

# Quality Improvement Program Ensures Preoperative Adherence to CDC SSI Prevention Guidelines and Reduces Orthopedic SSIs 66%

Monica Baxter, RN, MSN, CIC Infection Control Professional; Ellen Ables, NA, IP Surgery Unit Clerk; Rusty Allison, MD Orthopedic Surgeon; Vicky Boren, RN Staff Nurse; Bruce Brown, MD Orthopedic Surgeon; Bridget Davis, RN Assistant Director of Surgery; Mona Duvall, IP Surgery Coordinator; Rob Garrison, MD Orthopedic Surgeon; Susan Gray, IP Unit Clerk; Vicky Hawkins, RN, CNOR Perioperative Educator; Joyce Hudson, RN Staff Nurse; Stephanie Keaton, RN Staff Nurse; Kelly Owen, MD Orthopedic Surgeon; Ashley McCoy, RN Staff Nurse; Pam Saunders, LPN Staff Nurse; Jack Small, RN, CNOR Director of Surgery; Doreen Swatzel, LPN Staff Nurse • Saint Mary's Regional Medical Center, Russellville, AR

## INTRODUCTION

A surgical site infection (SSI) is defined by the Centers for Disease Control (CDC) as an infection that occurs at the site of surgery within 30 days of an operation or within 1 year of an operation if a foreign body is implanted as part of the surgery.<sup>1</sup> A survey on the national incidence of SSIs sponsored by the CDC found that 20% of all hospital-acquired infections were attributed to infections related to surgical incisions.<sup>2</sup> A separate study that reviewed 2 national databases found that the presence of SSIs was associated with a mean increased hospital length of stay of 9.7 days and increased economic costs of \$20,842 per patient.<sup>3</sup>

Guidelines for preventing SSIs have been released that include multi-step preventative bundles of care,<sup>4</sup> and CDC recommendations for SSI prevention.<sup>5</sup> These guidelines include specific recommendations for the prevention of SSIs before, during and after surgery. Clear guidance from the Centers for Medicare and Medicaid services has been provided to facilities concerning the implementation of risk mitigation policies to ensure adherence to nationally recommended SSI prevention guidelines.<sup>5</sup>

## QUALITY IMPROVEMENT PROJECT

The infection control professional noted an increase in joint-related SSIs. After conducting a thorough review of patient charts and internal processes, she discovered a lack of standardization for preoperative skin cleansing regimens. National guidelines for SSI prevention recommend that patients shower or bathe with an antiseptic agent on at least the night before the operative day.<sup>5</sup>

A quality improvement intervention was initiated by standardizing an advanced skin preparation protocol for patients undergoing elective orthopedic surgeries to include a "night-before and morning-of" skin regimen with an antiseptic agent. The intervention included selection of an antiseptic product for skin preparation, comprehensive education of staff, and development of patient educational materials.

## METHODS

After objective literature and product reviews were conducted, 2% chlorhexidine gluconate (CHG) non-rinse cloths\* were selected for the "night-before and morning-of" site-specific skin preparation.

- Comprehensive caregiver education was provided by the infection control professional which re-emphasized the SSI prevention guidelines and the rationale for these guidelines and provided a detailed explanation of the quality improvement project.
- Patients were provided with the CHG packs for the "night-before" site-specific skin preparation at the preoperative visit approximately 1-7 days prior to their surgery. Standardized patient education was provided concerning the site-specific skin preparation with the non-rinse cloths and the importance of preventing SSIs. Compliance monitoring was confirmed by patient report.
- The "morning-of" CHG packs were placed on the medication administration record (MAR), and the site-specific skin preparation took place in the preoperative holding area. Compliance monitoring was enhanced by placing the CHG packs on the MAR.

\* Sage® 2% Chlorhexidine Gluconate Cloth Patient Preoperative Skin Preparation (Sage Products Inc., Cary, IL)



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## RESULTS

The data analysis revealed a reduction in the SSI rate from 3.05 infections per 100 orthopedic surgeries (13/425 between October 2007 through March 2008) to 1.04 infections per 100 orthopedic surgeries (7/673 from April 2008 through December 2008). This reduction in SSI rates from 3% to 1% was statistically significant (test statistic = 5.9,  $P = .015$ ; Figure 1).

**This reduction in SSI rates from 3% to 1% was statistically significant ( $P = .015$ )**

## REFERENCES

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## CLINICAL IMPLICATIONS

### Summary of Results/Lessons Learned:

1. It is important to conduct a thorough chart review and assessment of internal processes to identify gaps in care that may contribute to increases in nosocomial infections.
2. An evidence-based literature review is effective at identifying the most appropriate and easy-to-use preoperative skin care regimen.
3. Ongoing education of patients and staff is essential to the successful implementation of a "night-before and morning-of" CHG non-rinse cloth preoperative skin preparation protocol.
4. Compliance monitoring is effective when MAR is used for the "morning-of" surgical skin preparation.
5. Compliance monitoring is more difficult with the "night-before" preoperative skin preparation protocol; however, patients should be asked about their compliance with physician recommendations concerning the skin preparation regimen.
6. This quality improvement intervention may have resulted in substantial cost savings. The most recent 2009 estimates from de Lissovoy et al<sup>3</sup> found that SSIs increase costs by US \$20,842 per admission. The total cost of the 2% CHG non-rinse cloths in 2008 was \$1,080. With 6 fewer SSIs in the post-intervention period, it is estimated that the hospital saved approximately \$123,972.

**Figure 1. Surgical Site Infections Pre- and Post-Intervention**

