Eradication of Methicillin Sensitive Staphylococcus aureus and Methicillin Resistant Staphylococcus aureus Before Orthopedic Surgery

Maureen P Spencer, RN, MEd, CIC, Diane Guleczynski, RN, MS, CNOR, Susan Davidson, MD, John Richmond, MD, New England Baptist Hospital, Boston, Massachusetts.

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 (PCRs) to identify MRSA-positive patients. This was directed to all inpatients undergoing orthopedic surgery. The intent of the program was to eradicate nasal colonization in the pre-op screening process by administering a decolonization 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 process using PCR technology. The treatment intervention was a 5-day application of intranasal mupirocin 2% twice daily and a daily cleansing with chlorhexidine 2%. MRSA-positive screens were re-screened prior to surgery. Contact precautions were implemented if the second screen was positive. All MRSA-positive patients 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.

Procedural Steps in the Implementation Process

January 2006 - Senior VP, Patient Care Services, Chief Nurse researched MRSA problem and developed a “MRSA White Paper” for the Board of Trustees.

January 2006 - Letter to the Infection Control Committee regarding eradicating MRSA in all surgeries.

February 2006 – Anonymous active surveillance study in the operating room revealed 7% MRSA colonization.

4685 patients were screened for MRSA – 139 (2.9%) were MRSA-positive.

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

Materials and Methods – patients admitted for orthopedic surgery were screened in the pre-screening process.

February 2006 – prepared three testing proposals with budgetary impact for Board of Trustees.


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 10/01/05-07/01/06</td>
<td>5293*</td>
<td>24</td>
<td>0.05%</td>
</tr>
<tr>
<td>FY06 07/01/06-07/30/07</td>
<td>7019**</td>
<td>13</td>
<td>0.18%</td>
</tr>
<tr>
<td>FY07 10/01/07-09/30/07</td>
<td>6245**</td>
<td>7</td>
<td>0.11%</td>
</tr>
<tr>
<td>FY08 10/01/08-02/31/09</td>
<td>3141**</td>
<td>2</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, treating, and appropriate 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: