Preventing Surgical Site Infections (SSI) in Wisconsin: How are we doing?

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Wisconsin Division of Public Health
SSI Summit V
September 29, 2017
At least 1,000 Wisconsin patients experienced a surgical site infection during 2016.
Standardized Infection Ratio (SIR)

The standardized infection ratio (SIR) is a summary measure used to track HAIs at a national, state, or local level over time. The SIR adjusts for patients of varying risk within each facility.

The method of calculating an SIR is similar to the method used to calculate the Standardized Mortality Ratio (SMR), a summary statistic widely used in public health to analyze mortality data.

In HAI data analysis, the SIR compares the actual number of HAIs reported with the baseline U.S. experience (i.e., NHSN aggregate data are used as the standard population), adjusting for several risk factors that have been found to be significantly associated with differences in infection incidence.

A SIR greater than 1.0 indicates that more HAIs were observed than predicted, accounting for differences in the types of patients followed; conversely, an SIR less than 1.0 indicates that fewer HAIs were observed than predicted.
Wisconsin SSI Standardized Infection Ratio (SIR)
Adult Inpatient Procedures
All SSI Events
Accessed August 30, 2017

*statistically significantly higher than baseline
### SSI occurrence among WI acute care facilities visited during August-December 2015: n = 10

<table>
<thead>
<tr>
<th>Year</th>
<th>Number Procedures</th>
<th>Number Infections</th>
<th>Number Predicted Infections</th>
<th>SIR</th>
<th>P-value</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3125</td>
<td>68</td>
<td>42</td>
<td>1.61</td>
<td>0.0003</td>
<td>1.26, 2.03</td>
</tr>
<tr>
<td>2016</td>
<td>2834</td>
<td>36</td>
<td>41</td>
<td>0.88</td>
<td>0.45</td>
<td>0.62, 1.21</td>
</tr>
</tbody>
</table>

The number of infections was reduced by 47% and the 2016 SIR was 45% lower than the 2015 SIR (p = 0.002)

### SSI occurrence among WI acute care facilities NOT visited during August-December 2015: n ~ 90

<table>
<thead>
<tr>
<th>Year</th>
<th>Number Procedures</th>
<th>Number Infections</th>
<th>Number Predicted Infections</th>
<th>SIR</th>
<th>P-value</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>40,359</td>
<td>574</td>
<td>601</td>
<td>0.96</td>
<td>0.96</td>
<td>0.88, 1.04</td>
</tr>
<tr>
<td>2016</td>
<td>41,753</td>
<td>659</td>
<td>645</td>
<td>1.02</td>
<td>0.59</td>
<td>0.94, 1.10</td>
</tr>
</tbody>
</table>

No reduction in number of infections, and no difference in the 2016 SIR compared to 2015 (p = 0.19)
2017 SSI Prevention Practices Survey Results
Survey Response Rate

Thank you!

94 percent

- A total of 121 (94%) of 129 acute care and critical access hospitals completed the survey.
- A total of 106 (93%) of 114 hospitals performing the selected procedures responded to the survey.
### Wisconsin Division of Public Health
Survey of Selected Inpatient Surgical Site Infection Prevention Practices
March 2017

<table>
<thead>
<tr>
<th>Statement</th>
<th>Number (%) Responding “Yes”</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one person from the facility attended the 2015 or 2016 SSI Summit.</td>
<td>83 (78%)</td>
</tr>
<tr>
<td>The facility received an onsite visit from Dr. Edmiston during 2015-16.</td>
<td>27 (25%)</td>
</tr>
<tr>
<td>The WDPH Supplemental SSI Guidance has been distributed to surgical staff members.</td>
<td>74 (70%)</td>
</tr>
<tr>
<td>The facility has identified a surgical champion.</td>
<td>66 (62%)</td>
</tr>
<tr>
<td>The facility is a current participant in the American College of Surgeons National Surgical Quality Improvement Program.</td>
<td>18 (17%)</td>
</tr>
</tbody>
</table>
## Wisconsin Division of Public Health
Survey of Selected Inpatient Surgical Site Infection Prevention Practices
March 2017
Number (%) Responding “Yes”

<table>
<thead>
<tr>
<th>Practice</th>
<th>Colorectal (n = 97)</th>
<th>Abdominal Hysterectomy (n = 91)</th>
<th>Joint (hip, knee) Replacement (n = 99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight-based dosing of prophylactic antibiotics</td>
<td>90 (93)</td>
<td>84 (93)</td>
<td>96 (97)</td>
</tr>
<tr>
<td>Re-dosing of prophylactic antibiotics</td>
<td>83 (86)</td>
<td>80 (88)</td>
<td>90 (91)</td>
</tr>
<tr>
<td>Oral antibiotics in mechanical bowel prep</td>
<td>65 (67)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Normothermia</td>
<td>88 (91)</td>
<td>83 (91)</td>
<td>89 (90)</td>
</tr>
<tr>
<td><strong>CHG with 70% alcohol skin prep</strong></td>
<td>88 (91)</td>
<td>79 (87)</td>
<td>84 (85)</td>
</tr>
<tr>
<td>CHG preoperative shower or cloth treatment</td>
<td>59 (61)</td>
<td>56 (62)</td>
<td>93 (94)</td>
</tr>
<tr>
<td>Use of Triclosan coated sutures</td>
<td>16 (16)</td>
<td>15 (16)</td>
<td>24 (24)</td>
</tr>
<tr>
<td>Staph decolonization</td>
<td>N/A</td>
<td>N/A</td>
<td>75 (76)</td>
</tr>
</tbody>
</table>

**chlorhexidine gluconate**
Wisconsin Division of Public Health
Survey of Selected Inpatient Surgical Site Infection Prevention Practices
2014-2016
Percent Responding “Yes”

<table>
<thead>
<tr>
<th>Practice</th>
<th>2017 n = 106</th>
<th>2015 n = 82</th>
<th>2014 n = 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight-based dosing of prophylactic antibiotics</td>
<td>93-97</td>
<td>85</td>
<td>60</td>
</tr>
<tr>
<td>Re-dosing of prophylactic antibiotics</td>
<td>86-91</td>
<td>76</td>
<td>53</td>
</tr>
<tr>
<td>CHG preoperative shower or cloth treatment</td>
<td>60-94</td>
<td>32</td>
<td>38</td>
</tr>
</tbody>
</table>
Wisconsin Division of Public Health
Survey of Selected Inpatient Surgical Site Infection Prevention Practices
March 2017

<table>
<thead>
<tr>
<th>Compliance measured</th>
<th>Percent Responding “Yes”</th>
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<tr>
<td>Weight-based dosing of prophylactic antibiotics</td>
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<tr>
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<td>74-80</td>
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<td>57</td>
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<td>Staph decolonization</td>
<td>47-76</td>
</tr>
</tbody>
</table>
Recommendations

- Increase implementation of the preoperative CHG shower or cloth skin treatment for all surgical procedures.
- Increase levels of preoperative staphylococcal screening and decolonization. Include decolonization of both methicillin-resistant and methicillin-sensitive S. aureus in the regimen.
- Increase use of Triclosan-coated sutures.
- Measure, re-measure, and measure again compliance with elements of the surgical care bundle.
DPH SSI Consultation Onsite Visits

- Services (free!)
  - Assessment
  - Grand rounds
  - Peer-to-peer consultation
  - Environmental rounds
  - Ongoing email consultation (Dr. Edmiston)
    preventingssis@gmail.com
To schedule a visit...

Ashlie Dowdell
1 West Wilson Street
Madison, WI 53702
Ashlie.dowdell@wi.gov
608-266-1122
Wisconsin Hospitals: Applying the Science of Improvement to Patient Care

Contact Beth Dibbert at bdibbert@wha.org
Surgical Collaborative of Wisconsin

• Promote surgical care that is safe, effective, equitable, and patient-centered.
• Develop a platform for individualized, confidential performance reports.
• Disseminate and implement evidence-based guidelines.
• Provide a forum for constructive, individualized feedback.

Contact Laurie Silverberg at silverberg@surgery.wisc.edu
Awards
Certificates of Merit

Ascension St. Michael’s Hospital-Stevens Point
Aurora Lakeland Medical Center-Elkhorn
Aurora Medical Center-Grafton
Bellin Hospital-Green Bay
Black River Memorial Hospital-Black River Falls
Columbia St. Mary’s Hospital-Milwaukee
Holy Family Memorial Hospital-Manitowoc
Marshfield Medical Center-Marshfield
Mayo Clinic Health System-Franciscan Healthcare-La Crosse
Certificates of Merit

Mayo Clinic Health System Red Cedar-Menomonie
Sacred Heart Hospital-Eau Claire
ThedaCare Medical Center-Berlin
ThedaCare Regional Medical Center-Appleton
ThedaCare Regional Medical Center-Neenah
ThedaCare Medical Center-Shawano
UnityPoint Health-Meriter-Madison
Watertown Regional Medical Center-Watertown
Western Wisconsin Health-Baldwin
Excellence in Surgical Care Awards
Saint Agnes Hospital
Fond du Lac
ThedaCare Regional Medical Center
Appleton