**ABSTRACT**

Background: Surgical site infections (SSI) increase hospital costs and length of stay as well as adversely impact patient mortality. Reduction efforts have focused on implementation of a set of measures as part of the Surgical Care Improvement Project (SCIP), evidence-based practices that are well documented as a successful reduction strategy. Our facility is a 305-bed, acute care, non-teaching community hospital serving an inner-city population. After intensive implementation of the SCIP measures and compliance monitoring, it was determined that SSI reduction efforts for laminectomy cases could be further enhanced.

Methods: In early October 2009 the effectiveness of the pre-op CHG shower program was assessed. The existing process, in place for five years, included supplying patients with a CHG product and written/verbal instructions for showering the night before and the morning of surgery, paying special attention to the surgical area. As part of the SSI reduction strategy, Infection Prevention recommended implementation of a concentrated pre-op wash of the back using the CHG-impregnated cloths in pre-operative holding. All SCIP measures continued as previously implemented and no other variables were changed during the next 12 months.

Given consistent success of the new process for laminectomy procedures over a one-year period, the program was expanded to include orthopedic surgeries. Beginning October 2010, the use of the CHG-impregnated cloths in the pre-op holding area was implemented for knee and hip total joint replacement procedures.

Results: During FY 2007-09, the combined mean SSI rate for laminectomy procedures was 3.5/100 procedures. Following implementation of the CHG-impregnated cloth pre-op wash in October 2009, an additional laminectomy SSI was identified. The 100% reduction in SSI rate as compared to the previous three years is statistically significant (p value = 0.017). During FY 2007-10, the combined mean SSI rate for knee and hip total joint replacement SSI was 1.7/100 procedures. Following implementation of the CHG cloth pre-op wash in this population, the decrease in SSI rate for these procedures was noted to be statistically significant (p-value = 0.013).

Conclusions: Implementation of CHG-impregnated cloths as a pre-op wash directly to the operative site as an adjunct to the traditional pre-op CHG shower has been successful in eliminating laminectomy SSI. Expansion of this process to include orthopedic procedures resulted in a significant decrease in knee and hip joint SSIs. Our sustained success with SSI reduction supports the practice of the CHG-impregnated cloth pre-op wash as an adjunct to the traditional pre-op surgical shower, and demonstrates the value of sharing our learning and success beyond the initial implementation period.

**METHODS**

- In October 2009, Infection Prevention collaborated with Surgical Services to address laminectomy surgical site infections at our facility. Quality monitoring showed 100% compliance with established SCIP preventative measures already in place. Brainstorming included discussion related to the effectiveness of a pre-shower with special attention to the operative site when the site is the back.
- Recommendations were made to use a CHG-impregnated cloth for cleansing of the back as an adjunct to the current pre-op shower, just prior to the surgical skin prep. Once the concept was approved by the surgeons, a process was implemented to include all patient undergoing laminectomy surgical procedures. Staff was educated and the process was implemented in early October 2009.
- After 12 months with this new process, Infection Prevention was able to report a complete elimination of SSI following laminectomy procedures. When this data was presented to the Department of Surgery, the surgeons requested that the process be extended to the total joint patients. The process was implemented for all hip and knee replacement patients as of October 2011. Success was achieved in the joint replacement population, as indicated by a statistically significant decrease in SSI over the next 12 months.
- The success in decreasing SSI in these two patient populations has been sustained. Discussions regarding additional use of the CHG-impregnated cloths as an adjunct to the pre-operative laminectomy shower will be taking place in the near future as we continue our pursuit for zero SSI.
- Ongoing monitoring of compliance with all prevention measures is imperative to sustain improvement. The data collection tool below is completed for all SSI in our targeted procedures.

**RESULTS**

**SSI EXTENDED DATA COLLECTION TOOL**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Pre-op Wash</th>
<th>Pre-op Skin Prep</th>
<th>Bone Debridement</th>
<th>Antiseptic Lotion</th>
<th>Antimicrobial Impregnated Cloth</th>
<th>Pre-op Antimicrobial Impregnated Cloth</th>
<th>Chlorhexidine Gluconate</th>
<th>Sterile Gown</th>
<th>Sterile Mask</th>
<th>Sterile Gloves</th>
<th>Sterile Cap</th>
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<tr>
<td>Laminectomy</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**CONCLUSIONS**

Formal implementation of additional actions in conjunction with existing SCIP measures and prevention strategies has been successful in decreasing both laminectomy and total joint replacement surgical infections.

- Sustainability of the process improvements is indicated by decrease in laminectomy SSI is shown with zero SSI over a two year period following implementation of the CHG-impregnated cloth cleansing process as an adjunct to the pre-op shower and an enhancement to existing SCIP measures.
- Sharing success across service lines related to the use of the CHG-impregnated cloth as an adjunct to the pre-op shower is indicated by a statistically significant decrease in SSI in their first year of implementation.
- Plan-do-check-act methodology continues to be a valuable tool in process improvement, as evidenced in this project.

**BIBLIOGRAPHY**