

# 2020

## Annual Report



# Healthcare Associated Infections in Utah



Utah Department of Health  
Division of Disease Control and Prevention  
Bureau of Epidemiology

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# Acknowledgements

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# Foreword

Healthcare-associated infections (HAIs) are a major, yet often preventable, threat to patient safety. The Utah Department of Health (UDOH) Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) Program helps Utah patients receive the best and safest care. Implementation of statewide HAI prevention efforts is an essential part of a comprehensive patient safety program. Publicly released HAI data is an important step in transparency creation for healthcare safety and quality in Utah.

Patients have a right to feel safe and assured that public health is working to eliminate preventable infections. We would like to thank all the healthcare professionals and facilities in Utah who work tirelessly to realize this goal. Two of the keys to elimination of HAIs are 1) the accurate collection of data to assess prevention impact, and 2) the dissemination of results to healthcare providers and consumers. Conscientious efforts in data reporting contribute toward meeting HAI prevention efforts and control needs.

This 2020 Annual Healthcare-Associated Infections Report was developed in collaboration with the Utah Healthcare Infection Prevention (UHIP) Governance Committee, a multi-disciplinary panel of state leaders in patient safety, infectious diseases, and infection control. It provides an update on previous HAI reports detailing Utah's progress toward the goal of reduction and, ultimately, elimination of HAIs.

This report will allow Utahns to compare HAIs among licensed hospitals in Utah. The data in this report are self-reported to the National Healthcare Safety Network (NHSN) by each facility required to report HAIs by the Centers for Medicare and Medicaid Services (CMS). The UDOH analyzes the data using proven statistical methods to provide comparison information.

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## Executive Summary

Healthcare-associated infections (HAIs) are infections acquired while patients are receiving treatment for another condition in a healthcare setting. The Utah Department of Health (UDOH) works with community partners to monitor and prevent these infections because they are an important threat to patient safety and are extremely costly to treat if left uncontrolled. Because of the concerns with these deadly and costly infections, Utah state regulation requires the UDOH to collect data on HAIs and report this data to the public on an annual basis. This information should be considered an overview. Validation of these data by UDOH is limited. Data also does not reflect variabilities of patient acuity experienced in different facility settings. This report contains the following data:

- All infections for which Centers for Medicare and Medicaid Services (CMS) requires facilities to report to the National Healthcare Safety Network (NHSN):
  - Central line-associated bloodstream infections (CLABSIs)
  - Catheter-associated urinary tract infections (CAUTIs)
  - Surgical site infections (SSIs)—exclusive to colon surgeries and abdominal hysterectomy surgeries
  - *Clostridioides difficile* (*C. difficile*) infections
  - Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia infections
  - Dialysis infection events
- Identified facilities, as required by the Utah Health Code, Title 26, Chapter 6, Section 31
- A comparison of data in acute care facilities, long-term acute care facilities, and inpatient rehabilitation facilities to national aggregate data

Numbers of HAIs reported by Utah facilities during 2020 showed some significant changes compared with the previous year's data. CAUTIs and CLABSIs more than quadrupled in number since 2019. *C. difficile* infections, however, showed significant decreases in the state of Utah. In 2019, Utah facilities reported 327 facility-onset *C. difficile* infections compared with 2020 when Utah facilities reported 281 facility-onset *C. difficile* infections. Finally, 30 facilities reported no MRSA infections in 2020.

## Introduction

Many patients in healthcare settings receive treatments for medical or surgical conditions, including the use of invasive devices and procedures. Healthcare-associated infections, or HAIs, are infections people acquire while they are receiving treatment for another condition in a healthcare setting. HAIs can be acquired anywhere healthcare is delivered, including inpatient acute care hospitals, outpatient settings (e.g., ambulatory surgical centers and dialysis facilities), and long-term care facilities (e.g., nursing homes and rehabilitation centers). HAIs may be caused by any infectious agent, including bacteria, fungi, and viruses, as well as other less common pathogens. HAIs include central-line associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), surgical site infections (SSIs), methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia infections, and *Clostridioides difficile*-associated infections (CDIs).

HAIs may be caused by use of various types of invasive devices, such as a central line or urinary catheter, when patients are ill.<sup>1</sup> The longer these devices are in place, the greater the risk for infection.<sup>2</sup> CLABSIs, CAUTIs, and ventilator-associated pneumonia account for roughly two-thirds of all HAIs.<sup>3</sup> In the United States, there was a 24% increase in CLABSIs between 2019 and 2020 among acute care hospitals.<sup>4</sup>

Infections may also occur as a result of complications following a surgical procedure or when staff fail to closely follow infection control practices such as hand washing.<sup>5</sup> According to the 2020 National and State Healthcare-Associated Infections Progress Report, there was about a 9% decrease in abdominal hysterectomy SSIs and a 5% decrease in colon surgery SSIs in the United States between 2019 and 2020.<sup>4</sup>

MRSA is a bacterium that is resistant to many antibiotics and is common in healthcare facilities. In the community, most MRSA infections are skin infections. In medical facilities, MRSA may cause life-threatening bloodstream (or bacteremia) infections, pneumonia, and surgical site infections.<sup>6</sup> MRSA bacteremia infections reported by Utah acute care facilities are included in this report. Although the number of MRSA cases reported in Utah increased from 2019 to 2020, 30 (70%) facilities reported 0 cases of MRSA in 2020.

Patients who receive medical care and take antibiotics for long periods of time may be more susceptible to HAIs such as CDIs. Antibiotic use and emerging antibiotic resistance has driven the growth of CDIs and the emergence of new strains.<sup>7</sup> Half of all hospital patients with CDIs have the infection when admitted and may spread it within the facility.<sup>8</sup> These infections now rival MRSA as the most common organism to cause HAIs in the U.S.<sup>9</sup> Furthermore, one in 11 patients who have *C. difficile* die within a month of diagnosis.<sup>8</sup> There has been an 11% decrease in hospital onset CDIs in American acute care hospitals between 2019 and 2020.<sup>5</sup>

Patients who undergo dialysis or “hemodialysis” treatment (a treatment for patients with inadequate kidney function) also have an increased risk for an HAI. They are at high risk because this artificial process to get rid of waste and fluid in the body requires frequent use of catheters to access the bloodstream. Hemodialysis patients may have weakened immune systems, which increases their risk for infection.<sup>10</sup>

HAIs cost the U.S. healthcare system \$28.4 billion per year and account for an additional \$12.4 billion in costs to society from the loss of tens of thousands of lives and loss of productivity.<sup>11</sup> In addition, HAIs can have devastating emotional, financial, and medical consequences for the person affected.<sup>2</sup> Each day, approximately one in 31 U.S. patients has at least one infection



associated with his or her hospital care, which underscores the need for improvements in infection prevention practices in U.S. healthcare facilities.<sup>12</sup>

These impacts were particularly evident during the COVID-19 pandemic. Not only were there challenges in the healthcare response to rising hospitalization rates, there were also documented shortages in healthcare personnel, which led to decreased HAI prevention and surveillance by facilities.<sup>13</sup> Based on the COVID-19 Impact Paper 2020, acute care hospitals (ACHs) reported increases in CLABSI, CAUTI, and MRSA bacteremia when compared with 2019 data.<sup>14</sup> The same trend was demonstrated for CLABSIs and MRSA bacteremia in Utah. However, Utah does report a decrease in the number of SSIs, *C. difficile* infections, and dialysis infection events when compared with 2019 data.

These findings stress the importance of action at every level of public health and healthcare to eliminate infections that commonly threaten hospital patients, especially during times of emergent crises.<sup>2,12</sup>

## How are Utah HAI data collected?

Identification of HAIs requires an organized approach involving several different types of activity. It is important to determine whether infections are healthcare-associated or already present upon facility admission. Due to the concerns about deadly and costly HAIs, state regulation ([Rule 386-705, Epidemiology, Healthcare-Associated Infection](#)) requires the UDOH to collect and report data on HAIs.

Since 2008, acute care hospitals with intensive care units have submitted data directly to the UDOH for the annual HAI report. However, reporting facilities were not identified by name. In 2011, the CMS required acute healthcare facilities to report specific HAI data to the National Healthcare Safety Network (NHSN) for payment reimbursement.<sup>14</sup> In 2012, [Utah Health Code Title 26, Chapter 6, Section 31, Public Reporting of Healthcare Associated Infections](#), was passed which requires the UDOH to: a) access and analyze facility-specific NHSN data required by CMS; b) publish an annual HAI report for the public in which facilities are identified by name; and c) conduct validation activities.

Facilities in Utah submit data about specific healthcare-associated infections (HAIs) to the NHSN, a secure, online tracking system used by hospitals and other healthcare facilities. The Utah data are reported to NHSN by each facility that is required to report HAIs to CMS. More than 17,000 hospitals and other healthcare facilities nationwide report data to NHSN. This information is then used to summarize HAI data at the national level and for care improvement by facilities, states, regions, quality groups, and national public health agencies, including CDC.

For an HAI to be publicly reported in Utah under Title 26, Chapter 6, Section 31, an HAI must meet CMS's specific reporting measures required for reporting to NHSN. The UDOH works with NHSN and other partners to monitor and prevent these infections as they are a significant threat to patient safety.

## Interpreting HAI data






### What does the standardized infection ratio (SIR) mean?

The SIR is the ratio of the observed number of infections (events) to the number of predicted infections (events) for a summarized time period.

**National baseline:** *Aggregated* data reported to the National Healthcare Safety Network (NHSN) by all facilities during a baseline period is used to “predict” the number of infections expected to occur in a hospital, state, or in the country. In the 2020 National and State Healthcare-Associated Infections Progress Report, the number of predicted infections is an estimate adjusted for each facility through the use of variables known to be significant predictors of HAIs, such as the number of community-onset infections or the number of annual patient-days. Incidence was also analyzed for each quarter in 2019 and compared to 2020, with appropriate risk adjustments made for the respective HAI, to assess the impact of COVID-19 on HAIs. Due to the high number of hospitalizations in 2020, the predicted number of infections was significantly higher than that of previous years for most HAIs.

<b>SIR Value</b>	<b>Interpretation</b>
<b>Less than 1</b>	There were fewer infections observed than predicted, based on the national aggregate data.
<b>Equal to 1</b>	There were about the same number of infections observed as predicted, based on the national aggregate data.
<b>More than 1</b>	There were more infections observed than predicted, based on the national aggregate data.

To enforce a minimum precision criterion, SIRs are only calculated when the number of predicted infections is greater than 1.0. This rule was instituted by NHSN to avoid the calculation and interpretation of statistically imprecise SIRs, which typically have extreme values.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
-  Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
-  Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

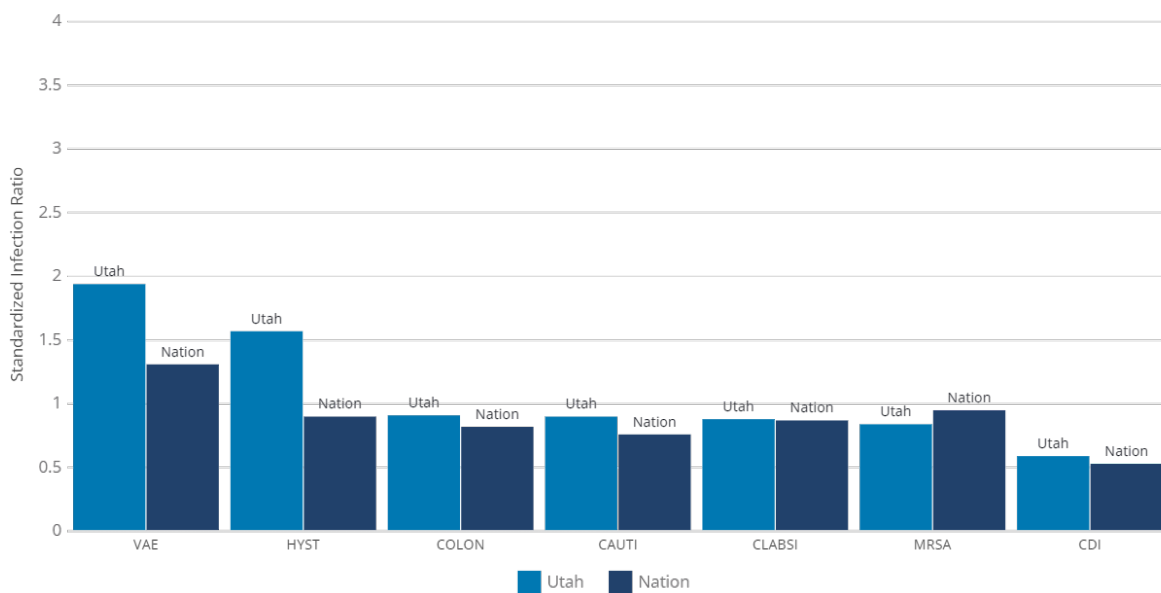
## Utah HAI summary data, 2015–2020

Yearly trends from 2015–2020: SIR of Utah facilities relative to national aggregate data. These trends reflect intensive, non-intensive, and newborn intensive care settings in acute care facilities and long-term acute care facilities.

+Source: NHSN data.

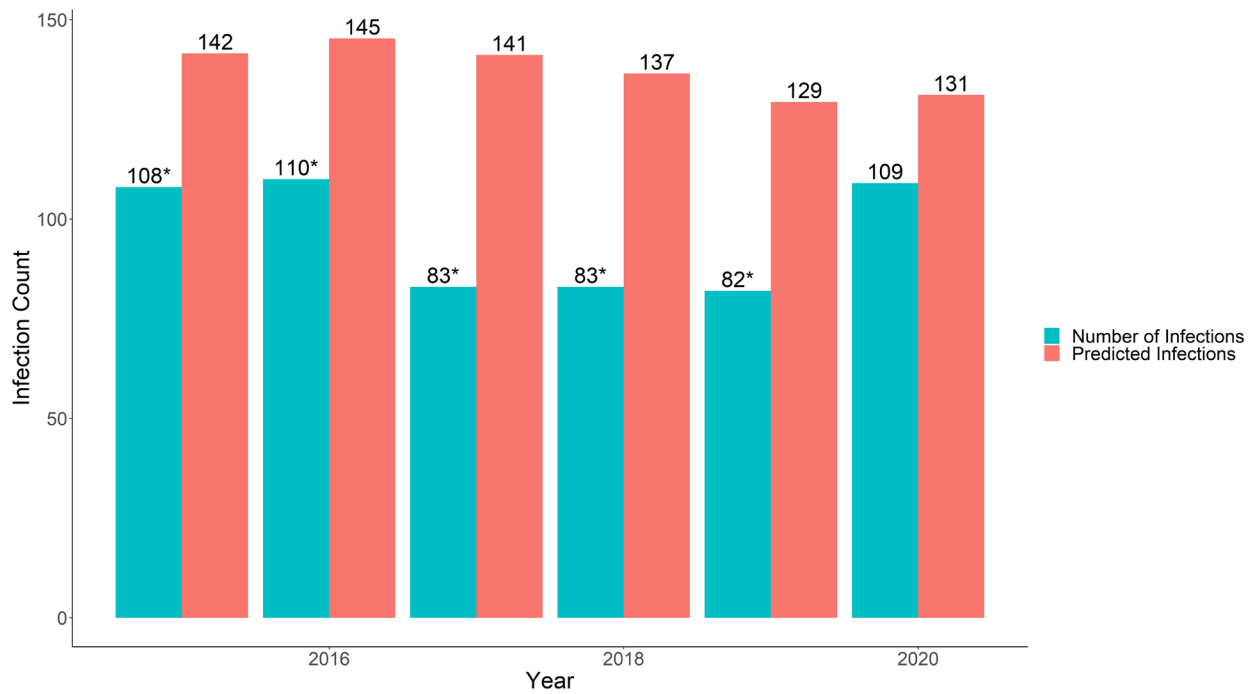
\*Denotes statistical significance of the SIR (number of infections/predicted infections) using a Poisson exact test

**Figure 1. SIR of common HAIs in Utah compared with the nation, 2020<sup>+</sup>**

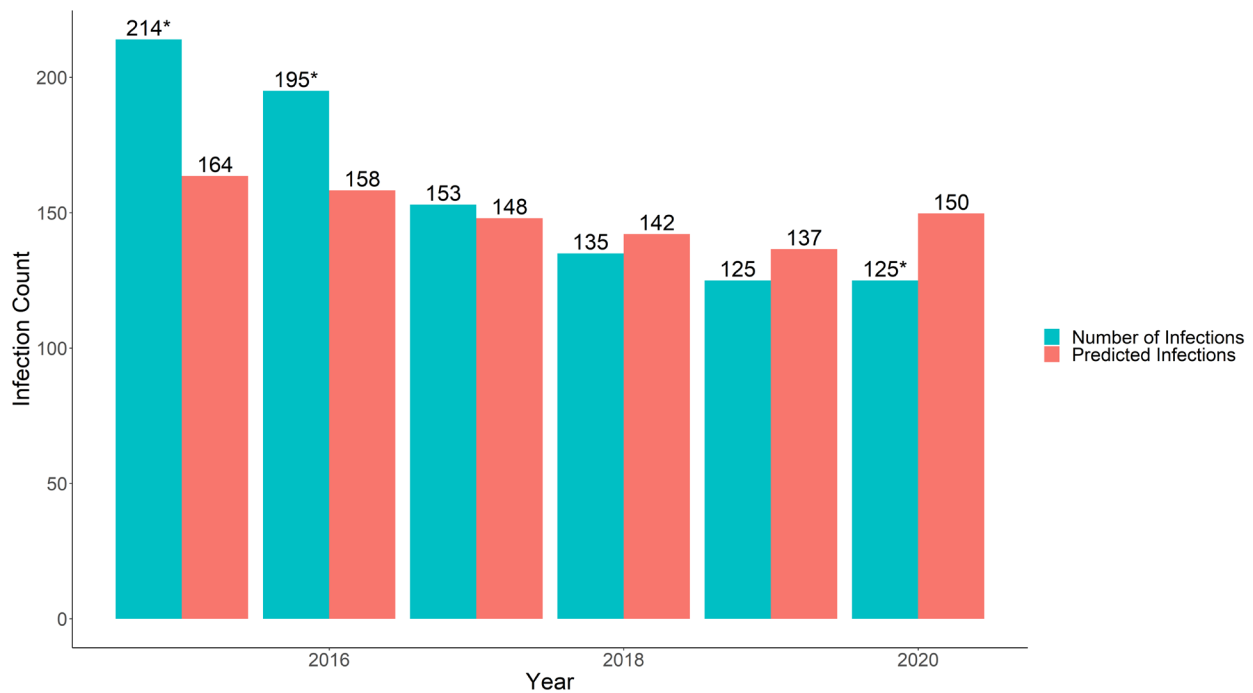


Source: Antibiotic Resistance and Patient Safety Portal.

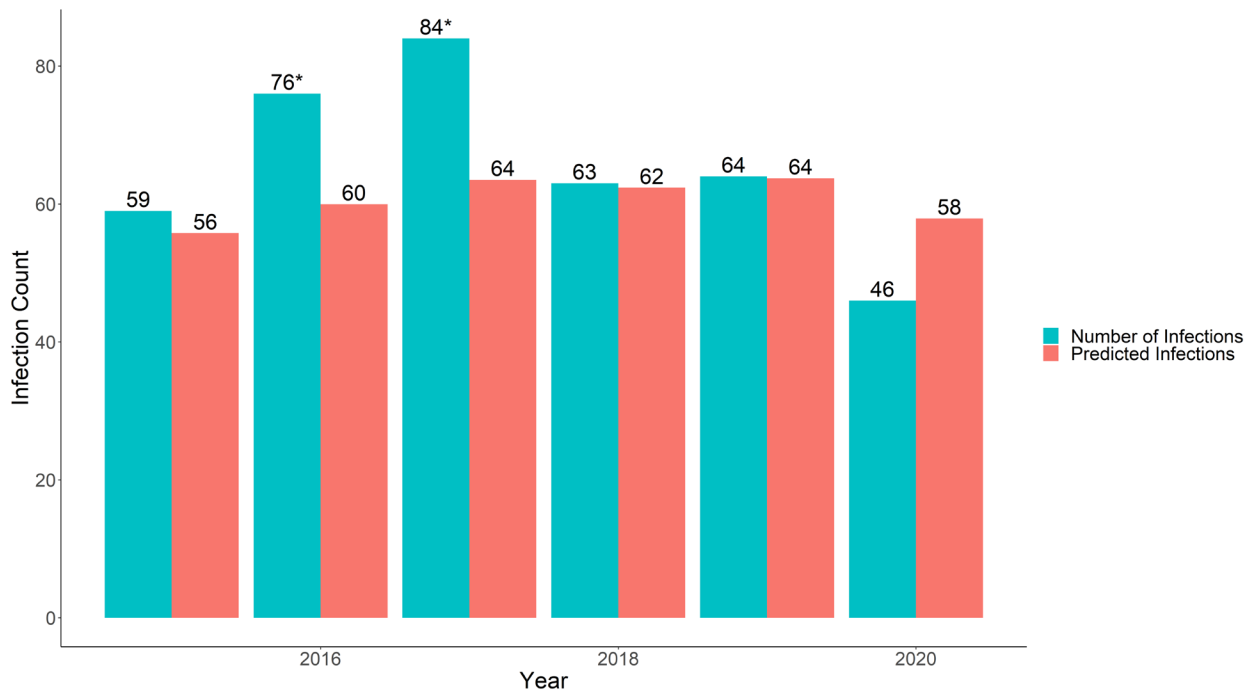
**Figure 2. Central line-associated bloodstream infections (CLABSIs), Utah, 2015–2020**



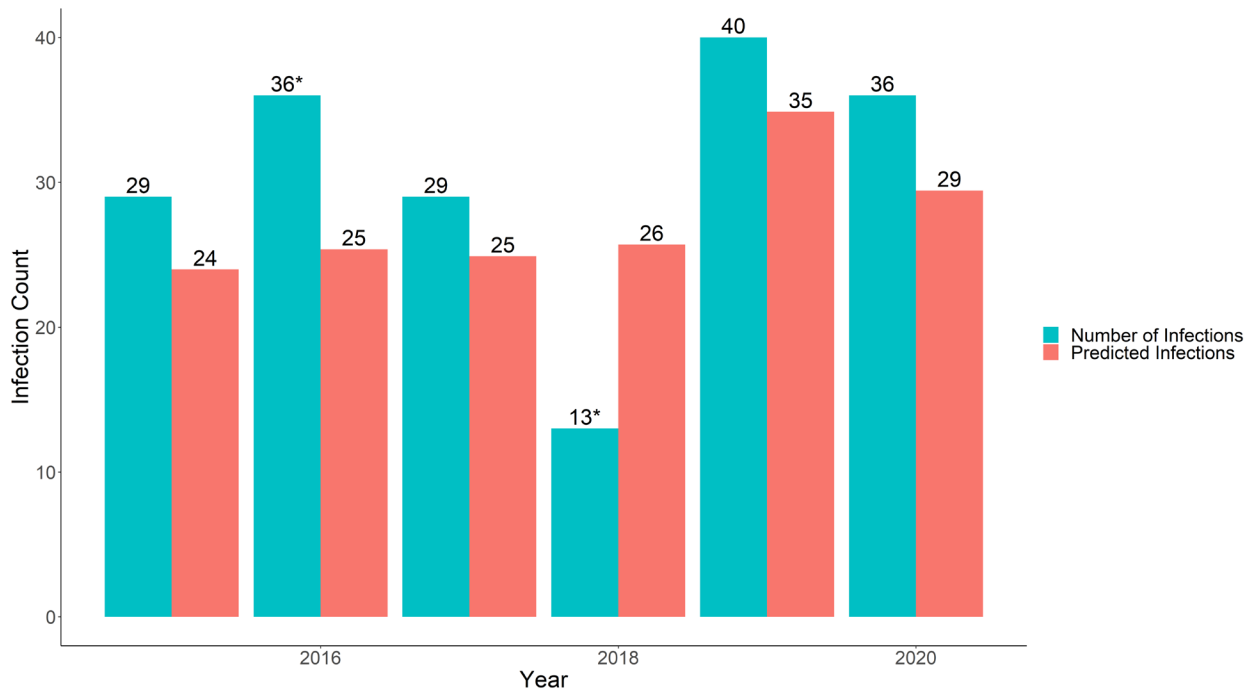
**Figure 3. Catheter-associated urinary tract infections (CAUTIs), Utah, 2015-2020**



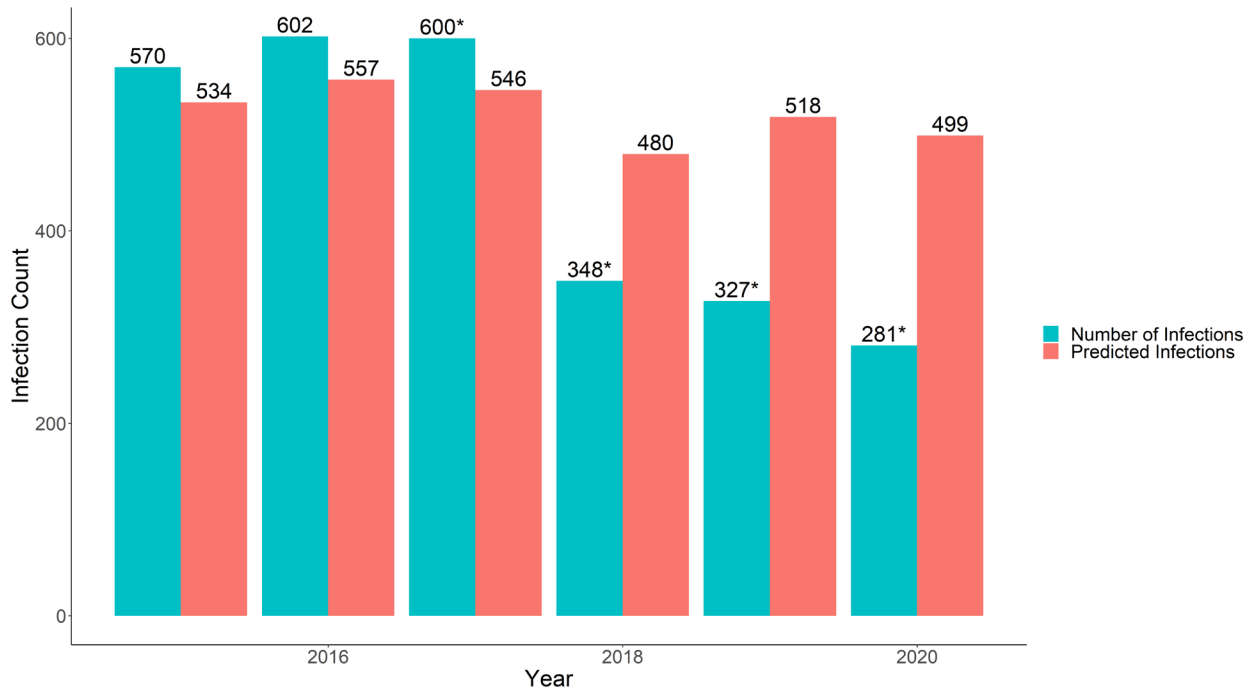
**Figure 4. Surgical site infections (SSIs) associated with colon surgeries, Utah, 2015-2020**



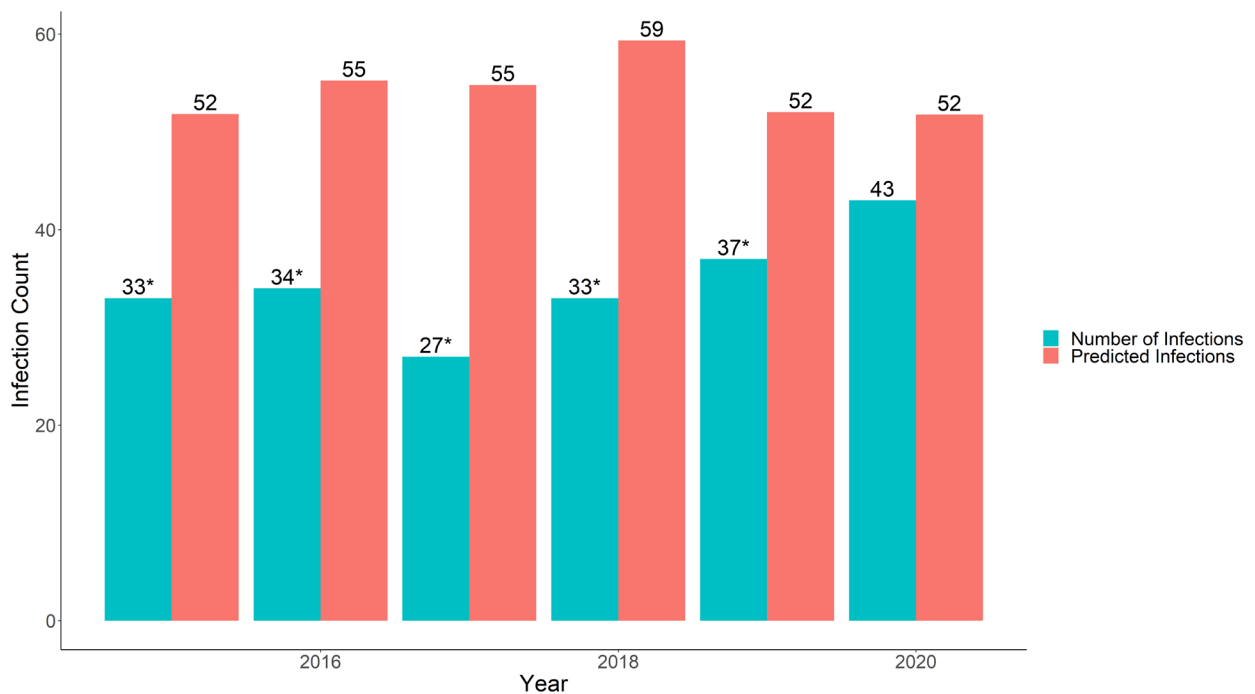
**Figure 5. Surgical site infections (SSIs) associated with abdominal hysterectomy surgeries, Utah, 2015-2020**



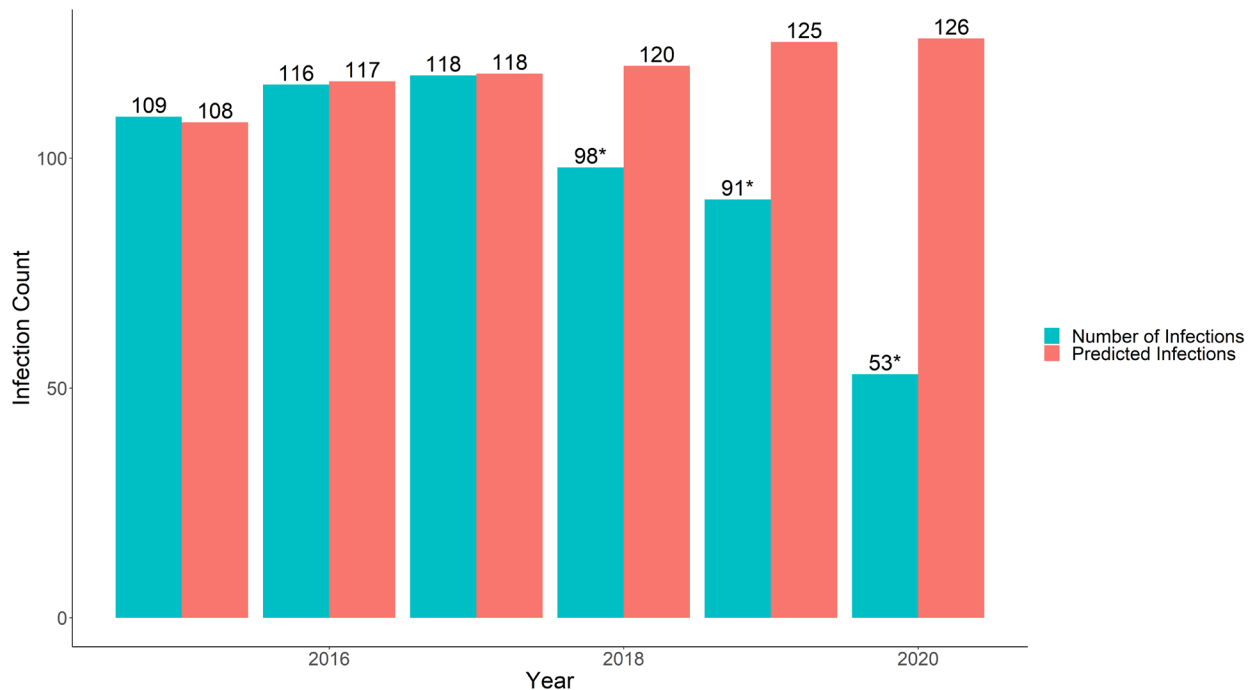
**Figure 6. *Clostridioides difficile* infections (CDIs), Utah, 2015-2020**



**Figure 7. Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia infections, Utah, 2015-2020**



**Figure 8. Dialysis infection events, Utah, 2015-2020**



## SIR summary of 2020 HAI data reported by Utah facilities compared to national aggregate data

- **Central Line-associated bloodstream infections (CLABSI)**
  - CLABSI—intensive care settings in acute care facilities
  - ▼ CLABSI—non-intensive care settings in acute care facilities
  - CLABSI—newborn intensive care settings in acute care facilities
  - CLABSI—long-term acute care facilities
- ▼ **Catheter-associated urinary tract infections (CAUTI)**
  - CAUTI—intensive care settings in acute care facilities
  - CAUTI—non-intensive care settings in acute care facilities
  - CAUTI— inpatient rehabilitation settings in acute care facilities
  - CAUTI—long-term acute care facilities
- **Surgical site infections associated with colon surgery**
- **Surgical site infections associated with abdominal hysterectomy**
- ▼ ***Clostridioides difficile* infections (facility onset)**
- **Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia infections**

## Central Line-Associated Bloodstream Infections (CLABSIs)



A **CLABSI** is a serious infection that occurs when germs (usually bacteria) enter the bloodstream through an invasive device called a **central line catheter**. A catheter is a tube placed in a large vein in the neck, chest, or groin that ends at, or close to, the heart to give medication or fluids, collect blood for medical tests, or monitor blood flow.







The risk of **CLABSI** in ICU patients is **high** due to:<sup>9</sup>

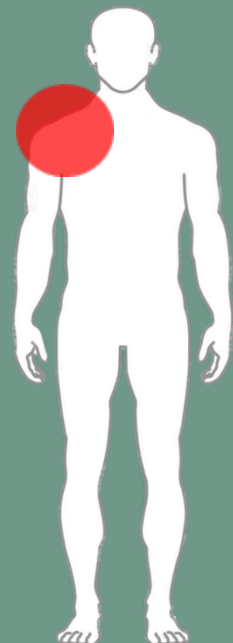
- Insertion of multiple catheters
- Use of specific catheters associated with substantial risk
- Catheters frequently placed in emergency circumstances
- Catheters accessed repeatedly each day
- Need for catheters for extended periods of time



The non-inflation adjusted cost of **CLABSIs** varies from  
**\$3,700 to \$39,000**  
per episode















### A Look at CLABSIs in Utah, 2020

- 62** adult and pediatric ICU-related CLABSIs in acute care facilities  
 The number of CLABSIs in Utah's acute care facilities was **NOT statistically different** compared with the national aggregate data
- 11** newborn ICU-related CLABSIs in acute care facilities  
 The number of CLABSIs in Utah's newborn ICUs was **NOT statistically different** compared with the national aggregate data
- 23** non-ICU-related CLABSIs in Utah acute care facilities  
 **statistically different** compared with the national aggregate data
- 13** CLABSIs in long-term acute care facilities  
 The number of CLABSIs in Utah's LTACs was **NOT statistically different** compared with the national aggregate data













**Figure 9. Central line-associated bloodstream infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>		<b>State of Utah</b>	
Alta View Hospital	*	McKay Dee Hospital	
American Fork Hospital	*	Mountain Point Medical Center	*
Ashley Regional Medical Center	*	Mountain View Hospital	*
Castleview Hospital	*	Mountain West Medical Center	*
Cedar City Hospital	*	Ogden Regional Medical Center	
Davis Hospital and Medical Center	/	Park City Medical Center	*
Huntsman Cancer Hospital		Primary Children's Hospital	
Intermountain Medical Center		Riverton Hospital	*
Jordan Valley Medical Center	/	Salt Lake Regional Medical Center	
Jordan Valley Medical Center West Valley Campus	*	St. George Regional Medical Center	
Lakeview Hospital	*	St. Mark's Hospital	
Layton Hospital	*	Timpanogos Regional Hospital	
LDS Hospital		Uintah Basin Medical Center	*
Logan Regional Hospital	/	University of Utah Hospital	
Lone Peak Hospital	*	Utah Valley Regional Medical Center	




<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data





**Figure 10. Central line-associated bloodstream infections in newborn intensive care units in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR
<b>State of Utah</b>	
Ashley Regional Medical Center	*
Davis Hospital and Medical Center	*
Intermountain Medical Center	
Jordan Valley Medical Center	*
Logan Regional Hospital	*
McKay-Dee Hospital	/
Ogden Regional Medical Center	*
Primary Children’s Hospital	
St. George Regional Medical Center	*
St. Mark’s Hospital	*
Timpanogos Regional Hospital	*
University of Utah Hospital	
Utah Valley Regional Medical Center	






<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

**Figure 11. Central line-associated bloodstream infections in long-term acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR
<b>State of Utah</b>	
Promise Hospital	
South Davis Community Hospital	
Utah Valley Specialty Hospital	

<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
-  Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
-  Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

**Figure 12. Central-line-associated bloodstream infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>	▼	<b>State of Utah</b>	▼
Alta View Hospital	*	Logan Regional Hospital	*
American Fork Hospital	*	Lone Peak Hospital	*
Ashley Regional Medical Center	*	McKay Dee Hospital	/
Bear River Valley Hospital	*	Mountain Point Medical Center	*
Brigham City Community Hospital	*	Mountain View Hospital	*
Cache Valley Hospital	*	Mountain West Medical Center	*
Castleview Hospital	*	Ogden Regional Medical Center	/
Cedar City Hospital	*	Park City Medical Center	*
Central Valley Medical Center	*	Primary Children's Hospital	●
Davis Hospital and Medical Center	*	Riverton Hospital	*
Delta Community Medical Center	*	Salt Lake Regional Medical Center	*
Fillmore Community Medical Center	*	Sanpete Valley Hospital	*
Garfield Memorial Hospital	*	Sevier Valley Medical Center	*
Heber Valley Medical Center	*	St. George Regional Medical Center	●
Intermountain Medical Center	●	St. Mark's Hospital	●
Jordan Valley Medical Center	*	Timpanogos Regional Hospital	*
Jordan Valley Medical Center West Valley Campus	*	Uintah Basin Medical Center	*
Lakeview Hospital	*	University of Utah Hospital	●
Layton Hospital	*	Utah Valley Regional Medical Center	*
LDS Hospital	●		

<sup>+</sup>Source: NHSN data.

- ▼ Statistically **FEWER** infections than the national aggregate data
- ▲ Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
- **NOT** statistically different from the national aggregate data

## Catheter-Associated Urinary Tract Infections (CAUTIs)



A urinary tract infection (UTI) is an infection that can happen anywhere along the urinary tract, including the kidneys, ureters, urinary bladder, and the urethra. A UTI that occurs in a patient or resident with a catheter is known as a catheter-associated UTI (CAUTI).

CAUTI data in 2020 were reported by:

- Acute care facilities for all admitted to an adult, pediatric, or neonatal intensive care unit
- Inpatient rehabilitation facilities
- Long-term acute care facilities for all inpatients
- Acute care facilities for all admitted to an adult or pediatric medical, surgical or medical/surgical wards



According to the Centers for Disease Control and Prevention

**75%**

of UTIs acquired in hospitals are associated with urinary catheters

Between

**15-25%**



of patients receive a urinary catheter at some point in their stay

### A Look at CAUTIs in Utah, 2020

#### 17 ICU-related CAUTIs in acute care facilities



The number of CAUTIs in Utah's inpatient intensive care locations was **NOT statistically different** compared with the national aggregate data

#### 28 CAUTIs in inpatient non-intensive care locations in acute care facilities



The number of CAUTIs in Utah's inpatient non-intensive care locations was **NOT statistically different** compared with the national aggregate data

#### 9 CAUTIs in inpatient rehabilitation facilities (IRFs)

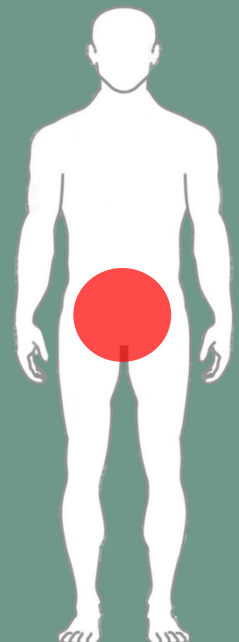


The number of CAUTIs in Utah's IRFs was **NOT statistically different** compared with the national aggregate data
















#### 17 CAUTIs in long-term acute care facilities (LTAC)






The number of CAUTIs in Utah's LTACs was **NOT statistically different** compared with the national aggregate data






**Figure 13. Catheter-associated urinary tract infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>		<b>State of Utah</b>	
Alta View Hospital	*	McKay Dee Hospital	
American Fork Hospital	*	Mountain Point Medical Center	*
Ashley Regional Medical Center	*	Mountain View Hospital	*
Castleview Hospital	*	Mountain West Medical Center	*
Cedar City Hospital	*	Ogden Regional Medical Center	
Davis Hospital and Medical Center		Park City Medical Center	/
Huntsman Cancer Hospital		Primary Children’s Hospital	
Intermountain Medical Center		Riverton Hospital	*
Jordan Valley Medical Center	*	St. George Regional Medical Center	
Jordan Valley Medical Center West Valley Campus	*	Salt Lake Regional Medical Center	
Lakeview Hospital	/	St. Mark’s Hospital	
Layton Hospital	*	Timpanogos Regional Hospital	
LDS Hospital		Uintah Basin Medical Center	*
Logan Regional Hospital	*	University of Utah Hospital	
Lone Peak Hospital	*	Utah Valley Regional Medical Center	




+Source: NHSN data

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

**Figure 14. Catheter-associated urinary tract infections in in-patient rehabilitation facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR
<b>State of Utah</b>	
Health South Rehabilitation Hospital of Utah	
Intermountain Medical Center	/
Jordan Valley Medical Center	*
McKay Dee Hospital	*
Northern Utah Rehabilitation Hospital	*
Salt Lake Regional Medical Center	*
St. George Regional Medical Center	*
St. Mark's Hospital	*
University of Utah Hospital	
Utah Valley Regional Medical Center	/

<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

**Figure 15. Catheter-associated urinary tract infections in long-term acute care facilities, Utah, 2020<sup>+</sup>**









Hospital	SIR
State of Utah	●
Promise Hospital	●
South Davis Community Hospital	●
Utah Valley Specialty Hospital	▼

<sup>+</sup>Source: NHSN data.




- ▼ Statistically **FEWER** infections than the national aggregate data
- ▲ Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
- **NOT** statistically different from the national aggregate data



**Figure 16. Catheter-associated urinary tract infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>		<b>State of Utah</b>	
Alta View Hospital	*	LDS Hospital	
American Fork Hospital	*	Logan Regional Hospital	*
Ashley Regional Medical Center	*	Lone Peak Hospital	*
Bear River Valley Hospital	*	McKay-Dee Hospital	/
Brigham City Community Hospital	*	Mountain Point Medical Center	*
Cache Valley Specialty Hospital	*	Mountain View Hospital	*
Castleview Hospital	*	Mountain West Medical Center	/
Cedar City Hospital	*	Ogden Regional Medical Center	
Central Valley Medical Center	*	Park City Medical Center	*
Davis Hospital and Medical Center	*	Primary Children's Hospital	/
Delta Community Medical Center	*	Riverton Hospital	/
Fillmore Community Medical Center	*	Salt Lake Regional Medical Center	*
Garfield Memorial Hospital	*	Sanpete Valley Hospital	*
Heber Valley Medical Center	*	Sevier Valley Medical Center	*
Intermountain Medical Center		St. George Regional Medical Center	
Jordan Valley Medical Center	*	St. Mark's Hospital	
Jordan Valley Medical Center West Valley Campus	*	Timpanogos Regional Hospital	*
Lakeview Hospital	*	Uintah Basin Medical Center	*
Layton Hospital	*	University of Utah Hospital	
		Utah Valley Regional Medical Center	*

<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

## Surgical Site Infections (SSIs)



A surgical site infection is an infection that occurs after surgery in part of the body where the surgery took place. Surgical site infections can sometimes be superficial infections involving the skin only. Other surgical site infections are more serious and can involve tissues under the skin, organs, or implanted material.



SSIs are the most common and most costly HAI in the U.S., which accounts for **31%** of all HAIs in hospitalized patients.<sup>10</sup>



**Colon surgery** is an operation performed on the large intestine. The colon (the large bowel or large intestine) is the tube-like part of the digestive tract that stores stool and pushes it out from the body. Colon surgery is performed for treatment of colon cancer, to repair colon damage, or treat disease such as diverticulitis and inflammatory bowel disease.



An **abdominal hysterectomy** is a surgical procedure in which the uterus is detached from the body through an abdominal incision. This operation is most commonly used when the uterus is enlarged, the ovaries and fallopian tubes are being removed, or when disease has spread to the pelvic cavity as in endometriosis or cancer.

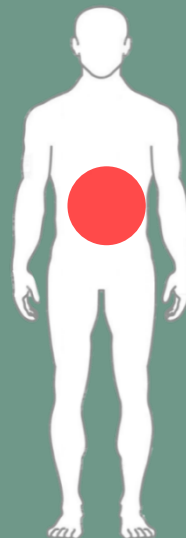
### A Look at SSIs in Utah, 2020

**46** SSIs associated with colon surgeries reported in Utah

The number of colon SSIs in Utah acute care facilities was **NOT statistically different** from the national aggregate data

**1,907** colon surgeries performed

**38** facilities met the criteria for required reporting of SSIs associated with colon surgeries















**36** SSIs associated with abdominal hysterectomy reported in Utah

The number of abdominal hysterectomy SSIs was **NOT statistically different** from the national aggregate data




**3,414** abdominal hysterectomy surgeries performed

**38** facilities met the criteria for required reporting of SSIs associated with abdominal hysterectomies













**Figure 17. Surgical site infections associated with colon surgeries in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>		<b>State of Utah</b>	
Alta View Hospital	*	Lone Peak Hospital	*
American Fork Hospital	*	McKay Dee Hospital	
Ashley Regional Medical Center	*	Mountain Point Medical Center	*
Bear River Valley Hospital	*	Mountain View Hospital	*
Brigham City Community Hospital	*	Mountain West Medical Center	*
Cache Valley Specialty Hospital	*	Ogden Regional Medical Center	
Castleview Hospital	*	Orem Community Hospital	*
Central Valley Medical Center	*	Park City Medical Center	/
Cedar City Hospital	*	Primary Children's Hospital	*
Davis Hospital and Medical Center	/	Riverton Hospital	*
Heber Valley Medical Center	*	Salt Lake Regional Medical Center	*
Huntsman Cancer Hospital		San Juan Hospital	*
Intermountain Medical Center		Sanpete Valley Hospital	*
Jordan Valley Medical Center	/	Sevier Valley Medical Center	*
Jordan Valley Medical Center West Valley Campus	/	St. George Regional Medical Center	
Lakeview Hospital	*	St. Mark's Hospital	
Layton Hospital	*	Timpanogos Regional Hospital	/
LDS Hospital		Uintah Basin Medical Center	*
Logan Regional Hospital		University of Utah Hospital	
		Utah Valley Regional Medical Center	




<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

**Figure 18. Surgical site infections associated with abdominal hysterectomy surgeries in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>		<b>State of Utah</b>	
Alta View Hospital	/	Lone Peak Hospital	*
American Fork Hospital	*	McKay-Dee Hospital	/
Ashley Regional Medical Center	*	Mountain Point Medical Center	*
Bear River Valley Hospital	*	Mountain View Hospital	*
Brigham City Community Hospital	*	Mountain West Medical Center	*
Cache Valley Hospital	*	Ogden Regional Medical Center	/
Castleview Hospital	*	Orem Community Hospital	*
Central Valley Medical Center	*	Park City Medical Center	/
Cedar City Hospital	*	Primary Children's Hospital	*
Davis Hospital and Medical Center		Riverton Hospital	
Heber Valley Medical Center	*	Salt Lake Regional Medical Center	*
Huntsman Cancer Hospital		San Juan Hospital	*
Intermountain Medical Center		Sanpete Valley Hospital	*
Jordan Valley Medical Center	*	Sevier Valley Medical Center	*
Jordan Valley Medical Center West Valley Campus	*	St. Mark's Hospital	
Lakeview Hospital	*	St. George Regional Medical Center	
Layton Hospital	/	Timpanogos Regional Hospital	
LDS Hospital		Uintah Basin Medical Center	*
Logan Regional Hospital		University of Utah Hospital	/
		Utah Valley Regional Medical Center	

<sup>+</sup>Source: NHSN data.

-  Statistically **FEWER** infections than the national aggregate data
-  Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
-  **NOT** statistically different from the national aggregate data

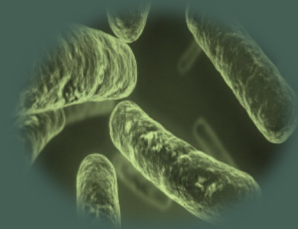
## *Clostridioides difficile* Infections (CDIs)



Most cases of *C. difficile* infections occur in patients who take antibiotics. The elderly and people with certain medical problems have the greatest chance of acquiring *C. difficile*. *C. difficile* can live outside the human body for a very long time and may be found on things in the environment such as bed linens, bed rails, bathroom fixtures, and medical equipment. *C. difficile* infections can spread from person-to-person on contaminated equipment and on the hands of doctors, nurses, other healthcare providers, and visitors.



*C. difficile* causes at least  
**250,000**  
hospitalizations and  
**15,000**  
deaths every year.<sup>7</sup>



The Centers for Disease Control and Prevention has classified *C. difficile* as an **urgent drug-related threat** to patients in the U.S.



### A look at *C. difficile* in Utah, 2020

**281** hospital-onset *C. difficile* infections were reported in acute care facilities

▼ **44% fewer** *C. difficile* infections in Utah healthcare facilities compared with the national aggregate data

**49** facilities met the criteria for reporting *C. difficile* infections

**11** of Utah's facilities had **significantly fewer** infections compared with the national aggregate data

**0** of Utah's facilities had **significantly more** infections compared with the national aggregate data



**Figure 19. *C. difficile* infections in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>	▼	<b>State of Utah</b>	▼
Alta View Hospital	●	Mountain Point Medical Center	●
American Fork Hospital	▼	Mountain View Hospital	▼
Ashley Regional Medical Center	●	Mountain West Medical Center	*
Bear River Valley Hospital	*	Northern Utah Rehabilitation Hospital	●
Brigham City Community Hospital	/	Ogden Regional Medical Center	●
Cache Valley Specialty Hospital	*	Orem Community Hospital	*
Castleview Hospital	●	Park City Medical Center	●
Central Valley Medical Center	*	Primary Children's Hospital	●
Cedar City Hospital	●	Promise Hospital of Salt Lake	●
Davis Hospital and Medical Center	●	Riverton Hospital	●
Delta Community Medical Center	*	Salt Lake Regional Medical Center	●
Fillmore Community Medical Center	*	San Juan Hospital	/
Garfield Memorial Hospital	/	Sanpete Valley Hospital	*
Health South Rehabilitation Hospital of Utah	●	Sevier Valley Hospital	*
Heber Valley Medical Center	*	Shriners Hospitals for Children	*
Huntsman Cancer Hospital	▼	South Davis Community Hospital	▼
Intermountain Medical Center	▼	St. George Regional Medical Center	▼
Jordan Valley Medical Center	●	St. Mark's Hospital	▼
Jordan Valley Medical Center West Valley Campus	●	The Orthopedic Specialty Hospital	*
Lakeview Hospital	●	Timpanogos Regional Hospital	▼
Layton Hospital	●	Uintah Basin Medical Center	●
LDS Hospital	●	University of Utah Hospital	●
Logan Regional Hospital	●	Utah Valley Regional Medical Center	▼
Lone Peak Hospital	●	Utah Valley Specialty Hospital	▼
McKay Dee Hospital	▼		

<sup>+</sup>Source: NHSN data.

 ▼ Statistically **FEWER** infections than the national aggregate data

 ▲ Statistically **MORE** infections than the national aggregate data

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020

 \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020

 ● **NOT** statistically different from the national aggregate data

## Methicillin-resistant *Staphylococcal aureus* (MRSA) Bacteremia Infections



**MRSA** is usually spread by direct contact with an infected wound or from contaminated hands, usually those of healthcare providers. Bacteremia occurs when bacteria enter the bloodstream.

This may occur through a wound or infection, or through a surgical procedure or injection. Bacteremia may cause no symptoms and resolve without treatment, or it may produce fever and other symptoms of infection. In some cases, bacteremia leads to septic shock, a potentially life-threatening condition.



Some studies that compare patients with methicillin-sensitive *Staphylococcus aureus* (MSSA) bacteremia to those with MRSA bacteremia have reported nearly twice the mortality rate, significantly longer hospital stays, and significantly higher median hospital costs for MRSA.<sup>11</sup>

The Centers for Disease Control and Prevention has classified MRSA as an **urgent drug-related threat** to patients in the U.S.



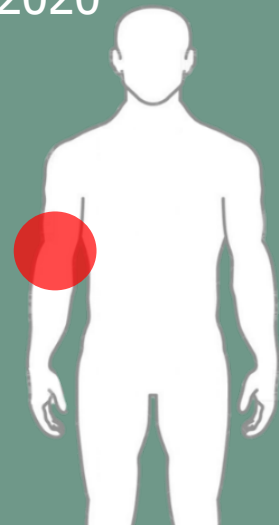
## A Look at MRSA Bacteremia in Utah, 2020

**43** MRSA bacteremia infections were reported

The number of MRSA bacteremia infections in Utah acute care facilities was **not statistically different** compared with the national aggregate data

**43** facilities met the criteria for required MRSA bacteremia infections

**30** facilities had **ZERO infections** in 2020



**Figure 20. Methicillin-resistant *Staphylococcus aureus* bacteremia in acute care facilities, Utah, 2020<sup>+</sup>**

Hospital	SIR	Hospital	SIR
<b>State of Utah</b>	●	<b>State of Utah</b>	▼
Alta View Hospital	*	Lone Peak Hospital	*
American Fork Hospital	*	McKay Dee Hospital	●
Ashley Regional Medical Center	*	Mountain Point Medical Center	*
Bear River Valley Hospital	*	Mountain View Hospital	*
Brigham City Community Hospital	*	Mountain West Medical Center	*
Cache Valley Specialty Hospital	*	Ogden Regional Medical Center	●
Castleview Hospital	/	Orem Community Hospital	*
Central Valley Medical Center	*	Park City Medical Center	*
Cedar City Hospital	*	Primary Children's Hospital	●
Davis Hospital and Medical Center	/	Riverton Hospital	*
Delta Community Medical Center	*	Salt Lake Regional Medical Center	/
Fillmore Community Medical Center	*	San Juan Hospital	*
Garfield Memorial Hospital	*	Sanpete Valley Hospital	*
Heber Valley Medical Center	*	Sevier Valley Hospital	*
Huntsman Cancer Hospital	●	St. George Regional Medical Center	●
Intermountain Medical Center	●	St. Mark's Hospital	●
Jordan Valley Medical Center	/	The Orthopedic Specialty Hospital	*
Jordan Valley Medical Center West Valley Campus	*	Timpanogos Regional Hospital	*
Lakeview Hospital	*	Uintah Basin Medical Center	*
LDS Hospital	●	University of Utah Hospital	●
Layton Hospital	*	Utah Valley Regional Medical Center	●
Logan Regional Hospital	*		

<sup>+</sup>Source: NHSN data.

- ▼ Statistically **FEWER** infections than the national aggregate data
- ▲ Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
- **NOT** statistically different from the national aggregate data



## Dialysis Infection Events



The kidneys perform several critical functions:

- Clean blood
- Remove excess fluid from the body
- Produce hormones needed for important bodily functions

When the kidneys are unable to perform these functions, they can fail, which results in the need for hemodialysis.



Hemodialysis is the process of filtering the waste products collected in the blood. Bloodstream and other types of infections are a leading cause of death among hemodialysis patients, second only to vascular disease.

Dialysis facilities are required to report:

Number of patients who required initiation of intravenous antimicrobial therapy

Number of patients with laboratory results indicating infection in their bloodstream

Number of patients with signs and symptoms of vascular access infections (redness, swelling, and/or pus)

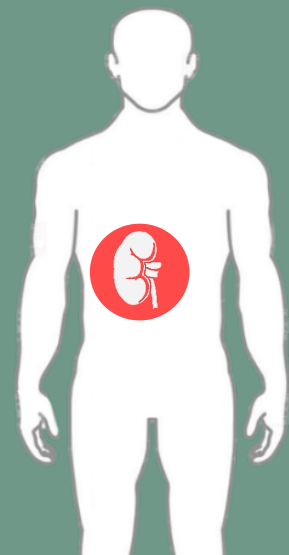
## A Look at Dialysis Infections in Utah, 2020

**53** dialysis infection events were reported

**▼ 58% fewer** compared with the national aggregate data

**37** facilities met the criteria for required reporting of dialysis infection events

**10** of Utah's facilities had **significantly fewer** infections compared with the national aggregate data



**Figure 21. Dialysis event bloodstream infections, Utah, 2020<sup>+</sup>**

Facility	SIR	Facility	SIR
<b>State of Utah</b>	▼	<b>State of Utah</b>	▼
American Fork Dialysis Center	●	Payson Regional Dialysis	●
Blue Mountain Hospital Dialysis Center	●	Pleasant View Dialysis Center	●
Bonneville Dialysis Center	●	Primary Children’s Dialysis Center	●
University of Utah Castleview Dialysis	●	Provo Dialysis	●
Desert Valley Dialysis Clinic	▼	Sevier Valley Dialysis	●
Farmington Bay Dialysis Center	●	South Mountain Dialysis	▼
Hurricane Dialysis	●	South Valley Dialysis Center	▼
Intermountain Medical Center Dialysis Center	▼	Tooele Valley Dialysis	●
Iron Mission Dialysis Center	●	UBMC Dialysis Roosevelt	▼
Kolff Dialysis Center	▼	Uintah Basin Medical Center Dialysis Vernal	●
Lakeside Dialysis Center	▼	University of Utah Dialysis Program St. George Dialysis	●
Liberty Dialysis Layton	●	Utah Dialysis Center	●
Liberty Dialysis St. George	●	Utah Valley Dialysis Center	●
Liberty Dialysis West Jordan	●	Wasatch Artificial Kidney Center	●
Logan Regional Dialysis Center	▼	Weber Valley Dialysis	●
Lone Peak Dialysis	●	West Bountiful Dialysis	*
Mark Lindsay Dialysis Center	●	West Valley Dialysis Clinic	▼
Ogden / Weber Dialysis Center	●	Woods Cross Dialysis	●
Oquirrh Artificial Kidney Center	▼		

<sup>+</sup>Source: NHSN data.

- ▼ Statistically **FEWER** infections than the national aggregate data
- ▲ Statistically **MORE** infections than the national aggregate data
- / Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020
- \* Predicted to have less than one infection for the year, and had **ZERO** infections, as defined by NHSN, in 2020
- **NOT** statistically different from the national aggregate data

# Data Quality Validation

## Background

The UDOH is required under Utah Title 26-6-31, Public Reporting of Healthcare-Associated Infections, to validate data reported to NHSN. Guidance from the CDC helped guide the selection of infection types for validation of 2020 NHSN data. This guidance included the use of results of targeted assessment for prevention (TAP) reports to prioritize activities, an increased focus on antimicrobial resistance, and a change in focus of prevention efforts to target networks among healthcare facilities, not specific facility types. This information led UDOH to perform validation of CLABSIs and SSI events.

The focus of these validation activities was to determine how NHSN CLABSI and SSI event surveillance definitions were interpreted and applied to data collection. The validations were performed by the UDOH Healthcare-Associated Infections and Antimicrobial Resistance Program at 15 healthcare facilities throughout the state. Facilities were chosen based on an NHSN targeted selection process from the NHSN External Validation Guidance and Toolkit for 2020. The facility selection process prioritized validation of facilities where HAIs were most expected. This method compared facilities' SIR and cumulative attributable difference (CAD) scores to help identify those facilities with high risk of HAIs, and also those facilities whose scores showed they were performing well in their practices to prevent infection.

Validation activities are intended to compare reported information in NHSN with UDOH audit findings and outcomes to enhance accuracy and completeness of CLABSI and SSI reporting. A standardized validation method, as guided by NHSN, was chosen to serve as a test of proficiency in surveillance methods and accuracy in case findings. It should also be noted that results from these 15 facilities may not be generalized to all facilities in the state. Also, because the audit sample was targeted and unweighted, aggregate findings are not necessarily indicative of NHSN data quality throughout the state.

## Procedure

An on-site medical record audit was conducted at the chosen healthcare facilities. Each visit started with an interview of at least one member of the infection prevention staff to learn about surveillance methodology, data collection, and personnel training and education on applications of NHSN criteria. CDC TAP Facility Assessment Tools for CLABSIs were also utilized at each facility to determine current prevention practices and make recommendations based upon the responses. In each facility, up to 30 charts were reviewed, including charts of patients identified by the facility as having a CLABSI event and charts of patients who had a positive blood culture but were not identified as having a CLABSI, to determine if any reportable infections were missed. Additionally, up to 30 charts of patients with potential for an SSI were reviewed. Results of the validation findings were reviewed with the facility to provide immediate onsite education to improve HAI surveillance and reporting. Facilities were expected to correct data in NHSN based on validation findings.

## Validation Key Findings

### UDOH Auditors Reviewed

**377** blood cultures

Auditors used CLABSI and SSI event criteria from the 2020 NSHN Patient Safety Component Manual

#### CLABSI

##### Acute Care Hospitals

- 32** CLABSIs identified by auditors
- 32** CLABSIs reported by healthcare facilities
- ZERO** CLABSIs were reported by facilities that did not meet the NSHN criteria
- ZERO** additional CLABSIs were identified by auditors

##### Dialysis Facilities

- 75** Records Reviewed
- 7** CLABSIs did not meet NSHN definitions



#### SSI

- 14** SSIs identified by auditors
- 16** SSIs reported by healthcare facilities
- 2** additional SSIs did not meet criteria for reporting



### Prevention and Success Stories from Validation Facilities

- All facilities collected central-line days data according to NSHN guidance
- Facilities take multidisciplinary team approaches to prevention activities
- Facilities work to incorporate prevention activities into daily patient care
- Infection preventionists serve as key members of their antimicrobial stewardship teams
- 88% of facilities have leadership who actively promote CLABSI prevention activities

## Validation Conclusions

Validation results indicate the number of CLABSIs and SSIs are generally accurate as reported surveillance data prior to validation activities.

Infection preventionists at the validated facilities were able to correctly determine which patients met the CLABSI definition and apply the definition appropriately. When performing CLABSI validation, a central line must be present for greater than two calendar days, bacterial or fungal pathogens are present in a blood culture, and/or presence of one of the following signs or symptoms, fever, chills or hypotension. For complete CLABSI definitions, refer to <https://www.cdc.gov/nhsn/pdfs/checklists/2020/lcbl-checklist-508.pdf>.

CDC TAP Facility Assessment Tools for CLABSIs demonstrated that 88% of all facilities reported leadership who actively promoted CLABSI prevention activities. Furthermore, facilities always (76%) or often (12%) covered central line insertion sites with sterile gauze or dressing. However, there are a few concerning areas that could be targeted for improvement. For example, 12% of respondents claimed they had no nurse champions for CLABSI prevention and 41% did not know if they had one. Fifty-three percent all facilities assessed responded they always assess whether a central line is needed on a daily basis. This daily assessment should always be done and further education is needed to implement this procedure into facilities' daily workflows.

NHSN surgical site infections are not always dependent upon a positive microbiological culture; surveillance definitions also include signs and symptoms of a surgical site infection experienced by the patient. All of the validated facilities use the International Statistical Classification of Diseases and Related Health Problems (ICD) to identify colon surgical procedures. Facilities used ICD Version 10 codes. UDOH auditors found only 2 SSIs were misreported by facilities.

Validation results demonstrate the need for a robust validation program to improve accuracy in all HAI reporting. It is important to determine whether infections are healthcare-associated or already present upon facility admission in order to implement appropriate infection prevention measures. Accurate HAI data supports facilities' efforts to implement effective infection prevention strategies. The validation site visit provides an opportunity for collaboration and education. The HAI/AR Program would like to extend our appreciation to the facilities chosen for a validation visit.

## Appendix A

### Understanding CLABSI and CAUTI Standardized Infection Ratio (SIR) Data in Acute Care Facilities with Intensive Care Units

The device infection event tables depict specific device-associated infections (central line-associated bloodstream infections [CLABSI] or catheter-associated urinary tract infections [CAUTI]) reported by acute care facilities within their intensive care units.

To understand the HAI report, it is important to know what each data element in the table means. Below is an example of a fictitious hospital's data. Each column is numbered and provides an explanation of each data element and its result.

**Table A. Device infection events in acute care facilities with intensive care units, Utah, 2019**

	Number of HAI device days	Number of HAI device events	Predicted number of HAI device events	Standardized Infection Ratio	95% Confidence Interval
<b>State of Utah</b>	#	#	#	#	#
Facility A	5,817	8	13	0.62	0.26 – 1.21
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

1. Acute care facilities (hospitals) with intensive care units (ICU) are listed here by name (Facility A).
2. For each reporting facility listed, patients in ICUs with central line catheters/urinary catheters (devices) are identified every day. A device count is performed at the same time each day. Each patient with one or more central line catheters at the time the count is performed is counted as having one device day. Each patient with a urinary catheter at the time the count is performed is counted as having one device day. For example, a patient with one or more central line catheters and one urinary catheter would be counted as having one central line day and one urinary catheter day. The number of device days in this column (5,817) represents the total number of specific device days for all patients who were in Facility A's intensive care unit(s) during the year.
3. When a patient develops an HAI device-associated infection while having a device in place or within one day after removal of the device, the infection is considered a device-associated HAI if it meets the criteria set forth by NHSN. The number of HAI events in this column (8) represents the total number of specific HAIs identified in patients in Facility A's intensive care units during the year.
4. The predicted number of HAI device events is adjusted to allow facilities to be more fairly compared. Risk adjustments account for differences in facility populations and other factors

that may affect the risk of developing an HAI. A facility that uses many devices on very sick patients would be predicted to have a higher device infection rate than a facility that uses fewer devices and has healthier patients. The predicted number of HAI device events for Facility A, based on comparison to a national HAI benchmark of similar hospitals, is calculated as 13.

5. The standardized infection ratio (SIR) is a summary measure developed by NHSN to track HAIs at the national, state, local, or facility level over time. The SIR compares the *total* number of HAI device events for Facility A (8) to the *predicted* number of HAI device events (13), based on “standard population” data. For purposes of this report, the standard population is HAI data reported nationally by thousands of facilities using NHSN. The SIR for Facility A, based on comparison to a national HAI benchmark of facilities that are similar to Facility A, is calculated as 0.62. Facilities with a predicted number of HAI events less than one do not have enough device day data to reliably compare their data with the standard population. Consequently, SIRs are not provided for health care facilities with a predicted number less than one.
6. A confidence interval (CI) will be provided if an SIR was estimated for a given healthcare facility. A CI describes the uncertainty associated with the SIR estimate. Facilities with more device days will have a narrower CI, which means there is less doubt associated with the accuracy of the SIR compared to facilities with fewer device days. This is because there is more information about a facility's performance with additional device days. A 95% CI means that 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 1. Central line-associated bloodstream infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of central line days <sup>1</sup>	Number of CLABSI events <sup>2</sup>	Predicted number of CLABSI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>56,062</b>	<b>62</b>	<b>67.08</b>	<b>0.92</b>	<b>0.71 – 1.18</b>
Alta View Hospital	122	0	0.08	*	*
American Fork Hospital	400	0	0.27	*	*
Ashley Regional Medical Center	44	0	0.03	*	*
Castleview Hospital	74	0	0.05	*	*
Cedar City Hospital	196	0	0.13	*	*
Davis Hospital and Medical Center	1262	1	0.95	/	/
St George Regional Medical Center	2410	3	2.72	1.10	0.28 – 3.0
Huntsman Cancer Hospital	1765	1	1.73	0.58	0.03 – 2.85
Intermountain Medical Center	11790	8	13.30	0.60	0.28 – 1.14
Jordan Valley Medical Center	764	1	0.58	/	/
Jordan Valley Medical Center West Valley Campus	868	0	0.65	*	*
Lakeview Hospital	499	0	0.38	*	*
Layton Hospital	78	0	0.05	*	*
LDS Hospital	1364	0	1.37	0.00	0.00 – 2.18
Logan Regional Hospital	204	1	0.15	/	/
Lone Peak Hospital	17	0	0.01	*	*
McKay Dee Hospital	2777	5	2.80	1.79	0.91 – 3.19
Mountain Point Medical Center	144	0	0.10	*	*
Mountain View Hospital	613	0	0.46	*	*
Mountain West Medical Center	59	0	0.04	*	*
Ogden Regional Medical Center	1846	5	1.60	3.12	1.14 – 6.92
Park City Medical Center	38	0	0.03	*	*
Primary Children's Hospital	5356	5	8.90	0.56	0.21 – 1.25
Riverton Hospital	30	0	0.02	*	*
Salt Lake Regional Medical Center	1845	1	1.81	0.55	0.03 – 2.73
St. Mark's Hospital	2073	2	2.09	0.96	0.16 – 3.16
Timpanogos Regional Hospital	1480	1	1.16	0.87	0.04 – 4.27
Uintah Basin Medical Center	57	0	0.04	*	*



**Table 1 continued**

	Number of central line days <sup>1</sup>	Number of CLABSI events <sup>2</sup>	Predicted number of CLABSI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>56,062</b>	<b>62</b>	<b>67.08</b>	<b>0.92</b>	<b>0.71 – 1.18</b>
University of Utah Hospital	13,022	21	20.69	1.02	0.65 – 1.53
Utah Valley Regional Medical Center	4,865	7	4.90	1.43	0.62 – 2.83

\*Source: NHSN data.  
See footnotes on page 41.

**Table 2. Central line-associated bloodstream infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020<sup>+</sup>**

	<b>Number of central line days<sup>1</sup></b>	<b>Number of CLABSI events<sup>2</sup></b>	<b>Predicted number of CLABSI events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>37,908</b>	<b>23</b>	<b>34.50</b>	<b>0.67</b>	<b>0.43 – 0.98</b>
Alta View Hospital	165	0	0.10	*	*
American Fork Hospital	557	0	0.32	*	*
Ashley Regional Medical Center	90	0	0.05	*	*
Bear River Valley Hospital	16	0	0.01	*	*
Brigham City Community Hospital	51	0	0.03	*	*
Cache Valley Hospital	102	0	0.06	*	*
Castleview Hospital	145	0	0.08	*	*
Central Valley Medical Center	607	0	0.17	*	*
Cedar City Hospital	216	0	0.13	*	*
Davis Hospital and Medical Center	147	0	0.10	*	*
Delta Community Medical Center	7	0	0.00	*	*
Fillmore Community Medical Center	15	0	0.00	*	*
Garfield Memorial Hospital	34	0	0.00	*	*
Heber Valley Medical Center	45	0	0.01	*	*
Intermountain Medical Center	9824	8	9.58	0.84	0.39 – 1.59
Jordan Valley Medical Center	308	0	0.20	*	*
Jordan Valley Medical Center West Valley Campus	617	0	0.40	*	*
Lakeview Hospital	361	0	0.24	*	*
Layton Hospital	134	0	0.08	*	*
LDS Hospital	1,634	1	1.42	0.70	0.04 – 3.47
Logan Regional Hospital	649	0	0.42	*	*
Lone Peak Hospital	81	0	0.05	*	*
McKay Dee Hospital	647	1	0.56	/	/
Mountain Point Medical Center	54	0	0.03	*	*
Mountain View Hospital	246	0	0.16	*	*
Mountain West Medical Center	43	0	0.03	*	*
Ogden Regional Medical Center	965	1	0.72	/	/
Park City Medical Center	153	0	0.09	*	*
Primary Children's Hospital	3,538	4	4.03	0.99	0.32 – 2.4
Riverton Hospital	310	0	0.20	*	*

**Table 2 continued**

	<b>Number of central line days<sup>1</sup></b>	<b>Number of CLABSI events<sup>2</sup></b>	<b>Predicted number of CLABSI events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>37,908</b>	<b>23</b>	<b>34.50</b>	<b>0.67</b>	<b>0.43 – 0.98</b>
Salt Lake Regional Medical Center	127	0	0.11	*	*
Sanpete Valley Hospital	123	0	0.03	*	*
Sevier Valley Medical Center	66	0	0.04	*	*
St. George Regional Medical Center	3,208	2	3.13	0.64	0.11 – 2.11
St. Mark's Hospital	1,661	1	1.45	0.69	0.03 – 3.41
Timpanogos Regional Hospital	598	0	0.39	*	*
Uintah Basin Medical Center	39	0	0.02	*	*
University of Utah Hospital	10,244	5	9.99	0.50	0.18 – 1.11
Utah Valley Regional Medical Center	81	0	0.07	*	*

+Source: NHSN data.  
See footnotes on page 41.

**Table 3. Central line-associated bloodstream infections in newborn intensive care units in acute care facilities, Utah, 2020<sup>+</sup>**

	<b>Number of central line days<sup>1</sup></b>	<b>Number of CLABSI events<sup>2</sup></b>	<b>Predicted number of CLABSI events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>12,021</b>	<b>11</b>	<b>15.68</b>	<b>0.70</b>	<b>0.37 – 1.22</b>
Ashley Regional Medical Center	8	0	0.00	*	*
Davis Hospital & Medical Center	99	0	0.08	*	*
Intermountain Medical Center	1,143	0	1.47	0.00	0.00 – 2.04
Jordan Valley Medical Center	278	0	0.22	*	*
Logan Regional Hospital	83	0	0.06	*	*
McKay Dee Hospital	601	1	0.93	/	/
Ogden Regional Medical Center	199	0	0.27	*	*
Primary Children's Hospital	4,918	5	6.04	0.83	0.30 – 1.84
St. George Regional Medical Center	409	0	0.52	*	*
St. Mark's Hospital	600	0	0.79	*	*
Timpanogos Regional Hospital	369	0	0.43	*	*
University of Utah Hospital	1,331	2	1.83	1.10	0.18 – 3.62
Utah Valley Regional Medical Center	1,983	3	3.05	0.98	0.25 – 2.68

<sup>+</sup>Source: NHSN data.  
See footnotes on page 42.

**Table 4. Catheter-associated urinary tract infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of catheter days <sup>1</sup>	Number of CAUTI events <sup>2</sup>	Predicted number of CAUTI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>63,264</b>	<b>71</b>	<b>87.45</b>	<b>0.81</b>	<b>0.64 – 1.02</b>
Alta View Hospital	365	0	0.20	*	*
American Fork Hospital	539	0	0.39	*	*
Ashley Regional Medical Center	163	0	0.09	*	*
Castleview Hospital	206	0	0.11	*	*
Cedar City Hospital	277	0	0.15	*	*
Davis Hospital and Medical Center	1,670	0	1.50	0.00	0.00 – 2.00
Huntsman Cancer Hospital	2,034	2	1.86	1.07	0.18 – 3.55
Intermountain Medical Center	13,387	18	21.60	0.83	0.51 – 1.29
Jordan Valley Medical Center	1,072	0	0.78	*	*
Jordan Valley Medical Center West Valley Campus	1,212	0	0.89	*	*
Lakeview Hospital	679	1	0.51	/	/
Layton Hospital	97	0	0.05	*	*
LDS Hospital	2,007	0	2.05	0.00	0.00 – 1.46
Logan Regional Hospital	568	0	0.42	*	*
Lone Peak Hospital	44	0	0.02	*	*
McKay Dee Hospital	3,840	3	3.92	0.76	0.19 – 2.08
Mountain Point Medical Center	284	0	0.16	*	*
Mountain View Hospital	763	0	0.56	*	*
Mountain West Medical Center	128	0	0.07	*	*
Ogden Regional Medical Center	2,189	1	1.96	0.51	0.03 – 2.52
Park City Medical Center	112	1	0.06	/	/
Primary Children's Hospital	2,393	5	3.90	1.28	0.47 – 2.84
Riverton Hospital	194	0	0.14	*	*
Salt Lake Regional Medical Center	1,854	1	1.97	0.51	0.03 – 2.50
St. George Regional Medical Center	4,011	5	5.22	0.96	0.35 – 2.12
St. Mark's Hospital	2,386	0	2.44	0.00	0.00 – 1.23
Timpanogos Regional Hospital	1,495	2	1.12	1.79	0.30 – 5.90
Uintah Basin Medical Center	163	0	0.09	*	*
University of Utah Hospital	14,321	24	30.28	0.79	0.52 – 1.16
Utah Valley Regional Medical Center	4,811	8	4.91	1.63	0.76 – 3.09

<sup>+</sup>Source: CMS data.

See footnotes on page 42.

**Table 5. Catheter-associated urinary tract infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of catheter days <sup>1</sup>	Number of CAUTI events <sup>2</sup>	Predicted number of CAUTI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>34,485</b>	<b>28</b>	<b>33.13</b>	<b>0.85</b>	<b>0.57 – 1.21</b>
Alta View Hospital	490	0	0.24	*	*
American Fork Hospital	851	0	0.56	*	*
Ashley Regional Medical Center	290	0	0.14	*	*
Bear River Valley Hospital	54	0	0.03	*	*
Brigham City Community Hospital	180	0	0.08	*	*
Cache Valley Hospital	138	0	0.07	*	*
Castleview Hospital	609	0	0.30	*	*
Central Valley Medical Center	1,042	0	0.68	*	*
Cedar City Hospital	376	0	0.18	*	*
Davis Hospital and Medical Center	518	0	0.41	*	*
Delta Community Medical Center	47	0	0.03	*	*
Fillmore Community Medical Center	22	0	0.01	*	*
Garfield Memorial Hospital	173	0	0.11	*	*
Heber Valley Medical Center	142	0	0.09	*	*
Intermountain Medical Center	8,224	10	9.90	1.01	0.51 – 1.80
Jordan Valley Medical Center	564	0	0.37	*	*
Jordan Valley Medical Center West Valley Campus	820	0	0.55	*	*
Lakeview Hospital	610	0	0.40	*	*
Layton Hospital	203	0	0.10	*	*
LDS Hospital	1,550	1	1.46	0.68	0.03 – 3.38
Logan Regional Hospital	1,007	0	0.68	*	*
Lone Peak Hospital	610	0	0.30	*	*
McKay Dee Hospital	415	1	0.41	/	/
Mountain Point Medical Center	382	0	0.19	*	*
Mountain View Hospital	389	0	0.25	*	*
Mountain West Medical Center	368	2	0.18	*	*
Ogden Regional Medical Center	1,417	0	1.16	0.00	0.00 – 2.57
Park City Medical Center	186	0	0.09	*	*
Primary Children's Hospital	465	3	0.41	/	/
Riverton Hospital	505	1	0.33	/	/
Salt Lake Regional Medical Center	109	0	0.10	*	*
Sanpete Valley Hospital	88	0	0.06	*	*
Sevier Valley Medical Center	288	0	0.14	*	*
St. George Regional Medical Center	2,961	2	3.60	0.56	0.09 – 1.84
St. Mark's Hospital	1,384	1	1.26	0.79	0.04 – 3.91

**Table 5 continued**

	<b>Number of catheter days<sup>1</sup></b>	<b>Number of CAUTI events<sup>2</sup></b>	<b>Predicted number of CAUTI events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>68,970</b>	<b>56</b>	<b>66.26</b>	<b>0.85</b>	<b>0.64 – 1.09</b>
Timpanogos Regional Hospital	771	0	0.54	*	*
Uintah Basin Medical Center	460	0	0.22	*	*
University of Utah Hospital	6,064	7	7.60	0.92	0.40 – 1.82
Utah Valley Regional Medical Center	18	0	0.01	*	*

<sup>+</sup>Source: NHSN data.

See footnotes on page 43.

## Footnotes

### **Table 1. Central line-associated bloodstream infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of central line days: The total number of days a patient has a central line.

<sup>2</sup> Number of CLABSI events: The total number of central line-associated bloodstream infections reported per year.

<sup>3</sup> Predicted number of central line-associated bloodstream infection events: The number of central line-associated bloodstream infection events anticipated to occur based on historical data of comparable ICUs.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of central line-associated bloodstream infection events in a hospital's ICU with a national benchmark. Rates are adjusted based on the type and size of a hospital or ICU.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

### **Table 2. Central line-associated bloodstream infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of central line days: The total number of days a patient has a central line.

<sup>2</sup> Number of CLABSI events: The total number of central line-associated bloodstream infections reported per year.

<sup>3</sup> Predicted number of central line-associated bloodstream infection events: The number of central line-associated bloodstream infection events anticipated to occur based on historical data of comparable non-ICU locations.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of central line-associated bloodstream infection events in a hospital's non-ICU locations with a national benchmark. Rates are adjusted based

on the type and size of a hospital or non-ICU locations.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.



**Table 3. Central line-associated bloodstream infections in newborn intensive care units in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of central line days: The total number of days a patient has a central line.

<sup>2</sup> Number of central line-associated bloodstream infection events: The total number of central line-associated bloodstream infections reported per year.

<sup>3</sup> Predicted number of central line-associated bloodstream infection events: The number of central line-associated bloodstream infection events anticipated to occur based on historical data of comparable newborn ICUs.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of central line-associated bloodstream infection events in a hospital's newborn ICU with a national benchmark. Rates are adjusted based on the type and size of a hospital or newborn ICU.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 4. Catheter-associated urinary tract infections in adult and pediatric intensive care units in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of catheter days: The total number of days a patient has a urinary catheter.

<sup>2</sup> Number of CAUTI events: The total number of catheter-associated urinary tract infections reported per year.

<sup>3</sup> Predicted number of CAUTI events: The number of catheter-associated urinary tract infections anticipated to occur based on historical data of comparable ICUs.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of catheter-associated urinary tract infections in a hospital's ICU with a national benchmark. Rates are adjusted based on the type and size of a hospital or ICU.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 5. Catheter-associated urinary tract infections in inpatient non-intensive care locations in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of catheter days: The total number of days a patient has a urinary catheter.

<sup>2</sup> Number of CAUTI events: The total number of catheter-associated urinary tract infections reported per year.

<sup>3</sup> Predicted number of CAUTI events: The number of catheter-associated urinary tract infections anticipated to occur based on historical data of comparable non-ICU locations.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of catheter-associated urinary tract infections in a hospital's ICU with a national benchmark. Rates are adjusted based on the type and size of a hospital or non-ICU locations.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

## Appendix B

### Understanding Surgical Site Infection (SSI) Data in Acute Care Facilities

SSI events depict infections associated with specific surgical procedures, colon, and abdominal hysterectomy surgeries, reported by acute care facilities.

To understand the HAI report, it is important to know what each of the table’s data elements mean. Below is an example of a fictitious hospital’s data. Each column is numbered and provides an explanation of each data element and its result.

**Table B. Surgical site infection events in acute care facilities, Utah, 2020**

	Number of surgical procedures	Number of SSI events	Predicted number of SSI events	Standardized Infection Ratio	95% Confidence Interval
State of Utah	#	#	#	#	#
Facility B	5,817	8	13	0.62	0.26 – 1.21
1	2	3	4	5	6

1. Only acute care facilities (hospitals) that perform colon and abdominal hysterectomy surgical procedures are listed here by name (Facility B).
2. For each reporting facility listed, the number listed (5,817) is the total number of colon/abdominal hysterectomy surgical procedures performed.
3. The number of SSI events in this column (8) represent the total number of colon/abdominal hysterectomy surgical site infections (SSIs) identified in patients who met the criteria set by NHSN who were in Facility B during the reporting period.
4. The predicted number of SSI events is adjusted to allow facilities to be more fairly compared. Risk adjustments account for differences in patient populations in terms of severity of illness and other factors that may affect the risk of developing an HAI. A facility that performs many procedures on very sick patients would be predicted to have a higher SSI rate than a hospital that performs fewer procedures and has healthier patients. The predicted number of SSI events for Facility B, based on comparison with a national HAI benchmark of similar facilities, is calculated as 13.
5. The standardized infection ratio (SIR) is a summary measure developed by NHSN to track HAIs at the national, state, local, or facility level over time. The SIR compares the *total* number of SSI events for Facility B (8) to the *predicted* number of SSI events (13) based on “standard population” data. For purposes of this report, the standard population is HAI data reported nationally by thousands of facilities using NHSN. The SIR for Facility B, based on comparison with a national HAI benchmark of facilities similar to Facility B, is calculated as

0.62. Facilities with a predicted number of HAI events less than one do not have enough data to reliably compare their data with the standard population. Consequently, SIRs are not provided for healthcare facilities with a predicted number less than one.

6. A confidence interval (CI) will be provided if a SIR was estimated for a given facility. A CI describes the uncertainty associated with the SIR estimate. Facilities that perform more procedures will have a narrower CI, which means there is less doubt associated with the accuracy of the SIR compared with facilities performing fewer procedures. This is because there is more information about a facility's performance with additional procedures. A 95% CI means 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 6. Surgical site infections associated with colon surgeries in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of colon surgeries <sup>1</sup>	Number of colon events <sup>2</sup>	Predicted number of colon events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>1,907</b>	<b>46</b>	<b>57.89</b>	<b>0.79</b>	<b>0.59 – 1.05</b>
Alta View Hospital	13	0	0.36	*	*
American Fork Hospital	41	0	0.97	*	*
Ashley Regional Medical Center	10	0	0.23	*	*
Bear River Valley Hospital	1	0	0.02	*	*
Brigham City Community Hospital	1	0	0.03	*	*
Cache Valley Hospital	7	0	0.20	*	*
Castleview Hospital	14	0	0.34	*	*
Central Valley Medical Center	0	0	0.00	*	*
Cedar City Hospital	14	0	0.36	*	*
Davis Hospital and Medical Center	20	2	0.52	/	/
Heber Valley Medical Center	1	0	0.02	*	*
Huntsman Cancer Hospital	229	12	10.95	1.10	0.59 – 1.86
Intermountain Medical Center	251	4	7.46	0.54	0.17 – 1.29
Jordan Valley Medical Center	31	3	0.79	/	/
Jordan Valley Medical Center West Valley Campus	6	1	0.19	/	/
Lakeview Hospital	25	0	0.67	*	*
Layton Hospital	14	0	0.39	*	*
LDS Hospital	153	1	4.19	0.24	0.01 – 1.18
Logan Regional Hospital	57	0	1.44	0.00	0.00 – 2.08
Lone Peak Hospital	14	0	0.33	*	*
McKay Dee Hospital	147	4	3.86	1.04	0.33 – 2.50
Mountain Point Medical Center	2	0	0.06	*	*
Mountain View Hospital	14	0	0.38	*	*
Mountain West Medical Center	3	0	0.06	*	*
Ogden Regional Medical Center	66	1	1.96	0.51	0.03 – 2.52

**Table 6 continued**

	<b>Number of colon surgeries<sup>1</sup></b>	<b>Number of colon events<sup>2</sup></b>	<b>Predicted number of colon events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>1,907</b>	<b>46</b>	<b>57.89</b>	<b>0.79</b>	<b>0.59 – 1.05</b>
Orem Community Hospital	0	0	0.00	*	*
Park City Medical Center	20	1	0.50	/	/
Primary Children's Hospital	4	0	0.17	*	*
Riverton Hospital	33	0	0.84	*	*
Salt Lake Regional Medical Center	14	0	0.41	*	*
San Juan Hospital	3	0	0.07	*	*
Sanpete Valley Hospital	1	0	0.03	*	*
Sevier Valley Medical Center	12	0	0.30	*	*
St. George Regional Medical Center	200	6	5.21	1.15	0.47 – 2.40
St. Mark's Hospital	170	0	4.43	0.00	0.00 – 0.68
Timpanogos Regional Hospital	32	1	0.95	/	/
Uintah Basin Medical Center	1	0	0.03	*	*
University of Utah Hospital	135	7	4.41	1.59	0.69 – 3.14
Utah Valley Regional Medical Center	148	3	4.75	0.63	0.16 – 1.72

\*Source: NHSN data.  
See footnotes on page 50.

**Table 7. Surgical site infections associated with abdominal hysterectomy surgeries in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of abdominal hyst <sup>1</sup>	Number of abdominal hyst events <sup>2</sup>	Predicted number of abdominal hyst events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>3,414</b>	<b>36</b>	<b>29.42</b>	<b>1.22</b>	<b>0.87 – 1.68</b>
Alta View Hospital	34	3	0.28	/	/
American Fork Hospital	117	0	0.89	*	*
Ashley Regional Medical Center	61	0	0.48	*	*
Bear River Valley Hospital	0	0	0.00	*	*
Brigham City Community Hospital	25	0	0.22	*	*
Cache Valley Hospital	24	0	0.18	*	*
Castleview Hospital	5	0	0.04	*	*
Central Valley Medical Center	0	0	0.00	*	*
Cedar City Hospital	19	0	0.17	*	*
Davis Hospital and Medical Center	314	0	2.34	0.00	0.00 – 1.28
Heber Valley Medical Center	49	0	0.41	*	*
Huntsman Cancer Hospital	232	3	3.57	0.84	0.21 – 2.29
Intermountain Medical Center	382	5	3.27	1.53	0.56 – 3.39
Jordan Valley Medical Center	5	0	0.03	*	*
Jordan Valley Medical Center West Valley Campus	4	0	0.03	*	*
Lakeview Hospital	27	0	0.23	*	*
Layton Hospital	30	1	0.24	/	/
LDS Hospital	215	1	1.66	0.60	0.03 – 2.97
Logan Regional Hospital	159	1	1.14	0.88	0.04 – 4.33
Lone Peak Hospital	68	0	0.57	*	*
McKay Dee Hospital	115	3	0.69	/	/
Mountain Point Medical Center	24	0	0.18	*	*

**Table 7 continued**

	Number of abdominal hyst <sup>1</sup>	Number of abdominal hyst events <sup>2</sup>	Predicted number of abdominal hyst events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>3,414</b>	<b>36</b>	<b>29.42</b>	<b>1.22</b>	<b>0.87 – 1.68</b>
Mountain View Hospital	21	0	0.17	*	*
Mountain West Medical Center	3	0	0.03	*	*
Ogden Regional Medical Center	77	3	0.70	/	/
Orem Community Hospital	57	0	0.44	*	*
Park City Medical Center	19	2	0.165	/	/
Primary Children's Hospital	0	0	0.00	*	*
Riverton Hospital	136	3	1.10	2.72	0.69 – 7.42
Salt Lake Regional Medical Center	12	0	0.10	*	*
San Juan Hospital	1	0	0.01	*	*
Sanpete Valley Hospital	2	0	0.02	*	*
Sevier Valley Medical Center	23	0	0.17	*	*
St. George Regional Medical Center	181	3	1.41	2.13	0.54 – 5.81
St. Mark's Hospital	518	2	4.23	0.47	0.08 – 1.56
Timpanogos Regional Hospital	134	0	1.07	0.00	0.00 – 2.80
Uintah Basin Medical Center	23	0	0.24	*	*
University of Utah Hospital	101	3	0.99	/	/
Utah Valley Regional Medical Center	197	2	1.67	1.20	0.20 – 3.95

<sup>+</sup>Source: NHSN data.  
See footnotes on page 50.



## Footnotes

### **Table 6. Surgical site infections associated with colon surgeries in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of colon surgeries: The total number of colon surgeries reported per year.

<sup>2</sup> Number of colon events: The total number of SSI infections associated with colon surgeries reported per year.

<sup>3</sup> Predicted number of colon events: The number of SSI infections associated with colon surgeries anticipated to occur based on historical data of comparable acute care facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of colon surgeries in a hospital's ICU with a national benchmark. Rates are adjusted based on the type and size of a hospital or ICU.

<sup>5</sup> Confidence interval: A 95% confidence interval means that if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

### **Table 7. Surgical site infections associated with abdominal hysterectomy surgeries in acute care facilities, Utah, 2020**

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of abdominal hysterectomies: The total number of abdominal hysterectomies reported per year.

<sup>2</sup> Number of abdominal hyst events: The total number of SSI infections associated with abdominal hysterectomies reported per year.

<sup>3</sup> Predicted number of abdominal hyst events: The number of abdominal hysterectomies anticipated to occur based on historical data of comparable acute care facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of abdominal hysterectomies in a hospital's ICU to a national benchmark. Rates are adjusted based on the type and size of a hospital or ICU.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

## Appendix C

### Understanding *C. difficile* and MRSA Bacteremia Data in Acute Care Facilities

The tables depict *Clostridioides difficile* infections (CDI) and Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia infections reported by acute care facilities.

In order to understand the HAI report, it is important to know what each of the table's data elements mean. Below is an example of a fictitious hospital's data. Each column is numbered and provides an explanation of each data element and its result.

**Table C. Bacterial infection events in acute care facilities, Utah, 2020**

	Number of patient days	Number of infections	Predicted number of infections	Standardized Infection Ratio	95% Confidence Interval
State of Utah	#	#	#	#	#
Facility C	5,817	8	13	0.62	0.29 – 1.17
1	2	3	4	5	6

1. Acute care facilities are listed here by name (Facility C).
2. For each reporting facility listed, the number listed (5,817) is the total number of days patients stayed at that facility.
3. When a patient develops a CDI or MRSA bacteremia infection, the infection is considered an HAI if it meets the criteria set forth by NHSN. The number of HAI events in this column (8) represents the total number of specific HAIs identified in patients in Facility C during the year.
4. The predicted number of infections is adjusted to allow facilities to be more fairly compared. Risk adjustments account for differences in patient populations in terms of severity of illness and other factors that may affect the risk of developing an HAI. A facility that generally has more severely ill patients would be predicted to have a higher rate than a facility that has healthier patients. The predicted number of infections for Facility C, based on comparison with a national HAI benchmark of similar facilities, is calculated as 13.
5. The standardized infection ratio (SIR) is a summary measure developed by NHSN to track HAIs at the national, state, local, or facility level over time. The SIR compares the *total* number of infections for Facility C (8) to the *predicted* number of infections (13), based on "standard population" data.

For purposes of this report, the standard population is HAI data reported nationally by thousands of facilities using NHSN. The SIR for Facility C, based on comparison with a national HAI benchmark of facilities similar to Facility C, is calculated as 0.62. Facilities with a predicted number of HAI events less than one do not have enough data to reliably

compare their data with the standard population. Consequently, SIRs are not provided for healthcare facilities with a predicted number less than one.

6. A confidence interval (CI) will be provided if an SIR was estimated for a given facility. A CI describes the uncertainty associated with the SIR estimate. Facilities performing with more patient days will have a narrower CI, which means there is less doubt associated with the accuracy of the SIR compared to facilities performing fewer procedures. This is because there is more information about a facility's performance with additional patient days. A 95% CI means that 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 8. *C. difficile* infections in acute care facilities, Utah, 2020<sup>+</sup>**

	Number of patient days <sup>1</sup>	Number of hospital onset <i>C. difficile</i> events <sup>2</sup>	Predicted number of hospital onset <i>C. difficile</i> events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>812,069</b>	<b>281</b>	<b>499.01</b>	<b>0.56</b>	<b>0.50 – 0.63</b>
Alta View Hospital	10,262	1	4.55	0.22	0.01 – 1.08
American Fork Hospital	15,199	1	6.97	0.14	0.01 – 0.71
Ashley Regional Medical Center	3,570	1	3.24	0.31	0.02 – 1.52
Bear River Valley Hospital	924	0	0.36	*	*
Brigham City Community Hospital	2,047	1	0.48	/	/
Cache Valley Hospital	1,873	0	0.43	*	*
Castleview Hospital	3,645	0	2.01	0.00	0.00 – 1.49
Central Valley Medical Center	2,556	0	0.57	*	*
Cedar City Hospital	6,399	0	2.65	0.00	0.00 – 1.13
Davis Hospital and Medical Center	14,367	15	9.19	1.63	0.95 – 2.63
Delta Community Medical Center	558	0	0.12	*	*
Fillmore Community Medical Center	463	0	0.13	*	*
Garfield Memorial Hospital	1,002	1	0.39	/	/
HealthSouth Rehabilitation Hospital of Utah	12,626	1	3.30	0.30	0.02 – 1.50
Heber Valley Medical Center	1,868	0	0.41	*	*
Huntsman Cancer Hospital	29,508	30	43.53	0.69	0.47 – 0.97
Intermountain Medical Center	106,387	46	71.87	0.64	0.47 – 0.85
Jordan Valley Medical Center	13,590	6	7.24	0.83	0.34 – 1.72
Jordan Valley Medical Center West Valley Campus	9,321	6	4.45	1.35	0.55 – 2.81
Lakeview Hospital	11,507	2	5.29	0.38	0.06 – 1.25
Layton Hospital	6,217	0	1.34	0.00	0.00 – 2.23
LDS Hospital	29,754	14	17.53	0.80	0.45 – 1.31
Logan Regional Hospital	15,778	3	6.87	0.44	0.11 – 1.19
Lone Peak Hospital	5,187	0	2.46	0.00	0.00 – 1.22
McKay Dee Hospital	49,753	13	33.61	0.39	0.22 – 0.64
Mountain Point Medical Center	4,900	1	1.73	0.58	0.03 – 2.85
Mountain View Hospital	11,170	1	5.01	0.20	0.01 – 0.98
Mountain West Medical Center	3,533	0	0.66	*	*
Northern Utah Rehabilitation Hospital	5,226	0	1.49	0.00	0.00 – 2.02

**Table 8 continued**

	Number of patient days <sup>1</sup>	Number of hospital onset <i>C. difficile</i> events <sup>2</sup>	Predicted number of hospital onset <i>C. difficile</i> events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>812,069</b>	<b>281</b>	<b>499.01</b>	<b>0.56</b>	<b>0.50 – 0.63</b>
Ogden Regional Medical Center	21,483	9	11.14	0.81	0.39 – 1.48
Orem Community Hospital	2,380	0	0.58	*	*
Park City Medical Center	4,526	0	1.22	0.00	0.00 – 2.45
Primary Children's Hospital	45,237	14	17.96	0.78	0.44 – 1.28
Promise Hospital of Salt Lake	10,522	3	7.20	0.42	0.11 – 1.13
Riverton Hospital	11,714	3	3.05	0.98	0.25 – 2.68
Salt Lake Regional Medical Center	9,270	4	4.40	0.91	0.29 – 2.19
San Juan Hospital	133	1	0.05	/	/
Sanpete Valley Hospital	1,164	0	0.26	*	*
Sevier Valley Medical Center	2,600	0	0.55	*	*
Shriners Hospitals for Children	560	0	0.09	*	*
South Davis Community Hospital	12,417	4	14.31	0.28	0.09 – 0.67
St. George Regional Medical Center	59,204	7	36.52	0.19	0.08 – 0.38
St. Mark's Hospital	41,587	6	21.50	0.28	0.11 – 0.58
The Orthopedic Speciality Hospital	2,435	0	0.38	*	*
Timpanogos Regional Hospital	12,102	0	6.33	0.00	0.00 – 0.47
Uintah Basin Medical Center	4,168	4	2.39	1.67	0.53 – 4.03
University of Utah Hospital	119,555	65	81.69	0.80	0.62 – 1.01
Utah Valley Regional Medical Center	61,904	17	42.76	0.40	0.24 – 0.62
Utah Valley Specialty Hospital	9,918	1	8.80	0.11	0.01 – 0.56

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of patient days: The total number of days that patients stay at a facility per year. Patient days data for *C. difficile* infections excludes newborn nursery patient days data.

<sup>2</sup> Number of *C. difficile* events: The total number of *C. difficile* infections reported per year.

<sup>3</sup> Predicted number of *C. difficile* events: The number of *C. difficile* infections anticipated to occur based on historical data of comparable ICUs.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of *C. difficile* infections in a facility with a national benchmark. Rates are adjusted based on the type and size of the facility.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 9. Methicillin-resistant *Staphylococcus aureus* bacteremia in acute care facilities, Utah, 2020<sup>+</sup>**

	<b>Number of patient days<sup>1</sup></b>	<b>Number of MRSA bacteremia events<sup>2</sup></b>	<b>Predicted number of MRSA bacteremia events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>935,198</b>	<b>43</b>	<b>51.77</b>	<b>0.83</b>	<b>0.61 – 1.11</b>
Alta View Hospital	12,553	0	0.47	*	*
American Fork Hospital	22,546	0	0.86	*	*
Ashley Regional Medical Center	4,025	0	0.15	*	*
Bear River Valley Hospital	1,109	0	0.03	*	*
Brigham City Community Hospital	2,047	0	0.04	*	*
Cache Valley Hospital	2,215	0	0.04	*	*
Castleview Hospital	4,031	1	0.16	/	/
Central Valley Medical Center	2,556	0	0.05	*	*
Cedar City Hospital	7,922	0	0.20	*	*
Davis Hospital and Medical Center	19,041	1	0.56	/	/
Delta Community Medical Center	700	0	0.02	*	*
Fillmore Community Medical Center	544	0	0.01	*	*
Garfield Memorial Hospital	1,076	0	0.02	*	*
Heber Valley Medical Center	2,164	0	0.05	*	*
Huntsman Cancer Hospital	29,508	3	2.73	1.10	0.28 – 2.99
Intermountain Medical Center	133,575	10	9.30	1.08	0.55 – 1.93
Jordan Valley Medical Center	18,569	1	0.91	/	/
Jordan Valley Medical Center West Valley Campus	10,165	0	0.45	*	*
Lakeview Hospital	12,529	0	0.52	*	*
Layton Hospital	8,292	0	0.23	*	*
LDS Hospital	34,460	5	2.22	2.26	0.83 – 5.00
Logan Regional Hospital	20,658	0	0.66	*	*
Lone Peak Hospital	6,230	0	0.21	*	*
McKay Dee Hospital	61,692	3	3.36	0.89	0.23 – 2.43
Mountain Point Medical Center	6,773	0	0.22	*	*

**Table 9 continued**

	Number of patient days <sup>1</sup>	Number of MRSA bacteremia events <sup>2</sup>	Predicted number of MRSA bacteremia events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>935,198</b>	<b>43</b>	<b>51.77</b>	<b>0.83</b>	<b>0.61 – 1.11</b>
Mountain View Hospital	12,089	0	0.38	*	*
Mountain West Medical Center	3,533	0	0.09	*	*
Ogden Regional Medical Center	27,522	0	1.36	0.00	0.00 – 2.21
Orem Community Hospital	3,871	0	0.08	*	*
Park City Medical Center	5,175	0	0.10	*	*
Primary Children's Hospital	59,921	2	2.34	0.85	0.14 – 2.82
Riverton Hospital	16,602	0	0.34	*	*
Salt Lake Regional Medical Center	9,715	1	0.54	/	/
San Juan Hospital	57	0	0.00	*	*
Sanpete Valley Hospital	1,381	0	0.03	*	*
Sevier Valley Medical Center	3,034	0	0.08	*	*
St. George Regional Medical Center	67,629	3	3.55	0.85	0.22 – 2.30
St. Mark's Hospital	50,319	1	2.45	0.41	0.02 – 2.01
The Orthopedic Speciality Hospital	2,435	0	0.03	*	*
Timpanogos Regional Hospital	19,316	0	0.73	*	*
Uintah Basin Medical Center	4,168	0	0.10	*	*
University of Utah Hospital	139,563	9	10.64	0.85	0.41 – 1.55
Utah Valley Regional Medical Center	83,888	3	5.50	0.55	0.14 – 1.48

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of patient days: The total number of days patients stay at a facility per year.

<sup>2</sup> Number of MRSA events: The total number of MRSA bacteremia infections reported per year.

<sup>3</sup> Predicted number of MRSA events: The amount of MRSA bacteremia infections anticipated to occur based on historical data of comparable facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of MRSA bacteremia in a facility with a national benchmark.

Rates are adjusted based on the type and size of the facility.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

## Appendix D

### Understanding CLABSI and CAUTI Rates in Long-term Acute Care Facilities with Intensive Care Units and Wards or Inpatient Rehabilitation Facilities

The device infection event tables depict specific device-associated infections (central line-associated bloodstream infections [CLABSI], catheter-associated urinary tract infections [CAUTI]), reported by long-term acute care facilities (LTAC) with intensive care units (ICU) and inpatient rehabilitation facilities (IRF).

To understand the HAI report, it is important to know what each of the data elements in the table mean. Below is an example of fictitious data from an LTAC or IRF. Each column is numbered and provides an explanation of each data element and its result.

**Table D. Device infection events in long-term acute care facilities with intensive care units and wards or inpatient rehabilitation facilities, Utah, 2019**

	Number of HAI device days	Number of HAI device events	Predicted number of HAI device events	Standardized Infection Ratio	95% Confidence Interval
State of Utah	#	#	#	#	#
Facility D	5,817	8	13	0.62	0.29 – 1.17
1	2	3	4	5	6

1. Long-term acute care facilities or inpatient rehabilitation facilities are listed here by name (Facility D).
2. For each reporting facility listed, patients with central line catheters/urinary catheters (devices) are identified every day. A device count is performed at the same time each day. Each patient with one or more central line catheters at the time the count is performed is counted as having one device day. Each patient with a urinary catheter at the time the count is performed is counted as having one device day. For example, a patient with one or more central line catheters and one urinary catheter would be counted as having one central line day and one urinary catheter day. The number of device days in this column (5,817) represents the total number of specific device days for all patients who were in Facility D during the year.
3. When a patient develops an HAI device-associated infection while having a device in place or within one day after removal of the device, the infection is considered a device-associated HAI if it meets the criteria set forth by NHSN. The number of HAI events in this column (8) represents the total number of specific HAIs identified in patients in Facility D during the year.



4. The predicted number of HAI device events is adjusted to allow facilities to be more fairly compared. Risk adjustments account for differences in patient populations in terms of severity of illness and other factors that may affect the risk of developing an HAI. A facility that uses many devices on very sick patients would be predicted to have a higher device infection rate than a facility that uses fewer devices and has healthier patients. The predicted number of HAI device events for Facility D, based on comparison with a national HAI benchmark of similar hospitals, is calculated as 13.
5. The standardized infection ratio (SIR) is a summary measure developed by NHSN to track HAIs at the national, state, local, or facility level over time. The SIR compares the *total* number of HAI device events for Facility D (8) with the *predicted* number of HAI device events (13), based on “standard population” data. For purposes of this report, the standard population is HAI data reported nationally by thousands of facilities using NHSN. The SIR for Facility D, based on comparison with a national HAI benchmark of facilities similar to Facility D, is calculated as 0.62. Facilities with a predicted number of HAI events less than one do not have enough device day data to reliably compare their data with the standard population. Consequently, SIRs are not provided for health care facilities with a predicted number less than one.
6. A confidence interval (CI) will be provided if an SIR was estimated for a given healthcare facility. A CI describes the uncertainty associated with the SIR estimate. Facilities with more device days will have a narrower CI, which means there is less doubt associated with the accuracy of the SIR compared with facilities with fewer device days. This is because there is more information about a facility's performance with additional device days. A 95% CI means that 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 10. Central-line associated bloodstream infections in long-term acute care facilities with intensive care units and wards, Utah, 2020<sup>+</sup>**

	Number of central line days <sup>1</sup>	Number of CLABSI events <sup>2</sup>	Predicted number of CLABSI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>13,532</b>	<b>13</b>	<b>13.87</b>	<b>0.94</b>	<b>0.52 – 1.56</b>
Promise Hospital	4,812	2	3.39	0.59	0.10 – 1.95
South Davis Community Hospital	3,693	8	4.18	1.92	0.89 – 3.64
Utah Valley Specialty Hospital	5,027	3	6.31	0.48	0.12 – 1.29

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of central line days: The total number of days a patient has a central line.

<sup>2</sup> Number of CLABSI events: The total number of central line-associated bloodstream infections reported per year.

<sup>3</sup> Predicted number of CLABSI events: The number of central line-associated bloodstream infection events anticipated to occur based on historical data of comparable long-term acute care facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of CLABSI events in long-term acute care facilities with a national benchmark.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 11. Catheter-associated urinary tract infections in long-term acute care facilities with intensive care units and wards, Utah, 2020<sup>+</sup>**

	Number of catheter days <sup>1</sup>	Number of CAUTI events <sup>2</sup>	Predicted number of CAUTI events <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>10,993</b>	<b>17</b>	<b>22.22</b>	<b>0.76</b>	<b>0.46 – 1.20</b>
Promise Hospital	3,436	10	8.25	1.21	0.62 – 2.16
South Davis Community Hospital	3,466	5	7.31	0.68	0.25 – 1.51
Utah Valley Specialty Hospital	4,091	2	6.66	0.30	0.05 – 0.99

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of catheter days: The total number of days a patient has a urinary catheter.

<sup>2</sup> Number of CAUTI events: The total number of catheter-associated urinary tract infections reported per year.

<sup>3</sup> Predicted number of CAUTI events: The number of catheter-associated urinary tract infections anticipated to occur based on historical data of comparable long-term acute care facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of catheter-associated urinary tract infections in long-term acute care facilities with a national benchmark.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 12. Catheter-associated urinary tract infections in inpatient rehabilitation facilities, Utah, 2020<sup>+</sup>**

	<b>Number of catheter days<sup>1</sup></b>	<b>Number of CAUTI events<sup>2</sup></b>	<b>Predicted number of CAUTI events<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>3,540</b>	<b>9</b>	<b>6.90</b>	<b>1.30</b>	<b>0.64 – 2.39</b>
Health South Rehabilitation Hospital of Utah	997	0	1.08	0.00	0.00 – 2.78
Intermountain Medical Center	159	3	0.43	/	/
Jordan Valley Hospital	179	0	0.26	*	*
McKay Dee Hospital	298	0	0.81	*	*
Northern Utah Rehabilitation Hospital	205	0	0.22	*	*
Salt Lake Regional Medical Center	194	0	0.28	*	*
St. George Regional Medical Center	139	0	0.38	*	*
St. Mark's Hospital	229	0	0.33	*	*
University of Utah Hospital	912	5	2.48	2.01	0.74 – 4.46
Utah Valley Regional Medical Center	228	1	0.62	/	/

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of catheter days: The total number of days a patient has a urinary catheter.

<sup>2</sup> Number of CAUTI events: The total number of catheter-associated urinary tract infections reported per year.

<sup>3</sup> Predicted number of CAUTI events: The number of catheter-associated urinary tract infections anticipated to occur based on historical data of comparable inpatient rehabilitation facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of catheter-associated urinary tract infections in inpatient rehabilitation facilities with a national benchmark.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

**Table 13. Dialysis event bloodstream infections, Utah, 2020<sup>+</sup>**

	Number of patient months <sup>1</sup>	Number of Dialysis Event BSI <sup>2</sup>	Predicted number of Dialysis Event BSI <sup>3</sup>	Standardized Infection Ratio <sup>4</sup>	95% Confidence Interval <sup>5</sup>
<b>State of Utah</b>	<b>19,410</b>	<b>53</b>	<b>126.02</b>	<b>0.42</b>	<b>0.32 – 0.55</b>
American Fork Dialysis Center	206	1	1.96	0.51	0.03 – 2.51
Blue Mountain Hospital Dialysis Center	367	3	1.84	1.63	0.41 – 4.43
Bonneville Dialysis Center	484	4	2.82	1.42	0.45 – 3.42
University of Utah Castlevew Dialysis	270	4	2.55	1.57	0.50 – 3.79
Desert Valley Dialysis Center	329	0	3.04	0.00	0.00 – 0.99
Farmington Bay Dialysis Center	414	2	3.16	0.63	0.11 – 2.09
Hurricane Dialysis	208	0	1.34	0.00	0.00 – 2.24
Intermountain Medical Center Dialysis Center	1,032	1	5.05	0.20	0.01 – 0.98
Iron Mission Dialysis Center	442	2	2.67	0.75	0.13 – 2.47
Kolff Dialysis Center	629	0	4.25	0.00	0.00 – 0.71
Lakeside Dialysis Center	413	0	3.20	0.00	0.00 – 0.94
Liberty Dialysis Layton	582	2	6.15	0.33	0.05 – 1.07
Liberty Dialysis St. George	792	2	4.84	0.41	0.32 – 0.55
Liberty Dialysis West Jordan	672	1	3.53	0.28	0.01 – 1.40
Logan Regional Dialysis Center	634	0	4.55	0.00	0.00 – 0.66
Lone Peak Dialysis	631	2	3.10	0.65	0.11 – 2.13
Mark Lindsay Dialysis Center	372	4	2.55	1.57	0.50 – 3.79
Ogden/Weber	524	1	3.60	0.28	0.01 – 1.37
Oquirrh Artificial Kidney Center	1,197	2	7.46	0.27	0.04 – 0.88
Payson Regional Dialysis	418	0	2.45	0.00	0.00 – 1.22
Pleasant View Dialysis Center	450	2	2.29	0.88	0.15 – 2.89
Primary Children’s Dialysis Center	136	1	2.63	0.38	0.02 – 1.87
Provo Dialysis	308	1	2.13	0.47	0.02 – 2.32
Sevier Valley Dialysis	316	0	1.54	0.00	0.00 – 1.94
South Mountain Dialysis	708	0	5.09	0.00	0.00 – 0.59
South Valley Dialysis Center	519	0	4.17	0.00	0.00 – 0.72
Tooele Valley Dialysis	242	1	1.46	0.68	0.03 – 3.38
UBMC Dialysis Roosevelt	622	1	5.18	0.19	0.01 – 0.95
Uintah Basin Medical Center Dialysis Vernal	134	0	1.37	0.00	0.00 – 2.18
University of Utah Dialysis Program St. George Dialysis	832	2	4.57	0.44	0.07 – 1.45
Utah Dialysis Center	782	1	4.17	0.24	0.01 – 1.18
Utah Valley Dialysis Center	939	3	4.73	0.63	0.16 – 1.73
Wasatch Artificial Kidney Center	1,119	2	7.48	0.31	0.05 – 1.02

**Table 13 continued**

	<b>Number of patient months<sup>1</sup></b>	<b>Number of Dialysis Event BSI<sup>2</sup></b>	<b>Predicted number of Dialysis Event BSI<sup>3</sup></b>	<b>Standardized Infection Ratio<sup>4</sup></b>	<b>95% Confidence Interval<sup>5</sup></b>
<b>State of Utah</b>	<b>19,410</b>	<b>53</b>	<b>126.03</b>	<b>0.42</b>	<b>0.32 – 0.55</b>
Weber Valley Dialysis	180	0	1.39	0.00	0.00 – 2.15
West Bountiful Dialysis	133	0	0.54	*	*
West Valley Dialysis Clinic	996	0	6.38	0.00	0.00 – 0.47
Woods Cross Dialysis	378	5	1.83	2.73	1.00 – 6.05

<sup>+</sup>Source: NHSN data.

/ Predicted to have less than one infection for the year, but had one or more infections, as defined by NHSN, in 2020.

\* Predicted to have less than one infection for the year, and reported ZERO infections, as defined by NHSN, in 2020.

<sup>1</sup> Number of patient months: The number of patient-months are equal to the summed number of patient-month denominators reported by the facility during the year. To calculate patient-months, facilities report the number of hemodialysis outpatients who were dialyzed in the facility on the first two working days of the month, using the Denominators for Dialysis Event Surveillance form. This count is used to estimate the number of patient-months that there is risk of a healthcare-associated infection.

<sup>2</sup> Number of dialysis event BSI: The total number of bloodstream infections reported per year.

<sup>3</sup> Predicted number of dialysis event BSI: The number of bloodstream infections anticipated to occur based on historical data of comparable dialysis facilities.

<sup>4</sup> Standardized Infection Ratio: Compares the total number of bloodstream infections in dialysis facilities with a national benchmark.

<sup>5</sup> Confidence interval: A 95% confidence interval means if the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

## Appendix E

### Definitions

- 1. Abdominal hysterectomy**—An abdominal hysterectomy is a surgical procedure in which the uterus is removed through an incision in the lower abdomen.
- 2. Acute care facility**—A hospital that provides inpatient medical care and other related services for surgery, acute medical conditions, or injuries (usually for a short-term illness or condition).
- 3. Catheter-associated urinary tract infection (CAUTI)**— Infection that involves any part of the urinary system, including urethra, bladder, ureters, and kidney caused by the insertion of a urinary catheter.
- 4. Central line**— A catheter (tube) placed in a large vein in the neck, chest, or groin that ends at, or close to, the heart to give medication or fluids, collect blood for medical tests, or monitor blood flow.
- 5. Central line days (CLDs)**—Refers to the number of patients with a central line in place. Central line days are calculated by recording the number of patients who have a central line for each day of the month at the same time each day for a specific care location. At the end of the month, the sum of all days is recorded. For purposes of this report, the total is recorded as the sum of all days in a year. Patients having more than one central line in place at a given time are counted as having only one central line day.
- 6. Central line-associated bloodstream infection (CLABSI)**—A serious infection that occurs when germs (usually bacteria) that are not related to another infection enter the bloodstream through the central line catheter.
- 7. Centers for Medicare and Medicaid Services (CMS)**—A federal agency within the U.S. Department of Health and Human Services that administers Medicare, Medicaid, the State Children's Health Insurance Program, and sets health insurance portability standards.
- 8. *Clostridioides difficile***—*Clostridioides difficile* is a germ that causes diarrhea. It is spread from person-to-person on contaminated equipment and on the hands of health care personnel and visitors. Most cases occur in patients who take antibiotics for long periods of time and in the elderly with certain medical problems.
- 9. Colon surgery**—Colon surgery is an operation performed on the large intestine, rectum, anus, and/or the perianal area.
- 10. Confidence interval (CI)**—A statistical measure of the precision of a rate estimate. It is a plus-or-minus range around the infection rate reported. A 95% confidence interval means if

the rate sampling was repeated over more periods of time, 95 times out of 100, the true value would be expected to fall within the range shown.

- 11. Dialysis**—Kidney dialysis is a life-support treatment that uses a special machine to filter harmful wastes, salt, and excess fluid from the blood. This restores the blood to a normal, healthy balance. Dialysis replaces many of the kidney's important functions. Hemodialysis is when the blood is filtered using a dialyzer and dialysis machine.
- 12. Dialysis facility**—An outpatient facility where a medical procedure (dialysis) is administered to people with end-stage kidney disease.
- 13. Healthcare-associated infection (HAI)**—An infection that develops in a person who is cared for in any setting where healthcare is delivered (e.g., acute care hospital, skilled nursing facility, dialysis center, etc.) that was not developing or present at the time of admission to that healthcare setting.
- 14. Inpatient rehabilitation facilities (IRFs)**—IRFs are freestanding rehabilitation hospitals and rehabilitation units in acute care hospitals. They provide an intensive rehabilitation program and patients who are admitted must be able to tolerate three hours of intense rehabilitation services per day.
- 15. Intensive Care Unit (ICU)**—An area in the hospital where severely ill patients are closely monitored and receive advanced life support.
- 16. Long-term acute care facility (LTAC)**—A facility that provides a range of institutional healthcare programs and services, such as comprehensive rehabilitation, respiratory therapy, head trauma treatment, and pain management, outside the acute care hospital.
- 17. MRSA bacteremia**—An infection in the blood caused by the bacteria *Staphylococcus aureus* that is resistant to methicillin antibiotics.
- 18. National rate**—The national rate is determined by the NHSN as similar facilities and specific infection events are compared nationwide.
- 19. National Healthcare Safety Network (NHSN)**—The nation's most widely used healthcare-associated infection (HAI) tracking system. NHSN provides facilities, states, regions, and the nation with data needed to identify problem areas, measure progress of prevention efforts, and ultimately eliminate HAIs. The system is supported by the U.S. Centers for Disease Control and Prevention.
- 20. Standardized infection ratio (SIR)**—A statistic used to calculate, track, and interpret the number of new HAIs. The SIR is determined by comparing the actual number of HAIs to the predicted number of HAIs for a specific group of patients admitted to a specific patient care unit.

- 21. Standard population**—The population against which each of its essential classes or groups can be compared. For purposes of this report, the standard population is the national HAI data reported by the thousands of U.S. facilities that use the NHSN system.
- 22. Surgical site infection (SSI)**—A surgical site infection is an infection that occurs after surgery in the part of the body where the surgery took place. Many SSIs involve the skin only. Other SSIs are more serious and involve deep tissue or organs and usually result in prolonged or re-hospitalization.
- 23. Utah Healthcare Infection Prevention Governance Committee (UHIP GC)**—A multi-disciplinary panel of state leaders in patient safety, infectious diseases, and infection control. Membership is comprised of a broad base of care delivery groups across the state and organized under and staffed by the Utah Department of Health.
- 24. Urinary catheter**—A flexible tube inserted through the urethra and into the bladder to drain urine from the bladder into a bag or container.



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