

Healthcare-Associated Infections Prevention Program—2017 Report

[Healthcare-associated infections](#) (HAIs) are infections that occur while receiving health care. Patients undergoing surgical procedures or who have medical devices such as central lines, urinary catheters, and ventilators are at risk of acquiring HAIs. Infections caused by multidrug-resistant organisms such as methicillin-resistant *Staphylococcus aureus* (MRSA) can also be acquired in various healthcare settings.

The Wisconsin Division of Public Health (DPH) collects HAI data from hospitals on a voluntary basis and publicly reports aggregate data to monitor trends and to compare Wisconsin HAI occurrence to the national baseline. This comparison is made using a standardized infection ratio (SIR), calculated by dividing the number of HAIs observed by the number of HAIs predicted from national pooled data. These national data are collected through the Centers for Disease Control and Prevention (CDC) [National Healthcare Safety Network \(NHSN\)](#) and are represented in each graph with a value of 1.00 and a gray line. Hospital-specific data are displayed on the Wisconsin Hospital Association [CheckPoint](#)® website.

The NHSN system adjusts SIRs for a facility or state to account for risk factors that might cause infection rates to be higher or lower. Such factors include hospital size and teaching status, the patient population a hospital serves, and surgical patient characteristics. Lower SIRs indicate better progress toward preventing HAIs.

This report includes 2017 data for six HAIs: Central line-associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), ventilator-associated events (VAE), surgical site infections (SSI), MRSA bacteremia (MRSA in the bloodstream), and *Clostridium difficile* infections (CDI). Data were accessed from NHSN during November 2018 to allow sufficient time for complete data collection and reporting for calendar year 2017. Among 131 eligible Wisconsin hospitals, all provided data regarding at least one type of HAI to DPH.

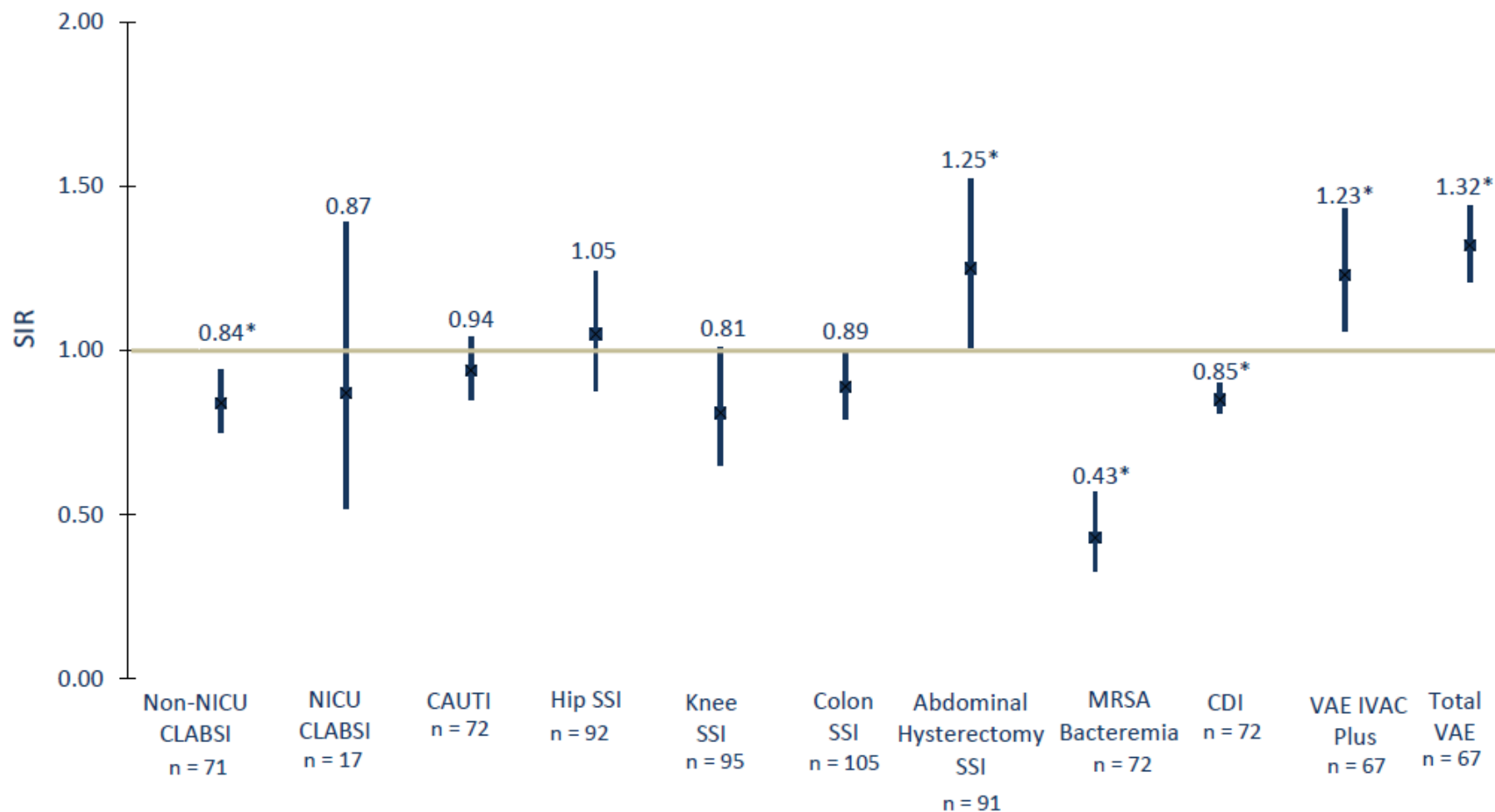
When compared to the 2015 national baseline (see Figures 1 and 2), Wisconsin HAI occurrence is statistically significantly lower than predicted for CLABSIs (16% lower in all non-neonatal intensive care units [NICU] in acute care hospitals), CAUTI (56% lower in critical access hospitals), MRSA bacteremia (57% lower in acute care hospitals), and CDI (15% lower in acute care hospitals). Most infection types are no different than the national baseline given the recent time period for comparison. Ventilator-associated events in the acute care hospitals and SSIs following abdominal hysterectomies in all hospitals are areas with statistically significantly higher than baseline SIRs in Wisconsin.

Detailed information, including a comparison of 2016 and 2017 Wisconsin HAI data, the number of hospitals with SIRs above the national baseline of 1.00, SIR values at key percentiles, and location-specific SIRs, is available on the following pages. When possible, annual data are *Wisconsin HAI Prevention Program Annual Report – 2017*

also displayed separately for critical access and acute care hospitals. Critical access hospitals are those in rural areas with an official federal billing designation that have 25 or fewer acute care inpatient beds, are located more than 35 miles from another hospital, maintain an average length of stay of 96 hours or less, and provide emergency care services. The remaining acute care hospitals, including children's hospitals, are grouped separately into reports.

Figure 1

2017 Wisconsin Standardized Infection Ratios (SIR) for Selected Healthcare-Associated Infections
2015 Baseline, Acute Care Hospitals



Note: SSI data include all hospitals. Device-associated and MDRO data include just acute care hospitals.

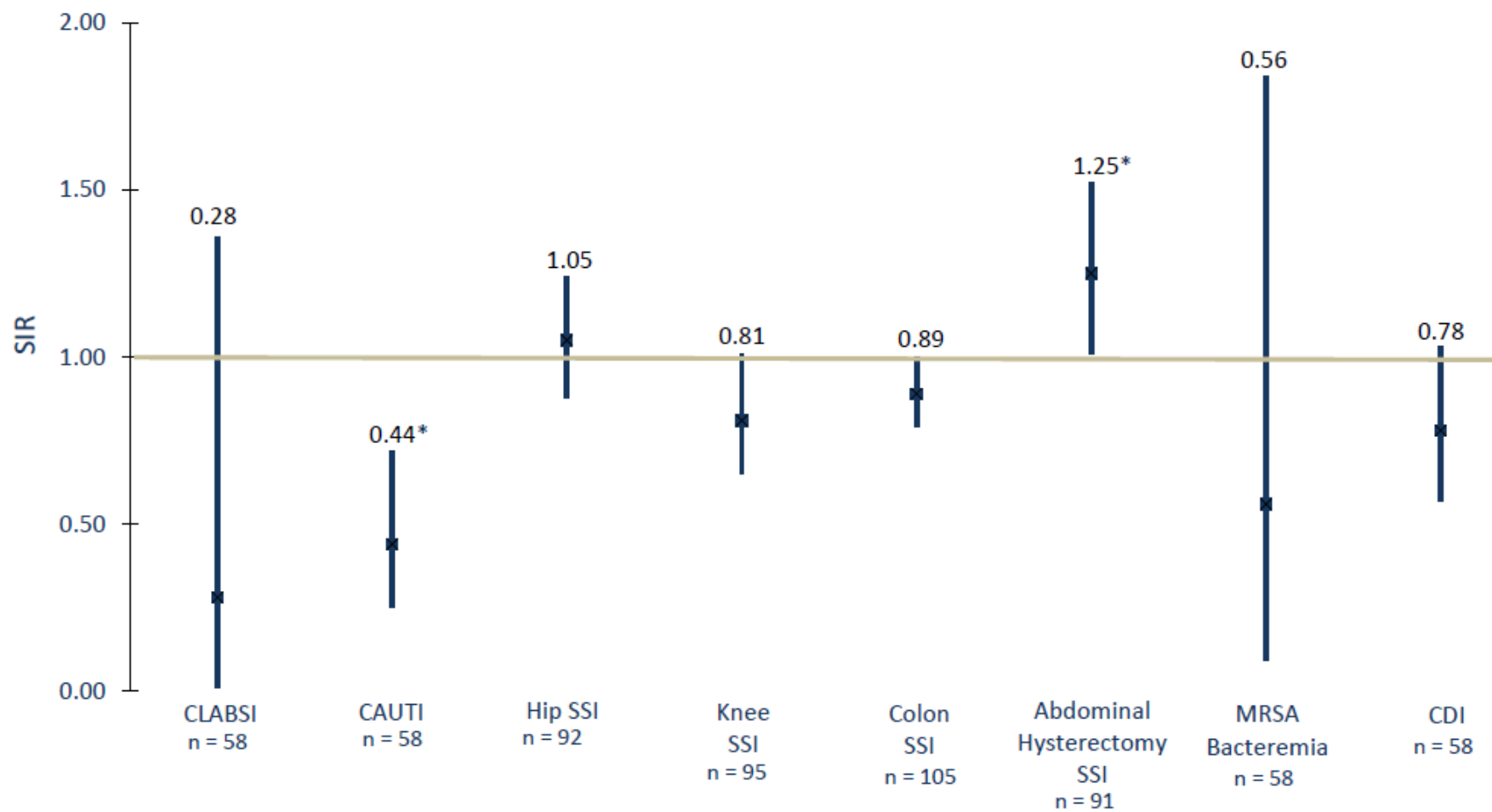
* = statistically significant difference from the national baseline

n = number of reporting hospitals

— = 2015 national baseline

Figure 2

2017 Wisconsin Standardized Infection Ratios (SIR) for Selected Healthcare-Associated Infections 2015 Baseline, Critical Access Hospitals



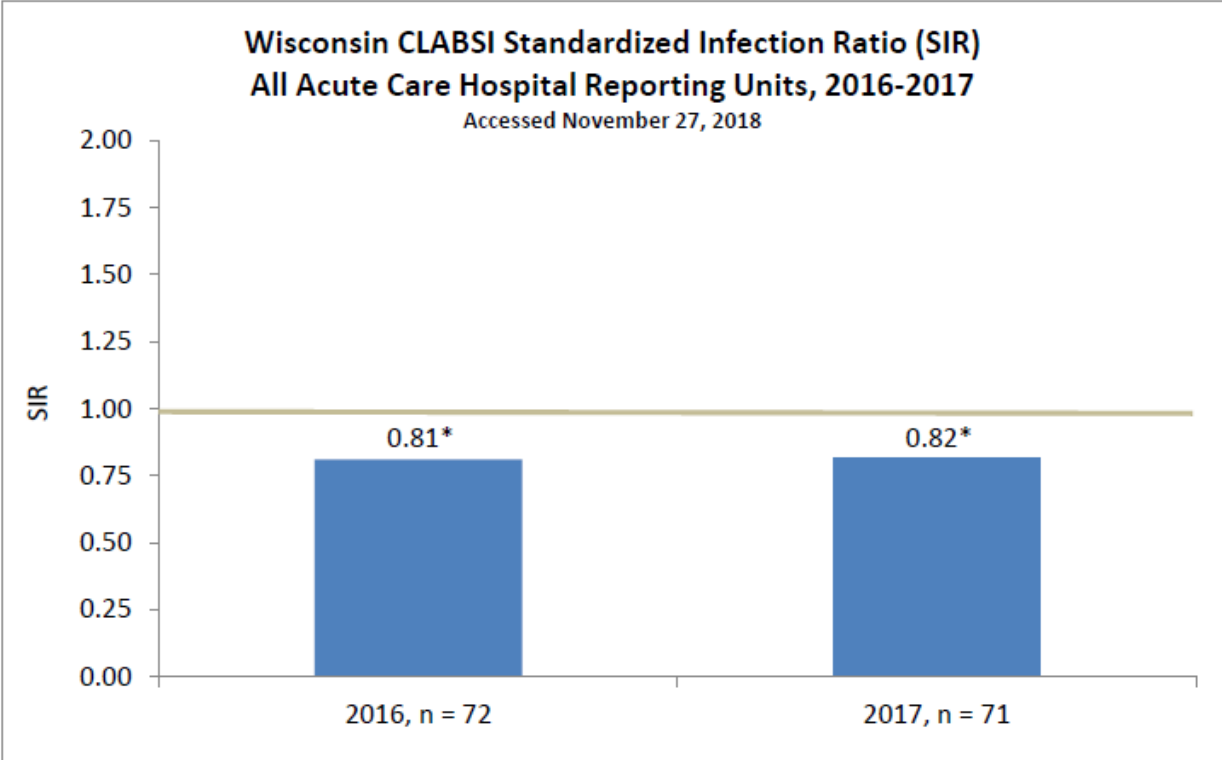
Note: SSI data include all hospitals. Device-associated and MDRO data include just critical access hospitals.

* = statistically significant difference from the national baseline

n = number of reporting hospitals

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Central Line-Associated Bloodstream Infections (CLABSI): A central line is a tube that is usually placed in a large vein in the neck, chest, or groin to give medications or fluid. When not put in correctly or kept clean, central lines can become a route for germs to enter the body and cause deadly infections in the blood.



2017 Wisconsin Acute Care Hospital SIR at Key Percentiles

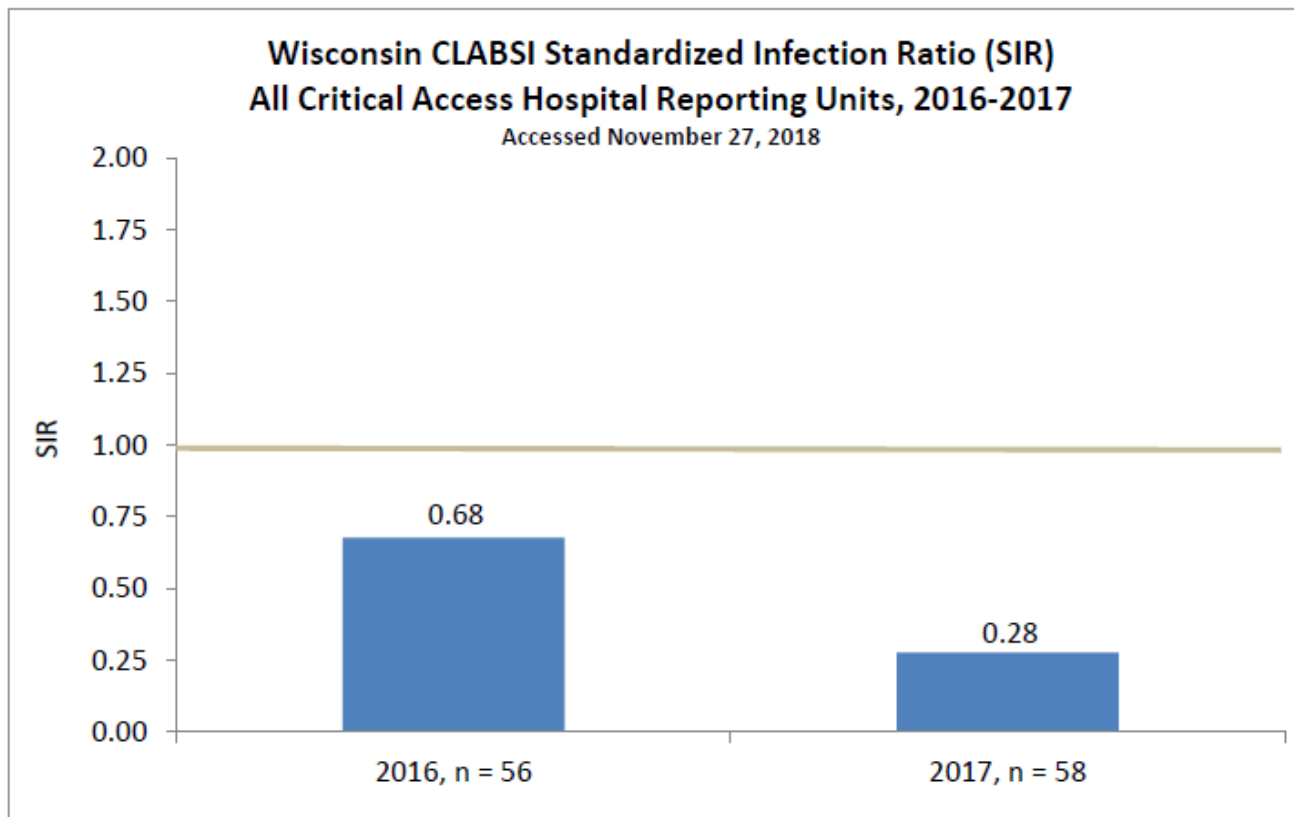
↑ Better

- 10th: 0.02
- 25th: 0.46
- 50th: 0.85
- 75th: 1.18
- 90th: 1.60

* Statistically significant difference from the national baseline
 — National baseline (2015)
 n = Number of reporting hospitals

Unit Type	Number of Reporting Acute Care Hospitals (Units)	Number of Infections	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Acute Care Hospitals (2016-2017)
All units combined	71 (466)	308	0.82*	0.73 - 0.91	18% lower	1% increase
NICUs	17 (18)	16	0.87	0.52 – 1.39	13% lower	32% decrease
ICUs	65 (94)	116	0.87	0.72 – 1.04	13% lower	6% increase
Non-ICUs	71 (354)	176	0.78*	0.67 - 0.90	22% lower	1% increase

Wisconsin acute care hospitals with SIRs above 1.00 during 2017: 14 (20%)



2017
Wisconsin Critical Access Hospital
SIR at Key Percentiles

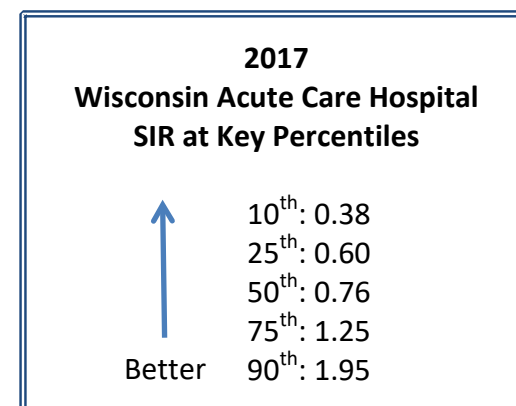
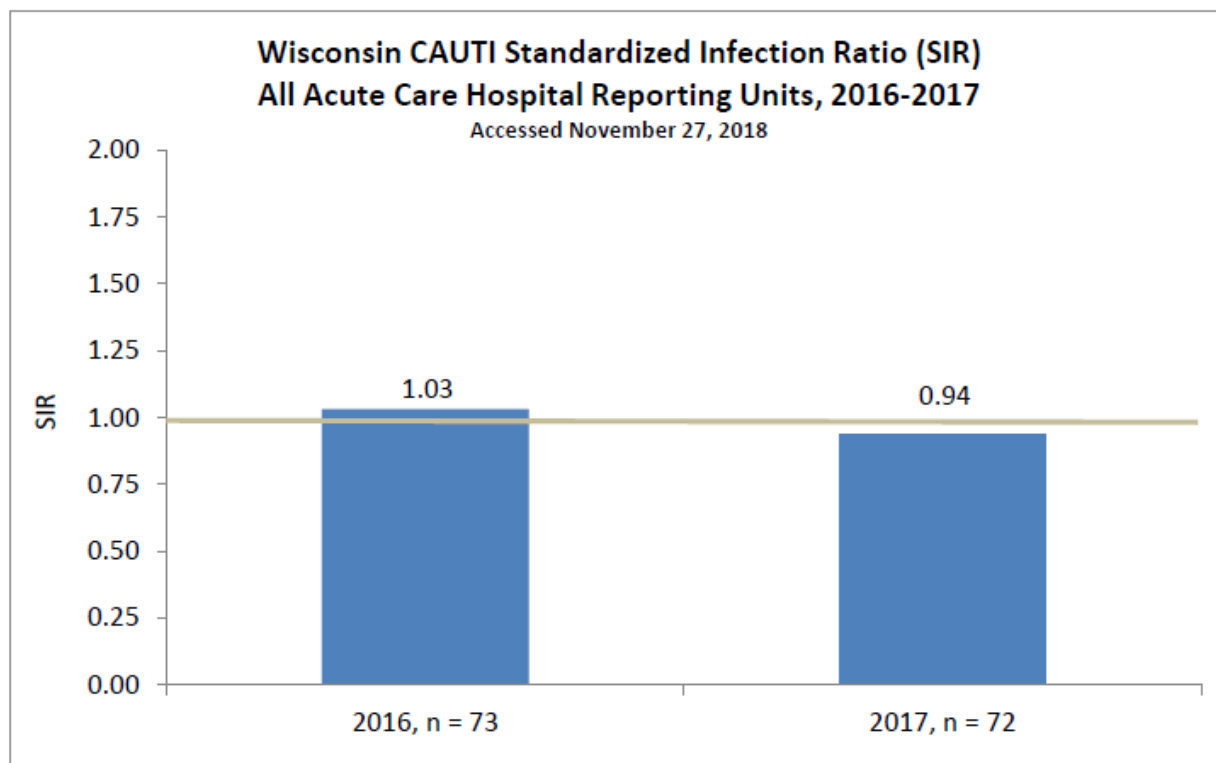
No critical access hospitals had enough data to calculate a SIR for the year.

— National baseline (2015)
n = Number of reporting hospitals

Unit Type	Number of Reporting Critical Access Hospitals (Units)	Number of Infections	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Critical Access Hospitals (2016-2017)
All units combined	58 (91)	1	0.28	0.01 - 1.36	32% lower	59% decrease
ICUs	12 (12)	0	Not calculated			
Non-ICUs	58 (79)	1	0.28	0.01 - 1.40	32% lower	61% decrease

Wisconsin critical access hospitals with SIRs above 1.00 during 2017: No critical access hospitals were able to calculate a facility SIR for this measure.

Catheter-Associated Urinary Tract Infections (CAUTI): When a urinary catheter is not inserted correctly, not kept clean, or left in a patient for too long, germs can travel through the catheter and cause a catheter-associated urinary tract infection in the urinary system, which includes the bladder and kidneys.



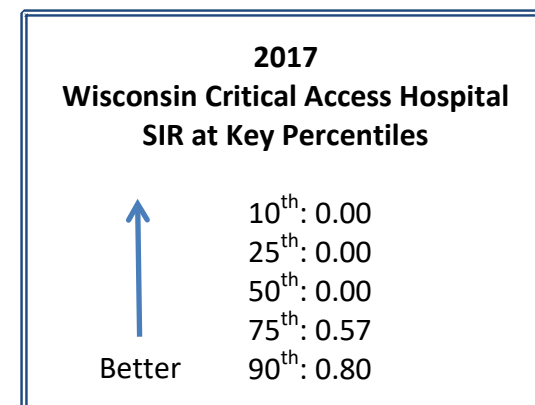
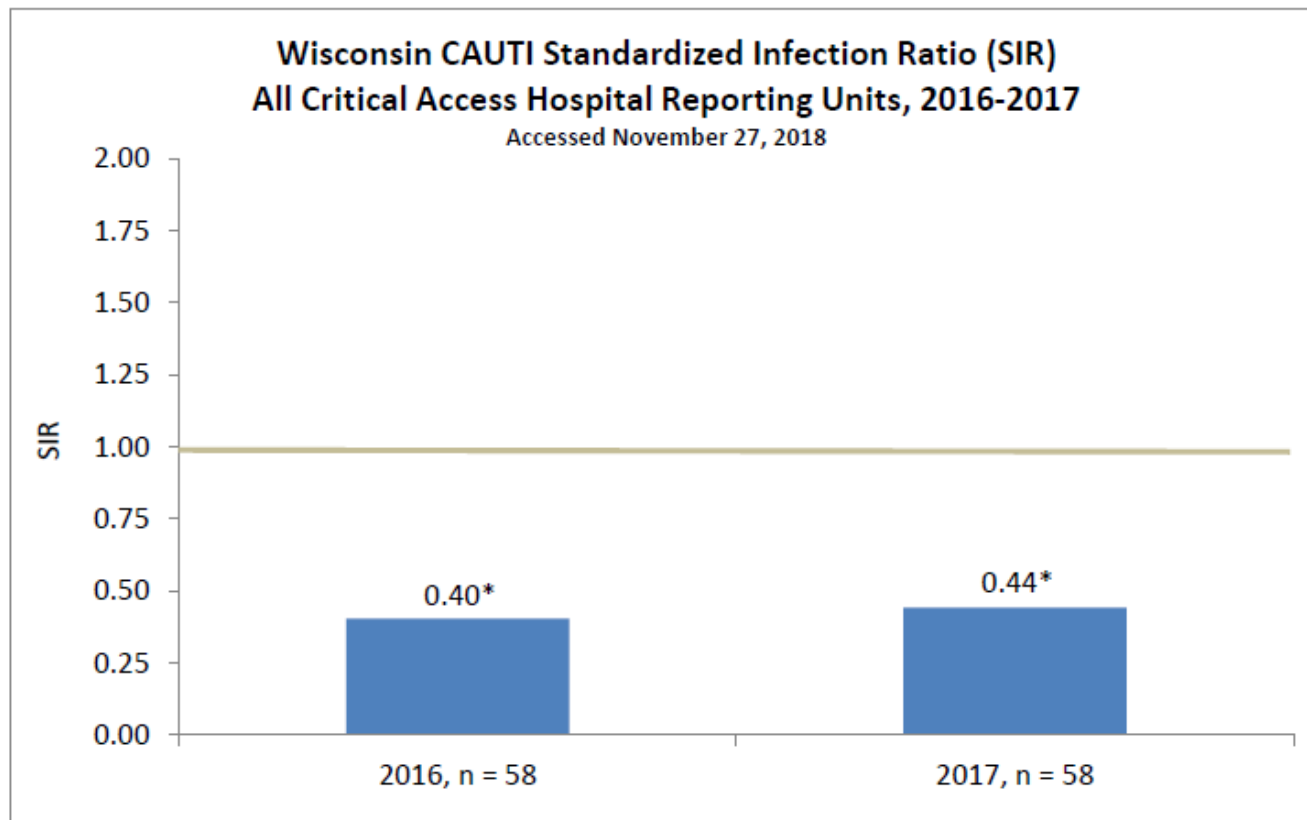
^ Statistically significant change

— National baseline (2015)

n = Number of reporting hospitals —

Unit Type	Number of Reporting Acute Care Hospitals (Units)	Number of Infections	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Acute Care Hospitals (2016-2017)
All units combined	72 (441)	361	0.94	0.85 – 1.04	6% lower	9% decrease
ICUs	66 (95)	169	0.93	0.80 – 1.08	7% lower	21% decrease [^]
Non-ICUs	72 (346)	192	0.94	0.82 - 1.09	6% lower	3% decrease

Wisconsin acute care hospitals with SIRs above 1.00 during 2017: 17 (24%)



* Statistically significant difference from the national baseline

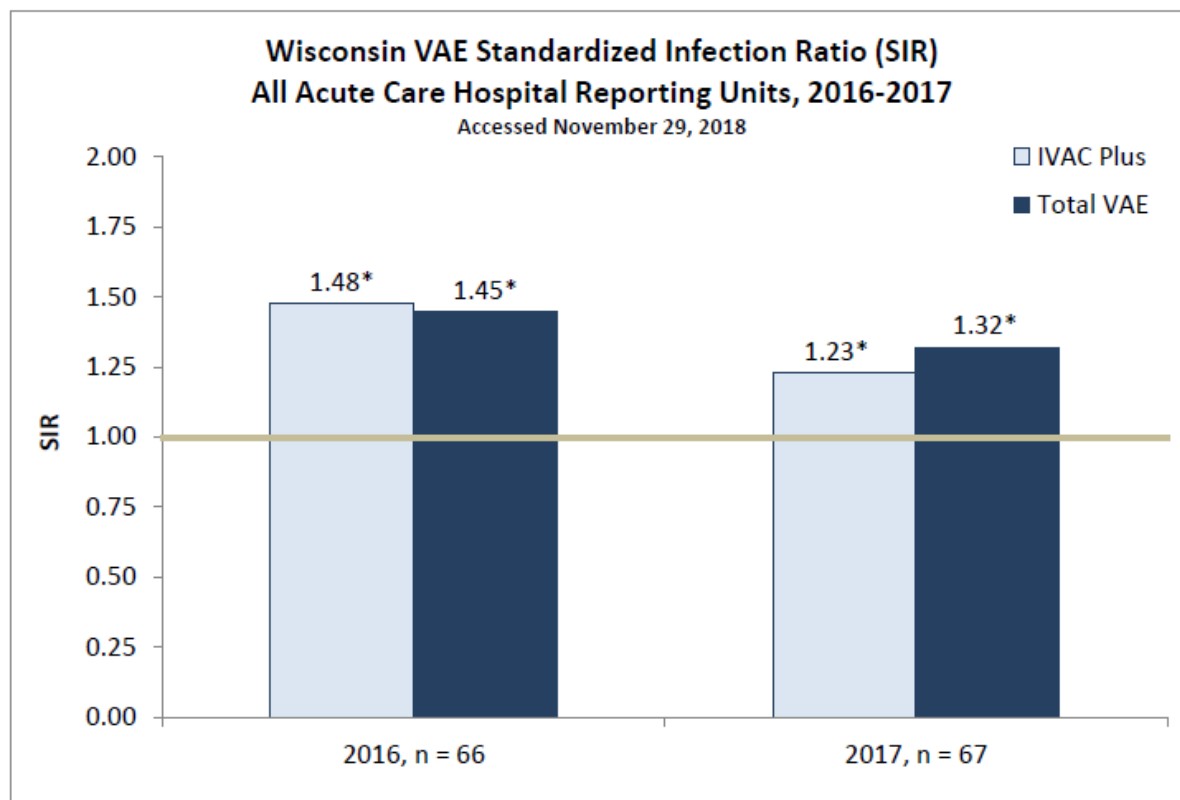
— National baseline (2015)

n = Number of reporting hospitals —

Unit Type	Number of Reporting Critical Access Hospitals (Units)	Number of Infections	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Critical Access Hospitals (2016-2017)
All units combined	58 (89)	14	0.44*	0.25 - 0.72	56% lower	10% increase
ICUs	12 (12)	0	0.00	, 1.37	100% lower	No change
Non-ICUs	58 (77)	14	0.47*	0.27 - 0.78	53% lower	9% increase

Wisconsin critical access hospitals with SIRs above 1.00 during 2017: Zero. Only nine critical access hospitals were able to calculate a facility SIR for this measure, six of those being 0.

Ventilator-Associated Events (VAE): A ventilator is a machine used to help a patient breathe by giving oxygen through a tube, but an infection can develop when germs go through the tube into the patient’s lungs. Not all ventilator-associated events being counted are infections; some are conditions associated with ventilator use that may or may not be true infections.



2017 Wisconsin Acute Care Hospital SIR at Key Percentiles		
	Total VAE	IVAC Plus
10 th	0.00	0.00
25 th	0.49	0.56
50 th	0.99	0.96
75 th	1.49	1.54
90 th	2.44	2.00

Better ↑

* Statistically significant difference from the national baseline

— National baseline (2015)

n = Number of reporting hospitals

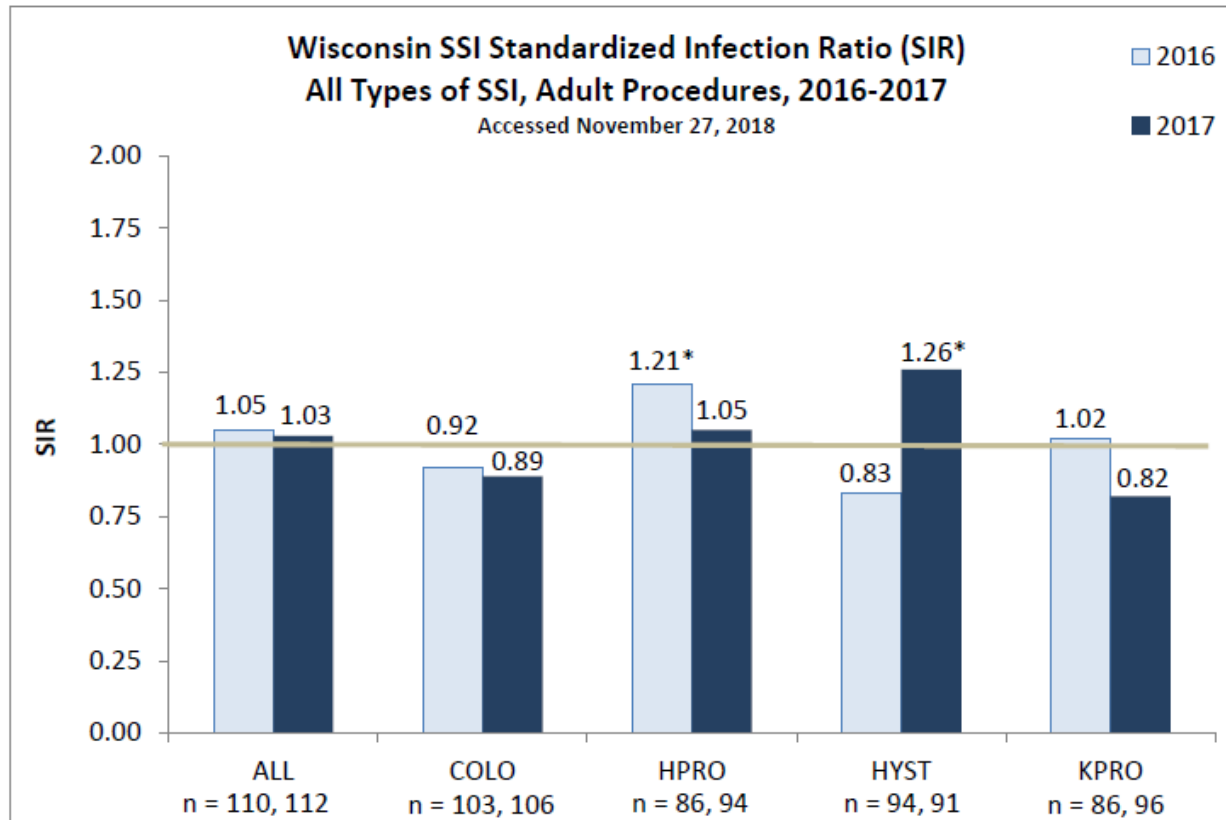
IVAC Plus = All ventilator-associated events except ventilator associated conditions

Total VAE = All ventilator-associated events

Event Type	Number of Reporting Acute Care Hospitals (Units)	Number of Infections	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Acute Care Hospitals (2016-2017)
IVAC Plus	67 (252)	170	1.23*	1.06 – 1.43	23% higher	17% decrease
Total VAE	67 (252)	510	1.32*	1.21 – 1.44	32% higher	9% decrease

Wisconsin acute care hospitals with total VAE SIRs above 1.00 during 2017: 19 (28%)

Surgical Site Infections (SSI): When germs get into an area where surgery is or was performed, patients can get a surgical site infection. Sometimes these infections involve the skin only. Other SSIs can involve tissues under the skin, organs, or implanted material.



2017 Wisconsin All Adult Procedures Combined SIR at Key Percentiles

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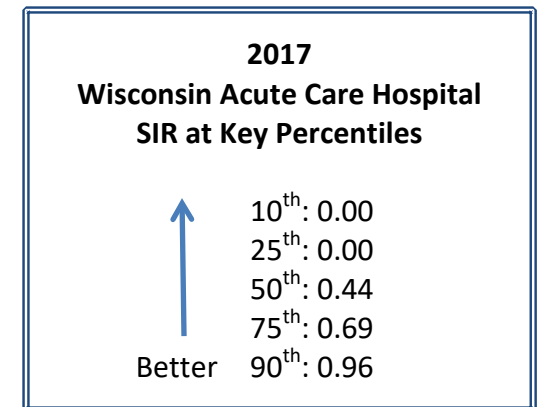
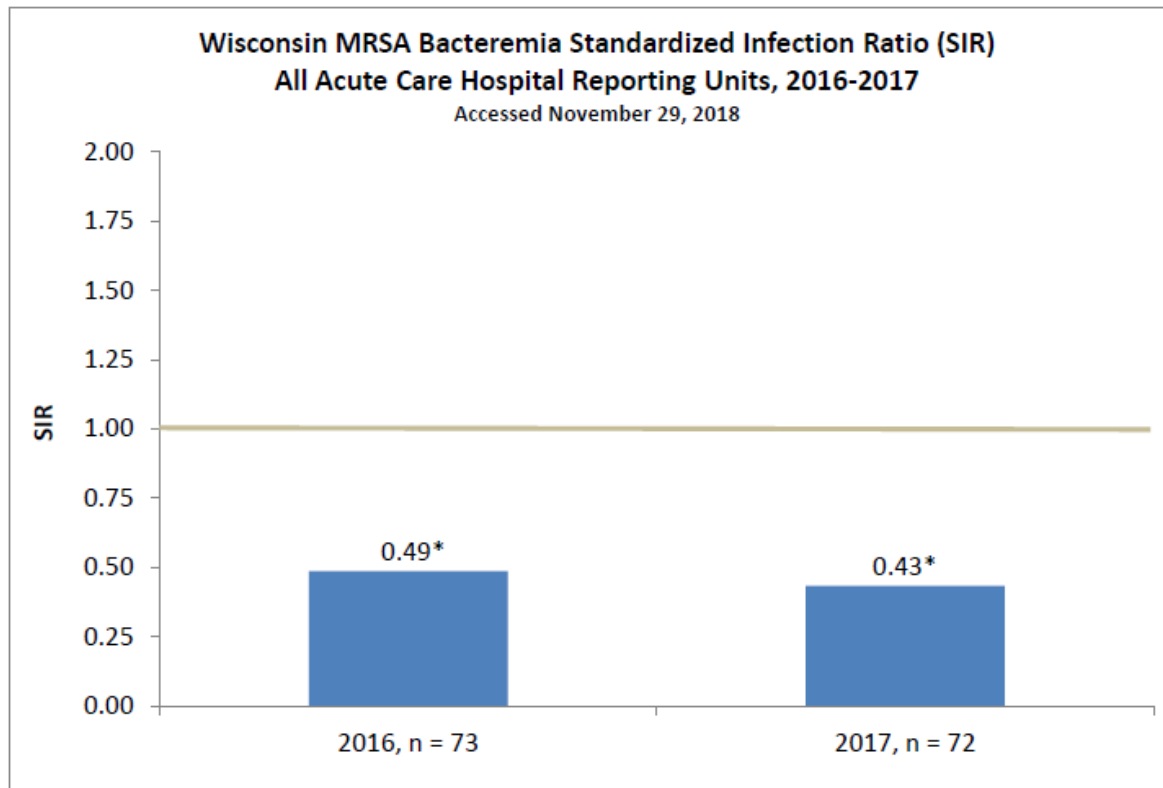
- 10th: 0.22
- 25th: 0.70
- 50th: 0.96
- 75th: 1.35
- 90th: 1.90

* Statistically significant difference from the national baseline
 — National baseline (2015)
 ^ Statistically significant change
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Procedure Type	Number of Reporting Hospitals (Procedures)	Number of Infections (Any Type of SSI)	2017 SIR (Superficial, Deep, and Organ/Space Infections Included)	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Hospitals (2016-2017)
All procedures combined (ALL)	112 (69,853)	1,023	1.03	0.97 - 1.10	3% higher	2% decrease
Colon procedures (COLO)	106 (6,105)	275	0.89	0.79 – 1.00	11% lower	3% decrease
Hip replacement (HPRO)	94 (11,804)	130	1.05	0.88 – 1.24	5% higher	13% decrease
Abdominal hysterectomy (HYST)	91 (5,209)	94	1.26*	1.02 - 1.53	26% higher	52% increase^
Knee replacement (KPRO)	96 (17,820)	83	0.82	0.66 - 1.01	18% lower	20% decrease

Wisconsin hospitals with SIRs above 1.00 (All Procedures Combined) during 2017: 42 (38%)

Methicillin-resistant *Staphylococcus aureus* (MRSA): Methicillin-resistant *Staphylococcus aureus* (MRSA) refers to *S. aureus* bacteria that are resistant to certain antibiotics. Patients treated with antibiotics or who have devices such as central lines, urinary catheters, and ventilators are at high risk of acquiring HAIs caused by MRSA and other multidrug-resistant organisms. This measure includes laboratory-identified MRSA in the bloodstream occurring more than three days after a hospital admission.



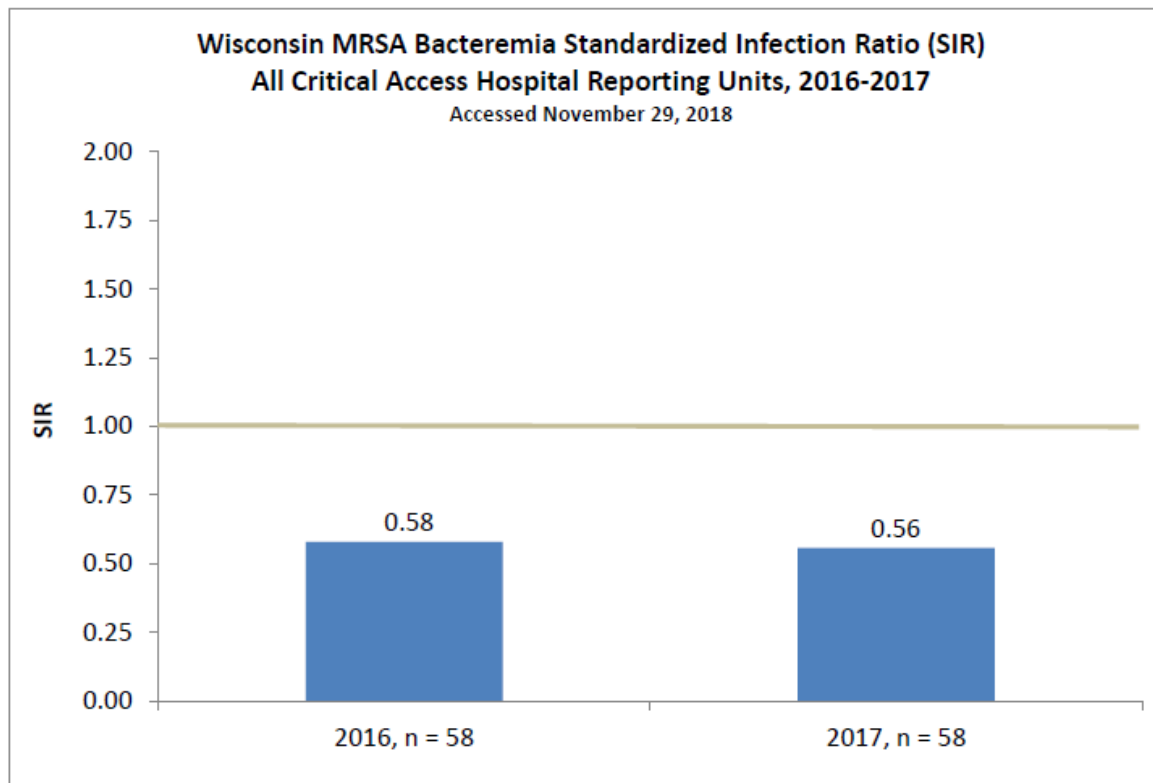
* Statistically significant difference from the national baseline

— National baseline (2015)

n = Number of reporting hospitals

Unit Type	Number of Reporting Acute Care Hospitals	Number of Healthcare-onset (> 3 days after admission) Laboratory-identified MRSA in the Bloodstream	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Acute Care Hospitals (2016-2017)
All units combined	72	50	0.43*	0.33 - 0.57	57% lower	12% decrease

Wisconsin acute care hospitals with SIRs above 1.00 during 2017: 2 (3%)



2017
Wisconsin Critical Access Hospital
SIR at Key Percentiles

No hospitals had enough data to calculate a SIR for the year.

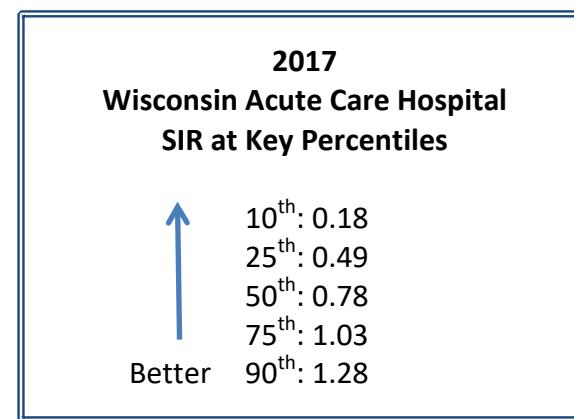
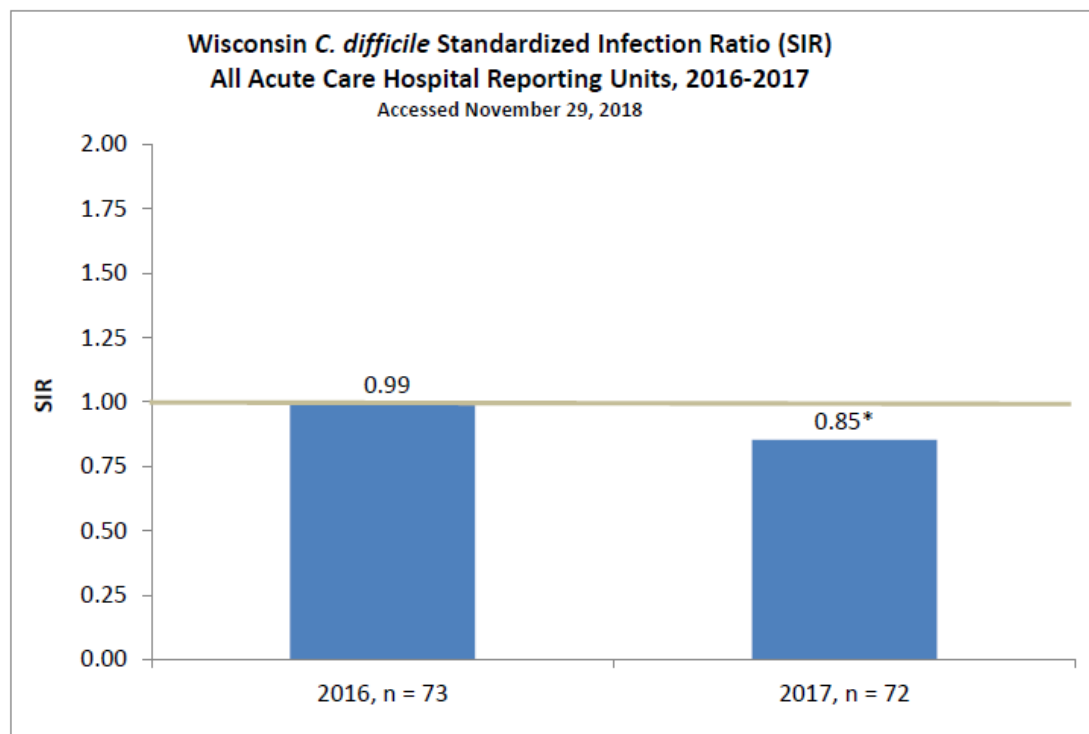
— National baseline (2015)

n = Number of reporting hospitals

Unit Type	Number of Reporting Critical Access Hospitals	Number of Healthcare-onset (> 3 days after admission) Laboratory-identified MRSA in the Bloodstream	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Critical Access Hospitals (2016-2017)
All units combined	58	2	0.56	0.09 - 1.84	44% lower	3% decrease

Wisconsin critical access hospitals with SIRs above 1.00 during 2017: No hospitals had a number of infections predicted greater than one, so no SIRs were calculated for the year.

Clostridium difficile: *Clostridium difficile* (*C. difficile*) is a bacterium normally found in the gut of about 50% of children less than two years of age but in only a small percentage of persons over the age of two. When normal bacteria in the gut are destroyed (as can happen with antibiotic use), *C. difficile* can take over and cause an infection. Symptoms of *C. difficile* infections (CDI) include diarrhea, abdominal cramps and colitis (inflammation of the colon). Persons at highest risk of CDI include older hospital patients or nursing home residents receiving prolonged antibiotic therapy. This measure includes laboratory-identified *C. difficile* occurring more than three days after a hospital admission.



* Statistically significant difference from the national baseline

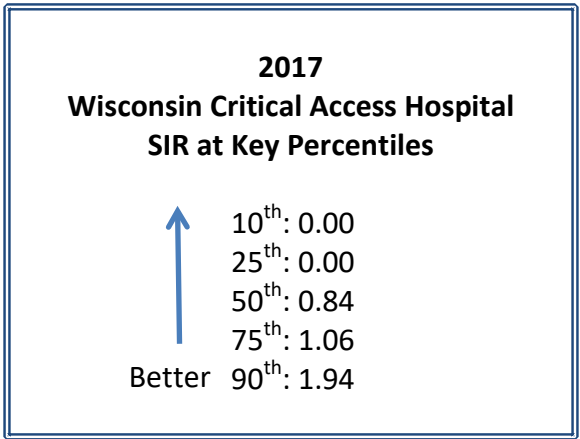
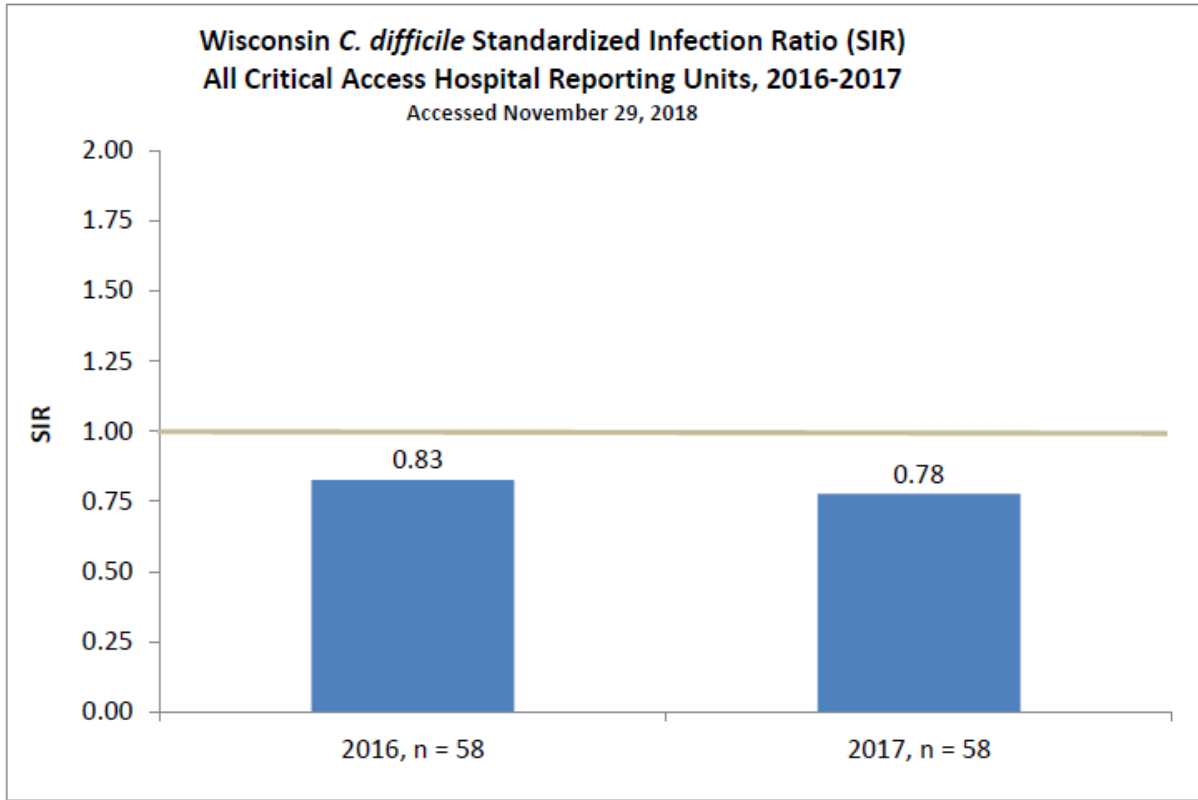
— National baseline (2015)

^ Statistically significant change

n = Number of reporting hospitals

Unit Type	Number of Reporting Acute Care Hospitals	Number of Healthcare-onset (> 3 days after admission) <i>C. difficile</i> Laboratory-identified Events	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Acute Care Hospitals (2016-2017)
All units combined	72	1,297	0.85*	0.81 – 0.90	15% lower	14% decrease^

Wisconsin acute care hospitals with SIRs above 1.00 during 2017: 19 (26%)



— National baseline (2015)
 n = Number of reporting hospitals

Unit Type	Number of Reporting Critical Access Hospitals	Number of Healthcare-onset (> 3 days after admission) <i>C. difficile</i> Laboratory-identified Events	2017 SIR	Confidence Interval	Percent Difference from 2015 National Baseline (1.00)	Percent Change Among WI Critical Access Hospitals (2016-2017)
All units combined	58	44	0.78	0.57 – 1.03	22% lower	6% decrease

Wisconsin critical access hospitals with SIRs above 1.00 during 2017: 10 (17%)