Methicillin-susceptible Staphylococcus aureus: Utilization of decolonization protocol and incidence of surgical site infections in orthopedic and cardiac bypass surgical patients

Carley Thompson PharmD
Tara Jellison PharmD, MBA, FASHP
Jennifer Sposito PharmD

Follow this and additional works at: https://researchrepository.parkviewhealth.org/pharma

Part of the Pharmacy and Pharmaceutical Sciences Commons
Methicillin-susceptible *Staphylococcus aureus* Utilization of decolonization protocol in patients colonized with MSSA and incidence of surgical site infections in orthopedic and cardiac bypass surgical patients

Carley L. Thompson, PharmD; Tara K. Jeillon, PharmD, MBA, FASHP; Jennifer Sposito, PharmD

Parkview Regional Medical Center, Fort Wayne, Indiana

**OBJECTIVE**

Evaluate the utilization of a decolonization protocol in methicillin-susceptible *Staphylococcus aureus* (MSSA) colonized patients following pre-admission testing at Parkview Health and the incidence of methicillin-resistant *Staphylococcus aureus* (MRSA) and MSSA in orthopedic, spinal, and cardiac surgical site infections (SSIs).

**BACKGROUND**

- Bundles including the following medications have been shown to decrease SSIs and decrease costs:1
  - Intra-nasal mupirocin topical
  - Chlorhexidine gluconate soap
  - Perioperative prophylaxis
    - No colonization or MSSA: cefazolin or cefuroxime
    - MRSA: vancomycin and cefazolin or cefuroxime
- Parkview Health updated MRSA/MSSA Decolonization Protocol in 2016
- MSSA screening is not routinely conducted in THA, TKA, spinal fusion, CABG, or emergency surgery. Potential risk factors for surgical site infection: obesity, smoking, and diabetes2,3

**METHODS**

- retrospective chart review from March 2016 to September 2017
- Inclusion criteria:
  - Elective spinal fusion, cardiac bypass, TKA, or THA surgery at a Parkview Health Allen County hospital
- ICD-10 procedure code
- Exclusion criteria:
  - Less than 18 years old
  - SSI due to an organism other than MSSA or MRSA
  - Double replacement surgery
  - Emergency surgery
- Endpoints:
  - Utilization of the decolonization protocol in patients colonized with MSSA
  - Incidence of MSSA SSI versus MRSA SSI

**RESULTS**

Patients Receiving MSSA Screening at PAT

<table>
<thead>
<tr>
<th>Age (years ≤ SD)</th>
<th>Positive for MSSA (n=5)</th>
<th>All Patients (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>54 (10.2)</td>
<td>67 (13)</td>
<td></td>
</tr>
<tr>
<td>Males (%)</td>
<td>0%</td>
<td>60%</td>
</tr>
<tr>
<td>TKA</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>THA</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Spinal Fusion</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>CABG</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Surgical Site Infections**

<table>
<thead>
<tr>
<th>MSSA SSI n=11</th>
<th>MRSA SSI n=4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years ≤ SD)</td>
<td>57 (14.6)</td>
</tr>
<tr>
<td>Males (%)</td>
<td>36%</td>
</tr>
<tr>
<td>TKA</td>
<td>5</td>
</tr>
<tr>
<td>THA</td>
<td>0</td>
</tr>
<tr>
<td>Spinal Fusion</td>
<td>5</td>
</tr>
<tr>
<td>CABG</td>
<td>1</td>
</tr>
<tr>
<td>Smokers</td>
<td>3</td>
</tr>
<tr>
<td>BMI ≥ 30 kg/m²</td>
<td>9</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>3</td>
</tr>
</tbody>
</table>

**DISCUSSION & CONCLUSIONS**

- **Conclusions:**
  - The decolonization protocol is not consistently utilized in any of the surgical populations for MSSA.
  - MSSA screening is not routinely conducted in TKA, TKA, spinal fusion and CABG patients.
  - The lack of routine screening patients leads to a limited opportunity to implement the decolonization protocol.
  - The inability to implement the decolonization protocol increases the risk of SSI.

- **Future Implications:**
  - Encourages the conduction of studies that evaluate patient adherence to decolonization protocol and incidence of SSI.
  - Routine screening and decolonization of MSSA may increase costs initially, but avoiding the high cost of SSI treatment could mean significant savings.

- **Limitations**
  - There was an inability to capture all procedures due to the software reporting on ICD-10 codes rather than CPT codes.
  - This study did not evaluate the adherence of patients to the decolonization protocol.
  - The patient’s smoking status was based upon the last patient encounter, not the surgical encounter.
  - Paper prescriptions or over-the-counter medications were not accounted for in this study.

- **Impact on Practice**
  - This study has lead to an increased awareness of the potential need to screen patients for MSSA.
  - This provides an opportunity for discussion regarding the utilization of PAT screening for MSSA and potential decolonization of surgical patients.

**REFERENCES**


Special thanks to Sarah Shields, PharmD for her contributions.