



# **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.

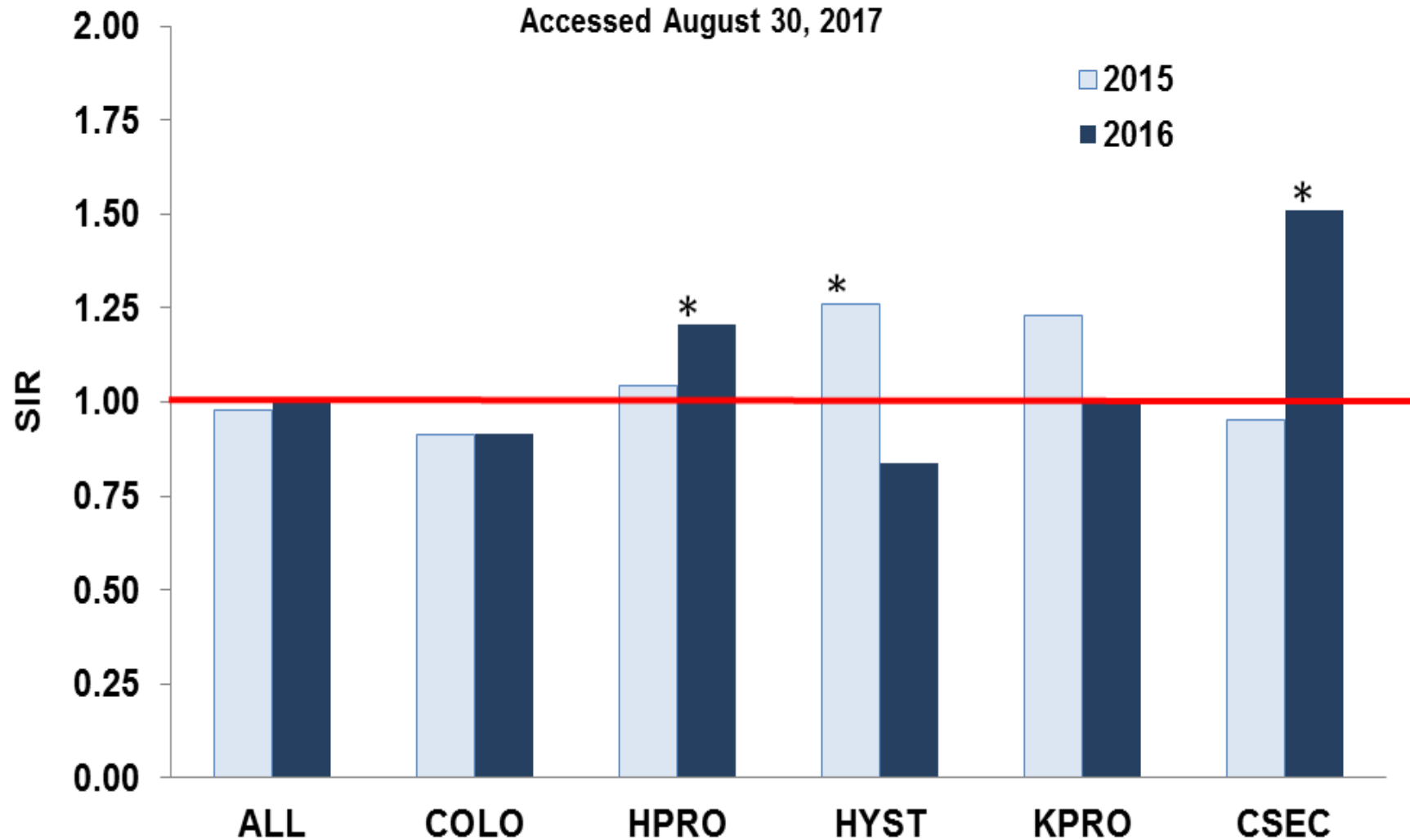
The method of calculating an SIR is similar to the method used to calculate the Standardized Mortality Ratio (SMR), a summary statistic widely used in public health to analyze mortality data.

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

Year	Number Procedures	Number Infections	Number Predicted Infections	SIR	P-value	95 % CI
2015	3125	68	42	1.61	0.0003	1.26, 2.03
2016	2834	36	41	0.88	0.45	0.62, 1.21

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

Year	Number Procedures	Number Infections	Number Predicted Infections	SIR	P-value	95 % CI
2015	40,359	574	601	0.96	0.96	0.88, 1.04
2016	41,753	659	645	1.02	0.59	0.94, 1.10

No reduction in number of infections, and no difference in the 2016 SIR compared to 2015 (p = 0.19)



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# **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

Statement	Number (%) Responding “Yes” n = 106
At least one person from the facility attended the 2015 or 2016 SSI Summit.	83 (78%)
The facility received an onsite visit from Dr. Edmiston during 2015-16.	27 (25%)
The WDPH Supplemental SSI Guidance has been distributed to surgical staff members.	74 (70%)
The facility has identified a surgical champion.	66 (62%)
The facility is a current participant in the American College of Surgeons National Surgical Quality Improvement Program.	18 (17%)



# Wisconsin Division of Public Health

## Survey of Selected Inpatient Surgical Site Infection Prevention Practices

March 2017

Number (%) Responding “Yes”

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

\*\*chlorhexidine gluconate

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

<b>Practice</b>	<b>2017 n = 106</b>	<b>2015 n = 82</b>	<b>2014 n = 45</b>
<b>Weight-based dosing of prophylactic antibiotics</b>	<b>93-97</b>	<b>85</b>	<b>60</b>
<b>Re-dosing of prophylactic antibiotics</b>	<b>86-91</b>	<b>76</b>	<b>53</b>
<b>CHG preoperative shower or cloth treatment</b>	<b>60-94</b>	<b>32</b>	<b>38</b>

# Wisconsin Division of Public Health

## Survey of Selected Inpatient Surgical Site Infection Prevention Practices March 2017

<b>Compliance measured</b>	<b>Percent Responding “Yes”</b>
<b>Weight-based dosing of prophylactic antibiotics</b>	<b>69-74</b>
<b>Re-dosing of prophylactic antibiotics</b>	<b>71-78</b>
<b>Oral antibiotics in mechanical bowel prep</b>	<b>59</b>
<b>Normothermia</b>	<b>74-80</b>
<b>CHG with 70% alcohol skin prep</b>	<b>72-74</b>
<b>CHG preoperative shower or cloth treatment</b>	<b>61-70</b>
<b>Use of Triclosan coated sutures</b>	<b>57</b>
<b>Staph decolonization</b>	<b>47-76</b>



# 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](mailto:preventingssis@gmail.com)



# To schedule a visit...

**Ashlie Dowdell**

**1 West Wilson Street**

**Madison, WI 53702**

**[Ashlie.dowdell@wi.gov](mailto:Ashlie.dowdell@wi.gov)**

**608-266-1122**

# Wisconsin DPH Resources



**Wisconsin Division of Public Health Supplemental  
Guidance for the Prevention of Surgical Site Infections:  
An Evidence-Based Perspective**

January 2017

P- 01715 (Rev. 8/2017)

## Antimicrobial Prophylaxis - Weight-based Dosing

- Bratzler D, Dellinger E, Olsen K, et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health-Syst Pharm* 2013;70:195-283
- Catanzano A, Phillips M, Dubrovskaya Y, et al. The standard one gram dose of vancomycin is not adequate prophylaxis for MRSA. *Iowa Orthop J.* 2014;34:111-7.
- Edmiston CE, Krepel C, Kelly H, et al. Peri-operative antimicrobial prophylaxis in the gastric bypass patient: Do we achieve therapeutic levels? *Surgery* 2004;136:738-747.
- Hafermann MJ, Kiser TH, Lyda C, et al. Weight-based versus set dosing of vancomycin for coronary artery bypass grafting or aortic valve surgery. *J Thorac Cardiovasc Surg.* 2014 Jun;147(6):1925-30. doi: 10.1016/j.jtcvs.2013.12.037. Epub 2014 Jan 15.
- Pevzner L, Swank M, Krepel C, et al. Effect of maternal obesity on tissue concentration of prophylactic cefazolin during cesarean section. *Obstet Gynecol* 2011;117:877-882.
- Swank ML, Wing DA, Nicolau DP, et al. Increased 3-gram cefazolin dosing for cesarean delivery prophylaxis in obese women. *Am J Obstet Gynecol.* 2015 Sep;213:415.e1-8. doi: 10.1016/j.ajog.2015.05.030. Epub 2015 May 21.

Antimicrobial Wound Closure

CHG Shower

CHG Wound Irrigation

Colon Surgery Bundle

Guideline Evaluation

HAI Prevalence Data

Infection Control Practices for Ambulatory Surgery Centers

MRSA Surveillance/Decolonization

Postoperative Wound Care

Selective Interventional Strategies beyond SCIP

<https://www.dhs.wisconsin.gov/hai/ssi-prevention.htm>

# Wisconsin Hospitals: Applying the Science of Improvement to Patient Care



Contact Beth Dibbert at [bdibbert@wha.org](mailto:bdibbert@wha.org)





UNIVERSITY OF WISCONSIN SCHOOL OF MEDICINE AND PUBLIC HEALTH

# Department of Surgery

*Remarkable People. Remarkable Results.*

## 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](mailto: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



# Ascension Saint Elizabeth Hospital Appleton





# Froedtert and Medical College of Wisconsin Milwaukee





# Gundersen Health System La Crosse





# Midwest Orthopedic Specialty Hospital Franklin



Saint Agnes Hospital  
Fond du Lac





# Sauk Prairie Healthcare Prairie du Sac





# ThedaCare Regional Medical Center Appleton

