

Winter 12-11-2015

Preventing Surgical Site Infections by Utilizing CHG Wipes for Preoperative Skin Preparation

Jini K. Paek

University of San Francisco, paekjini@hotmail.com

Follow this and additional works at: <https://repository.usfca.edu/capstone>

 Part of the [Perioperative, Operating Room and Surgical Nursing Commons](#)

Recommended Citation

Paek, Jini K., "Preventing Surgical Site Infections by Utilizing CHG Wipes for Preoperative Skin Preparation" (2015). *Master's Projects and Capstones*. 154.

<https://repository.usfca.edu/capstone/154>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Preventing Surgical Site Infections by Utilizing
CHG Wipes for Preoperative Skin Preparation
Jini Paek, RN, MSN
School of Nursing and Health Professions

Abstract

The Clinical Nurse Leader project took place at a 106-bed community hospital in Washington. The microsystem has five operating rooms where they provide outpatient, and inpatient surgical procedures. The goal of this project is to reduce and sustain a near zero number of surgical site infections by implementing the use of a no rinse 2% CHG cloth in the surgical patient. The specific aim of the project is to reduce the rate of SSIs by 80% by December 31st, 2015. Due to a lack of a standardized care, specifically designed for the prevention of SSIs, the microsystem is experiencing a higher rate of SSIs than desired. Methods utilized in this project were data of the current SSI rates for fiscal year 2015, and thorough unit assessment. The data revealed that the microsystem had incurred a total of 12 SSIs, which cost a total of \$249,420 to treat. The cost of implementation of the 2% CHG cloth annually is \$12,168. The pre-intervention results found variations in preoperative skin preparation, and a lack of compliance. Interventions included the standardization of preoperative skin process, developing education for staff and patients, and determining how product would be dispersed to patients. The specific aim goals will not be actualized until data analysis is completed on December 31st, 2015.

Clinical Leadership Theme

This project centers on the CNL curriculum element of *Nursing Leadership*. The CNL function is that of Advocate. I will be disseminating current evidence based practices to prevent surgical site infections (SSIs) in Perioperative Services. This project requires collaboration and communication with the interdisciplinary team regarding the improvement of patient safety and quality. Teamwork and collaboration are essential components for advocating change in any microsystem. As the CNL, I will develop and sustain an environment that is conducive to changing current practices. This project is evidenced based, and constructed on best care outcomes. The clinical and economic implications of surgical site infections are significant.

Statement of the Problem

Infection control is a critical component of patient safety. Nosocomial, or hospital-acquired infections are today by far the most common complication affecting hospitalized patients. Surgical-site infections are second in frequency (about 20 percent) and third in cost (Burke, 2003). According to the Centers for Disease Control (2015), “In 2010, an estimated 16 million operative procedures were performed in acute care hospitals in the United States. A recent prevalence study found that SSIs were the most common healthcare-associated infection, accounting for 31% of all HAIs among hospitalized patients.” With advancements in health care practices (infection control practices, surgical technique, antimicrobial prophylaxis), SSIs are still a significant cause of morbidity, mortality, costly, and need for further treatment.

Project Overview

The goal of this project is to reduce and sustain a near zero number of surgical site infections by implementing the use of a no rinse 2% CHG cloth in the surgical patient. Surgical patients will cleanse with CHG cloth baths prior to the day of surgery and the day of surgery to reduce superficial soil, and transient soil to decrease the risk of wound contamination. It is imperative to make patient safety and quality of care strategic priorities.

This project will consist of interdisciplinary collaboration, developing staff, and patient education, and data analysis pre and post implementation. Other focuses will be on drafting and finalizing standardized processes and drafting a sustainability plan. Strategic planning on how CHG wipes will be delivered to inpatients as well as outpatients who bypass the preadmission visit.

To lessen or negate potential barriers as the CNL, I will need to develop a standardized order set for pre-operative skin care, develop a strategy for distribution of the skin antiseptic at a low cost to ensure availability and use (inpatient and outpatient), and educating staff and patients on how to appropriately apply the skin antiseptic prior to the day of surgery, and day of surgery.

The specific aim statement for the project is: The goal is to reduce SSIs by 80% by Dec 31st, 2015. This aim correlates with the global aim of improving patient safety, and quality by reducing SSIs in the surgical patient population. Each and every patient deserves and should be provided with the same care that encompasses and focuses on patient safety, and reducing risk.

Rationale

The data analysis from the IP report for 2015 showed that the microsystem is experiencing surgical site infections at a higher rate than desired as a result of not having a standard of care designed specifically for the prevention of SSIs (Appendix A). The data collected in regards to SSIs in the microsystem show that in the fiscal year of 2015 that the microsystem incurred a total of 12 SSIs, and spending \$249,420 dollars on SSI treatment. By implementing a 2% CHG cloth for preoperative skin cleansing could possibly reduce the rate of SSIs when bundled with the Surgical Care Improvement Project measures.

The cost evaluation for the microsystem shows in detail the cost savings that the organization could possibly achieve. A significant organism average cost (SSI) costs \$20,785 depending on the severity, where costs could possibly rise depending on nature of infection, and patient comorbidities. Estimated surgical procedures performed per year in the microsystem are 1,300. The overall SSI in the microsystem for the fiscal year of 2015 is 12. Estimated HAI Cost for Select Infections for Fiscal year 2015:\$249,420. The costs of the CHG wipes are: \$5.85/pack with 2 packs per patient. \$11.70 per patient for preoperative bathing. Cost of 2% CHG Cloth Annually is \$12,168.00 (Appendix B). As we can see from the cost evaluation the cost of implementing preoperative bathing outweighs the cost of a preventable SSI. The clinical and economic implications of surgical site infections are significant. By preventing and lowering the incidence of SSIs will result in less readmissions, decreased length of stay, reoperation, and decreases costs associated with SSIs (Appendix C).

Also a root cause analysis was performed prior to implementation, which identified causal factors that could trigger variation in performance (Appendix D).

Several causes for the unsuccessful implementation were noted. The RCA sets an illustration of what barriers might be foreseen prior to implementation, and creating an action plan to deter obstacles.

Methodology

The purpose of this project is to reduce surgical site infections by 80% three months after the implementation of preoperative surgical skin antisepsis protocol. The interdisciplinary team must take into account prolonged length of stay, cost of treating the infection, longer antibiotic regimens, extra tests, and pain and suffering for patient. Today's healthcare is focused on "pay for performance", which emphasizes eliminating preventable errors which includes most SSIs.

Phase one of the project comprised of an extensive systematic literature review, review of existing preoperative skin prophylaxis guidelines, best care guidelines, and current practices, and current microsystem data on SSIs. Steps that have been taken to date for implementing preoperative skin care are: selecting CHG cloth product, establishing baseline data, developing a communication plan, providing current information that can be used in the regional newsletter on the upcoming change in policy/procedure.

Phase two consists of: working on developing education for patient and the interdisciplinary team, working on printed instructions for proper bathing with CHG cloths. Education not only needs to be focused in the Perioperative unit but also in the inpatient unit, and emergency room. There are many patients who are inpatients or in the ER who are scheduled for surgery, and are not receiving any preoperative surgical skin care prior to surgery. As the CNL, I will also need to draft and communicate the

standardized process to the Perioperative Leadership team, and identify how progress will be communicated to the interdisciplinary team.

The change theory that I am applying to this project would be Lewin's change model. During the first phase known as unfreezing, I will need to address the detrimental events of SSIs, anticipate resistance from the interdisciplinary team, communicating the plan for change in an open, and structured manner to increase communication, and participation. Communication in this stage is critical so that the interdisciplinary team can be informed about the future change. Many people resist change, in the "unfreezing" stage. I will inform staff of the impact of SSIs and how it hinders patients, staff, and organization. The second phase changing. This would be the implementation of CHG wipes for preoperative bathing. I know that during this phase I will be getting some resistance from staff. The stage of "changing" must be carefully, and thoughtfully prepared for success. By preparing staff and educating the staff on the risks of noncompliance (time, expense, patient satisfaction, and payment) I can better prepare staff for the needed change. Must have support from risk management, infection control, and Perioperative Leadership team. The final stage of Lewin's change theory, "refreezing." Reinforcing the new state of change. I find this to be the most crucial stage for change. The interdisciplinary team could possibly revert back to former behavior unless changes are not reinforced. This is a perfect time for reassessing staff's feelings on change. It is crucial as the CNL to provide an environment that is positive, and encouraging.

Actions to be taken once the project is implemented are random retrospective chart audits, and measuring compliance from staff. Compliance will be monitored by

preoperative skin cleansing audits. Accurate auditing is crucial in addressing compliance. If compliance is a barrier after implementation audits can help address those providers who may need extra education/support. Leadership support is essential for implementation, maintaining, and sustaining a preoperative skin antiseptics program.

Data results that will be collected to check if the project is effective will be monthly data on current SSIs rates in the microsystem. Running a preoperative skin care report through the EMR will collect this data. After three months post implementation data will be compared from previous months to see if the preoperative skin cleanse is effective. Predictions I see are better surveillance and feedback of SSI data to surgeons.

Data Source/Literature Review

The focus of my project will be based on retrospective chart audits, comparing baseline information on SSI rates in the microsystem and post implementation data. Also unit assessment will be assessed to see what current practices are within the microsystem. Current processes with preoperative skin cleansing will be assessed, and evaluated as well. Currently, there is no policy in regards to preoperative skin preparation in the microsystem. Patients that are seen in physician offices prior to surgery are not receiving any type of preoperative skin preparation, as well as patients on the unit, and the emergency room who are scheduled for surgery. The amount of patients who are not receiving a presurgical skin prep is alarming. The transient soil, and superficial soil on the patients skin can cause an increased risk in post operative SSI.

The PICO statement that was used to assess the appropriate evidence based practice guideline was: “In surgical patients who receive preoperative CHG (P) does CHG bathing (I) compared to non-CHG bathing (C) decrease Surgical Site Infections

(O)?" The PICO statement resulted in several literature results. The PICO statement generated 117 results on CINAHL. I then refined the timeline from 2010-2015, which resulted in 70 results. I then went to the Cochrane Database of Systemic Reviews and entered the same PICO statement with the timeline from 2010-2014, which resulted in 34 literature results. The PICO statement was useful in attaining information that was specific to my PICO statement.

There were several articles that were evidence-based. Evidence based practice (EBP) utilizes current knowledge into care decisions that improve care processes, and patient outcomes. By implementing, and utilizing EBP can help support the need, and importance for this project. There are still many people (surgeons, and nurses) who are skeptical of the importance of preoperative skin preparation prior to surgery. There needs to be added stress, and education on the impact of SSI's on both patient and interdisciplinary team.

Recent evidence based- scientific and clinical studies support two types of CHG application (2% CHG coated cloth or 4% CHG soap) using a standardized, timed process prior to hospitalization admission as an effective approach for reducing the risk of postoperative surgical site infections (Edmiston, Okoli, Graham, Sinski, & Seabrook, 2010, p.512). The microsystem has chosen the 2% coated CHG wipes for the presurgical skin care regimen. Each patient will receive 2 bathes one the day prior to surgery, and one the day of surgery in the short stay unit.

In 2010, the *New England Journal of Medicine* published an article that presented evidence to support the use of three components shown to decrease SSIs. These components were: preoperative bathing or showering with chlorhexidine soap,

preoperative skin antisepsis with an alcohol-containing agent, and screening patients for Staph aureus and intranasal Mupirocin decolonization of S. Aureus carriers (New England Journal of Medicine, 2010). Also the study showed that in a randomized study that the application of chlorhexidine-alcohol minimized the risk of SSIs by 41% as compared with the most widespread practices in the United States of using aqueous povidine-iodine (NEJM, 2010).

Karki, Cheng (2012), conducted a systematic review of the impact of no-rinse skin cleansing with chlorhexidine gluconate on prevention of healthcare-associated infections and colonization with multi-resistant organisms. The study wanted to measure the impact of skin cleansing with CHG impregnated or saturated washcloths in inhibiting healthcare-associated infections and colonization. The results from the study suggest that the use of a no-rinse CHG wipes significantly reduces the risk of CLABSI, SSI, and colonization with VRE and MRSA but not infection. Studies have shown that the use of a no-rinse 2% CHG impregnated washcloth has a higher amount of CHG residual left on the skin than that of the 4% CHG solution. The microsystem has chosen the 2% no rinse CHG wipes for preoperative skin preparation. Currently, the microsystem is the pilot for the trialing of preoperative skin preparation prior to the target implementation, which will be applied regionally.

Lee, Agarwal, Lee, Fishman, & Umscheid (2010), compared the use of chlorhexidine with use of iodine for preoperative skin antisepsis in its effectiveness in preventing surgical site infections. The results from the study revealed that chlorhexidine antisepsis was associated with significantly lower rates of SSIs than with iodine. The cost benefit model in this study showed that switching from iodine to CHG resulted in a net

cost savings of \$16-\$26 dollars per surgical case which resulted in a savings of \$349,904-568,594 per year for the hospital (Lee, Agarwal, Lee, Fishman, & Umscheid, 2010). The cost benefit model in this study shows promise with the use of a no rinse 2% CHG as a preoperative skin antisepsis in significantly lowering SSIs in the microsystem. Also the study shows that the implementation of a preoperative skin prep resulted in massive savings to the organization from the prevention of SSI care.

Pyrek, K (2015), the author addressed the challenges to the implementation of CHG bathing interventions. The author also emphasized the significance of compliance that CHG bathing is being properly performed. There were many variations that were found after implementation. This article was helpful in determining and understanding possible barriers to compliance. Takeaways from this article that will be applied to the microsystem project were the importance of standardization and compliance with the no rinse CHG wipes, and that CHG bathing is being performed properly. Another barrier that stood out that I can see as an issue is convincing the interdisciplinary team that this is the appropriate intervention. It is essential to get interdisciplinary buy-in and address competencies in providing accurate and thorough education about CHG's contraindications, and benefits.

Zywiell, M., Daley, J., Delanois, R., Naziri, Q., Johnson, A., & Mont, M. (2011), the author's in this study wanted to evaluate the incidence of deep SSIs in knee arthroplasty patients who used an advanced preoperative skin preparation compared to patients who only received a standard perioperative preparation. An additional purpose of the study was to compare the infection rates between the two groups. Group one was given 2% chlorhexidine-impregnated cloths for their advanced pre-operative skin

preparation, while group two received no pre-operative skin preparation. Zyweil et al. (2011) concluded “Results showed a considerably lower incidence of SSIs in patients who complied with the advanced skin preparation compared to those patients who did not. There were no SSIs among the 136 patients who used the advanced pre-operative skin protocol compared to 21 infections in 711 patients who used the in-hospital preparation only” (p. 1003).

The research findings of this study are useful and applicable implications for healthcare providers to reduce surgical site infections as well as improving the quality of patient care by reducing preventable SSIs in the postoperative period. The findings also form a basis for a change of practice for pre surgical patients. Lowering surgical site infections will result in less readmission or prolonged length of stay, reoperation, and sepsis or infection.

Timeline

The project was initiated March 25th, 2015. Current processes that have been completed to date are: drafting charter, determining which product will be used, and supplied, establishing baseline SSI data, and providing current information that can be used for the regional newsletter.

Project initiatives that are in process are: developing education for physicians, staff, and patient as well as targeting the inpatient interdisciplinary team (Appendix E). Target implementation date for the outpatient unit is set for September 1st, 2015, and the inpatient target implementation date is set for December 1st, 2015.

Expected Results

Outcomes that are expected from this project are a reduction in surgical site infections within the microsystem. The desired goal will be met if there is a reduction of SSIs by 80% three months following implementation. Return on investment cost will produce substantial cost savings (skin antiseptic product cost, decreased number of SSIs resulting in significant cost savings). Number of patient readmitted for SSI decreased by 75%, and interdisciplinary compliance in pre-op skin antiseptic. Also I foresee better surveillance with patients and SSI tracking. There needs to be a multimodal approach involving active post discharge surveillance, as well as measures at every step of the healthcare delivery process, ranging from the Short Stay Unit to Post Discharge.

Nursing Relevance

Reducing SSIs in the preoperative patient will bring a significant contribution to nursing profession since reducing risks and patient safety are key quality, and safety issues. Due to increasing prevalence, extent of injury, and rising healthcare costs, related to SSIs, SSI prophylaxis has become a national priority. Nurses in all settings need to be able to detect postoperative wound infections. Perioperative nurses play a key role in decreasing SSI risk postoperatively, however due to the variety of settings patients are seen in, it is imperative that all nurses have the ability and training to assess for wound infection.

Each and every patient should be provided the same care in regards to safety, quality, and the prevention of surgical site infections. It is essential that we reduce SSIs so that we can provide high quality, cost effective care to all of our patients. It is essential to make patient safety and quality of care strategic priorities in order for any care improvement project to be successful.

Conclusion

The specific aim statement for the project is: The goal is to reduce SSIs by 80% by Dec 31st, 2015. This aim correlates with the global aim of improving patient safety, and quality by reducing SSIs in the surgical patient population. Each and every patient deserves and should be provided with the same care that encompasses and focuses on patient safety, and reducing risk.

The microsystem is a 106-bed community hospital in Washington. The microsystem has five operating rooms where they provide outpatient, and inpatient surgical procedures. A majority of cases consist of: general, orthopedics, plastics, podiatry, gynecology, urology, and robotic surgical procedures. The patients in the microsystem are all surgical patients.

Modifications to the project included estimating SSIs that adjusts for risk factors associated with infection for different care settings, and procedures. Also developing a plan with surrounding outpatient clinics to develop a communication tactic for tracking SSIs, and reporting back to the hospital.

Published material that will be used for teaching aids for both staff, and patient is a preoperative skin preparation anatomical diagram, which has graphical instructions for the use of preoperative skin wipes. Also included will be a preoperative skin checklist that the patient will fill out and bring on the day of surgery. Patients will remove adhesive sticker from the package and affix the sticker to the protocol instruction sheet, to record and confirm compliance. For inpatients/emergency surgical procedures the nurse will instruct the patient on the proper use and application of preoperative skin preparation. Depending on patient limitations the nurse may assist the patient in skin disinfection. The

nurse will then document and report to the Operating Room nurse that preoperative skin preparation was appropriately applied, and completed.

The Clinical Nurse Leader project initiated numerous strategies for the microsystem to incorporate in support of the implementation of the preoperative skin preparation policy. A specific preoperative skin report was created to retrieve data on the completion of skin preparation in the EMR to ensure that all elements of the protocol were completed. The microsystem project also established and created a reliable, standardized system to obtain complete preoperative skin preparation, a consistent process to communicate completed preoperative skin preparation, and developed a patient-centered approach to education. Lessons learned from this project are: leadership support, surgeon and nurse champions are unquestionably vital for the successful implementation, and sustainability of this policy.

The specific aim goals will not be actualized until data is available December 31st, 2015. Then the microsystem will be able to compare “before and after” data to see if they have reached it’s goal of reducing SSIs by 80% 3 months post implementation. Compliance measures will be obtained by random retrospective chart audits, and incident reports for those who are non compliant. Audits will occur randomly, and will be an ongoing process. Accurate auditing is crucial in addressing compliance. If compliance is a barrier after implementation audits can help address those providers and staff who may need extra education and support. Monthly reports on compliance will be available for staff to see. Trends will be followed in quarterly reports, and findings will be communicated to Perioperative Leadership team, surgeons who have a trend of SSI complications, and the interdisciplinary staff. As the CNL, it is critical that education,

and compliance are adhered to. After data is available following the post implementation period recommendations will be made based on the microsystems data. Improvement takes place over time. Determining if improvement has actually occurred and if the implementation is successful will require observing of patterns over time.

The implementation of a preoperative skin preparation with 2% CHG no rinse cloth can aid in reducing the incidence of an avoidable adverse event and is a crucial component of improving patient safety . Nosocomial, or hospital-acquired infections are today by far the most common complication affecting hospitalized patients. By educating and implementing the preoperative skin preparation policy we can increase patient satisfaction by providing a culture of safety, and quality of care based on evidence based practices. The findings from this project are useful and applicable for healthcare providers to reduce surgical site infections as well as improving the quality of patient care by reducing preventable SSIs in the postoperative period. The findings also develop a basis for a change of practice for pre-surgical patients. Reducing surgical site infections will result in less readmissions, decreased length of stay, reoperation, and decreased costs associated with SSI care.

References

- American Association of Colleges of Nursing. (2013). *Competencies and curricular expectations for clinical nurse leader education and practice*. Retrieved from <http://www.aacn.nche.edu/cnl/CNL-Competencies-October-2013.pdf>
- Anderson, D., Podgorny, K., Berrios-Torres, S., Bratzler, D., Dellinger, P., Greene, L., ...Kaye, K. (2014). Strategies to prevent surgical site infections in acute care hospitals: 2014 update. *Infection Control and Hospital Epidemiology*, 35, 605-627.
- Bryce, E., Wong, T., Roscoe, D., Forrester, L., & Masri, B. (2013). A novel immediate pre-operative decolonization strategy reduces surgical site infections. *Antimicrobial Resistance and Infection Control*, 2, 1-2.
- Burke, J. (2003). Infection control-A problem for patient safety. *The New England Journal of Medicine*, 348(7), 651-656.

Centers for Disease Control (2015). Surgical site infection (SSI) event. Retrieved from

<http://www.cdc.gov/nhsn/PDFs/pscManual/9pscSSICurrent.pdf?agree=yes&next=>

[Accept](#)

Darouiche, R., Wall, M., Itani, K., Otterson, M., Webb, A., Carrick, M., ... Berger, D.

(2010). Chlorhexidine-alcohol versus povidone-iodine for surgical site antisepsis.

The New England Journal of Medicine, 362, 18-26.

Dizer, B., Hatipoglu, S., Kaymakcioglu, N., Tufan, T., Yava, A., Iyigun, E., & Senses, Z.

(2009). The effect of nurse-performed preoperative skin preparation on

postoperative surgical site infections in abdominal surgery. *Journal of Clinical*

Nursing, 18, 3325-3332.

Edmiston, C., Okoli, O., Graham, M., Sinski, S., & Seabrook, G. (2010). Evidence for

using chlorhexidine gluconate preoperative cleansing to reduce the risk of surgical

site infection. *The Association of perioperative Registered Nurses Journal*, 92,

509-518.

Eiselt, D. (2009). Presurgical skin preparation with a novel 2% chlorhexidine gluconate

cloth reduces rates of surgical site infection in orthopedic surgical patients.

Orthopedic Nursing, 28, 141-145.

Graling, P., & Vasaly, F. (2013). Effectiveness of 2% CHG cloth bathing for reducing

surgical site infections. *The Association of perioperative Registered Nurses*

Journal, 97, 547-551.

Health Research & Educational Trust. (2014). Surgical site infection (SSI) change

package: Preventing surgical site infections 2014 update. Retrieved from

<http://www.hret->

- [hen.org/index.php?option=com_phocadownload&view=category&download=1394:surgical-site-infections-change-package-2014&id=73:surgical-site-infections](http://www.hen.org/index.php?option=com_phocadownload&view=category&download=1394:surgical-site-infections-change-package-2014&id=73:surgical-site-infections)
- Jakobsson, J., Perlkvist, A., & Wann-Hansson, C. (2011). Searching for evidence regarding using preoperative disinfection showers to prevent surgical site infections: A systematic review. *Worldviews On Evidence-Based Nursing*, 8, 143-152.
- Institute for Healthcare Improvement. (2015). Project JOINTS. Retrieved from <http://www.ihl.org/engage/initiatives/completed/projectjoints/Pages/default.aspx>
- Karki, S., & Cheng, C. (2012). Impact of non-rinse skin cleansing with chlorhexidine gluconate on prevention of healthcare-associated infections and colonization with multi-resistant organisms: a systematic review. *J Hosp Infect*, 82, 71-84.
- Lee, I., Agarwal, R., Lee, B., Fishman, N., & Umscheid, C. (2010). Systematic review and cost analysis comparing use of chlorhexidine with use of iodine for preoperative skin antisepsis to prevent surgical site infection. *Infection Control and Hospital Epidemiology*, 31, 1219-1229
- Napolitano, L. (2006). Decolonization of the skin of the patient and surgeon. *Surg Infect*, Suppl 3:S3-S15.
- Pyrek, K. (2015). Experts address the promise and challenges of CHG bathing interventions. Retrieved from <http://www.infectioncontrolday.com/articles/2015/01/experts-address-the-promise-and-challenges-of-chg-bathing-interventions.aspx>
- Schweizer, M., Chiang, H., Septimus, E., Moody, J., Braun, B., Hafner, J., ...Herwaldt, L. (2015). Association of a bundled intervention with surgical site infections

among patients undergoing cardiac, hip, or knee surgery. *Journal of American Medical Association*, 313, 2162-2171.

Zywiell, M., Daley, J., Delanois, R., Naziri, Q., Johnson, A., & Mont, M. (2011). Advance pre-operative chlorhexidine reduces the incidence of surgical site infections in knee arthroplasty. *International Orthopaedics*, 35(7), 1001-1006

Appendix A

Denominators													
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	Total
Total Patient Days	2097	2270	2279	2496	2185	2452	2902						16681
Adjusted Patient Days	4790	5130	4995	5445	4877	5268	5824						31061
Colon Procedures	4	0	4	7	4	5	6	0	0	0	0	0	30
Other GI Procedures	14	10	22	16	12	18	17	0	0	0	0	0	109
C-Sec Procedures	0	0	0	0	0	0	0	0	0	0	0	0	0
Hyst-Abd Procedures	5	5	4	8	7	6	8	0	0	0	0	0	43
Hyst-Vag Procedures	0	0	0	0	0	0	0	0	0	0	0	0	0
Joint-Hip Procedures	31	15	32	28	23	29	12	0	0	0	0	0	170

Joint-Knee Procedures	19	24	20	25	33	30	24	0	0	0	0	0	175
Other Orthopedic Procedures	6	15	18	11	7	12	22	0	0	0	0	0	91
Other Procedures	96	90	117	108	84	92	94	0	0	0	0	0	681

Significant Organism Average Costs per Infection													
MRSA	\$27,083												
SSI	\$20,785												
Overall Surgical Site Infections													
Infection Type	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	Total
Superficial Incisional Primary (SIP)	3	0	0	0	1	1	0	0	1	0	0	0	6
Superficial Incisional Secondary (SIS)	0	0	0	0	0	0	0	0	0	0	0	0	0
Deep Incisional Primary (DIP)	0	0	0	0	0	2	1	1	0	0	0	0	4
Deep Incisional Secondary (DIS)	0	0	0	0	0	0	0	0	0	0	0	0	0
Organ Space	0	1	0	0	0	0	0	0	1	0	0	0	2

SSI Total	3	1	0	0	1	3	1	1	2	0	0	0	12
Date of SSI & Type													
List Surgical Site Infection specifics in monthly overview section													

Hospital-Acquired Organisms Overall													
MRSA	0	0	0	0	1	1	0	0	0	0	0	0	2
STAU	1	0	0	0	0	1	1	1	0	0	0	0	4
STRE P	0	0	0	0	0	0	0	0	0	0	0	0	0
ENTC	0	1	0	0	0	0	0	0	0	0	0	0	1
PSAE	0	0	0	0	0	1	0	0	0	0	0	0	1
CNST	0	0	0	0	0	0	0	0	0	0	0	0	0
Candida	1	0	0	0	0	0	0	0	0	0	0	0	1
ENTB	1	0	0	0	0	0	0	0	0	0	0	0	1
Other	0	2	0	0	0	1	0	0	2	0	0	0	5
Total	3	3	0	0	1	4	1	1	2	0	0	0	15

Estimated HAI Cost for Select Infections													
Overall	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	TOTAL
MRSA Cost	\$0	\$0	\$0	\$0	\$27,083	\$27,083	\$0	\$0	\$0	\$0	\$0	\$0	\$54,166
SSI Cost	\$62,355	\$20,785	\$0	\$0	\$20,785	\$62,355	\$20,785	\$20,785	\$41,570	\$0	\$0	\$0	\$249,420
Total	\$62,355	\$20,785	\$0	\$0	\$47,868	\$89,438	\$20,785	\$20,785	\$41,570	\$0	\$0	\$0	\$303,586

Appendix B

Significant Organism Average Costs per Infection:

- SSI- \$20,785

Estimated average number of surgical procedures performed per year:

- 1300

Overall Surgical Site Infections for Fiscal year 2015:

- 12

Estimated HAI Cost for Select Infections for Fiscal year 2015:

- \$249,420

SAGE CHG wipes

- \$5.85/pack with 2 packs per patient.
- \$11.70 per patient for preoperative bathing

Cost of SAGE 2% CHG Cloth Annually

- \$12,168.00

Appendix C

SWOT Analysis

Through the analysis of the materials that I have created for this course several issues have been discovered.

Strengths of my project include the support of the Perioperative Leadership Team, and Physician champion.

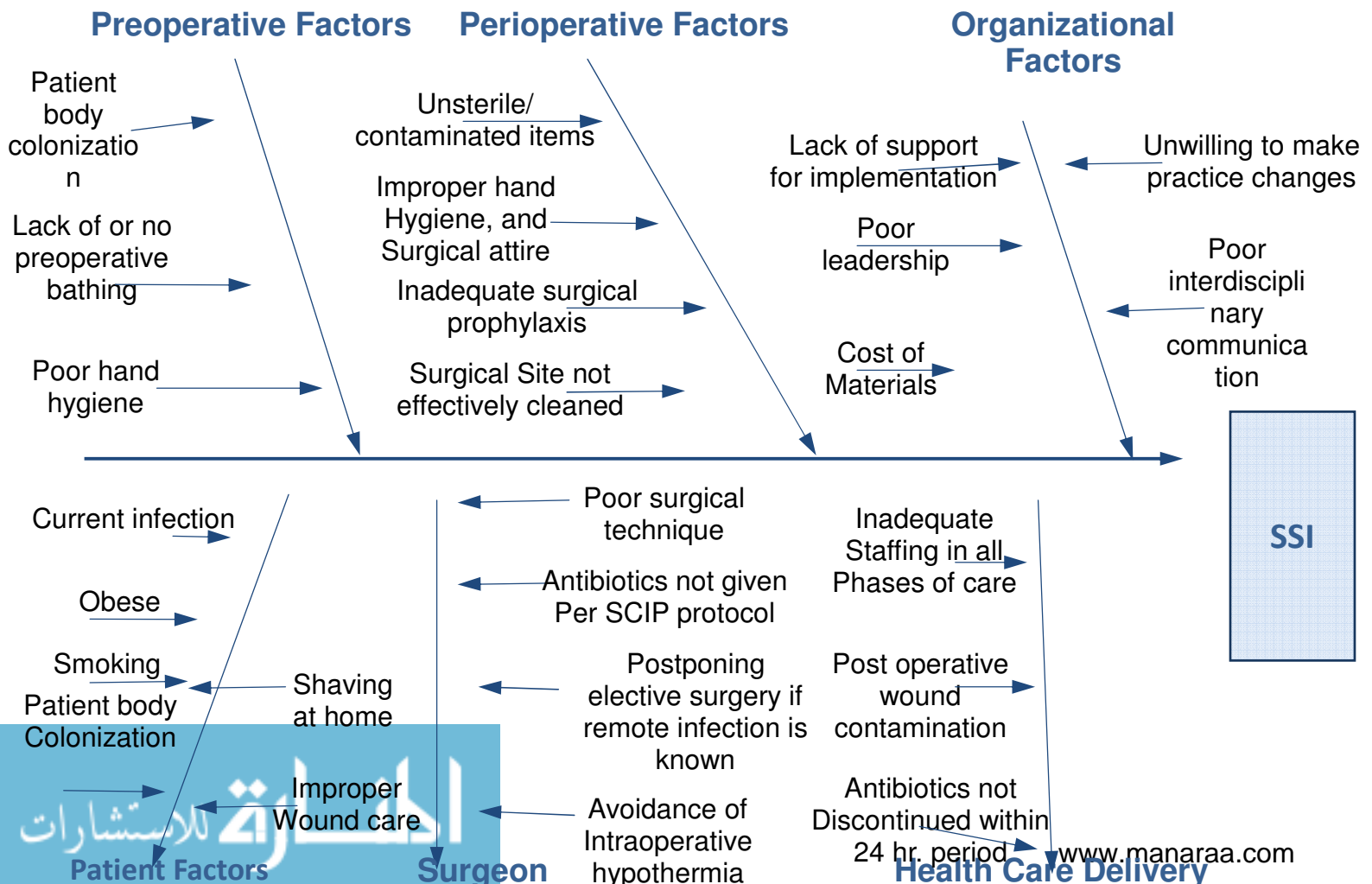
Weaknesses include a lack of standardized methods of care in relation to SSI prevention, and adherence to SCIP infection process measures.

Opportunities for improvement include surveillance to improve situational awareness, and performance improvement in reporting surgical site infections to key stakeholders.

Threats to my project are difficulty in obtaining surgeons' agreement to participate (there is already some push back from certain surgeons), difficulty in screening and decolonizing patients who have bypassed the usual preadmission process (patients in the ER, weekends and holidays), and time constraints (documenting and auditing).

Appendix D

Surgical Site Infection Diagram



Appendix E

CHI Franciscan CSI Bundle Implementation Project (Last updated 5/4/2015)						
Task #	Task Description	Responsible (Who)	To be Completed by (When)	Status	Comments	
PHASE 1: CHG Wipes						
OUTPATIENT FOCUS						
1	Administrative					
1A	Conduct kick-off/Planning Meeting	Periop leader, CNS, Infection Control	3/25/15	Complete		
1B	Draft Charter	Periop leader	3/25/15	Complete		
1C	Review/approve project charter	Periop leader, CNS, Infection Control	5/5/15	In process		
1D	Update associated policies	CNS, CNL, Periop	5/4/15	In process		
1E	Update associated order sets	CNS/Periop/CNL	5/8/15	In process		Forms to create/submit requested order set have been received and will be completed/submitted. Actual duration for request to be approved is unknown at this time.
1F	Determine which product will be used/supplied	CNS/Periop	4/24/15	Complete		Sage brand, \$11/3 pack with 2 packs per patient = \$22 per patient
1G	Determine how product will be paid for, i.e., HS?	Periop leader/	5/8/15	In process		
1H	Determine how product will be distributed	Periop leader		Not started		How will product be delivered to FMG and how will it be ordered
1I	Draft Standardized Process to be used within PATs regionally	CNS/CNL	5/8/15	In process		
1J	Finalize Standard Process to be used with PATs regionally	CNL/CNS	5/12/15	Not started		
1K	Draft sustainability plan	Periop leader, CNS, CNL, Infection Control		Not started		
1L	Establish baseline data	Periop leader	2/5/15	Complete		
2	Communication and training					
2A	Communicate standard process to Periop leadership/wipes	CNS/CNL	5/20/15	Complete		Next PLC Meeting is scheduled for 5/20 @ 15CH; Next Clin Ops meeting (Directors) is scheduled for 5/19
2B	Develop education for physicians/wipes	CNS/CNL		In process		Scrub News?
2C	Develop education for staff/wipes	CNS/CNL		In process		Bugbyte
2D	Develop patient education	CNL/CNS		In process		
2E	Develop communication plan	Periop leader, CNS, Infection Control	4/28/15	Complete		Living document, will continue to be updated as needed
2F	Identify how progress will be communicated, i.e., dashboard	Periop leader/CNS/CNL	6/8/15	Complete		
2G	Determine how project will be evaluated post-implementation	CNL/CNS	6/12/15	Complete		
2H	Send video links to team for review and discussion	CNS/CNL	5/4/15	Complete		
2I	Provide current information that can be used for bugbyte, etc.	CNS/CNL	5/4/15	Complete		
3	Implementation					
3A	Target implementation date: OUTPATIENT	Team	9/1/15	Not started		
INPATIENT FOCUS						
4	Administrative					
4A	Update associated policies	CNS/CNL	In process	Not started		
4B	Determine product availability and distribution	Periop leader		Not started		Based on work associated with Phase 1 OUTPATIENT
4C	Establish baseline data	Periop leader	3/25/15	Complete		
5	Communication and training					
5A	Develop education for physicians/wipes	CNS/CNL		Not started		
5B	Develop education for staff/wipes	CNS/CNL		Not started		
5C	Develop patient education	CNS/CNL		Not started		
5D	Update communication plan	Periop leader, CNS, Infection Control		Not started		
5E	Identify how progress will be communicated, i.e., dashboard	Periop leader/CNS/CNL		Not started		
5F	Determine how project will be evaluated post-implementation	Periop leader/CNS/CNL		Not started		
6	Implementation					
6A	Target implementation date: INPATIENT	Team	12/1/15	Not started		
PHASE 2: Attire and Hair Clipping						
7	Administrative					
7A	Update associated policies	CNS/CNL		Not started		
7B	Establish baseline data	Periop leader		Not started		
8	Communication and training					
8A	Develop education for Periop leadership/clipping, attire	CNS/CNL		Not started		
8B	Develop education for physicians/clipping, attire	CNS/CNL		Not started		
8C	Develop education for staff/clipping, attire	CNS/CNL		Not started		
8D	Update communication plan	CNS/CNL		Not started		
8E	Identify how progress will be communicated, i.e., dashboard	Periop leader/CNS/CNL		Not started		
8F	Determine how project will be evaluated post-implementation	Periop leader/CNS/CNL		Not started		
8G	Patient education	Periop leader/CNS/CNL		Not started		
9	Implementation					
9A	Target implementation date: Attire and Hair Clipping	Team	12/1/15	Not started		