

Healthcare-Associated Infections in Minnesota Acute Care Hospitals

2022 ANNUAL REPORT

Healthcare-Associated Infections in Minnesota Acute Care Hospitals 2022 Annual Report

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Introduction

Healthcare-associated infections (HAIs) are infections that patients can get while receiving medical care in hospitals or other health care facilities. A Centers for Disease Control and Prevention (CDC) analysis of a national HAI prevalence survey conducted in 2015 estimated that on any given day, one in 31 hospitalized patients has an HAI; further, CDC estimated that in 2015 alone, there were approximately 687,000 HAIs in acute care hospitals which led to around 72,000 HAI-related deaths (CDC, 2018). CDC also examined the impact of widespread use of antibiotics and its contribution to a rise in antibiotic-resistant HAIs, causing an estimated 2.8 million illnesses and more than 35,000 deaths annually in the U.S. (CDC, 2019). To combat antimicrobial resistance and reduce the devastating physical, mental/emotional, and financial strains caused by HAIs, hospitals and health care settings have implemented evidence-based HAI prevention bundles and created antibiotic stewardship programs (ASPs) which aim to measure and improve how antibiotics are prescribed by clinicians and used by patients.

Unfortunately, despite previous HAI prevention and antibiotic stewardship efforts, the COVID-19 pandemic introduced unprecedented challenges which impacted the surveillance for and incidence of HAIs. Increased demand for hospital resources and significant increases in antimicrobial use coupled with staffing and supply shortages, among other challenges, created new opportunities for the transmission of infections, particularly antimicrobial-resistant infections, within health care facilities. These same factors may have played a role in the increases in HAIs observed in Minnesota hospitals during the pandemic timeframe.

On the national level, a CDC analysis conducted in 2021 found that U.S. hospitals saw notable increases in the rates of multiple HAIs (four of six reportable conditions), a significant deviation from the previous trend of consistent reduction in such infections leading up to 2020 (CDC, 2021). CDC also identified that resistant hospital-onset infections and deaths both increased at least 15% during the first year of the pandemic (CDC, 2022). Locally, increases in some HAIs were also observed among Minnesota hospitals; from 2019 through 2022, central line-associated bloodstream infection (CLABSI) and catheter-associated urinary tract infection (CAUTI) rates increased by +9% and +11% respectively, while surgical site infections associated with colon surgery (SSI-COLO) had a slight increase of +6%. The emergence of new COVID-19 variants and the prolonged duration of the pandemic continue to pose challenges in preventing and managing HAIs. It remains critical to carefully monitor and address the ongoing impacts of the COVID-19 pandemic on infection prevention practices and HAIs to protect patient safety.

Purpose of Report

The purpose of this report is to summarize statewide HAI data and implementation of certain antibiotic stewardship program components, or ASP core elements, as reported by Minnesota acute care hospitals participating in the Inpatient Prospective Payment System (PPS) to the National Healthcare Safety Network (NHSN). NHSN is a secure, internet-based surveillance system managed by CDC which is used to fulfill hospital reporting requirements for the Centers for Medicare and Medicaid Services (CMS) Hospital Inpatient Quality Reporting Program. Note that data from hospitals who are not participating in the PPS, such as critical access hospitals (CAH), are not included in this report.

This report includes five HAIs reported by acute care PPS hospitals:

- Central line-associated bloodstream infections (CLABSI)
- Catheter-associated urinary tract infections (CAUTI)
- Surgical site infections (SSI) following colon surgery and abdominal hysterectomy
- Positive laboratory-identified (LabID) results for methicillin-resistant *Staphylococcus aureus* (MRSA) in the bloodstream
- Positive laboratory-identified (LabID) results for *Clostridioides difficile* infection (CDI) in stool

Key Findings

As compared with predicted rates, Minnesota PPS acute care hospitals reported improvement across most HAI types in 2022, compared to the previous year. Predicted rates are determined by CDC using baseline data from 2015.

- **Fewer** central line-associated bloodstream infections (CLABSI) than predicted
- **Fewer** catheter-associated urinary tract infections (CAUTI) than predicted
- **Fewer** hospital-onset cases of methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria in the bloodstream than predicted
- **Fewer** hospital-onset *Clostridioides difficile* infections (CDI) than predicted, as identified through laboratory-identified (LabID) testing of stool (feces)
- **Fewer** surgical site infections (SSI) following colon procedures than predicted and **similar** number of SSIs following abdominal hysterectomies as predicted.

Table 1. Minnesota PPS Acute Care Hospital Standardized Infection Ratios (SIR) and Progress Toward Goals for Selected Healthcare-Associated Infections (HAI), 2021 - 2022

HAI Type	2021 MN SIR (n=49)	2022 MN SIR (n=49)	% Change (2021 – 2022)	HHS goal	At or below HHS goal
CLABSI	0.88	0.73	↓ 18%	0.50	✗
CAUTI	0.86	0.89	↑ 3%	0.75	✗
SSI – HYST	1.26	0.86	↓ 32%	0.70	✗
SSI – COLO	0.68	0.71	↑ 5%	0.70	✗
MRSA	0.60	0.53	↓ 12%	0.50	✗
CDI	0.57	0.54	↓ 4%	0.70	★

No shading indicates the SIR is not statistically different from the 2015 national baseline

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Symbol Key



Change is not statistically significant



Statistically significant decrease in SIR



Statistically significant increase in SIR



State SIR is at or below the HHS goal



State SIR is not at or below the HHS goal

Methods

NHSN Data

Hospitals self-report data to NHSN according to the NHSN surveillance protocol developed by CDC. Although efforts are made through education and training to improve the standardization and understanding of NHSN surveillance guidelines, definitions, and criteria, there can be variability in interpretation and application, leading to differences in reporting practices among hospitals.

Minnesota Department of Health (MDH) accesses NHSN data through a data use agreement (DUA) with CDC that was initially established in 2013 and updated in 2023. The DUA establishes a formal data access and data use relationship between MDH and CDC and stipulates that MDH may only use the data for HAI surveillance and prevention purposes. For more information about MDH NHSN DUA, refer to [National Healthcare Safety Network \(NHSN\)](https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/nhsn.html) (<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/nhsn.html>).

This report covers data that were collected between January and December 2022 and were downloaded from the NHSN secure internet platform on June 1, 2023; any changes made to the data after this date are not reflected in this report.

There might be variation between results published in this report and results published elsewhere. Hospitals can modify their NHSN data at any time and therefore results might appear to vary if other sources use different data collection periods or downloaded data from NHSN on a different date.

For more information about NHSN, refer to [CDC: National Healthcare Safety Network \(NHSN\)](https://www.cdc.gov/nhsn/) (<https://www.cdc.gov/nhsn/>).

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 accounts for various facility and/or patient-level factors that contribute to HAI risk. The SIR is calculated by dividing the number of observed infections by the number of predicted infections. The number of predicted infections is calculated based on 2015 national HAI aggregate data, using a multivariable regression model and adjusted using factors found to be significant predictors of HAI incidence.

$$\text{SIR} = \frac{\text{Observed Infections}}{\text{Predicted Infections}}$$

- An SIR greater than 1.0 indicates that more infections were observed than predicted
- An SIR less than 1.0 indicates that fewer infections were observed than predicted

For more information about the SIR, refer to [CDC: The NHSN Standard Infection Ratio \(SIR\): A Guide to the SIR \(PDF\)](https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf) (<https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>).

Risk Adjustment

The SIRs presented in this report are adjusted for risk factors known to be significantly associated with differences in infection incidence, such as type of patient care location, bed size of the hospital, patient age, and other factors. NHSN incorporates information on many important factors that might put a patient at risk for an HAI, but not all clinical details are collected in this system. Therefore, each patient has a different set of risks that might not be fully accounted for in the calculation of the standardized infection ratio.

U.S. Department of Health and Human Services (HHS) SIR Goals

The U.S. Department of Health and Human Services (HHS) sets national HAI reduction targets through the National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination. In October 2016, HHS announced targets for acute care hospitals using national 2015 NHSN data as the baseline. These targets were intended to be in effect for a five-year period during 2015–2020; however, the release of updated targets was impacted by the COVID-19 pandemic. Updated goals beyond 2020 have not yet been released.

The 2020 HHS SIR goals for the HAIs included in this report are as follows:

- CLABSI and MRSA: 0.50
- CAUTI: 0.75
- SSI and CDI: 0.70

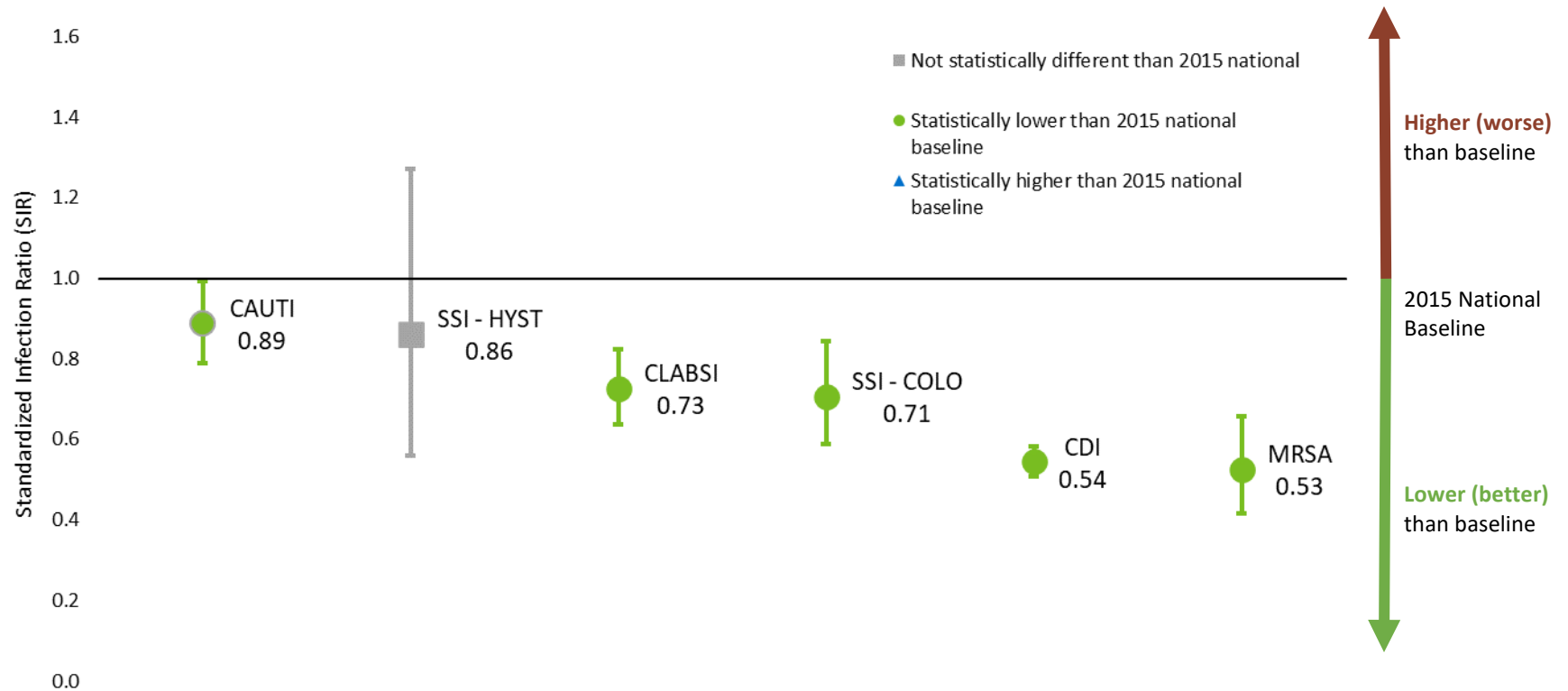
For more information about these targets and the National HAI Action Plan, refer to [HHS: National Targets and Metrics – Health Care-Associated Infections \(https://health.gov/hcq/prevent-hai-measures.asp\)](https://health.gov/hcq/prevent-hai-measures.asp).

Data Quality

All data presented in this report are self-reported by hospitals to NHSN. To ensure complete and accurate data, MDH conducts quarterly data quality reviews of NHSN data for Minnesota acute care PPS hospitals to identify internal inconsistencies and outlier values that could be erroneous. For more information about MDH NHSN data quality reviews, refer to [National Healthcare Safety Network \(NHSN\) \(https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/nhsn.html\)](https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/nhsn.html).

Statewide HAI Summary

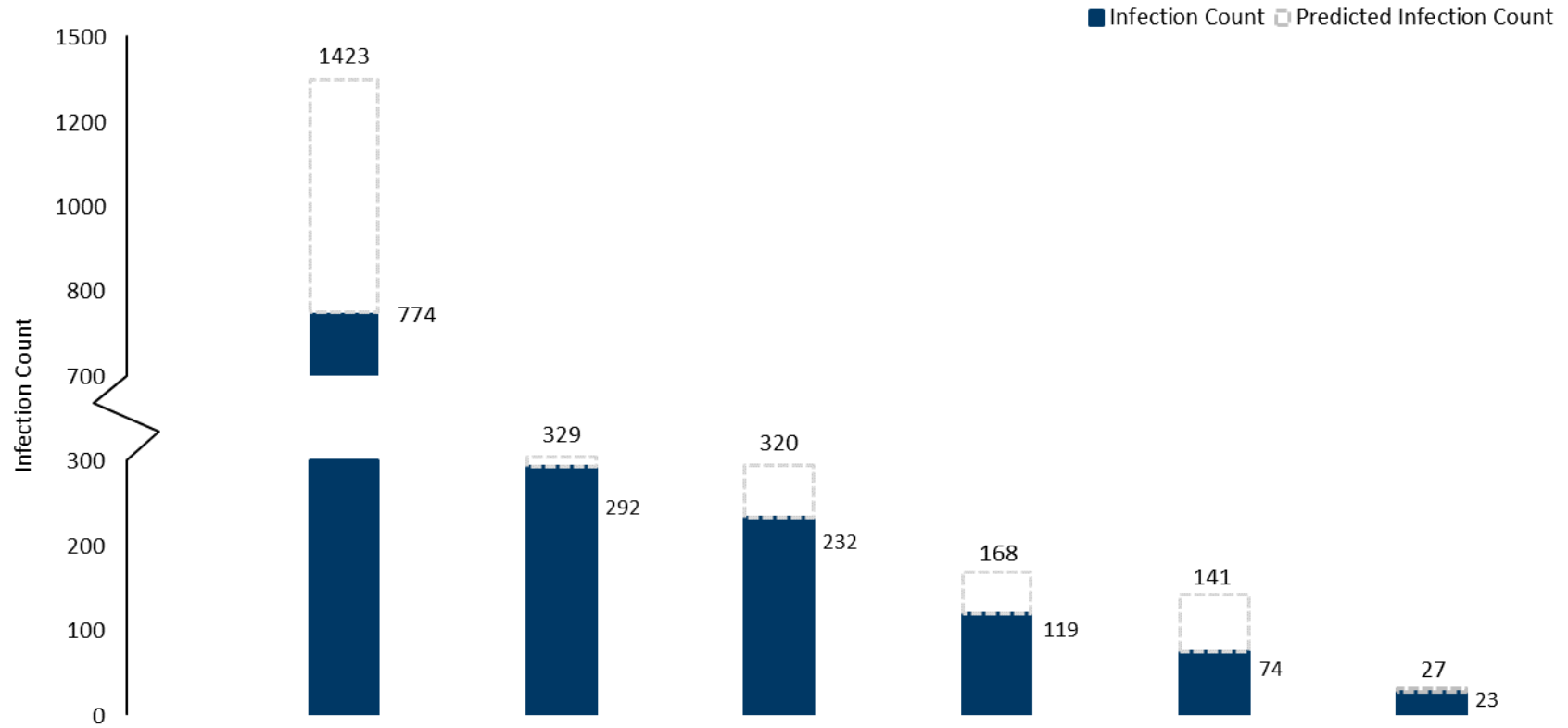
Figure 1. Minnesota PPS Acute Care Hospital Standardized Infection Ratios (SIR) for Selected Healthcare-Associated Infections (HAI), 2022 (n=49)



HAI Type	CAUTI	SSI – HYST	CLABSI	SSI – COLO	CDI	MRSA
Infection Count	292	23	232	119	774	74
Predicted Infection Count	329	27	320	168	1,423	141
SIR	0.89	0.86	0.73	0.71	0.54	0.53
HHS 2020 SIR Goal	0.75	0.70	0.50	0.70	0.70	0.50

PPS = prospective payment systems; SSI = surgical site infection; HYST = abdominal hysterectomy; COLO = colon surgery; CDI = laboratory-identified *C. difficile*. CAUTI = catheter-associated urinary tract infection; CLABSI = central line-associated bloodstream infection; MRSA = laboratory-identified MRSA bacteremia. HHS = U.S. Department of Health and Human Services; Data downloaded from NHSN on June 1, 2023

Figure 2. Minnesota PPS Acute Care Hospitals Predicted and Actual Infection Counts for Selected Healthcare-Associated Infections (HAI), 2022 (n=49)



HAI Type	CDI	CAUTI	CLABSI	SSI – COLO	MRSA	SSI – HYST
Infection Count	774	292	232	119	74	23
Predicted Infection Count	1,423	329	320	168	141	27
SIR	0.54	0.89	0.73	0.71	0.53	0.86
HHS 2020 SIR Goal	0.70	0.75	0.50	0.70	0.50	0.70

PPS = prospective payment systems; SSI = surgical site infection; HYST = abdominal hysterectomy; COLO = colon surgery; CDI = laboratory-identified *C. difficile*; CAUTI = catheter-associated urinary tract infection; CLABSI = central line-associated bloodstream infection; MRSA = laboratory-identified MRSA bacteremia; HHS = U.S. Department of Health and Human Services; Data downloaded from NHSN on June 1, 2023

Healthcare-Associated Infection (HAI) Data Submitted to the National Healthcare Safety Network (NHSN) by Minnesota Acute Care PPS Hospitals (n=49), 2021 and 2022

Table 2. Central Line-Associated Bloodstream Infections (CLABSI)

Unit	2021 MN SIR	2022 MN SIR	% Change (2021 – 2022)
ICU, NICU, and Ward*	0.88	0.73	↓ 18%
ICU	1.14	0.84	↓ 26%
NICU	0.94	0.54	↓ 42%
Ward*	0.65	0.66	↑ 1%

HHS 2020 SIR Goal: 0.50

*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards

Table 4. Surgical Site Infections (SSI)**

Type	2021 MN SIR	2022 MN SIR	% Change (2021 – 2022)
Colon Surgery	0.68	0.71	↑ 5%
Abdominal Hysterectomy	1.26	0.86	↓ 32%

HHS 2020 SIR Goal: 0.70

** SSI SIR is risk adjusted using the Complex Admission/Readmission model

SIR = standardized infection ratio

Risk adjustment for SIR based on NHSN 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Table 3. Catheter-Associated Urinary Tract Infections (CAUTI)

Unit	2021 MN SIR	2022 MN SIR	% Change (2021 – 2022)
ICU and Ward*	0.86	0.89	↑ 3%
ICU	0.89	0.75	↓ 15%
Ward*	0.83	1.04	↑ 26%
Inpatient Rehabilitation	0.84	2.48	↑ 194%

HHS 2020 SIR Goal: 0.75

*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards

Table 5. Facility-wide Laboratory-Identified (LabID) Events

Type	2021 MN SIR	2022 MN SIR	% Change (2021 – 2022)
MRSA Bacteremia	0.60	0.53	↓ 12%
C. difficile Infection	0.57	0.54	↓ 4%

MRSA HHS 2020 SIR Goal: 0.50

CDI HHS 2020 SIR Goal: 0.70

Key
SIR is not statistically different from national baseline
SIR is statistically lower than national baseline
SIR is statistically higher than national baseline
↕↕ Change is not statistically significant
↓ Statistically significant decrease in SIR
↑ Statistically significant increase in SIR

Central Line-Associated Bloodstream Infections (CLABSI)

A **central line** is a tube placed in a large vein to allow access to the bloodstream and administration of intravenous (IV) medications. A **central line-associated bloodstream infection (CLABSI)** can occur when bacteria or other germs travel along a central line and enter the bloodstream. When inserted incorrectly or if the insertion site is not kept clean, a central line can become a pathway for germs to enter the body, potentially resulting in a serious bloodstream infection.

This report includes CLABSI data reported by Minnesota acute care PPS hospitals from units required for CMS reporting, including adult, pediatric, and neonatal intensive care units (ICU), and adult and pediatric medical, surgical, and medical/surgical wards. It does not include CLABSI data that might have been reported voluntarily from other units, such as specialty wards.

Table 6. CLABSI by Location Type, Acute Care PPS Hospitals, 2022

Location Type	No. Facilities Reporting	Infection Count	Predicted Infection Count	Number Central Line Days	SIR (95% CI)	Facilities with ≥ 1 Predicted Infection	Facilities with ≥ 1 Predicted Infection and SIR Sig. < 1 n (%)	Facilities with ≥ 1 Predicted Infection and SIR Sig. > 1 n (%)
ICU, NICU, and Ward*	47	232	319.7	320,512	0.73 (0.64, 0.82)	24	5 (21%)	1 (4%)
ICU	31	110	131.1	119,354	0.84 (0.69, 1.01)	15	2 (13%)	1 (7%)
NICU	11	9	16.6	11,973	0.54 (0.27, 1.00)	3	1 (33%)	0 (0%)
Ward*	47	113	172.0	189,185	0.66 (0.54, 0.79)	21	4 (19%)	0 (0%)

*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards

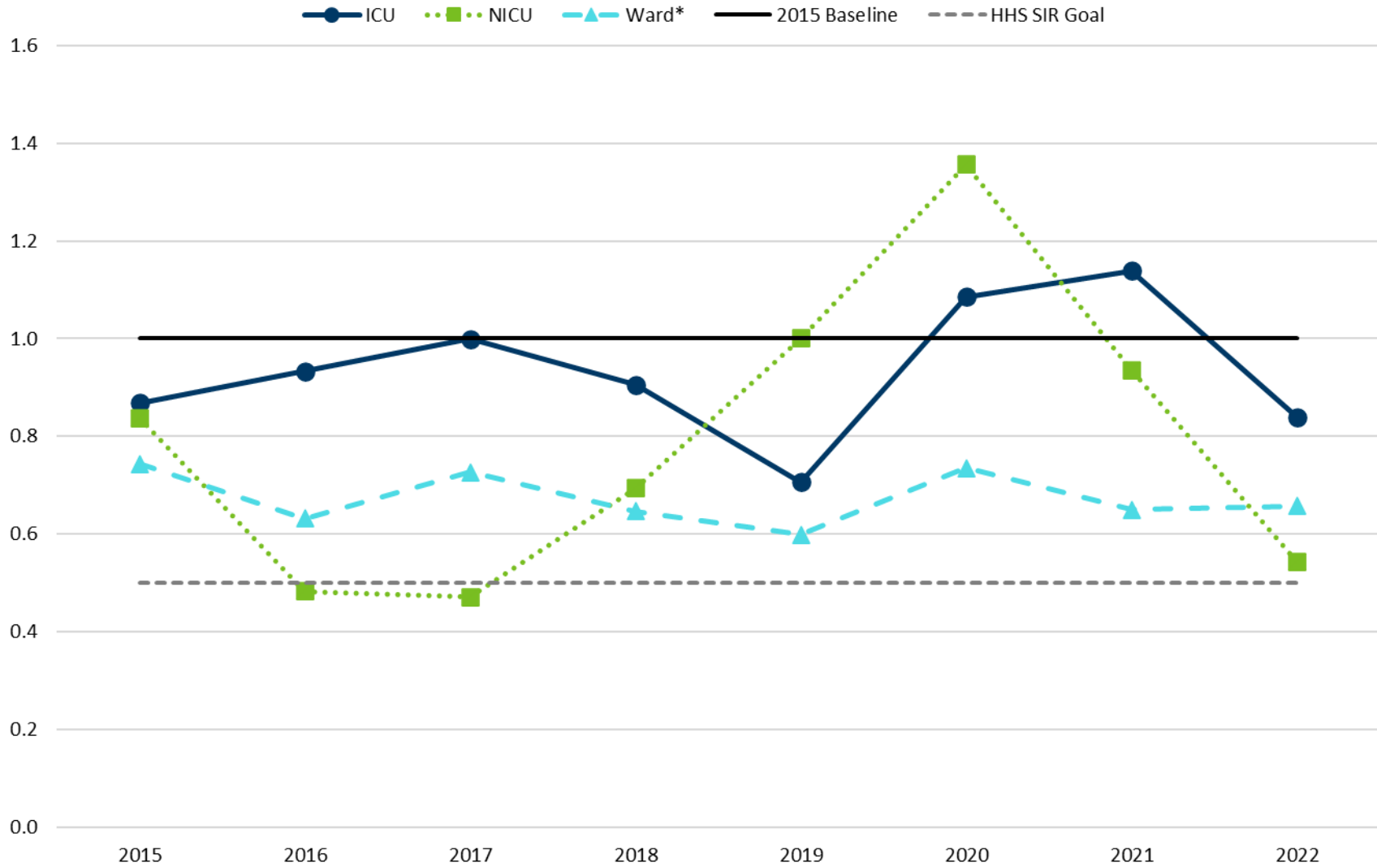
Sig. = statistically significant

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Figure 3. CLABSI SIR by Year and Location Type, Acute Care PPS Hospitals, 2015–2022



*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards
Data downloaded from NHSN on June 1, 2023

Catheter-Associated Urinary Tract Infection (CAUTI)

A **urinary catheter** is a tube placed in the bladder to drain urine. A **catheter-associated urinary tract infection (CAUTI)** can occur when bacteria or other germs travel along a urinary catheter, resulting in a bladder or kidney infection.

This report includes CAUTI data reported by Minnesota acute care PPS hospitals from units required for CMS reporting including adult and pediatric intensive care units (ICU), adult and pediatric medical, surgical, and medical/surgical wards, and CMS-certified inpatient rehabilitation wards. It does not include CAUTI data that might have been reported voluntarily from other units, such as specialty wards.

Table 7. CAUTI by Location Type, Acute Care PPS Hospitals, 2022

Location Type	No. Facilities Reporting	Infection Count	Predicted Infection Count	Number Urinary Catheter Days	SIR (95% CI)	Facilities with ≥ 1 Predicted Infection	Facilities with ≥ 1 Predicted Infection and SIR Sig. <1 n (%)	Facilities with ≥ 1 Predicted Infection and SIR Sig. >1 n (%)
ICU and Ward*	47	292	329.1	271,728	0.89 (0.79, 0.99)	26	2 (8%)	1 (4%)
ICU	31	129	172.3	120,286	0.75 (0.63, 0.89)	15	2 (13%)	2 (13%)
Ward*	47	163	156.8	151,442	1.04 (0.89, 1.21)	24	0 (0%)	1 (4%)
Rehabilitation	11	28	11.3	4,168	2.48 (1.68, 3.54)	4	0 (0%)	1 (25%)

*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards

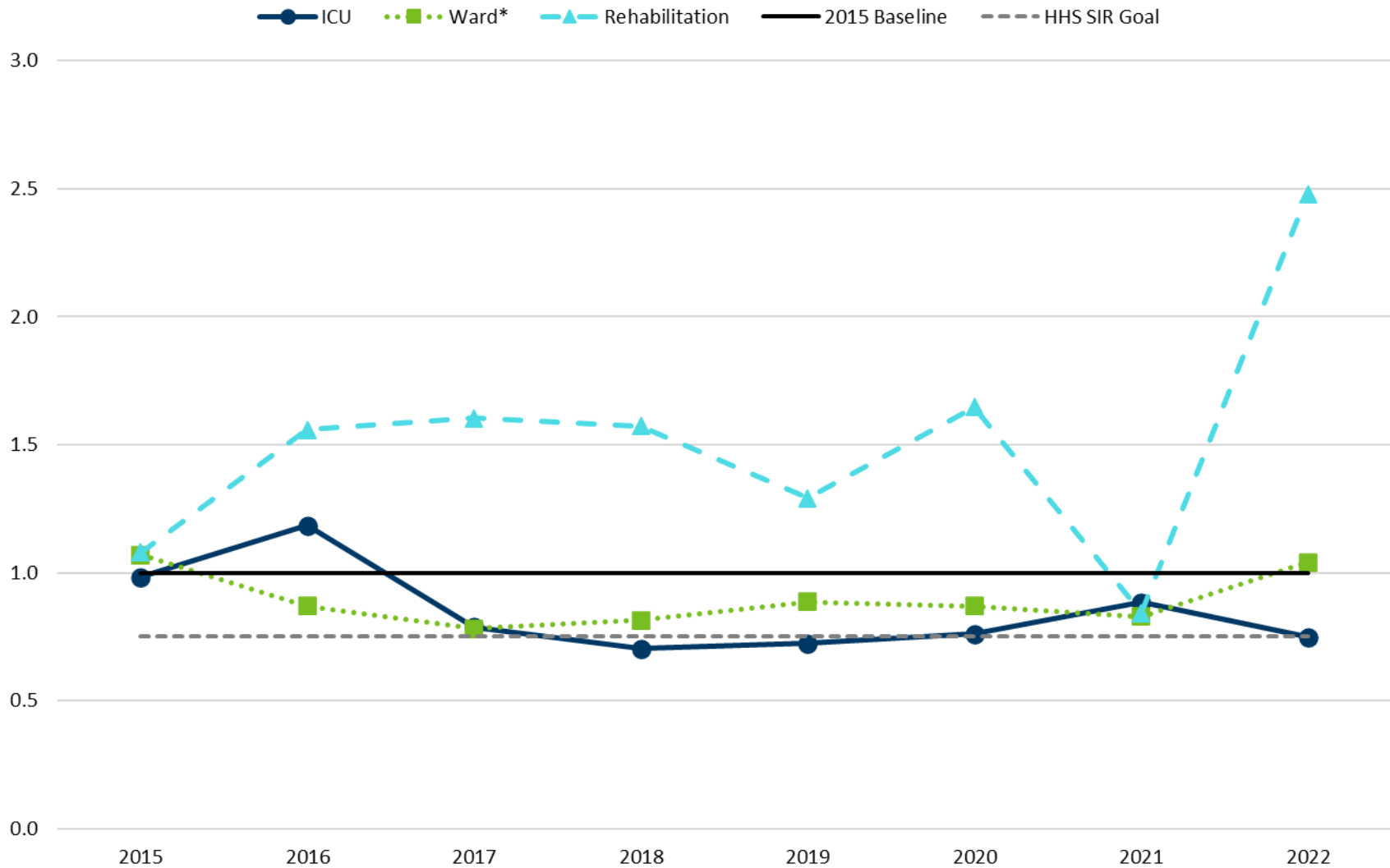
Sig. = statistically significant

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Figure 4. CAUTI SIR by Year and Location Type, Acute Care PPS Hospitals, 2015–2022



*Ward locations include adult and pediatric medical, surgical, and medical/surgical wards
 Data downloaded from NHSN on June 1, 2023

Surgical Site Infections (SSI)

A **surgical site infection** (SSI) occurs after surgery in the part of the body where the surgery took place. These infections might involve only the skin but could also be more serious if tissue under the skin or internal organs are infected. SSIs sometimes take extended time periods after surgery to develop. Symptoms might include fever, redness or pain around the surgical site, or drainage of fluid from the wound.

This report includes SSIs reported by Minnesota acute care PPS hospitals following surgical procedures required for CMS reporting including colon surgeries (COLO) and abdominal hysterectomies (HYST) from hospitals that perform those procedures. It does not include SSI data that might have been reported voluntarily for other types of surgical procedures. The risk-adjustment model used to calculate SIR is the complex admission/readmission model, which includes procedures in adult patients that stay overnight in the hospital. This model includes more complicated and severe infections involving deep tissue and organ space and excludes superficial infections that involve only the top layers of skin and tissue.

Table 8. SSIs Following Colon Surgery (COLO) and Abdominal Hysterectomy (HYST), Acute Care PPS Hospitals, 2022

Procedure Type	No. Facilities Reporting	Infection Count	Predicted Infection Count	Number of Procedures	SIR (95% CI)	Facilities with ≥ 1 Predicted Infection	Facilities with ≥ 1 Predicted Infection and SIR Sig. <1 n (%)	Facilities with ≥ 1 Predicted Infection and SIR Sig. >1 n (%)
COLO	47	119	168.4	5,445	0.71 (0.59, 0.84)	22	3 (14%)	0 (0%)
HYST	47	23	26.7	3,094	0.86 (0.56, 1.27)	9	1 (11%)	0 (0%)

Complex Admission/Readmission SIR model, adult only

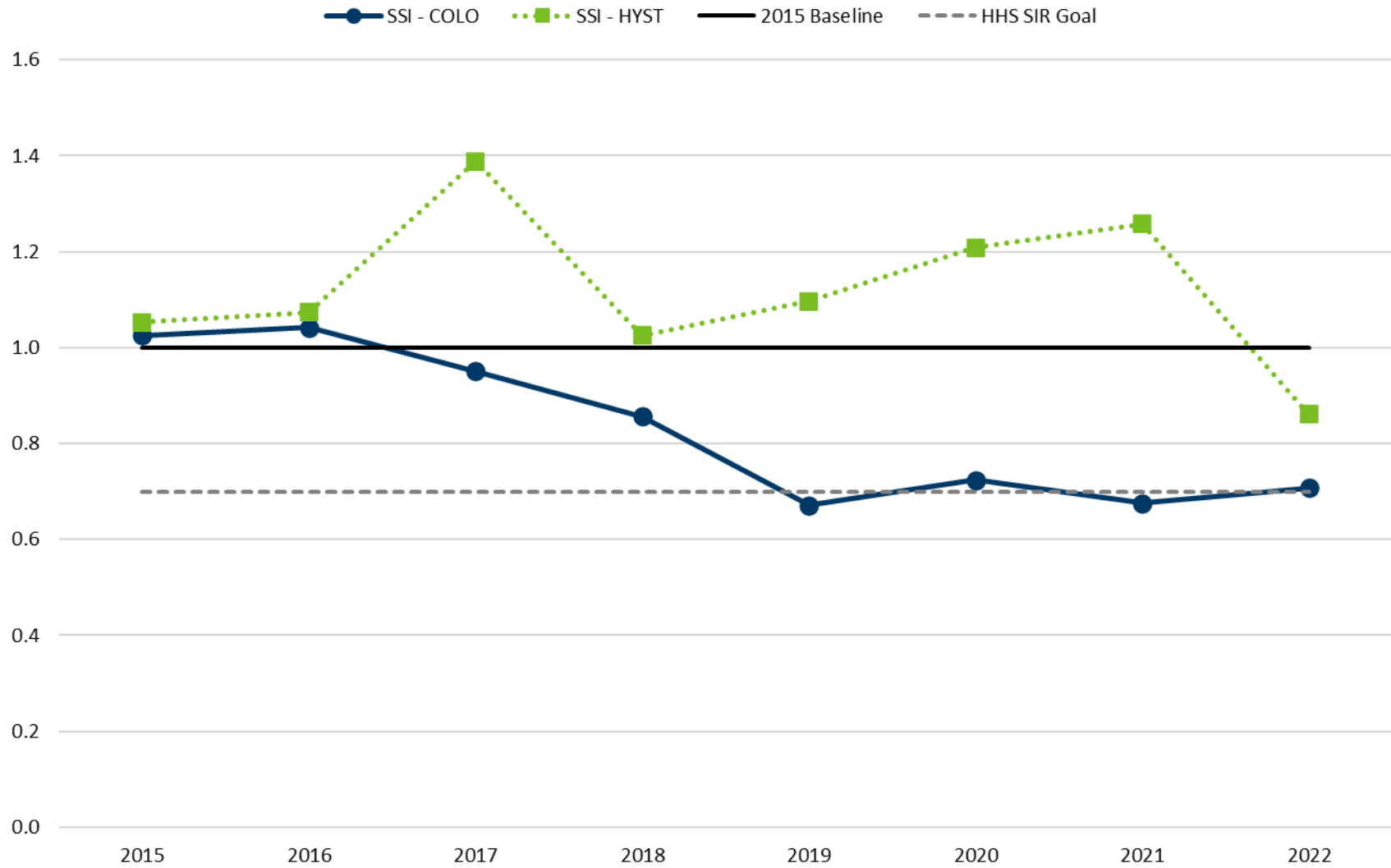
Sig. = statistically significant

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Figure 5. SSI Complex Admission/Readmission SIR by Year and Procedure Type, Acute Care PPS Hospitals, 2015–2022



Data downloaded from NHSN on June 1, 2023

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Bacteremia Laboratory-Identified Events (LabID)

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are caused by bacteria that are resistant to certain types of drugs. MRSA can cause skin or wound infections. Sometimes, MRSA can infect the blood and cause serious illness and even death.

MRSA LabID events rely on laboratory data only and do not require patients to be ill to have a positive result. Sometimes patients will have multiple lab tests during their treatment that are positive for a MRSA infection. The first positive test that identifies a MRSA infection is called the incident infection, which means that the patient did not have another positive test result for MRSA within the last 56 days.

This report only displays incident MRSA bloodstream infections identified on or after the fourth day of hospitalization (health care facility-onset) in inpatient locations reported by Minnesota acute care PPS hospitals.

Table 9. Health Care Facility-Onset MRSA Bacteremia LabID Events, Acute Care PPS Hospitals, 2022

No. Facilities Reporting	Infection Count	Predicted Infection Count	Number of Patient Days	SIR (95% CI)	Facilities with ≥ 1 Predicted Infection	Facilities with ≥ 1 Predicted Infection and SIR Sig. < 1 n (%)	Facilities with ≥ 1 Predicted Infection and SIR Sig. > 1 n (%)
49	74	140.6	2,359,058	0.53 (0.42, 0.66)	20	5 (25%)	0 (0%)

Health care facility-onset events include incident events collected on or after hospital day four

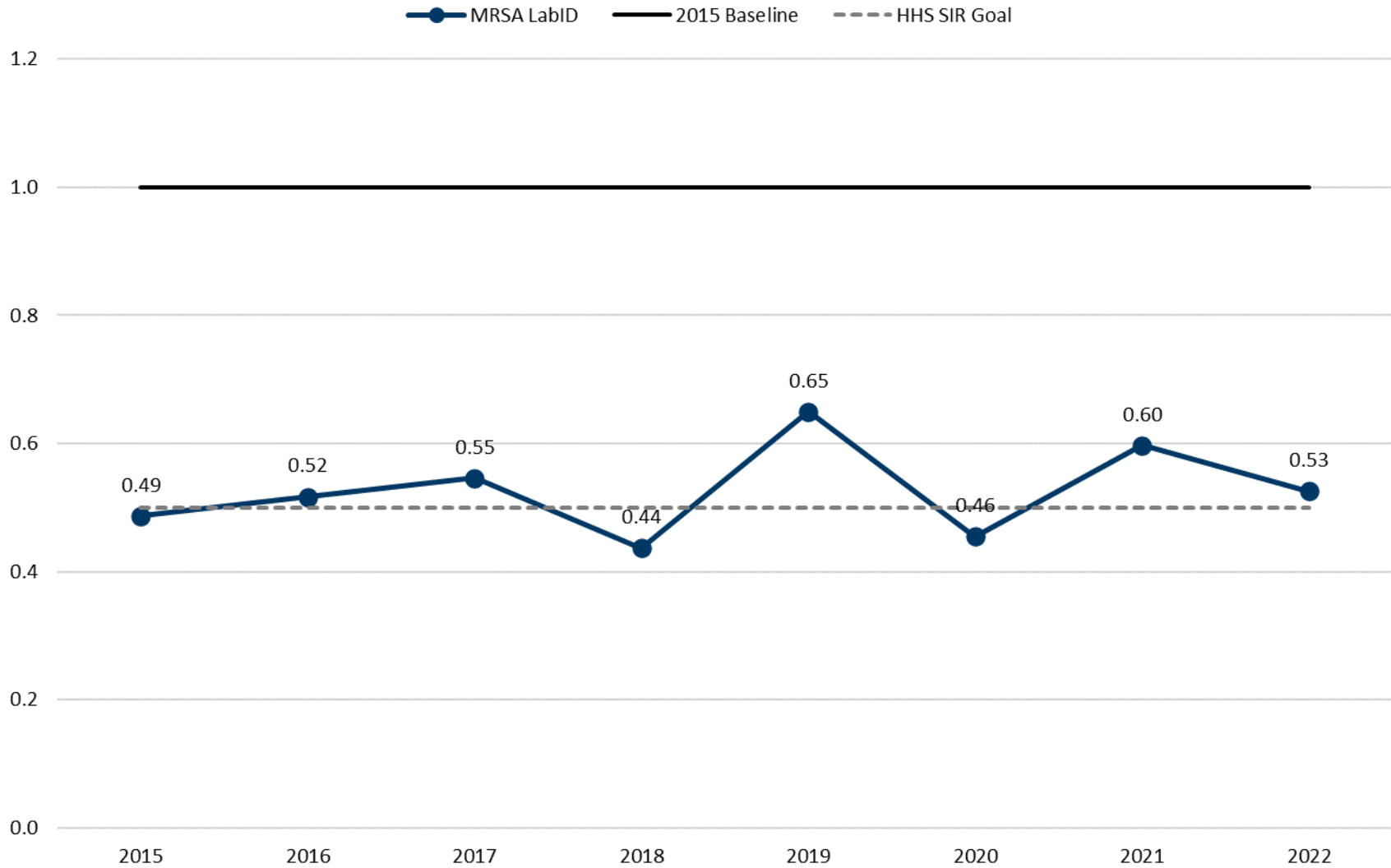
Sig. = statistically significant

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Figure 6. Health Care Facility-Onset MRSA LabID Event SIR by Year, Acute Care PPS Hospitals, 2015–2022



Data downloaded from NHSN on June 1, 2023
Health care facility-onset events include incident events collected on or after hospital day four

***Clostridioides difficile* Infection (CDI) Laboratory-Identified (LabID) Events**

Clostridioides difficile (CDI) is a type of bacteria that causes severe diarrhea and can be deadly. CDI usually occurs in people who have recently taken antibiotics and have been under medical care.

CDI LabID events rely on laboratory data only and do not require patients to be ill to have a positive result. Sometimes patients will have multiple lab tests during their treatment that are positive for CDI. The first positive test that identifies CDI is called the incident infection, which means that the patient did not have another positive test result for CDI within the last 56 days.

This report only displays incident CDI identified on or after the fourth day of hospitalization (health care facility-onset) in inpatient locations reported by Minnesota acute care PPS hospitals.

Table 10. Health Care Facility-Onset CDI Infection LabID Events, Acute Care PPS Hospitals, 2022

No. Facilities Reporting	Infection Count	Predicted Infection Count	Number of Patient Days	SIR (95% CI)	Facilities with ≥ 1 Predicted Infection	Facilities with ≥ 1 Predicted Infection and SIR Sig. < 1 n (%)	Facilities with ≥ 1 Predicted Infection and SIR Sig. > 1 n (%)
49	774	1,422.9	2,176,138	0.54 (0.51, 0.58)	47	19 (40%)	1 (2%)

Health care facility-onset events include incident events collected on or after hospital day four

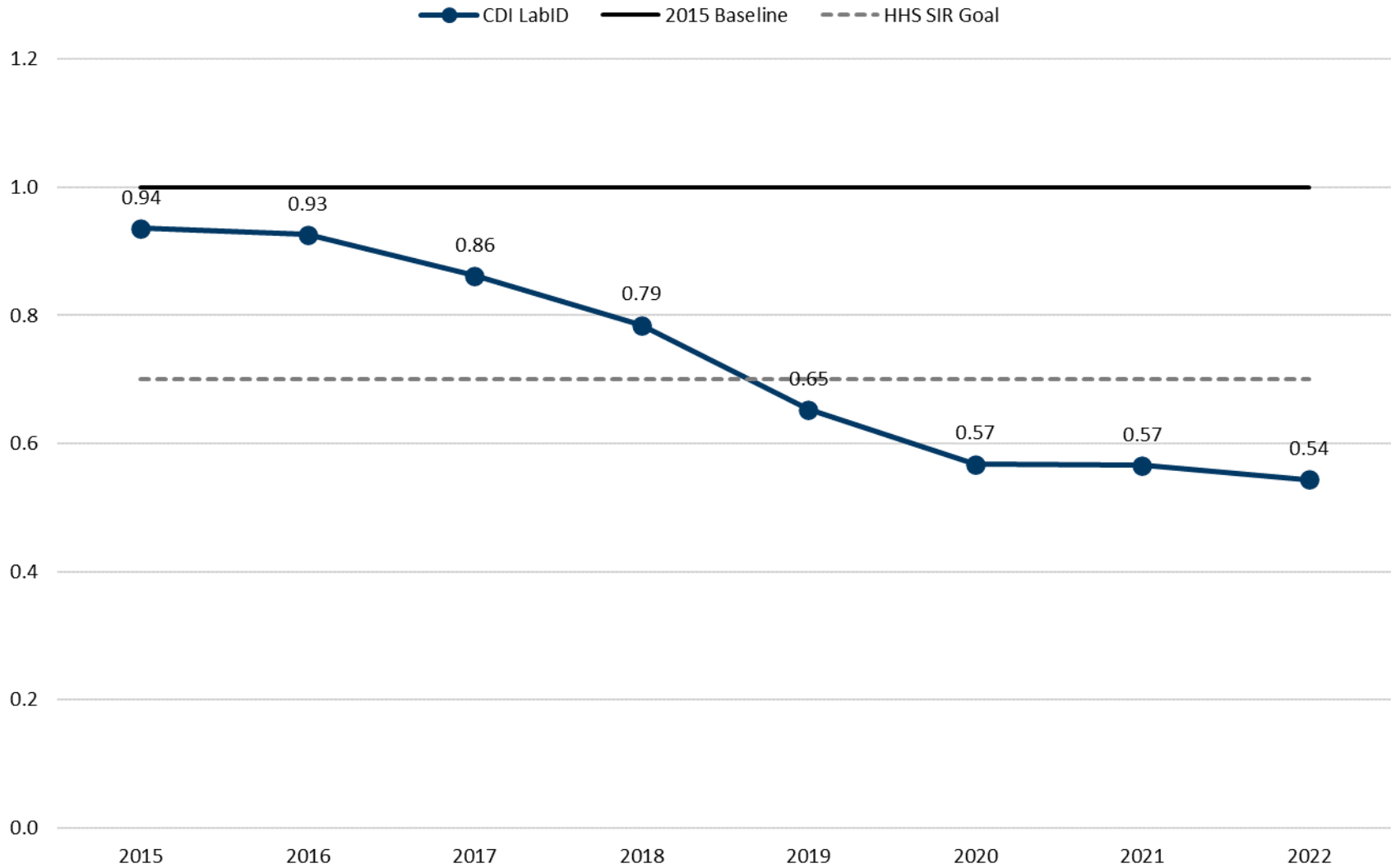
Sig. = statistically significant

Green shading indicates SIR is statistically lower than 2015 national baseline

Red shading indicates SIR is statistically higher than 2015 national baseline

Data downloaded from NHSN on June 1, 2023

Figure 7. Health Care Facility-Onset CDI LabID SIR by Year, Acute Care PPS Hospitals, 2015–2022



Data downloaded from NHSN on June 1, 2023

Health care facility-onset events include incident events collected on or after hospital day four

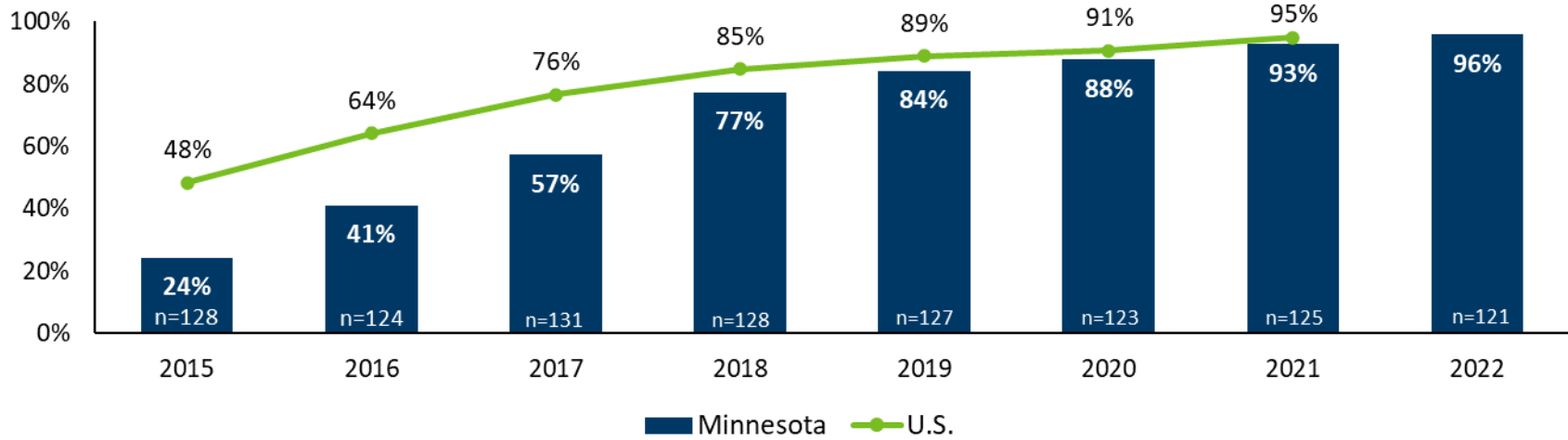
Antibiotic Stewardship Program Core Elements

Hospital antibiotic stewardship programs (ASPs) have been shown to improve prescribing and treatment practices and to reduce negative impacts of antibiotic use. In 2014, CDC recommended that all acute care hospitals implement an ASP. That same year, CDC published guidance titled, *The Core Elements of Hospital Antibiotic Stewardship Programs* (CDC, 2014). Recognizing that hospitals differ in terms of organizational structure, care provided, and available resources, the core elements are intended to provide flexible guidance to implement the most essential components of an ASP. With this guidance, CDC highlights leadership commitment and a multidisciplinary approach to antibiotic stewardship and regards an ASP that incorporates all seven core elements as a comprehensive program.

The following section details survey results from Minnesota hospitals and, where available, national results. Results from all participating acute care hospitals are included in this section, including critical access hospitals (CAH) and specialty hospitals that voluntarily report these data to NHSN. In reviewing results comparing Minnesota and U.S. hospitals, it is important to note that the proportion of Minnesota NHSN hospitals classified as CAHs is greater than the proportion of CAHs nationwide. In 2022, CAHs accounted for 58% of 121 Minnesota hospitals reporting to NHSN compared with 26% of 4,567 nationwide.

In 2022, Minnesota acute care hospitals reported significant advancement in institutional antibiotic stewardship, with 96% of all hospitals reporting implementation of all seven antibiotic stewardship program core elements. This is a 68% increase from 2017 (57%).

Figure 8. Proportion of Hospitals Meeting All Seven Antibiotic Stewardship Program Core Elements by Year and Location



(n): Number of Minnesota hospitals reporting

*2022 national data not yet available.

Figure 9. Proportion of Minnesota Hospitals Meeting Antibiotic Stewardship Program Core Elements by Year

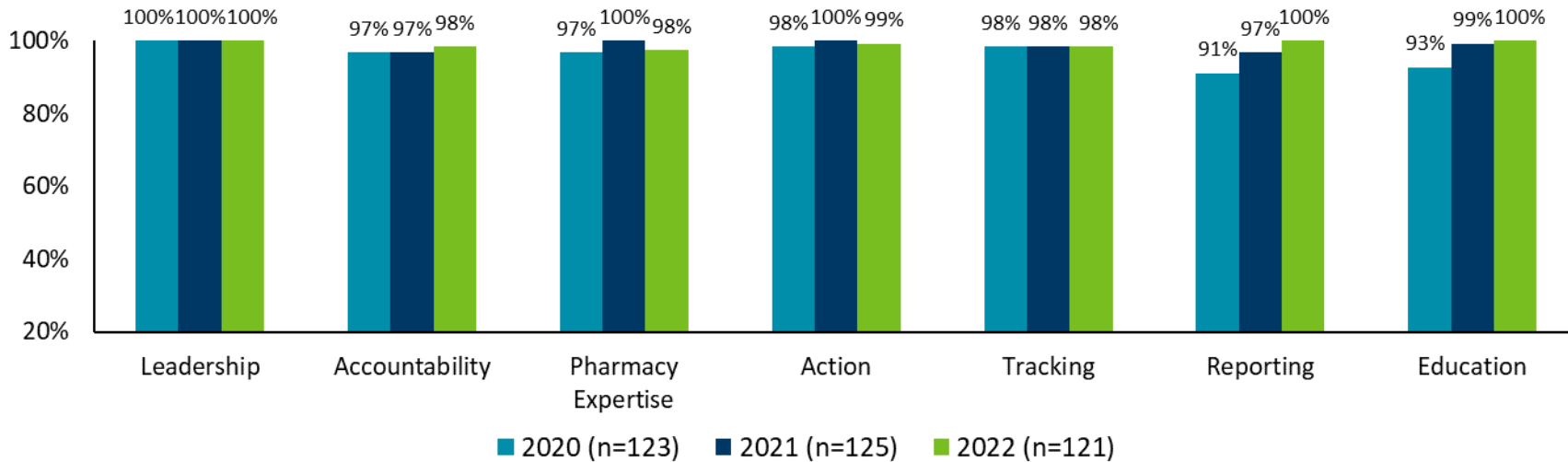


Figure 10. Proportion of Minnesota Hospitals Meeting All Seven Antibiotic Stewardship Program Core Elements by Year and Hospital Type

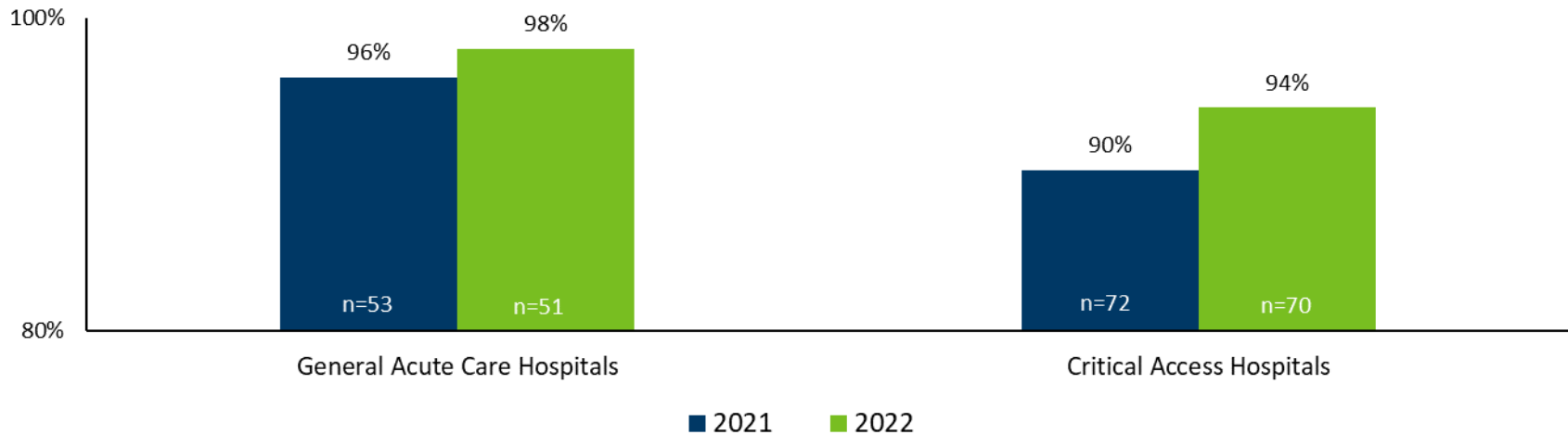


Figure 11. Proportion of Minnesota Hospitals Meeting All Seven Antibiotic Stewardship Program Core Elements by Year and Teaching Status

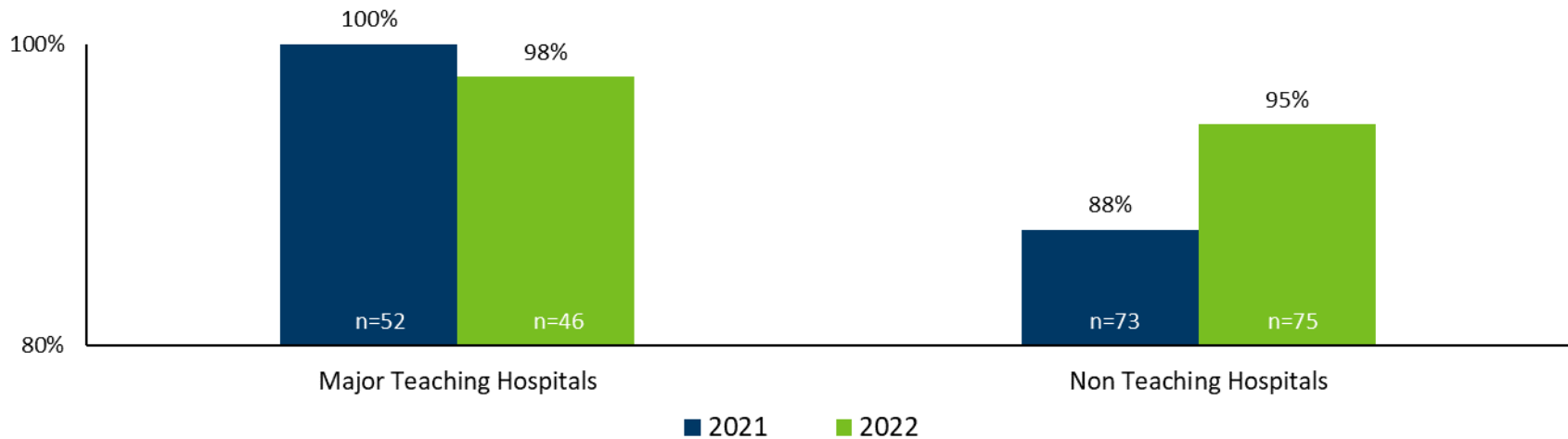
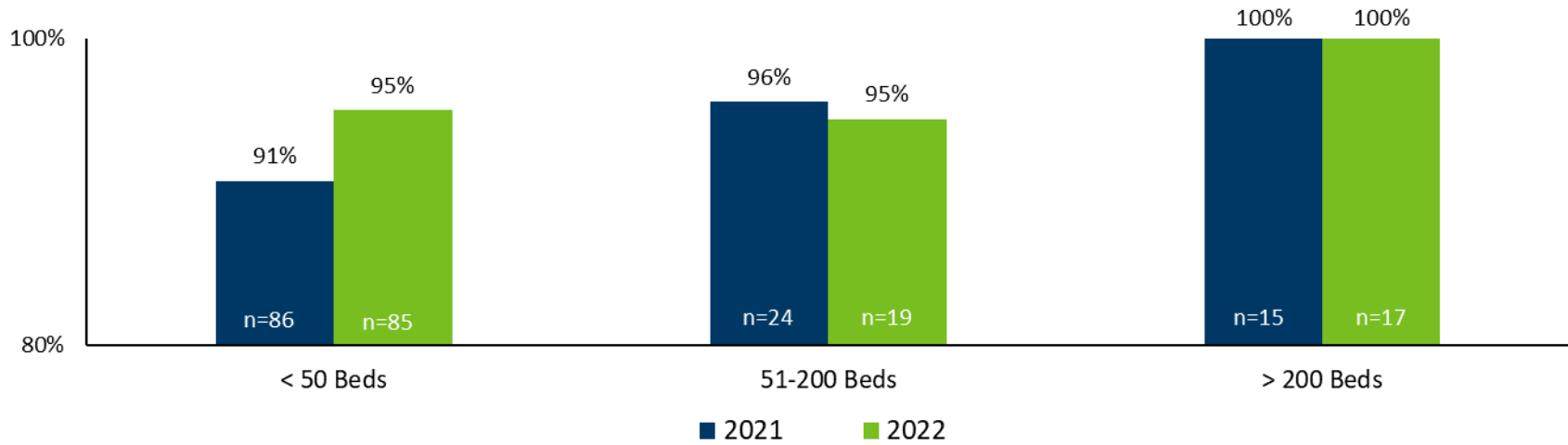


Figure 12. Proportion of Minnesota Hospitals Meeting All Seven Antibiotic Stewardship Program Core Elements by Year and Hospital Bed Number



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