



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

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SSI Summit IV
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Abbreviations

- CAUTI = catheter-associated urinary tract infection
- CDI = *Clostridium difficile* infection
- CLABSI = central line-associated bloodstream infection
- MRSA = methicillin resistant *Staphylococcus aureus*
- NICU = neonatal intensive care unit



All Surgical Site Infections, Inpatient Procedures 2013-2015, Wisconsin

	2013	2014	2015
Number infections	854	859	836
Number procedures	57,198	59,962	56,650
% procedures with infections	1.5	1.4	1.5



What is a Standardized Infection Ratio (SIR)?

SIR: Summary statistic used to track progress toward reducing healthcare-associated infections (HAI) over time. A facility SIR is determined by comparing the observed number of infections to a national baseline. Lower SIRs are better. Facility and state SIRs are adjusted using factors affecting the risk of infection.



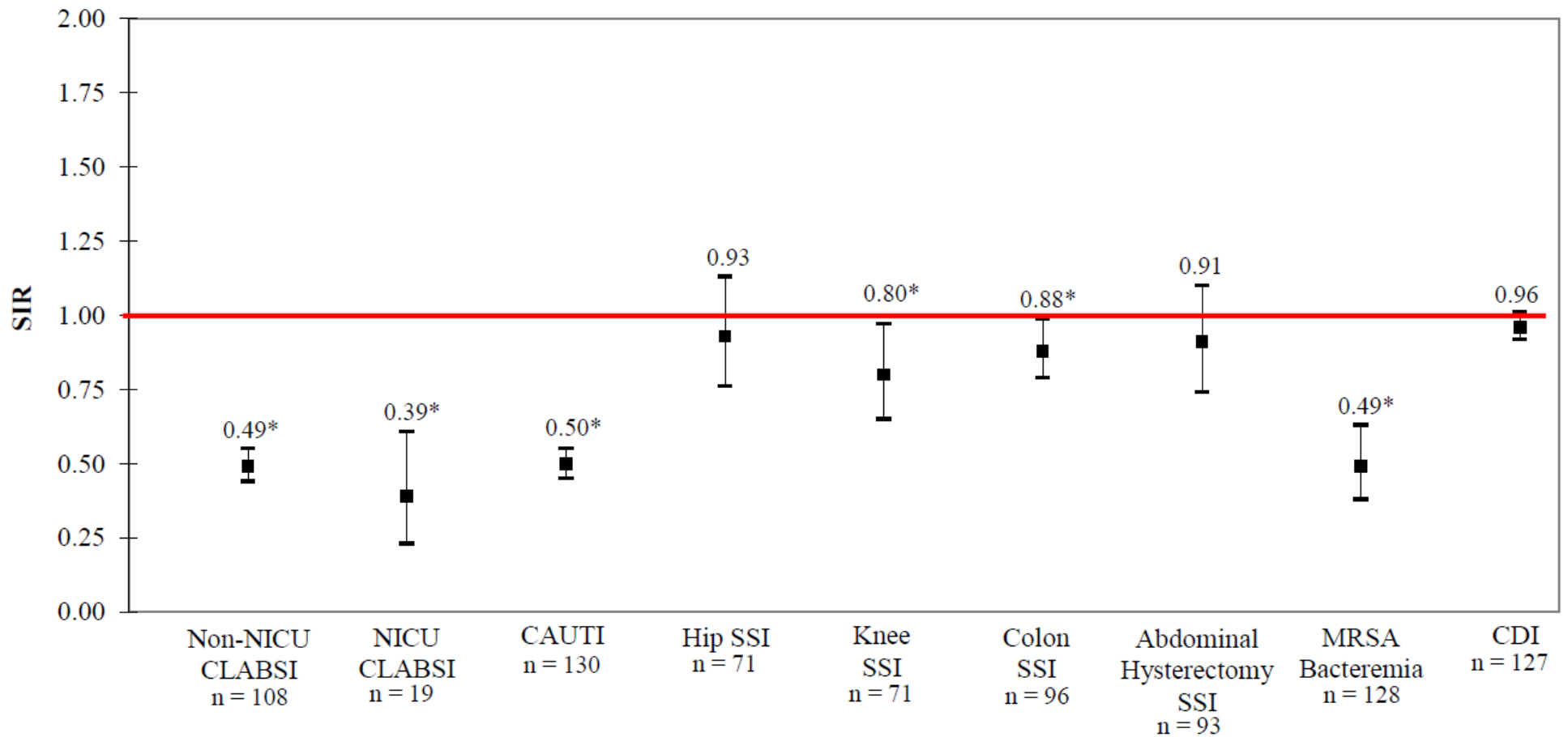
Predictive Risk Factors, Selected Procedures

National Healthcare Safety Network (NHSN), December 2010

Procedure	Risk Factors
Colorectal	age, anesthesia, asa, duration, endoscope, medical school affiliation, hospital bed size, wound class
C-section	age, anesthesia, asa, BMI, duration, emergency, labor, wound class
Hip Prosthesis	age, anesthesia, asa, duration, total/partial/revision, hospital bed size, trauma
Knee Prosthesis	age, anesthesia, asa, duration, gender, revision, hospital bed size, trauma

Wisconsin Standardized Infection Ratios (SIR) for Selected Healthcare-Associated Infections, 2015

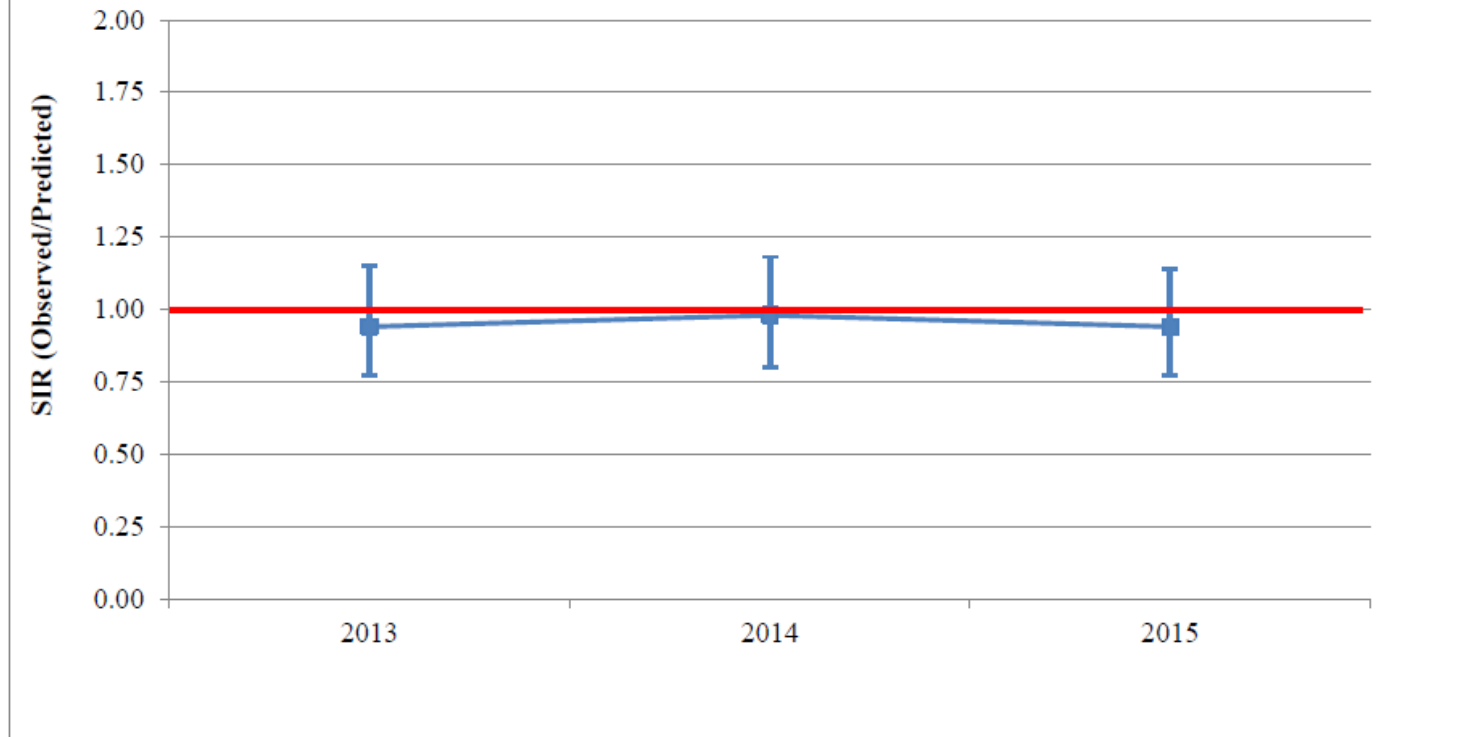
Accessed June 29, 2016



* = statistically significant difference from the national baseline

**Wisconsin SSI Standardized Infection Ratio (SIR)
Abdominal Hysterectomy (HYST), All SSIs, 2013-2015**

Data Pulled August 31, 2016



	2013	2014	2015
# Infections	97	102	100
% Superficial	50%	58%	49%
% Deep	9%	6%	10%
% Organ/Space	41%	36%	41%
# Predicted	102.74	104.31	106.21
# Procedures	5,403	5,493	5,375
SIR	0.94	0.98	0.94
SIR p-value	0.58	0.87	0.55
UCI	1.15	1.18	1.14
LCI	0.77	0.80	0.77
n (hospitals)	77	90	94
% PPS	83% (64/77)	73% (66/90)	70% (66/94)

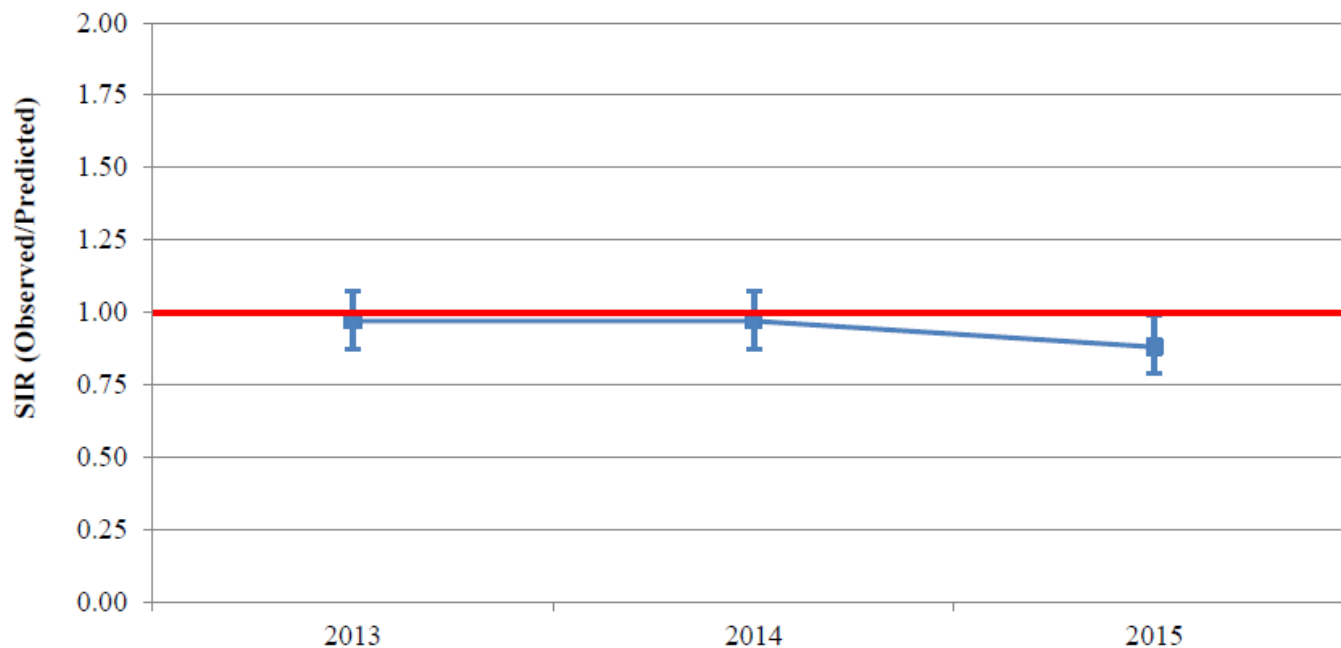
	Q1 2015	Q1 2016
# Infections	29	16
% Superficial	45%	62%
% Deep	3%	13%
% Organ/Space	52%	25%
# Predicted	25.56	23.96
# Procedures	1,294	1,194
SIR	1.14	0.67
SIR p-value	0.49	0.09
UCI	1.61	1.06
LCI	0.77	0.40
n (hospitals)	83	83
% PPS	76% (63/83)	76% (63/83)

Q2 2016
10

1,037
0.49

**Wisconsin SSI Standardized Infection Ratio (SIR)
Colon Surgery (COLO), All SSIs, 2013-2015**

Data Pulled August 31, 2016



	2013	2014	2015
# Infections	333	345	301
% Superficial	46%	47%	40%
% Deep	15%	12%	10%
% Organ/Space	39%	41%	50%
# Predicted	344.74	357.44	340.53
# Procedures	5,890	6,358	6,003
SIR	0.97	0.97	0.88
SIR p-value	0.55	0.53	0.03
UCI	1.07	1.07	0.99
LCI	0.87	0.87	0.79
n (hospitals)	85	100	97
% PPS	78% (66/85)	66% (66/100)	68% (66/97)

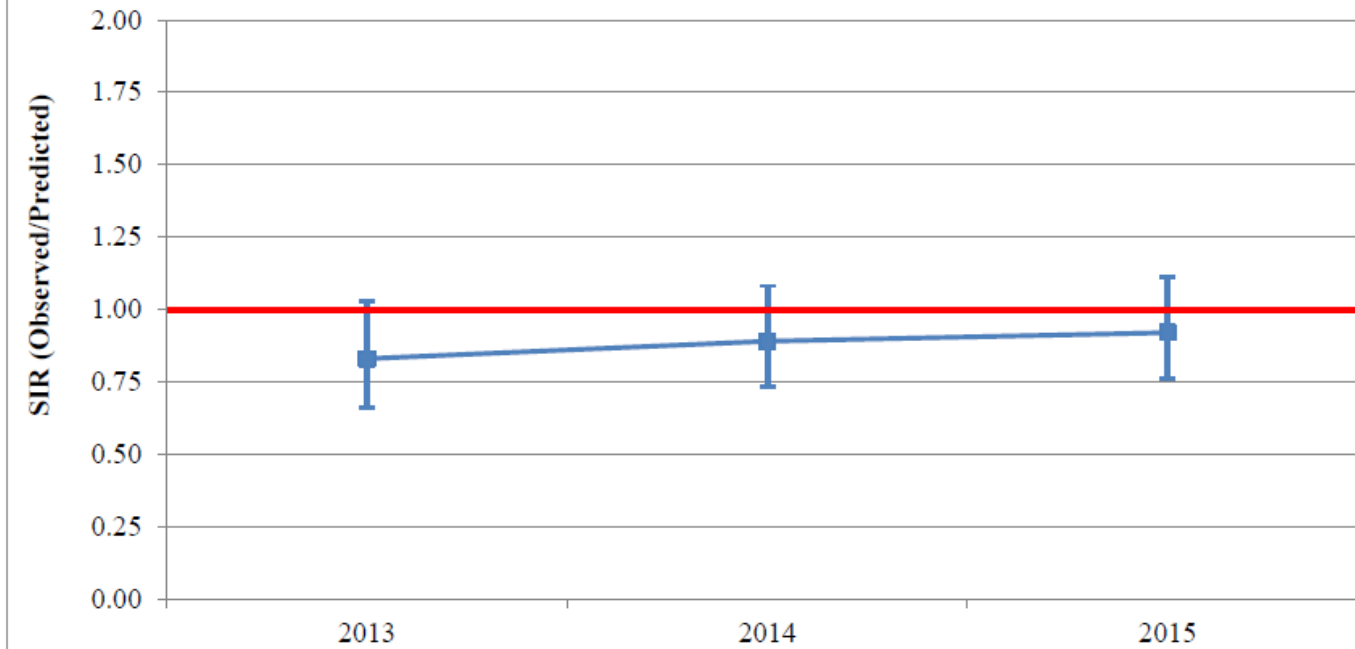
	Q1 2015	Q1 2016
# Infections	83	81
% Superficial	43%	33%
% Deep	9%	11%
% Organ/Space	48%	56%
# Predicted	85.36	91.06
# Procedures	1,493	1,593
SIR	0.97	0.89
SIR p-value	0.81	0.29
UCI	1.20	1.10
LCI	0.78	0.71
n (hospitals)	90	90
% PPS	72% (65/90)	74% (67/90)

Q2 2016
53

1,247
0.78

**Wisconsin SSI Standardized Infection Ratio (SIR)
Hip Arthroplasty (HPRO), All SSIs, 2013-2015**

Data Pulled August 31, 2016



	2013	2014	2015
# Infections	80	105	104
% Superficial	35%	31%	29%
% Deep	42%	41%	35%
% Organ/Space	23%	28%	36%
# Predicted	96.27	117.51	113.01
# Procedures	7,761	9,300	9,113
SIR	0.83	0.89	0.92
SIR p-value	0.09	0.27	0.43
UCI	1.03	1.08	1.11
LCI	0.66	0.73	0.76
n (hospitals)	69	75	76
% PPS	72% (50/69)	69% (52/75)	68% (52/76)

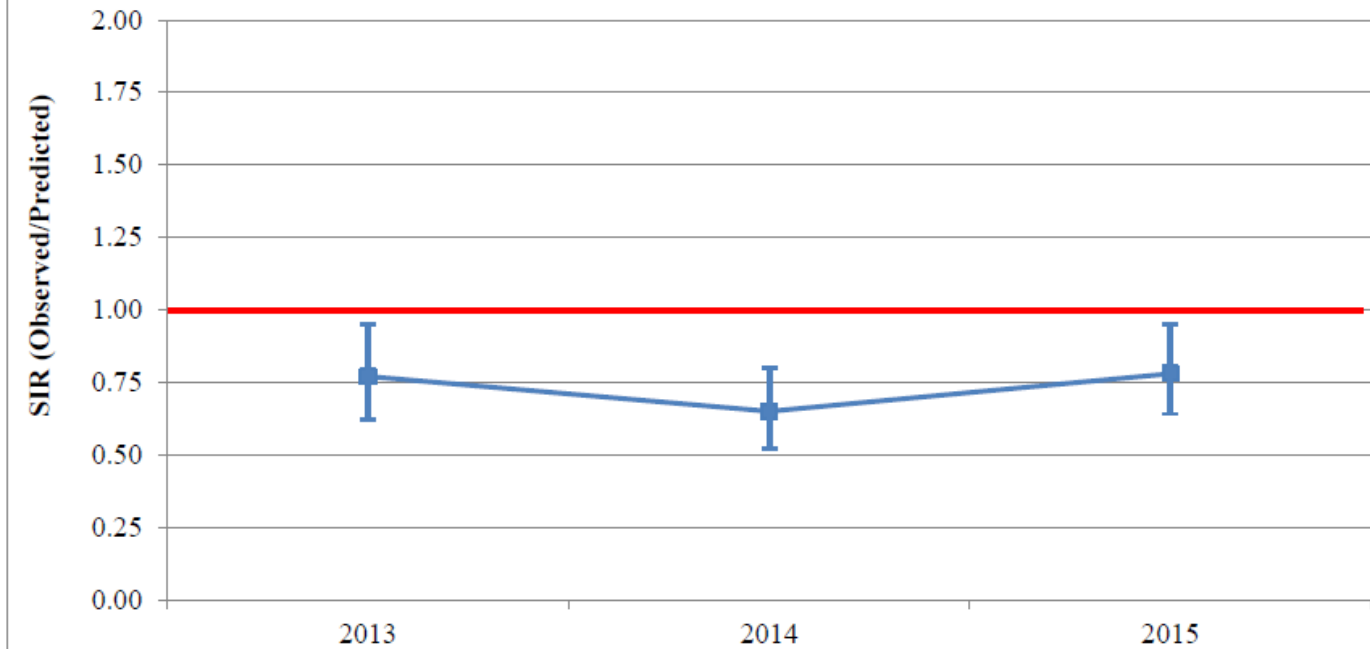
	Q1 2015	Q1 2016
# Infections	26	26
% Superficial	13%	34%
% Deep	41%	28%
% Organ/Space	46%	38%
# Predicted	26.81	26.75
# Procedures	2,179	2,127
SIR	0.97	0.97
SIR p-value	0.90	0.91
UCI	1.40	1.40
LCI	0.65	0.65
n (hospitals)	70	69
% PPS	71% (50/70)	70% (48/69)

Q2 2016
26

1,904
1.12

**Wisconsin SSI Standardized Infection Ratio (SIR)
Knee Arthroplasty (KPRO), All SSIs, 2013-2015**

Data Pulled August 31, 2016



	2013	2014	2015
# Infections	87	81	98
% Superficial	35%	32%	37%
% Deep	27%	38%	30%
% Organ/Space	38%	30%	33%
# Predicted	113.00	125.34	124.93
# Procedures	12,457	13,688	13,720
SIR	0.77	0.65	0.78
SIR p-value	0.01	0.00	0.01
UCI	0.95	0.80	0.95
LCI	0.62	0.52	0.64
n (hospitals)	69	73	75
% PPS	71% (49/69)	70% (51/73)	69% (52/75)

	Q1 2015	Q1 2016
# Infections	24	22
% Superficial	36%	45%
% Deep	48%	32%
% Organ/Space	16%	23%
# Predicted	29.95	30.04
# Procedures	3,327	3,287
SIR	0.80	0.73
SIR p-value	0.28	0.13
UCI	1.17	1.09
LCI	0.53	0.47
n (hospitals)	69	67
% PPS	72% (50/69)	72% (48/67)

Q2 2016

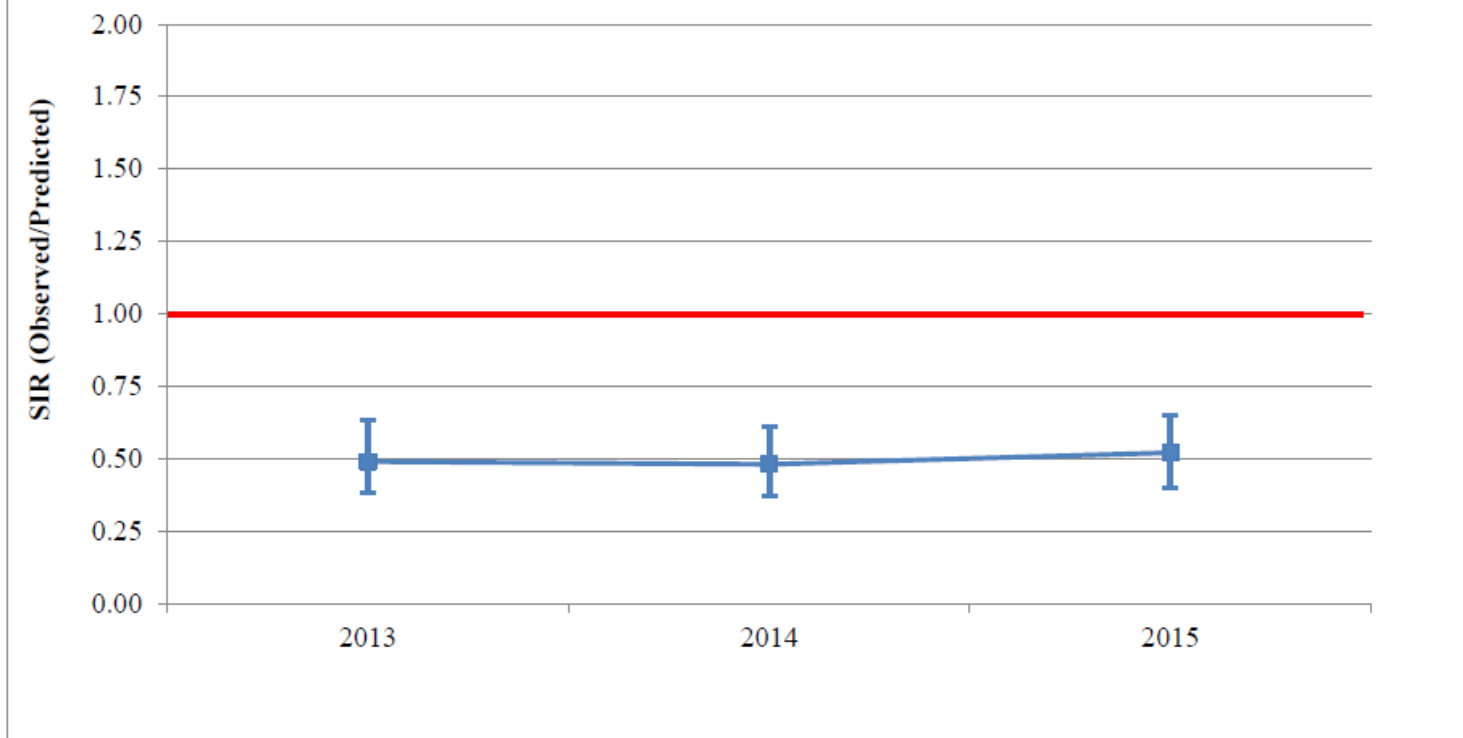
8

2,750

0.33

**Wisconsin SSI Standardized Infection Ratio (SIR)
C-section (CSEC), All SSIs, 2013-2015**

Data Pulled August 31, 2016



	2013	2014	2015
# Infections	61	59	65
% Superficial	86%	77%	80%
% Deep	8%	6%	10%
% Organ/Space	6%	17%	10%
# Predicted	124.14	124.17	126.02
# Procedures	5,937	6,019	5,960
SIR	0.49	0.48	0.52
SIR p-value	0.00	0.00	0.00
UCI	0.63	0.61	0.65
LCI	0.38	0.37	0.40
n (hospitals)	23	21	22
% PPS	65% (15/23)	62% (13/21)	59% (13/22)

	Q1 2015	Q1 2016
# Infections	11	29
% Superficial	100%	79%
% Deep	0%	0%
% Organ/Space	0%	21%
# Predicted	27.92	33.35
# Procedures	1,390	1,548
SIR	0.39	0.87
SIR p-value	0.00	0.46
UCI	0.69	1.23
LCI	0.21	0.59
n (hospitals)	22	24
% PPS	59% (13/22)	58% (14/24)

Q2 2016
25

1,448
0.74



Facility A

Year, Quarter	Number Procedures	Number Infections	Expected Number Infections	SIR	SIR p-value	SIR Confidence Interval
2014Q1	240	2	3.706	0.540	0.4001	0.090, 1.783
2014Q2	236	2	3.921	0.510	0.3474	0.086, 1.685
2014Q3	267	1	4.322	0.231	0.0839	0.012, 1.141
2014Q4	275	1	4.631	0.216	0.0646	0.011, 1.065
2015Q1	227	1	3.870	0.258	0.1225	0.013, 1.275
2015Q2	238	0	4.103	0.000	0.0165	, 0.730
2015Q3	308	4	5.884	0.680	0.4627	0.216, 1.640
2015Q4	295	6	5.436	1.104	0.7640	0.447, 2.296
2016Q1	263	11*	4.550	2.418	0.0098	1.271, 4.202
2016Q2	302	6	5.757	1.042	0.8694	0.422, 2.168

*BMI 28—46



Facility B

Year, Quarter	Number Procedures	Number Infections	Expected Number Infections	SIR	SIR p-value	SIR Confidence Interval
2014Q1	150	2	4.615	0.433	0.2166	0.073, 1.432
2014Q2	173	4	5.325	0.751	0.6078	0.239, 1.812
2014Q3	161	4	4.709	0.849	0.8013	0.270, 2.049
2014Q4	147	3	3.730	0.804	0.7685	0.205, 2.189
2015Q1	157	3	3.711	0.808	0.7756	0.206, 2.200
2015Q2	163	3	5.929	0.506	0.2229	0.129, 1.377
2015Q3	135	0	5.275	0.000	0.0051	, 0.568
2015Q4	104	2	3.246	0.616	0.5356	0.103, 2.035
2016Q1	139	7	4.373	1.601	0.2294	0.700, 3.167
2016Q2	99	1	2.940	0.340	0.2613	0.017, 1.678



DPH SSI Consultation Onsite Visits

- Services (free!)
 - Assessment
 - Grand rounds
 - Peer-to-peer consultation
 - Environmental rounds
 - Ongoing email consultation (Dr. Edmiston)
preventingssis@gmail.com
 - Infection prevention program evaluation



To schedule a visit...

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Additional DPH SSI Prevention Activities

- Wisconsin SSI prevention guidance
- Journal library
<https://www.dhs.wisconsin.gov/hai/ssi-prevention.htm/>
- Statewide expert panel of surgical champions
- SSI prevention practices surveys
- Surgical centers of excellence
- Teleconferences (?)
- Future SSI Summits (?)