Background

Asymptomatic colonization with methicillin-resistant Staphylococcus aureus (MRSA) and Methicillin-sensitive Staphylococcus aureus (MSSA) has been described as a risk factor for subsequent surgical site infection. Identifying Staphylococcus aureus colonization in the presurgical screening process is important in reducing subsequent surgical site infection.

Objective

- We initiated active surveillance screens using polymerase chain reaction (PCR) rapid testing technology. This was directed to all inpatients undergoing orthopedic surgery.

- The intent of the program was to eradicate nares colonization in the preoperative screening process by the administration of a decontamination protocol and therefore reduce post-surgical site infections due to MRSA and MSSA.

Materials and Methods

- Patients admitted for orthopedic surgery were screened in the prescreening unit using PCR technology. The treatment intervention was a 5-day application of intranasal mupirocin 2% applied twice daily and a daily cleansing with chlorhexidine 2%.

- MRSA positive screens were required to be re-screened prior to surgery. Contact precautions were implemented if the second screen was positive. All MRSA positives received vancomycin for surgical prophylaxis.

Study Sample

- From July 17, 2006 through September 30, 2007, 7019 patients who underwent inpatient orthopedic surgery were screened in the prescreening process.

Results

- From July 17, 2006 through March 31, 2009, 16,486 patients were screened by PCR; 3957 (23%) were Staphylococcus aureus positive and 710 (4%) were MRSA positive.

- Repeat nasal screens were obtained from MRSA positive patients prior to surgery and revealed 546 (77%) negative for MRSA.

- In the cohort of 710 positive MRSA screens, there were 9 infections (1.3%) and in 3957 positive Staphylococcus aureus screens, 7 infections (0.18%).

- Therefore, overall MRSA/MSSA eradication program for all inpatient orthopedic surgeries during the prescreening process.

- A multidisciplinary approach with strong administrative support and consistent communication was vital to the implementation of the program.

Table 1. SSI - Orthopedic Inpatients

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Inpatient surgeries</th>
<th>Surgical Infections (SSI)</th>
<th>Infec. Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>10/0105-07/1505</td>
<td>5293*</td>
<td>0.45%</td>
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<tr>
<td>FY07</td>
<td>07/1706-09/3007</td>
<td>7019**</td>
<td>0.18%</td>
</tr>
<tr>
<td>FY08</td>
<td>10/0107-03/3108</td>
<td>6245**</td>
<td>0.11%</td>
</tr>
<tr>
<td>FY09</td>
<td>10/0108-03/3109</td>
<td>3141**</td>
<td>0.06%</td>
</tr>
</tbody>
</table>

Conclusions

- We have successfully implemented a Staphylococcus aureus and MRSA eradication program for all inpatient orthopedic surgeries during the prescreening process.

- It has allowed for early identification of patients with Staphylococcus aureus and MRSA colonization treatment, and appropriate surgical prophylaxis for MRSA.

- Since implementation we have documented a significant reduction in infections due to Staphylococcus aureus and MRSA.

- A multidisciplinary approach with strong administrative support and consistent communication was vital to the implementation of the program.

References: