most important intervention patients can do to reduce infection. However, an inconsistency on hand hygiene education during the discharge process was observed within the PACU. Because of the organization's policies and the short time frame allotted for this project, an actual intervention

was not feasible. Therefore, future direction includes implementing the *Standardized 3-Step Hand Hygiene Discharge Teaching* model, performing periodic audits to further explore the influence of consistent hand hygiene discharge teaching over SSIs, and conducting observations on other days and shifts to further explore the validity of the observation results.

Section II: Introduction

Every year millions of surgeries are performed globally with the goal of curing a disease, relieving patients from pain, or many other reasons that may improve patient health outcomes. At the bottom of the list of anticipated outcomes is the development of a surgical site infection (SSI). An SSI, according to the Centers for Disease Control and Prevention (CDC) (2010), “is an infection that occurs after surgery in the part of the body where the surgery took place.” Furthermore, SSIs are defined as occurring within 30 days from the surgical procedure or within 90 days if prosthetics were implanted (National Healthcare Safety Network, 2021). SSIs are considered to be “superficial” when they affect only the skin, or “deep” when they involve underlying tissue and/or organs (CDC, 2010). Ultimately, both types of SSIs have been shown to contribute to patient mortality, pain, and diminished quality of life (Bashaw & Keister, 2018; Spruce, 2014).

Postoperative complications, such as SSIs, are also a concern because of their impact on the healthcare system. SSIs are a leading cause of readmission and can add an additional three to four days to a patient’s hospital stay (Bashaw & Keister, 2018). This extended length of stay can make a significant financial impact on the healthcare institution. When compared to other reasons for readmission, SSIs are the most expensive postsurgical complication costing the healthcare system as much as \$30,000 per patient (Kang et al., 2020). Furthermore, in the United States, SSI-related readmissions account for an approximate \$17 billion a year in medical expenditures (Bashaw & Keister, 2018; Kang et al., 2020).

Although the healthcare system continues to advance in a multifaceted nature, SSIs continue to be a serious concern in need of addressing. This carries significant weight when considering the fact that at least 50% of all SSIs are preventable (Bashaw & Keister, 2018;

Spruce, 2014). Fortunately, there are a plethora of potential approaches aimed at decreasing and preventing SSIs that demand further exploration. Investing in focused quality improvement projects (QIP) can help enhance existing preventative measures, as well as introduce new initiatives to address SSIs that can ultimately improve patient health outcomes and relieve healthcare organizations of SSI-related financial burdens.

Problem Description

Between the months of October 2020 and June 2021, the Post-Anesthesia Care Unit (PACU) of a perioperative unit in an acute care hospital in the East Bay Area witnessed an incidence of 13 superficial SSIs in postsurgical patients. In order to identify a quality gap, preliminary observations were conducted throughout all phases of the perioperative unit: preoperative, intraoperative, and postoperative. A discrepancy regarding the consistency of hand hygiene discharge teaching offered to postsurgical patients was observed.

Metrics to quantify these observations were collected via a Hand Hygiene Discharge Teaching Observation Form (*See Appendix A*). The Hand Hygiene Discharge Teaching Observation Form collected data on four factors: 1. Whether the patient received hand hygiene education, 2. Whether the patient received hand hygiene education reinforcement, 3. Whether the patient's preoperative folder contained the unit's handout on hand hygiene, and 4. Whether the patient was sent home with the unit's handout on hand hygiene. Every Wednesday for a period of six weeks, observations were conducted in the PACU. To prevent data from being skewed, PACU staff were not informed that the observations were focusing on hand hygiene education specifically, rather the entire discharge process as a whole. Nevertheless, the PACU staff were aware that they were being observed. The inclusion criteria for these observations was simple and included any postsurgical patient that had a surgical incision, which would require hand

hygiene education upon discharge. Conversely, the exclusion criteria were patients that did not have a surgical incision site.

At the end of the six weeks, data on a total of 31 observations was collected. **Figure A-1** displays that out of 31 discharge processes that were observed, 16% received hand hygiene education, 10% received hand hygiene education reinforcement, 74% had the unit's hand hygiene handout in their preoperative folder, and 19% were sent home with said handout. The data collected indicated that there was a need for a standardized discharge process that included hand hygiene education for postsurgical patients with surgical site incisions in order to prevent SSIs.

Literature Review

In order to facilitate the literature research for this QIP, the following PICOT question was formulated: In postsurgical adults (P), how will consistent hand hygiene discharge education in the form of verbal education, education reinforcement, and educational handouts (I), compared to inconsistent hand hygiene discharge teaching (C), influence the rates of surgical site infections (O) within one year (T)? Several databases and scientific journals were utilized to gather comprehensive research, including PubMed and CINAHL. A search filter was used to include articles published less than 15 years ago and key search words included: *surgical site infections, surgical wound infections, surgery, surgical, hand hygiene, hand wash**, *patient teaching*, and *patient education*. Multiple articles were selected according to their relevance to the PICOT question and overall themes of the project.

A recurring theme identified in the literature review was the positive implications that hand hygiene practices can have on infection rates in surgical patients. Haverstick et al. (2017) identified that contaminated hands are a primary source of transmission, and that hand hygiene is

the ultimate method to prevent infection. In an experimental study aimed at discovering whether patient's hand hygiene practices improved with increased access to hand hygiene products and patient education, Haverstick et al. (2017) found a 70% decrease of vancomycin-resistant enterococci infections and a 63% decrease of methicillin-resistant *Staphylococcus aureus* infections within a 19-month period. It was concluded that this could be attributed to increased knowledge on hand hygiene that led to improved hand hygiene practices amongst both staff and patients (Haverstick et al., 2017). However, while there are plenty of interventions geared towards healthcare workers and improving their adherence to hand hygiene practices, there was not much on the importance of hand hygiene practices by patients (Ardizzone et al., 2013). This identified a need towards integrating patients into their own care.

Another overarching theme observed in the literature review was the need to involve all stakeholders in the promotion of proper hand hygiene practices, specifically patients (Ardizzone et al., 2013; Hammoud et al., 2020; Haverstick et al., 2017; Tartari et al., 2017). Literature emphasized the importance of patient empowerment, which consisted of providing surgical patients with information, skills, and attitudes regarding SSIs that ultimately encourages the patient to actively participate in their own care (Hammoud et al., 2020; Martins et al., 2020; Seale et al., 2015). In an experimental study by Haverstick et al. (2017), it was discovered that two reasons why patients in the study sample often did not practice appropriate hand hygiene was because they were not aware of its importance on infection prevention, and because the medical staff did not encourage them to adopt proper hand hygiene practices. Furthermore, in another experiment conducted by Seale et al. (2015), a group of patients were given empowerment tools, such as a flip-chart and a brochure that contained information regarding healthcare associated infections, such as SSIs, and what the patient's role was in preventing

them. This study stated that participants found the material interesting and eye-opening, and suggested that more information be included, such as symptoms to look out for, rates of infections, and more pictures and diagrams (Seale et al., 2015). A noteworthy comment that a participant made was that while written information was valuable, verbally going over the information was important too (Seale et al., 2015). This eagerness in wanting to be involved reassures that engaging the patient in their own care can be a feasible approach. Hammoud et al. (2020) reiterated that hospitals need to highlight the benefits of patient involvement to their staff in order for them to empower patients to be involved in their own care.

Finally, a literature review was conducted on the benefits of educational handouts, and other implications worth considering. As mentioned, Seale et al. (2015) revealed that patients showed interest in the flip-chart and brochure provided to them and provided feedback on how to improve them. This proved a willingness for patients to participate in their own care. Tartari et al. (2017) emphasized that educational handouts and brochures need to consider the literacy needs of every patient. An observational study conducted by Ding et al. (2017) elaborated that the information should be provided in a manner that takes into consideration the patient's age and cognitive status.

Overall, this literature review strengthened the need for a QIP that advocates for consistent hand hygiene discharge teaching to postsurgical patients in order to prevent SSIs. The literature highlighted the benefits of involving the patients in their own care and providing them with educational materials that supplement verbal teaching.

Change Rationale

In order to implement a change within the PACU, Lewin's Change Theory can be utilized. This change theory includes three stages: unfreezing, change, and refreezing.

Additionally, Lewin's Change Theory has three major concepts: driving forces, restraining forces, and equilibrium.

The unfreezing stage consists of diagnosing a problem within the microsystem, identifying the driving and restraining forces, and determining the unit's readiness for change. For this project, the identified problem was an inconsistency in hand hygiene discharge teaching to postsurgical patients amongst PACU nurses. Driving forces help push for change to occur while restraining forces push against it. One entity that can be classified as either a driving or restraining force is the PACU staff itself, and the types of adopters that comprise it. The adopter types, as described by Roger's Diffusion of Innovation Theory, includes innovators, early adopters, early and late majority, and laggards. Innovators welcome change and will be the first to adopt the proposed intervention. These are usually administrative staff. Early adopters are the second fastest category to adopt a change and often have the most respect within the unit. This can be the unit champion, which is someone who influences others to follow evidence-based practices. Early and late majority eventually acquiesce to the proposed change. This can be nurses who look up to the unit champion and eventually see the benefits of the proposed intervention. Laggards, however, resist change and prefer to maintain the status quo. These can be nurses on the PACU that have worked in the unit for years and practice in specific ways because "that's just how it's always been done." Assessing these driving or restraining forces can facilitate change.

During the change stage of Lewin's Change Theory, the proposed intervention is implemented in collaboration with all the entities involved, including the patient and the multidisciplinary health care team. Failure for change to occur will render the microsystem being in a state of equilibrium, a state where there is no change due to the driving and restraining

forces being equal. Finally, during the refreezing stage, change has successfully occurred and the unit is no longer in equilibrium. This stage consists of making the intervention permanent and establishing a new process.

To further maximize the potential for a successful change, a Plan-Do-Study-Act (PDSA) Cycle I and PDSA Cycle II were utilized to align with the stages of Lewin's Change Theory (*See Appendix B*). Additionally, a Strengths, Weakness, Opportunities, and Threats (SWOT) analysis was conducted to further assess the PACU's key resources that may facilitate the change (*See Appendix C*).

Specific Project Aim

The specific aim for this project in the perioperative unit is to improve the delivery of hand hygiene discharge teaching to postsurgical patients in order to decrease the occurrences of SSIs. The anticipated outcomes for this proposed intervention include: 1. A standardized hand hygiene discharge teaching process, 2. 70% compliance amongst PACU nurses with this new process, and 3. An overall decrease in SSIs.

Section III: Methodology

Context

The PACU within the perioperative unit of an East Bay Area medical center was the focused microsystem for this project. A microsystem assessment, SWOT analysis, and root cause analysis (RCA) were conducted.

Microsystem Assessment

The PACU consisted of 20 beds, which were separated by curtains to provide privacy for patients. The staff present on a daily basis was contingent on patient volume. However, it generally included surgical nurses, medical assistants, patient care technicians (PCTs), and management staff. Because the PACU is only one of three components of the perioperative unit, the PACU staff worked collaboratively with other disciplines from the preoperative and intraoperative phases, such as preoperative nurses, surgeons, surgical nurses, anesthesiologists, and surgical technicians. Connected to the PACU are both the preoperative unit, which admits and prepares the patient for surgery, and the operating room (OR) where the surgical procedures are performed. In total there were three ORs and one red room that was utilized for emergent surgeries.

The process begins with the patient checking in for their scheduled surgery at the admissions desk. As they are escorted into the preoperative phase, they are asked to change into a patient gown and store their personal belongings in an assigned locker. The patient is then taken to a designated waiting area where they complete a preoperative assessment sheet with the preoperative nurse. Once the patient's assigned OR and surgical team are ready, the patient is escorted via a gurney to the OR, where report is exchanged between the preoperative nurse and the OR nurse. Just prior to the surgery, the OR staff conducts a "time-out" to verify the correct

patient, correct surgical procedure, and correct site. The patient is then placed under anesthesia and the surgery is performed. During the entire procedure, measures are taken to ensure sterility and infection control, including maintaining a sterile field and limiting ins and outs.

Once the surgery is complete, the surgical incision is closed, and the patient is transferred over to the PACU, where the OR nurse and anesthesiologist provide report to the PACU nurse. In the PACU, the patient, who is usually still under anesthesia, is monitored for fluid hydration, return of urine and bowel movements, vitals stabilization, amongst other metrics. Once the patient is awake, the discharge teaching process can begin. Prior to discharge, the patient's doctor will brief the patient on the surgery and overall findings. The PACU nurse will contact the patient's family to provide them with any additional discharge teaching, and a pick-up location and time. Once the discharge process has been completed, the patient is dressed and escorted to the designated pick-up location by an available nurse or PCT. Altogether, all three phases of the perioperative unit function to provide exceptional and comprehensive general surgery services to the surrounding communities.

SWOT Analysis

In addition to a microsystem assessment, a SWOT analysis was conducted to determine the unit's strengths, weaknesses, opportunities, and threats that would aid in implementing a change (*See Appendix C*). The strengths that were identified in the PACU included adequate number of beds, efficient discharge flow, and good communication between staff. A weakness that was identified through this analysis included inconsistent hand hygiene discharge teaching amongst PACU staff. Opportunities that were identified included a need to improve patient hand hygiene discharge teaching, and a need to promote patient engagement. A few threats to the PACU that were identified included safety restrictions imposed as a result from the coronavirus

disease (COVID-19) pandemic, language barriers, and the additional time it would take for more comprehensive discharge teaching.

Root Cause Analysis

An RCA in the form of a fishbone diagram was also conducted to determine factors that could have led to the incidence of 13 SSIs within the analyzed nine-month period (*See Appendix D*). These factors were divided into the following categories: patients, environment, healthcare staff, patient conditions, and processes. Patient factors included being fearful or anxious, having a knowledge deficit on hand hygiene, and lack of patient involvement. Environmental factors included increased ins and outs in the OR, and a fast-paced environment that led to a decreased amount of time for teaching. Factors pertaining to the healthcare staff included burnout and not enough staff on certain days. Next, were patient conditions that included a prior infection, smoking, poor nutrition, diabetes mellitus, among other underlying conditions. Finally, factors related to processes included inconsistent discharge teaching, teach-back method for education reinforcement not included in the process map, and handouts not being sent home with the patient.

Intervention

After the six week observation period, it was evident that a need existed for an intervention that would address the inconsistent hand hygiene discharge teaching provided by PACU nurses to postsurgical patients with an incision site. Furthermore, a process to ensure that patients were sent home with the unit's handout containing information on hand hygiene practices and incision care was also needed. Because of the healthcare organization's policies and regulations, as well as the short time frame allotted for this project, an actual intervention was not feasible. Therefore, a proposed PDSA Cycle II was created to aid in the implementation

of the intervention should it be considered (*See Figure B-2*). Subsequently, this QIP and its proposed intervention were presented to and accepted by the perioperative unit's administrative staff via a poster presentation (*See Appendix G*).

Standardized 3-Step Hand Hygiene Discharge Teaching

The proposed intervention is a standardized *3-Step Hand Hygiene Discharge Teaching* process that aims to systemize the discharge teaching provided by the PACU nurses to postsurgical patients. This process is meant to be integrated into the PACU nurse's daily routine in order to perpetuate a culture that provides comprehensive hand hygiene discharge teaching to all postsurgical patients. The plan and do portion of the PDSA Cycle II detail the proposed intervention's planning and execution process.

In order to incorporate this process into the nurse's daily practice, the unit champion, innovators, and perceived early adopters will be recruited and provided with the results from the Hand Hygiene Discharge Teaching Observation Form to introduce the quality gap and need within the PACU. Supplemental information gathered from the literature review will also be discussed in order to further emphasize the need for an intervention.

Next, an in-service will be held where the *3-Step Hand Hygiene Discharge Teaching* process will be introduced and covered in full to the PACU staff. A poster detailing these three steps will be provided for the attendees (*See Appendix E*). Typically, when the PACU nurse is going over discharge instructions, the nurse is relaying information that the healthcare provider has deemed essential for the patient's recovery and placed in the patient's chart as "discharge orders." It was observed, however, that discharge instructions on caring for an incision were not comprehensive and failed to emphasize hand hygiene. This 3-step discharge process aims to fill that gap. When the PACU nurse finishes communicating the discharge instructions provided by

the healthcare provider, the PACU nurse will then refer to this 3 step-process to complete the discharge teaching.

The three steps included in this process are 1. Verbal education, 2. Education reinforcement, and 3. Educational handouts. In step one, the PACU nurse will confirm that verbal education was provided to the patient regarding hand hygiene and its role in preventing SSIs. If it has not, this process will have served its purpose by reminding the PACU nurse to deliver that education. Next, the PACU nurse will verify that education reinforcement has been completed. Education reinforcement can include a teach-back method where the patient repeats back the information delivered to them to ensure that the patient understood the instructions. It may also take the form of a demonstration of what proper hand hygiene looks like prior to caring for the surgical incision. Finally, the third step involves the PACU nurse verifying that the patient is discharged home with the unit's handout on hand hygiene in the language that is most appropriate for them.

Following the in-service, the *3-Step Hand Hygiene Discharge Teaching* process will be implemented into the nurse's workflow. Posters detailing the three steps may be displayed throughout the unit and break room to provide further reinforcement. To ensure that PACU nurses are complying with this process, a nurse self-audit sheet will require completion for every surgical case during the first 12 weeks of the intervention (*See Appendix F*). Once the nurse has completed the *3-Step Hand Hygiene Discharge Teaching* process, they will sign the audit sheet and upload it to the patient's electronic health record in Epic.

Study of the Intervention

Once the intervention is implemented, it is imperative that it is analyzed continuously to gauge its success and address any arising obstacles. During the study portion of the PDSA Cycle

II, auditing strategies are described to measure the PACU nurses' compliance with completing the *3-Step Hand Hygiene Discharge Teaching* process.

One way to measure compliance is through the utilization of the nurse self-audit sheet (*See Appendix F*). During the first 12 weeks of the intervention, every postsurgical case that involves a patient with a surgical incision will require the PACU nurse to complete the self-audit sheet to ensure that the *3-Step Hand Hygiene Discharge Teaching* process is completed. At the end of each week, the self-audit sheets will be reviewed to assess for staff compliance and the findings will be discussed at weekly meetings dedicated to this project.

After the completion of the 12 weeks, the data from the self-audit sheets will be compiled and staff compliance will be determined. Additionally, the project's effectiveness will be assessed by reviewing all surgical procedures that occurred during the 12 weeks following the implementation of the intervention. This will occur 90 days after the end of the 12th week of project implementation considering that an SSI can occur up to 30 days after the surgery date or within 90 days if prosthetic implantations were performed. In order to calculate the SSI rate, the number of SSIs identified during the 12-week period will be divided by the total number of inpatient days and multiplied by 1000. Ultimately, this is the project's outcome goal and a calculation of zero would indicate a flawless intervention.

The results that follow the study portion of the PDSA Cycle II will help guide any decisions made during the act portion. During the act portion, it will be considered whether the *3-Step Hand Hygiene Discharge Teaching* process is effective as is. If not, modifications may be suggested and a third PDSA cycle may follow.

Measures

The measures collected for this project are aimed at assessing the intervention's effectiveness in reducing incidences of SSIs. Outcome measures determine whether the intervention is leading to an improvement within the microsystem. The outcome measure for this project will be the rate of SSIs per 1,000 patient days. This outcome measure is directly influenced by whether or not the PACU nurses are complying with the *3-Step Hand Hygiene Discharge Teaching* process, which is determined by the number of self-audit sheets being completed by PACU nurses assigned to surgical patients with an incision site. Next, process measures evaluate whether the intervention is being completed. For this project, the process measure includes the percentage of PACU nurses completing the nurse self-audit sheet (*See Appendix F*) during discharge teaching. Finally, the balancing measures identify whether the proposed intervention is negatively affecting another process within the microsystem. For this project, the balancing measure includes the change of adding the nurse self-audit sheet and whether it is indirectly causing negative implications on other processes within the microsystem, which can include but is not limited to delays in discharge, overflow of the PACU, increase in nurse burnout, etc.

Ethical Considerations

This project has been approved as a QIP by faculty of the University of San Francisco using QI review guidelines and did not require IRB approval. The postoperative phase can be a vulnerable experience for patients and may have psychological and emotional implications as well. Therefore, it is imperative that patients receive care that heals the patient as a whole. By providing all surgical patients with comprehensive hand hygiene discharge education, they are equipped with the knowledge to physically recover from their surgeries at home. Consequently, a

patient's physical recovery can positively affect their mental and emotional health as well. This care for the whole person is a reflection of the Jesuit value of *cura personalis*. Additionally, by requiring that all PACU nurses perform self-audits to ensure they are providing quality and comprehensive patient discharge teaching, the project is promoting the Jesuit value of *magis*, a concept that believes in doing more for others, and requires high accountability and personal achievement.

This project also aligns with the ethical principles of the American Nurses Association, such as autonomy, justice, beneficence, and nonmaleficence. Appropriate patient education at discharge fosters the postsurgical patient with the knowledge necessary to have the right to self-determination, and be able to make informed decisions from home in order to prevent postoperative complications. In the context of this project, that is the prevention of an SSI. By standardizing the project's *3-Step Hand Hygiene Discharge Teaching* process and implementing self audits for the PACU nurses, this project ensures that all postsurgical patients have access to patient discharge education that is consistent in quality and content for their respective surgical incisions. Moreover, because all the components of the project's intervention are noninvasive, no harm is anticipated to be inflicted on or experienced by the patient. Ultimately, it is believed that the benefits outweigh any perceived risks that may result from the implementation of this project.

Section IV: Results

Due to this QIP's inability to implement the proposed intervention, only anticipated results could be formulated. Prior to this QIP, the PACU observed an incidence of 13 SSIs within a nine-month period. It was observed that there was an inconsistency amongst the PACU nurses regarding hand hygiene discharge teaching. Therefore, the ideal outcome from the proposed intervention is an incidence of zero SSIs during the 12 weeks of implementation, and improved consistency regarding hand hygiene discharge teaching amongst the PACU nurses. A rate of 100% compliance with the *3-Step Hand Hygiene Discharge Teaching* process, evidenced by the nurse self-audit sheets, will determine that consistency.

As described in the root cause analysis, there are various factors that could affect whether or not SSIs occur. It is perceived that these factors may also affect whether or not the proposed *3-Step Hand Hygiene Discharge Teaching* process is fully successful. With these factors into consideration, it is predicted that the PACU will still experience a significant reduction in SSIs and a 70% compliance rate with the *3-Step Hand Hygiene Discharge Teaching* process. As time progresses, it is believed that resources, such as the unit champion, will help increase compliance and further positively impact the results of the intervention.

Finally, it is expected that the healthcare organization will also experience positive results from this intervention. Considering that SSIs can lead to readmissions, which burden the healthcare system with additional costs, a reduction in SSIs will lower the amount of dollars allocated towards SSIs. All of these results combined will produce better patient health outcomes.

Section V: Discussion

Recovering from surgery without the possibility of developing an SSI should not be something that postsurgical patients hope for, but rather are guaranteed. Unfortunately, for the 13 individuals that experienced an SSI between the months of October 2020 and June 2021 in the PACU of an East Bay Area acute care hospital, this was not the case. Primary findings in the assessment of this microsystem revealed that inconsistent hand hygiene discharge teaching amongst the PACU nurses could have played a role in these incidents. Considering that proper hand hygiene practices is the simplest, least expensive and most important intervention patients can do to reduce infection, it was concluded that there was a need for a process that standardized the discharge process to include hand hygiene education for postsurgical patients with surgical site incisions in order to prevent SSIs. This QIP aimed to propose an intervention that standardizes that process.

Lessons Learned

In retrospect, there are a few lessons that were learned from the planning and proposed implementation of this QIP. One lesson that was reviewed was the possibility that the PACU nurses could have altered how they performed the discharge process because they were aware that they were being observed. This could have altered our findings because the PACU nurses could have either a) included hand hygiene education to showcase a competent discharge process or b) forgotten to provide hand hygiene education due to pressure to perform competently.

Another lesson that was considered was the fact that the discharge process may have varied from a shift to shift and day to day basis. As mentioned in the Problem Description, the preliminary observations were only conducted on Wednesdays for a period of six weeks. It is

possible that the discharge process may have looked differently on a different day of the week or shift with a different staff.

A third lesson that was learned was the realization that data on one more metric could have been beneficial to the QIP. During the preliminary observations, it could have been valuable to collect data on whether the six patients who did take home the unit's handout on hand hygiene took it home in the language most appropriate for their literacy needs. The possibility that one of those patients took home the handout in a language foreign to them is significant because it would have been incomprehensible to them.

Finally, the COVID-19 pandemic and its implications on the discharge process was another lesson to consider. In the past, patients had the option of having a person of their choice accompany them at the bedside. The idea that patients adhered to discharge instructions better due to a second person being present during the discharge teaching is noteworthy. Because of the COVID-19 pandemic, patients in this PACU were not able to have someone with them during the discharge process. It is possible that this could have had some effect on the patient's ability to retain and comply with all the discharge instructions provided to them.

Ultimately, there is no doubt that actually implementing the intervention would have allowed for a clearer perspective of key findings and factors that led to a successful change.

Conclusion

The *3-Step Hand Hygiene Discharge Teaching* process is a promising approach towards the reduction of SSIs in this East Bay Area acute care hospital. By optimizing the discharge process to include comprehensive hand hygiene education, the microsystem will produce high patient satisfaction scores and improved patient health outcomes. Consequently, this

improvement in the microsystem will lead to a positive effect on the macrosystem by decreasing any SSI-related costs.

Sustaining this change in the microsystem may prove to be challenging, but not impossible. Through proper use of the PACU's unit champion, strengths, and interval audits, this microsystem possesses undeniable potential towards decreasing SSI incidences during any given timeframe. Therefore, it is with great ambition that the successful implementation of the *3-Step Hand Hygiene Discharge Teaching* process in this medical institution can provide hope that the same results can be achieved on a global scale, or at the very least increase awareness on the positive impact that comprehensive hand hygiene discharge education can have on preventing SSIs in postsurgical patients.

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Section VII: Appendices

Appendix A. Hand Hygiene Discharge Teaching Observation

Hand Hygiene Discharge Teaching Observation Form

Type of Surgery	Was hand hygiene education provided?	Was hand hygiene education reinforced?	Was the unit's handout on hand hygiene in the patient's folder?	Was the unit's handout on hand hygiene sent home with the patient?
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
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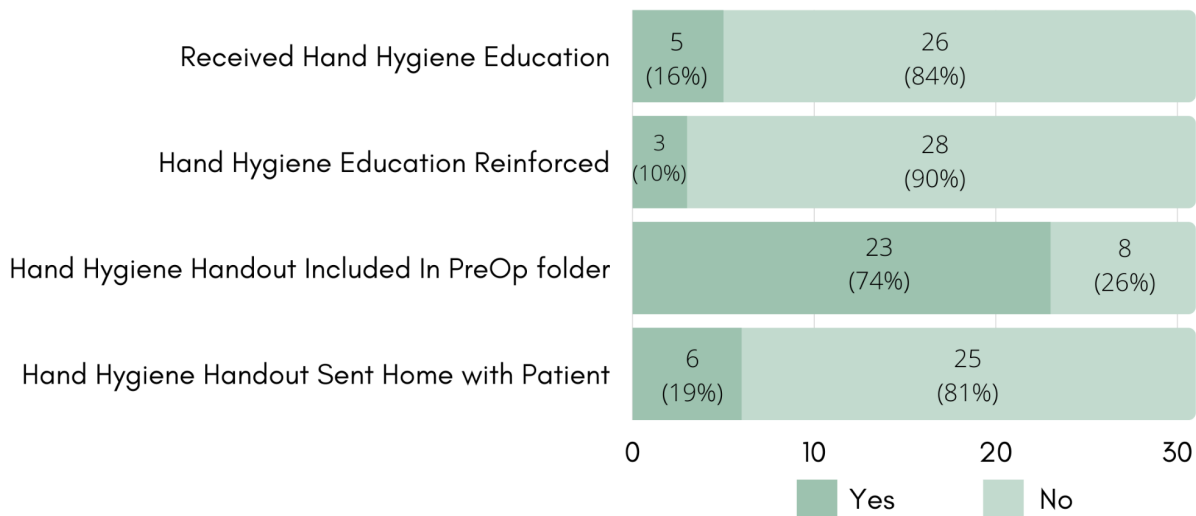


Figure A-2. Observational data was collected on four factors: 1. Whether the patient received hand hygiene education, 2. Whether the patient received hand hygiene education reinforcement, 3. Whether the patient's preoperative folder contained the unit's handout on hand hygiene, and 4. Whether the patient was sent home with the unit's handout on hand hygiene.

Appendix B. PDSA Cycle I & II

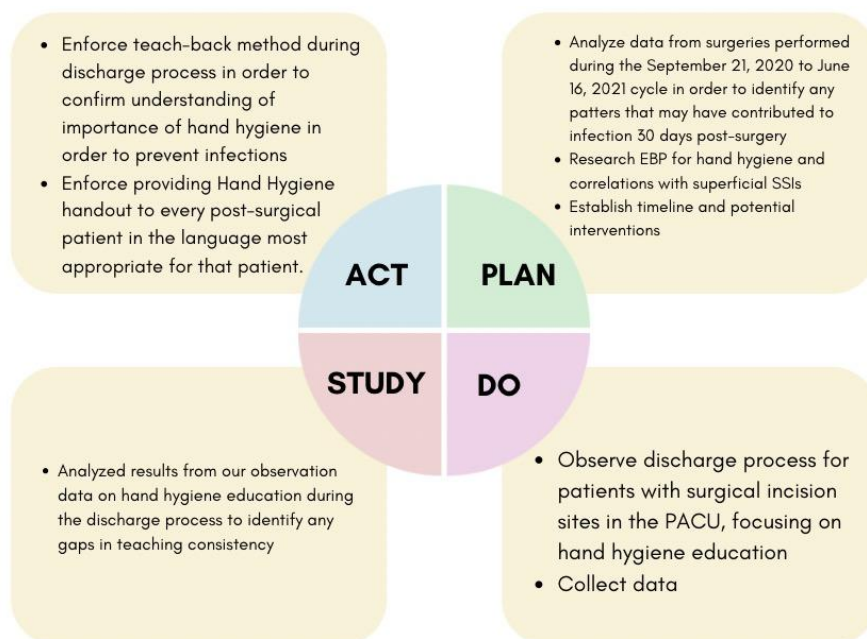


Figure B-1. To assess the microsystem's quality gap and plan an intervention, a first PDSA Cycle was created. This included analyzing historical data from the PACU, observing the discharge process to identify a quality gap, studying the observation results, and proposing an intervention.

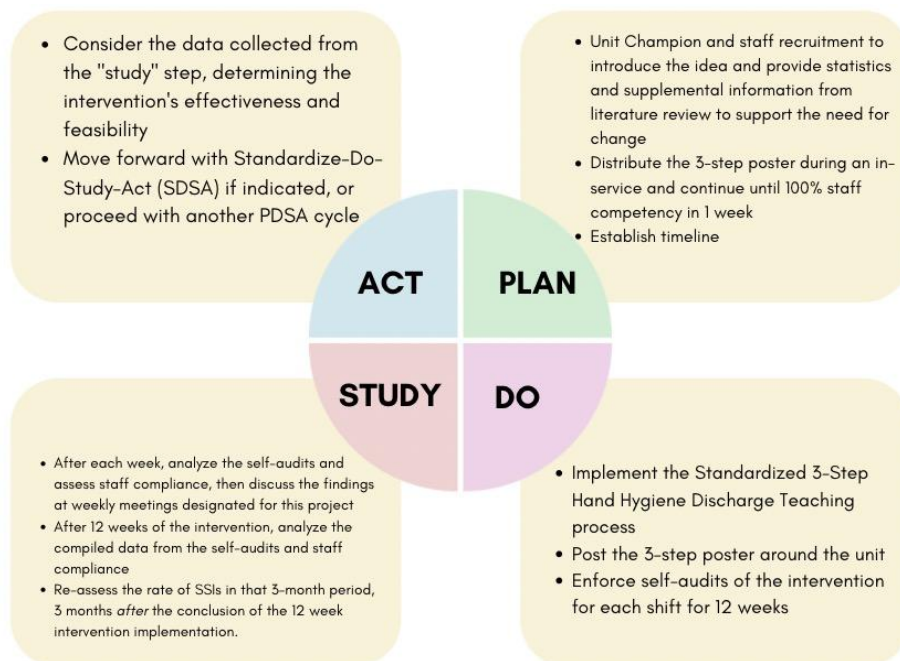


Figure B-2. A second PDSA Cycle was created to guide the implementation of the proposed intervention. This included an in-service, implementation of the *3-Step Hand Hygiene Discharge Teaching* process, and auditing strategies.

Appendix C. SWOT Analysis

SWOT Analysis Chart

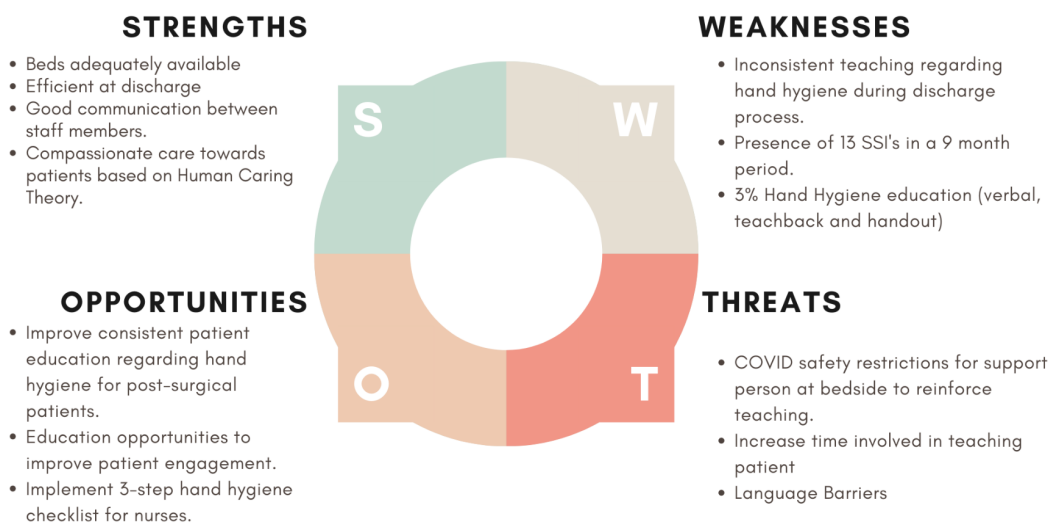
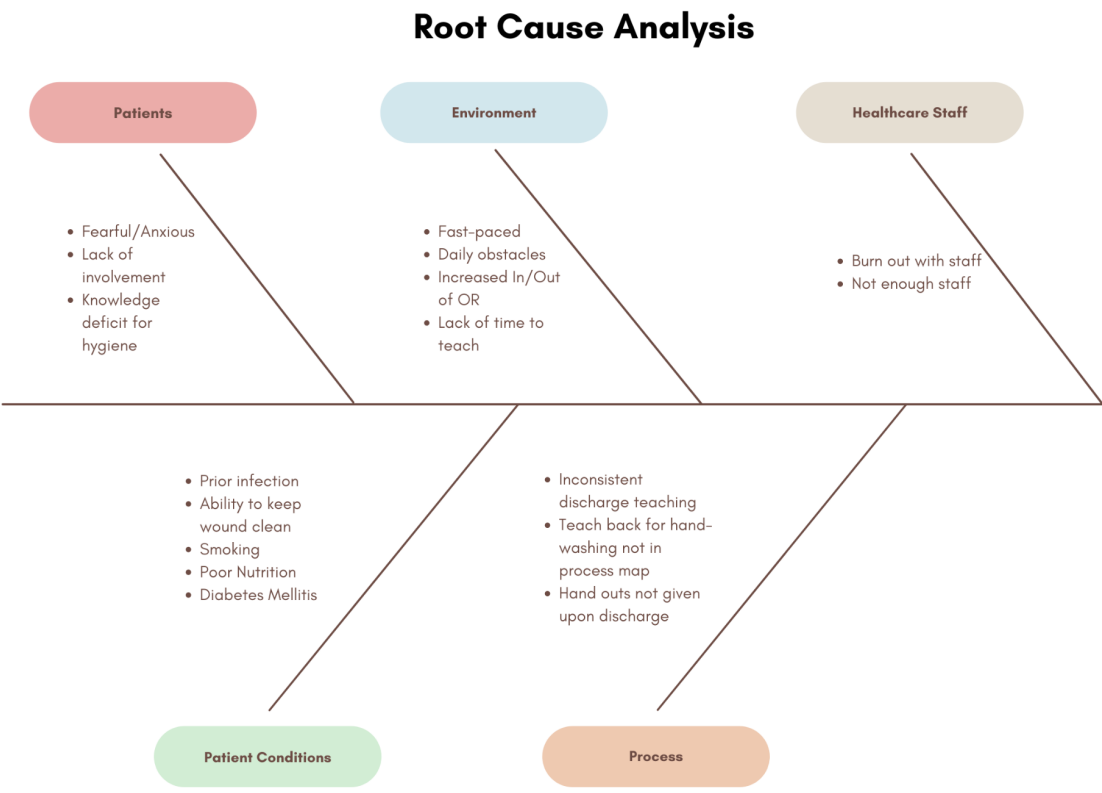


Figure C-1. A SWOT analysis was conducted to determine the unit's strengths, weaknesses, opportunities, and threats that would aid in implementing a change.

Appendix D. Root Cause Analysis



Appendix E. 3-Step Hand Hygiene Discharge Teaching Guide

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3-STEP HAND HYGIENE DISCHARGE TEACHING *Guide*

**1****Verbal Education**

Refer to the hand hygiene handout as a guide to verbally educate the patient.

2**Education Reinforcement**

Review different modes such as teach back, demonstration, and roleplay.

3**Handout**

Ensure the handout is discussed and taken home with the patient.

WHO SHOULD RECEIVE DISCHARGE TEACHING ON HAND HYGIENE?

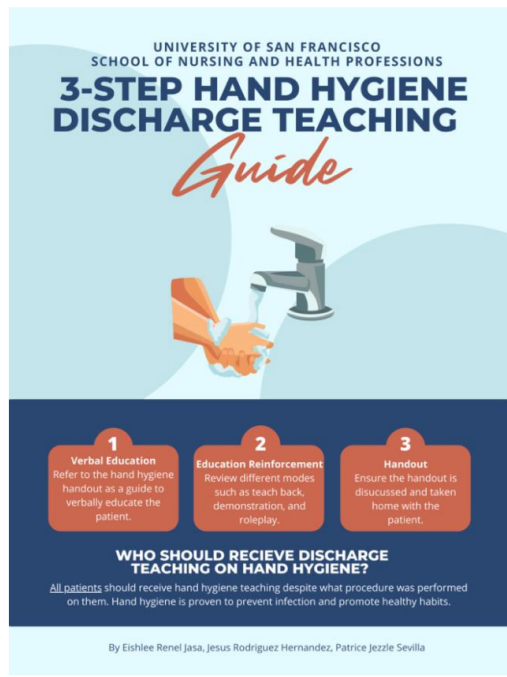
All patients should receive hand hygiene teaching despite what procedure was performed on them. Hand hygiene is proven to prevent infection and promote healthy habits.

By Eishlee Renel Jasa, Jesus Rodriguez Hernandez, Patrice Jezzle Sevilla

Appendix F. Nurse Self Audit Sheet

Self-Audit

Standardized 3-Step Hand Hygiene Discharge Teaching



Sign, initial, and date if you completed the 3-step process above.

Name Initial Date

Appendix G. Poster Presentation

The Relationship Between Superficial Surgical Site Infections and Hand Hygiene Discharge Teaching

Eishlee Renel Jasa RN, CNL, Jesus Rodriguez Hernandez RN, & Patrice Jezzle Sevilla



Introduction

Background
According to the CDC, surgical site infections (SSIs) are the most expensive hospital-acquired infections (HAIs), costing approximately \$3.5 billion a year and an additional 1 million inpatient days annually (2021). To be considered an SSI, the infection must occur at or near the surgical site within 30 days of the procedure or within 90 days if prosthetic implants are used. Among 50-70% of HAIs occur through the hands of healthcare workers (HCWs) and hand washing is still the most effective strategy in reducing infection (Tortori et al., 2017). In addition, studies have shown that improving patient discharge teaching regarding hand hygiene practices, increases hand hygiene compliance in HCWs due to reinforcement. Another study found that there was a 51% reduction in hospital-acquired MRSA infections when patients and visitors participated in a program that promoted hand washing (Gagne et al., 2010). The refinement in hand hygiene teaching in a post-surgical setting may decrease the incidence of SSIs and reap other benefits such as cost reduction, decrease in readmission rates, and improved patient health outcomes.

Problem
There were 15 SSIs within a 9-month period for post-surgical adult patients.

PICT
In post-surgical adults, how will consistent hand hygiene discharge teaching in the form of verbal education, education reinforcement, and educational handouts, compared to inconsistent hand hygiene discharge teaching influence the rates of surgical site infections within one year?

Population & Setting
The 20-bed PACU mostly serves adult patients in the East Bay Area and performs a variety of surgeries, including elective and emergent procedures. This facility specializes in general surgeries, where laparoscopic excisions and hernia repairs were observed the most.

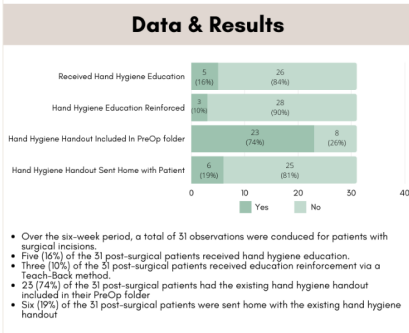
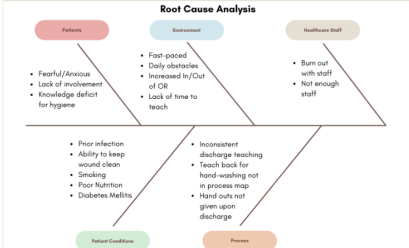
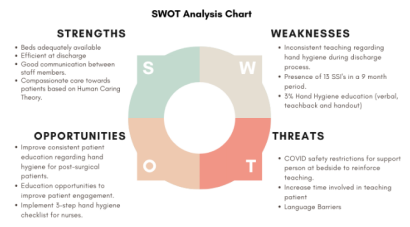
Objective
• Improve the hand hygiene education discharge process in the PACU in order to decrease the rates of SSIs post-discharge

Methodology

- Created a form for data collection that tracked whether hand hygiene was emphasized to patients in the PACU with surgical site incisions; whether Teach-Back method was reinforced; and whether the existing Hand Hygiene handout was sent home with the surgical patient
- In order to not skew findings, we briefly explained to PACU staff that our observations were on the overall discharge process as opposed to hand hygiene education specifically
- Conducted observations on the discharge process once a week over a span of a six-week period
- Analyzed results from our observational data on hand hygiene education during the discharge process to identify any gaps in teaching consistency

Inclusion Criteria
• In order to be considered for our observations, patients coming out of the OR and into the PACU must have had a surgical incision

Exclusion Criteria
• Patients coming out of the OR and into the PACU who did not have a surgical incision (e.g. most GI procedures)

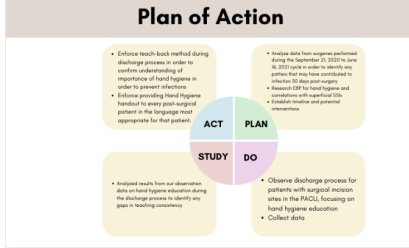


Proposed Intervention

Standardized 3-Step Hand Hygiene Discharge Teaching

- Verbal Education
- Education Reinforcement
- Handout

Our 3-step Hand Hygiene Discharge Teaching process is aimed to promote consistency of teaching for all post-surgical patients with incisional sites. About 6% of the patient cases in our data, received all interventions stated above. Our reasoning behind this simplified comprehensive approach is to promote patient engagement and meet their different learning preferences. A study that applied an education model called "Partners In Your Care", interviewed its participants and found that patients felt empowered as participants of their own care when encouraged to ask their HCWs about hand hygiene compliance (McGuckin et al., 1999).



Discussion

- Key Findings:** insufficient education regarding hand hygiene and surgical site infections during the discharge process
- Specific Aim:** improve the delivery of hand hygiene discharge teaching to posturgical patients in order to decrease the occurrences of SSIs
- Lessons Learned:**
 - Smaller sample size and short period of time to collect data
 - Data does not reflect any other days of the week
 - Influence of support person during the discharge process
- Strengths:**
 - Good communication amongst the staff
 - Compassion towards the patients
 - Willingness to adhere to other organization policies

Future Recommendations

- Perform observations and data collection throughout the week and during other shifts
- Perform audits on hand hygiene discharge teaching
- Utilizing unit champion to educate staff
- Delegate tasks to a unit assistant, nurse aide, or nurse to check if hand hygiene handout is taken home with the patient and does not remain in the folder
- Require each case to have completed EPIC charting for hand hygiene
- Implement patient surveys to assess patients' perceptions on the healthcare staff's effectiveness in infection prevention

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- Peri-operative Staff
- Patients

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