Making Healthcare Safer for All Californians

Healthcare-Associated Infections in California Hospitals

Annual Report | January 2018 to December 2018

Report to the Legislature and the People of California by the Healthcare-Associated Infections Program, Center for Health Care Quality,
California Department of Public Health | November 2019

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MESSAGE FROM THE CHIEF OF THE HEALTHCARE-ASSOCIATED INFECTIONS PROGRAM

The California Department of Public Health (CDPH) is dedicated to protecting Californians from healthcare-associated infections (HAI) and improving patient safety. Each year CDPH publishes an annual report describing HAI incidence in California hospitals for consumers, providers, payers, and policy makers. The report is intended to prompt hospitals to work with public health on activities to prevent HAI through consistent adherence to evidence-based infection prevention care practices.

In 2018, California hospitals prevented more HAI than in any previous reporting year. Although California hospitals continue to make sustained progress in preventing HAI, plenty of work remains. The CDPH Healthcare-Associated Infections (HAI) Program provides support to hospitals and communities for accelerating HAI prevention through a variety of activities, including:

- Building and maintaining the infection preventionist workforce by offering a free two 2-day "Basics of Infection Prevention" course 2-3 times per year
- Providing onsite assistance to hospitals with the highest infection rates
- Working with local public health agencies to convene infection prevention collaboratives among regional hospitals, skilled nursing facilities, and other providers that share patients
- Assisting local public health to investigate and contain outbreaks and unusual infectious disease occurrences in hospitals and other health care facilities

This year's annual report and interactive map have been improved, allowing better views of HAI data trends over time. Users of the HAI map are now able to select and view infection results for multiple counties and hospitals at the same time.

The CDPH mission is to advance the health and well-being of California's diverse people and communities. California hospitals' continued progress in preventing infections, as demonstrated in this report, is helping to advance that mission by improving health outcomes. CDPH commends hospitals for taking appropriate action to reduce, and ultimately, eliminate avoidable HAI.

Erin Epson, MD
Medical Director / Chief
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ACKNOWLEDGEMENTS

The HAI Program would like to recognize the contributions of California hospitals that diligently track and report HAI data using the National Healthcare Safety Network protocols and definitions and for their continued dedication to ensuring the accuracy of the data used to produce this public report.

HAI Advisory Committee

The HAI Program Advisory Committee makes recommendations to CDPH on issues related to HAI surveillance, reporting, and prevention in California hospitals. The HAI Advisory Committee is comprised of voting members with HAI expertise or interest and non-voting liaison members who represent California HAI stakeholder organizations. The HAI Program thanks each member for their support and contributions.

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EXECUTIVE SUMMARY

The California Department of Public Health (CDPH) publishes healthcare-associated infections (HAI) data annually to provide vital information about the quality of hospital care and to monitor prevention progress (Health and Safety Code section 1288.55). This report presents California hospital HAI data for calendar year 2018.

In 2018, 401 California general acute care hospitals reported 2,428 fewer HAI than were reported in 2017. Hospitals prevented more HAI than in any previous reporting year for three infection types: central line-associated bloodstream infections (CLABSI), MRSA bloodstream infections (MRSA BSI), and *C. difficile* infections (CDI). Statewide incidence for all reportable infection types continues to be lower (better) than 2015 national baselines (Figure 1).

For the second straight year, the largest reductions in HAI incidence among hospitals were reported in CDI, a type of life-threatening diarrheal infection that occurs when a patient inadvertently ingests the organism and is treated with certain antibiotics. Since 2015, California hospitals reduced overall CDI incidence by 41%, exceeding the 2020 CDI reduction goal.

Although California HAI incidence continues to improve each year, HAI incidence is not decreasing for all infection types in all hospitals. In 2018, hospitals reported 168 more surgical site infections (SSI) than in 2017, accounting for a 2% overall increase in SSI incidence.

Long-term acute care (LTAC) hospitals, which provide complex care to patients that typically require prolonged hospital stays, continue to show little progress in HAI prevention and are unlikely to meet 2020 HAI reduction goals for MRSA bloodstream infections, CLABSI or CDI. California LTAC hospitals need to greatly accelerate their HAI prevention efforts to improve patient safety.

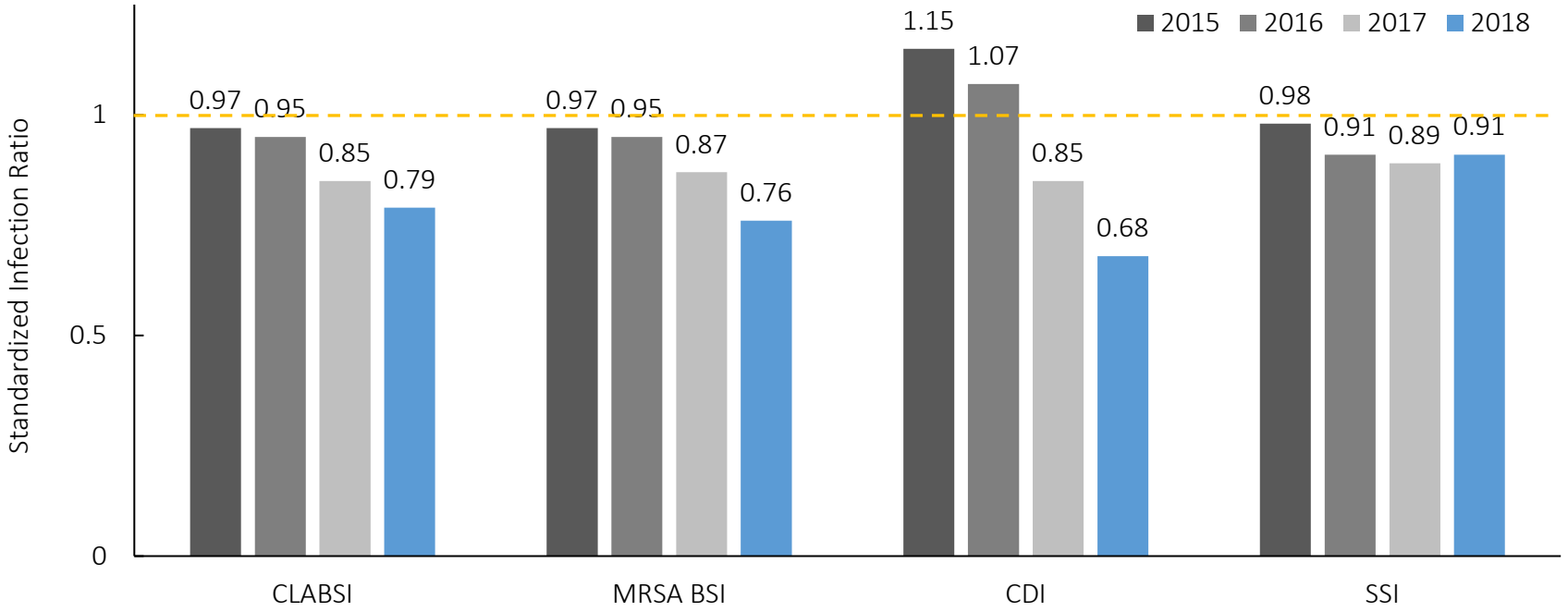
In response to this report, CDPH is engaged in 10 HAI prevention projects and will provide HAI data to local health departments with plans to reduce countywide HAI incidence. CDPH is also

California hospitals have reduced C. difficile infection incidence by 41% since 2015, exceeding the 2020 reduction goal.

targeting 10 hospitals with high HAI incidence over multiple years and will continue to provide assistance to 44 hospitals with the highest SSI incidence among all hospitals performing the same procedures. CDPH continues to collaborate with 20 hospitals that reported nearly half of all CLABSI in 2017 and released a statewide reduction strategy in July 2019.

CDPH recommends hospitals take HAI-specific prevention actions to reach the 2020 reduction goals. Hospitals should review SSI incidence for the past five years to identify procedures for which SSI have increased or have shown no prevention progress. Hospitals should also work with surgical teams to assess and improve infection prevention practices where gaps are identified.

Figure 1. Healthcare-Associated Infection Incidence in California Hospitals, 2015-2018



NOTE. Dashed horizontal line reflects the national baseline for the standardized infection ratio (SIR). An SIR below the dashed line represents HAI prevention progress.

ANNUAL REPORT

Patients in hospitals are exposed to invasive devices, procedures, and medications that put them at risk for **healthcare-associated infections (HAI).** Most HAI can be prevented if health care providers and staff consistently adhere to infection prevention care practices [1]. The California Department of Public Health (CDPH) publishes HAI data to prompt California hospitals to act and provide to consumers and health care purchasers important information for evaluating the quality of care in California hospitals.

This report provides an annual summary of HAI data reported by California hospitals to CDPH, in accordance with Health and Safety Code sections 1288.5 and 1288.55.

METHODS

California acute care hospitals track and report to CDPH five types of hospital-onset infections (Health and Safety Code section 1288.5):

Central line-associated bloodstream infections (CLABSI) result from contamination of a central line, a catheter (tube) that is inserted in a large vein to give medication or fluids. CLABSI can occur due to breaks in infection control care practices during insertion of the central line or during the time the line is in use. Low CLABSI rates are important indicators of patient safety because most CLABSI can be prevented with consistent adherence to recommended infection prevention care practices [2].

Methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections (BSI) are very serious infections due to one of the most common organisms resistant to multiple antibiotics. MRSA BSI acquired in the hospital can result in patients having longer hospital stays, higher hospital costs, and greater risk of death. For MRSA to cause an infection in the bloodstream, the bacteria must be introduced into the bloodstream by a device or during a procedure, or travel to the bloodstream from an MRSA infection at another body site.

Vancomycin-resistant Enterococci (VRE) BSI are invasive infections that occur due to displacement or disruption of gastrointestinal tract bacteria that have acquired resistance due to prior antibiotic exposure or from transmission in a hospital or other health care setting.

***Clostridioides difficile* infections (CDI)** are a type of life-threatening diarrhea that occurs far too commonly in hospitalized patients due to lapses in infection control care practices and exposure to certain antibiotics.

Surgical site infections (SSI) occur after surgery in the part of the body where the surgery took place due to contamination during the time of the operation. California hospitals track and report SSI for 28 procedure types.

This report summarizes HAI data reported to CDPH via the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) from January 1 to December 31, 2018. In 2018, CDPH received HAI data from 335 acute care hospitals (including 250 community, 75 major teaching, and 10 pediatric acute care hospitals), 22 long-term acute care (LTAC) hospitals, 34 critical access hospitals, and 76 acute care rehabilitation hospitals and units. CDPH reports HAI data from LTAC, critical access, and rehabilitation hospitals in separate sections of this report because risk-adjustment methods are different for each hospital type.

Ten (3%) California hospitals did not report complete HAI data for 2018; five of these also failed to report complete data in a prior year (Table 1). CDPH issues deficiencies to hospitals that do not report all required HAI data.

CDPH calculates and presents HAI incidence based on national referent data (baselines) to track California hospital HAI prevention progress from

Table 1. California Hospitals with Incomplete Reporting of Healthcare-Associated Infections Data, 2018

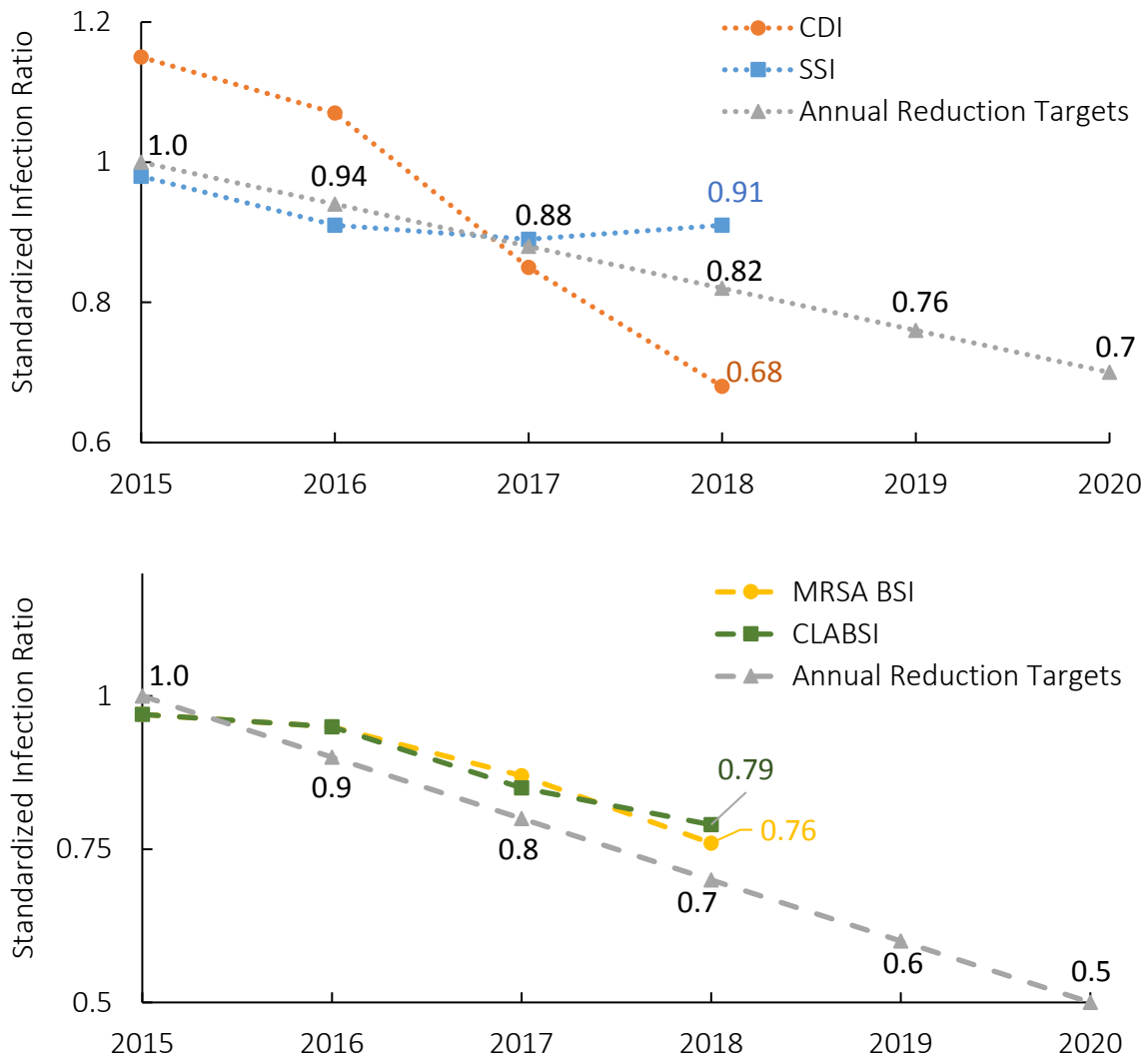
County Hospital	Infection Type(s) with Missing or Incomplete Data in 2018	Incomplete or Missing Data in Previous Years
Glenn		
Glenn Medical Center	CLABSI, MRSA BSI, VRE BSI, CDI	2017
Inyo		
Southern Inyo Hospital	CLABSI, MRSA BSI, VRE BSI, CDI	2015, 2017
Los Angeles		
Miracle Mile Medical Center	CLABSI	
Modoc		
Modoc Medical Center	CLABSI, MRSA BSI, VRE BSI, CDI	
Orange		
Healthbridge Children's Hospital, Orange	CLABSI, MRSA BSI, VRE BSI, CDI	2016, 2017
Plumas		
Seneca District Hospital	CLABSI	2015, 2017
Sonoma		
Healdsburg District Hospital	CLABSI, MRSA BSI, VRE BSI, CDI	
Sonoma Developmental Center	CLABSI, MRSA BSI, VRE BSI, CDI	2015, 2017
Sonoma Specialty Hospital	CLABSI, VRE BSI	
Sutter		
Sutter Surgical Hospital, North Valley	CLABSI	

year to year [3]. When available, CDPH reports HAI incidence using a measure called the **standardized infection ratio (SIR)**. The SIR is calculated by comparing the number of HAI that were reported by the hospital with the number of HAI that were predicted using 2015 national baseline data [4]. The predicted number of infections is determined by a risk adjustment process that accounts for differences in hospital and patient characteristics.

CDPH presents VRE BSI incidence as rates (per 10,000 patient days) because a risk adjustment model and SIR are not available.

In 2015, the CDPH HAI Advisory Committee recommended that CDPH track each hospital's progress in meeting national HAI reduction goals [5]. From 2015 to 2020, all California hospitals should achieve 50% reductions in CLABSI and MRSA BSI incidence and 30% reduction in CDI and SSI. To be considered on track, hospitals must have SIRs at or below incremental targets each year (Figures 2 and 3).

Figures 2 and 3. Standardized Infection Ratio (SIR) Targeted Reduction Goals by Year, HAI Infection Type, and Progress to Date among California Hospitals



CDPH publishes annual HAI findings on its website (www.cdph.ca.gov/HAI). The webpage includes this report and two-page HAI profiles for each California hospital. The profiles show detailed HAI data reported in 2018 and graphs of annual infection trends since 2015. The profiles are also available via the CDPH interactive map, "My Hospital's Infections" (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/HAImap.aspx).

All HAI hospital-specific data tables are available for viewing or downloading at the California Health and Human Services Open Data Portal, (https://data.chhs.ca.gov/).

The Key Findings section of this report presents HAI data for the majority (335) of California hospitals.

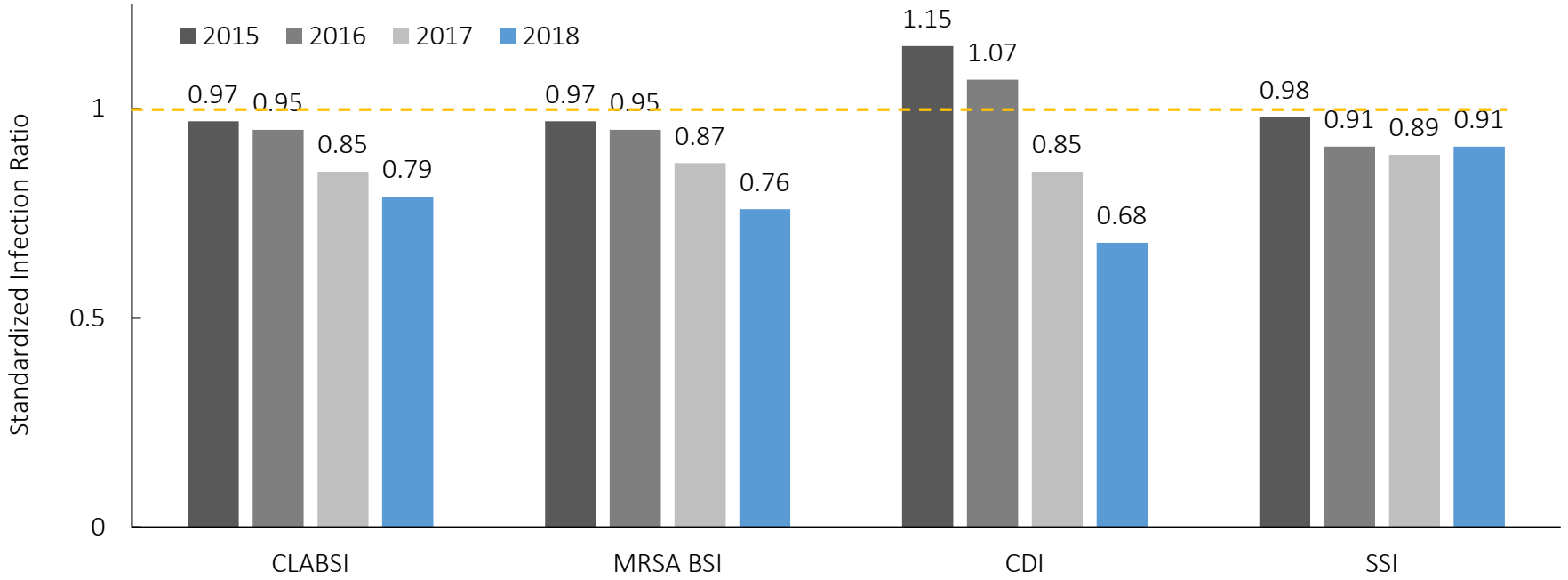
KEY FINDINGS

In 2018, California hospitals continued making HAI prevention progress. Statewide incidence for all reportable infection types is significantly lower or better than national baselines (Figure 1). For at least one infection type, 158 (47%) hospitals in 32 counties have HAI incidence significantly better (★) than the national baseline (or statewide VRE BSI rate) and 34 (10%) hospitals in 11 counties had HAI incidence significantly worse (✖) (Appendix A).

CLABSI

Overall, California hospitals reported 2,075 CLABSI, 203 fewer infections than the number reported in 2017. The statewide CLABSI SIR is 0.79 for 2018, which represents a 7% decrease in CLABSI incidence since 2017 and a 19% decrease in CLABSI incidence compared with the 2015 California hospital CLABSI SIR.

Figure 1. Healthcare-Associated Infection Incidence in California Hospitals, 2015-2018



NOTE. Dashed horizontal line reflects the national baseline for the standardized infection ratio (SIR). An SIR below the dashed line represents HAI prevention progress.

Statewide CLABSI incidence is better than the national baseline in 2018. Despite California hospitals' progress in preventing CLABSI, hospitals need to prevent 764 CLABSI to achieve the 2020 reduction goal for an SIR of 0.50.

MRSA BSI

California hospitals continued to make incremental progress in preventing MRSA BSI in 2018. Hospitals reported 624 MRSA BSI, 66 infections fewer than the number reported in 2017. The statewide SIR among hospitals is 0.76, which represents a 13% reduction in MRSA BSI incidence compared with MRSA BSI reported in 2017. California hospitals reduced MRSA BSI incidence by 22% when compared with the 2015 California baseline SIR of 0.97.

Despite significant reductions in MRSA BSI incidence and being significantly lower than national baseline, California hospitals are not on track in 2018 to meet the 2020 prevention goal that aims for a statewide SIR of 0.50. To meet the 2020 prevention goal, hospitals must prevent 211 MRSA BSI.

VRE BSI

In 2018, California hospitals continued to make progress in reducing VRE BSI rates, most notably among major teaching hospitals (Figure 5). Community hospitals with 125-250 beds had an increase in VRE BSI rates. Overall, hospitals reported 450 VRE BSI, 39 infections fewer than the number reported in 2017. Major teaching hospitals continue to have the highest VRE BSI rate (0.45 per 10,000 patient days) and accounted for 59% of all VRE BSI reported. CDPH identified nine hospitals with significantly high VRE BSI rates compared with their hospital types, including five major teaching hospitals (Appendix A).

CDI

California hospitals made substantial progress in preventing CDI in 2018. In total, 5,731 *C. difficile* infections were reported, 2,052 infections fewer than the number reported in 2017. The statewide CDI SIR among hospitals is 0.68, which represents a 20% reduction in CDI incidence compared with CDI reported in 2017. California hospitals reduced CDI incidence by 41% when compared with the 2015 SIR of 1.15. The

California hospitals must prevent 764 CLABSI, 211 MRSA bloodstream infections and 875 SSI to meet the 2020 HAI prevention goals.

2018 reductions achieved by California hospitals exceeded the 2020 prevention goal aiming for a statewide SIR of 0.70.

CDI can spread among hospitals, skilled nursing facilities, and medical clinics that share patients who are colonized or infected with *C. difficile*. For this reason, understanding CDI incidence by county can help inform state-wide prevention efforts.

California has 44 counties with one or more hospitals that report HAI data to CDPH via the National Healthcare Safety Network. In 2018, CDI incidence is significantly better than the national baseline in 30 (68%) counties, which is twice as many counties that achieved an SIR less than 1.0 in 2017 (Figure 4). Fourteen (32%) counties had an SIR no different than 1.0 in 2018, and no counties had an SIR significantly above 1.0. Additionally, 24 (55%) counties met the 2020 prevention goal of achieving an SIR at or below 0.70.

Figure 4. CDI Incidence by County, 2018

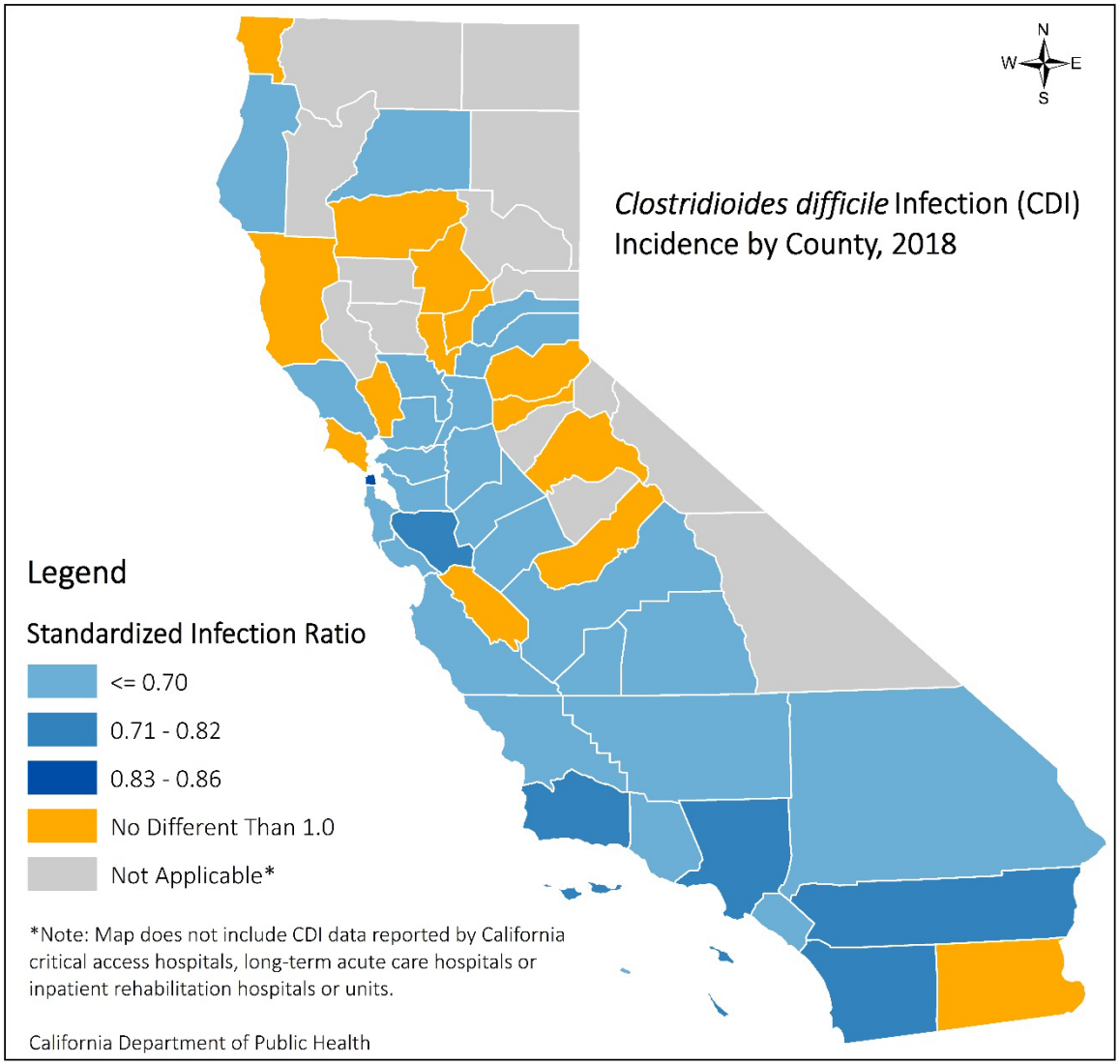
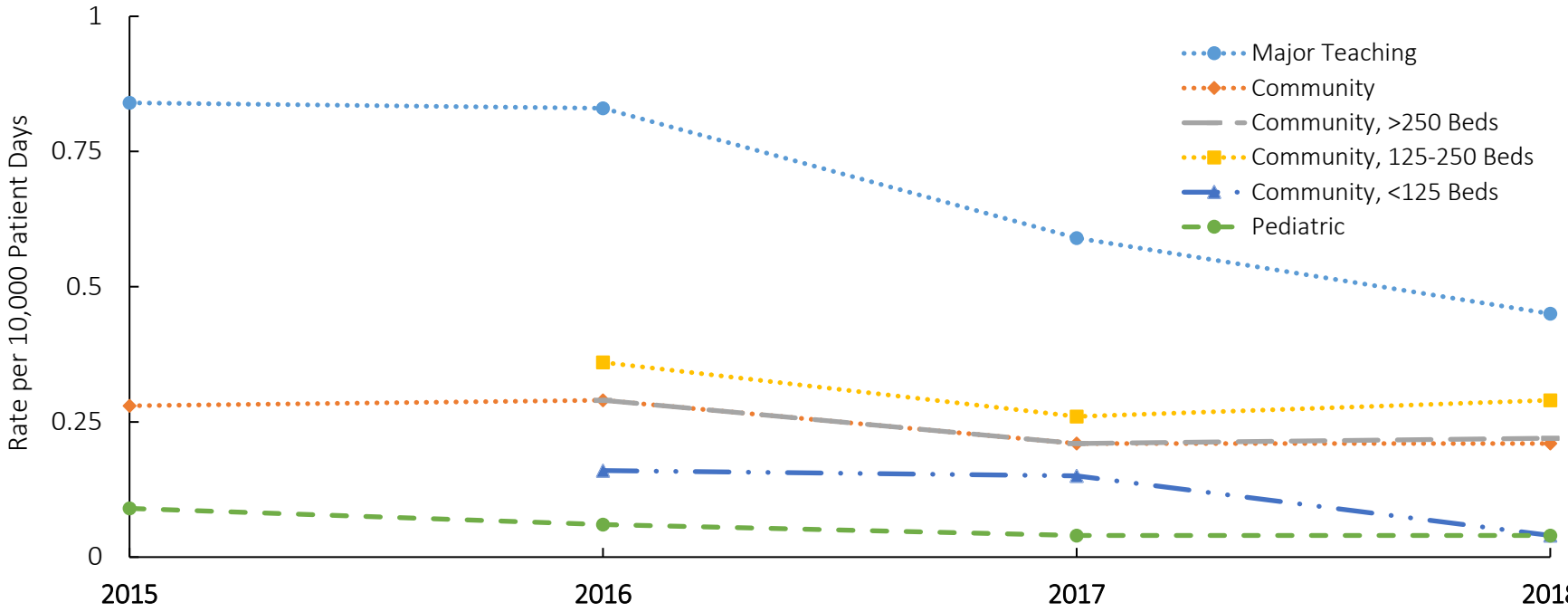


Figure 5. Unadjusted VRE Bloodstream Infection Rates by California Hospital Type, 2015-2018



SSI

CDPH reports SSI data separately for adult (18 years and older) and pediatric (younger than 18 years) surgical patients because different risk adjustment models are applied to account for differences in the two patient groups.

Among adult patients, California hospitals reported 3,747 SSI in 2018, 168 infections more than the number reported in 2017 which resulted in a 2% increase in SSI incidence overall. The increases in SSI incidence were distributed across 15 surgical procedure categories in 2018.

The majority of SSI (89%) were reported among 18 surgical procedure types, which accounted for 95% of surgeries among the 28 surgical procedure types hospitals are required to report (Table 2).

The statewide SSI SIR was 0.91 in 2018. SSI incidence was better than national baseline for six procedures (small bowel surgery, spinal fusion, gastric surgery, appendix surgery, rectal surgery, liver transplant) and worse than national baseline for three procedures (exploratory abdominal surgery (laparotomy), bile duct, liver or pancreatic surgery, pacemaker surgery). In total, 86 hospitals had significantly low SSI incidence for one or more

surgical procedures and 120 hospitals had significantly high SSI incidence for one or more surgical procedures (Appendix B).

Among pediatric patients, hospitals reported 106 SSI in 23,428 surgical procedures in 2018, six infections fewer than the number of SSI reported in 2017. Overall, the pediatric SSI SIR of 0.81 is on track to meet the 2020 reduction goal.

Table 2. Hospital Surgical Site Infection Incidence in Adult Surgical Patients for 18 Most Common Surgical Procedure Categories, 2017 vs. 2018

Surgical Procedure Category	Standardized Infection Ratio		2018 Compared with National Baseline	On Track to Achieve 2020 Target Goal?
	2017	2018		
Appendix surgery	1.02	0.80	Better	Yes
Cardiac surgery	1.01	0.82	Same	No
Cesarean section	1.01	0.91	Same	No
Colon surgery	0.97	0.96	Same	No
Coronary bypass, chest and donor incisions	0.79	0.90	Same	No
Exploratory abdominal surgery (laparotomy)	0.93	1.18	Worse	No
Gallbladder surgery	0.94	0.95	Same	No
Gastric surgery	0.58	0.70	Better	Yes
Hip prosthesis	0.92	1.02	Same	No
Hysterectomy, abdominal	0.86	0.89	Same	No
Knee prosthesis	0.94	0.87	Same	No
Laminectomy	0.72	0.98	Same	No
Open reduction of fracture	0.96	1.01	Same	No
Ovarian surgery	1.16	1.16	Same	No
Pacemaker surgery	1.16	1.34	Worse	No
Small bowel surgery	0.74	0.76	Better	Yes
Spinal fusion	0.81	0.88	Better	No
Thoracic surgery	0.68	0.81	Same	Yes

HAI PREVENTION PROGRESS IN INDIVIDUAL HOSPITALS

Hospitals with Low HAI Incidence

In 2018, California hospitals prevented 2,360 CLABSI, MRSA BSI, VRE BSI and CDI when compared with 2017.

Individual hospitals are also successfully sustaining low HAI incidence. Seventeen hospitals reported low CDI or CLABSI incidence for four consecutive years from 2015 to 2018 (Table 3). Many other hospitals are also demonstrating meaningful HAI reductions. In 2018, 134 (40%) hospitals' CDI incidence is lower (better) than national baseline.

The CDPH HAI Program uses annually reported HAI data to target hospitals and communities for outreach and interventions. Among 12 hospitals targeted in 2017 for multi-year high CLABSI incidence, 11 (92%) improved and are no longer significantly higher than 2015 national baselines in 2018.

CDPH continues to work closely with 20 hospitals that reported 42% of all CLABSI in 2017 and developed new targeted strategies for CLABSI prevention. In 2018, 16 (80%) of these

Table 3. Hospitals with HAI Incidence Better than National Baselines for Four Consecutive Years, 2015-2018

Hospital Name	County	HAI Type
California Hospital Medical Center, Los Angeles	Los Angeles	CDI
College Medical Center	Los Angeles	CDI
Cedars-Sinai Medical Center	Los Angeles	CLABSI
Natividad Medical Center	Monterey	CDI
St. Jude Medical Center	Orange	CDI
College Hospital Costa Mesa	Orange	CDI
Memorial Care Orange Coast Medical Center	Orange	CLABSI
University of California Irvine Medical Center	Orange	CLABSI
Mercy General Hospital	Sacramento	CLABSI
Mercy San Juan Medical Center	Sacramento	CLABSI
University of California Davis Medical Center	Sacramento	CLABSI
Redlands Community Hospital	San Bernardino	CLABSI
Sharp Mary Birch Hospital For Women And Newborns	San Diego	CDI
Zuckerberg San Francisco General Hospital and Trauma Center	San Francisco	CDI
California Pacific Medical Center, California West Campus Hospital	San Francisco	CDI
St. Joseph's Medical Center Of Stockton	San Joaquin	CLABSI
Regional Medical Center of San Jose	Santa Clara	CDI

20 hospitals reported a reduction in CLABSI incidence. Overall, the 20 hospitals reported 217 fewer CLABSI in 2018 compared with 2017.

Among 39 hospitals targeted for multi-year high CDI in 2017, 37 (95%) improved and are no longer significantly higher than 2015 national baselines. Among these 37 hospitals, 15 (41%) are significantly lower (better) than national baselines.

In 2018, CDPH evaluated the impact of a CDI prevention collaborative among hospitals and healthcare facilities in Orange County. The results of the analysis showed a significant 4% per month reduction in CDI incidence among hospitals that participated in the collaborative from June 2015 to June 2016 [6]. CDPH also found a 2% per month decrease in community-onset CDI among patients admitted to Orange County hospitals following the prevention collaborative.

Sixteen hospitals reported 52% of all VRE BSI in 2017 and were asked to evaluate their VRE prevention practices. Fourteen (88%) of these hospitals reported a reduction in VRE BSI rates in 2018, resulting in 51 fewer VRE BSI reported by the 16 targeted hospitals.

Last year, 44 hospitals were prioritized for outreach based on high SSI incidence compared with other California hospitals performing the same procedures. Ten (23%) of those hospitals showed significant reductions in SSI incidence from 2017 to 2018 for one of the targeted procedure types, including two hospitals with significant decreases in multiple procedure types.

Overall, 41 (93%) of 44 targeted hospitals had a decrease in SSI incidence (defined as any reduction in SIR) for at least one of the procedures for which they had been targeted.

Hospitals with High HAI Incidence

Seven hospitals have HAI incidence that remains significantly higher (worse) than national baselines for four consecutive years, 2015-2018. Ten other hospitals are also worse for two or

Table 4. Hospitals with HAI Incidence Worse than National Baselines in 2018 for Multiple Infection Types or in Consecutive Years

Hospital Name	County	HAI Type	Worse than 2015 National Baseline
Centinela Hospital Medical Center	Los Angeles	MRSA BSI	2017, 2018
Children's Hospital Los Angeles	Los Angeles	CDI	2017, 2018
City of Hope Helford Clinical Research Hospital	Los Angeles	CDI VRE BSI	2016, 2017, 2018 2015, 2016, 2017, 2018
Garfield Medical Center	Los Angeles	CLABSI VRE BSI	2018 2017, 2018
LAC+USC Medical Center	Los Angeles	CLABSI	2015, 2016, 2017, 2018

three consecutive years or for multiple HAI types in 2018 (Table 4).

In addition, 27 hospitals had significantly high HAI incidence for one HAI type in 2018 compared with the 2015 national baseline (Appendix A).

Table 4. Hospitals with HAI Incidence Worse than National Baselines in 2018 for Multiple Infection Types or in Consecutive Years, Continued

Hospital Name	County	HAI Type	Worse than 2015 Baseline
Olympia Medical Center	Los Angeles	CLABSI MRSA BSI	2015, 2016, 2017, 2018 2018
Ronald Reagan UCLA Medical Center	Los Angeles	VRE BSI	2015, 2016, 2017, 2018
Saint Vincent Medical Center	Los Angeles	CDI CLABSI VRE BSI	2018 2018 2018
Southern California Hospital at Culver City	Los Angeles	CDI CLABSI	2018 2018
West Hills Hospital & Medical Center	Los Angeles	CDI CLABSI	2017, 2018 2018
Loma Linda University Medical Center	San Bernardino	VRE BSI	2016, 2017, 2018
Loma Linda University Surgical Hospital	San Bernardino	CDI	2017, 2018
UC San Diego Health La Jolla	San Diego	CDI	2017, 2018
California Pacific Medical Center, Pacific Campus Hospital	San Francisco	VRE BSI	2015, 2016, 2017, 2018
UCSF Medical Center	San Francisco	CDI	2015, 2016, 2017, 2018
Stanford Health Care	Santa Clara	VRE BSI	2015, 2016, 2017, 2018
Kaweah Delta Medical Center	Tulare	CLABSI MRSA BSI	2018 2017, 2018

LONG-TERM ACUTE CARE (LTAC) HOSPITALS

LTAC hospitals provide complex care to patients that typically require prolonged acute care (greater than 25 days) for respiratory ventilation, multiple intravenous (IV) medications, or complex wound care.

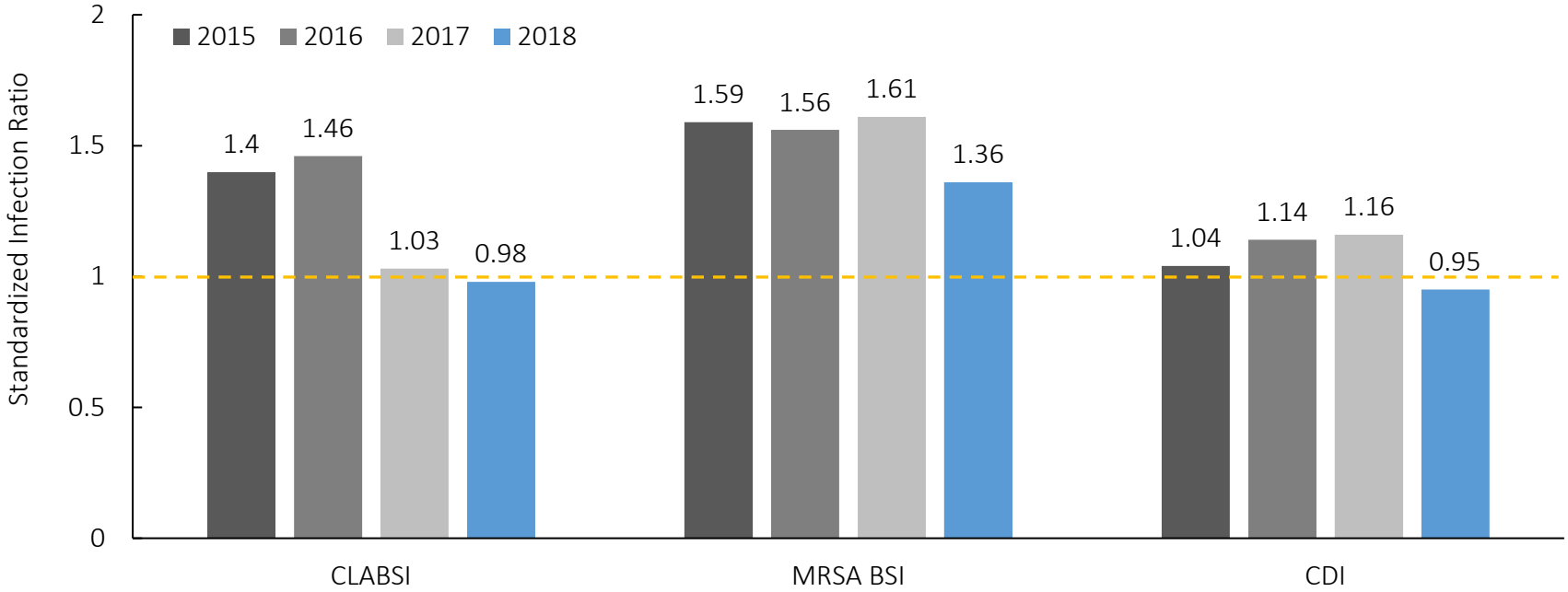
CLABSI in LTAC Hospitals

In 2018, LTAC hospitals reported 288 CLABSI, 26 fewer CLABSI than reported in 2017. The statewide CLABSI SIR is 0.98, a decrease of 30% since 2015. Statewide CLABSI incidence continues to be the same as national baseline for LTAC hospitals. LTAC hospitals are not on track to meet the 2020 CLABSI reduction goal and need to prevent 141 infections to achieve the target SIR of 0.50.

MRSA BSI in LTAC Hospitals

For the fourth consecutive year, California LTAC hospitals were worse

Figure 6. Healthcare-Associated Infection Incidence in California Long-Term Acute Care Hospitals, 2015-2018



NOTE. Dashed horizontal line reflects the national baseline for the standardized infection ratio (SIR). An SIR below the dashed line represents HAI prevention progress.

than national baseline for MRSA BSI incidence. In 2018, LTAC hospitals reported 93 MRSA BSI, 17 infections fewer than the number reported in 2017. The statewide SIR among LTAC hospitals is 1.36, which represents a 16% reduction in MRSA BSI incidence compared with MRSA BSI reported in 2017. To meet the 2020 prevention goal for reducing MRSA BSI incidence, LTAC hospitals need to prevent 59 MRSA BSI.

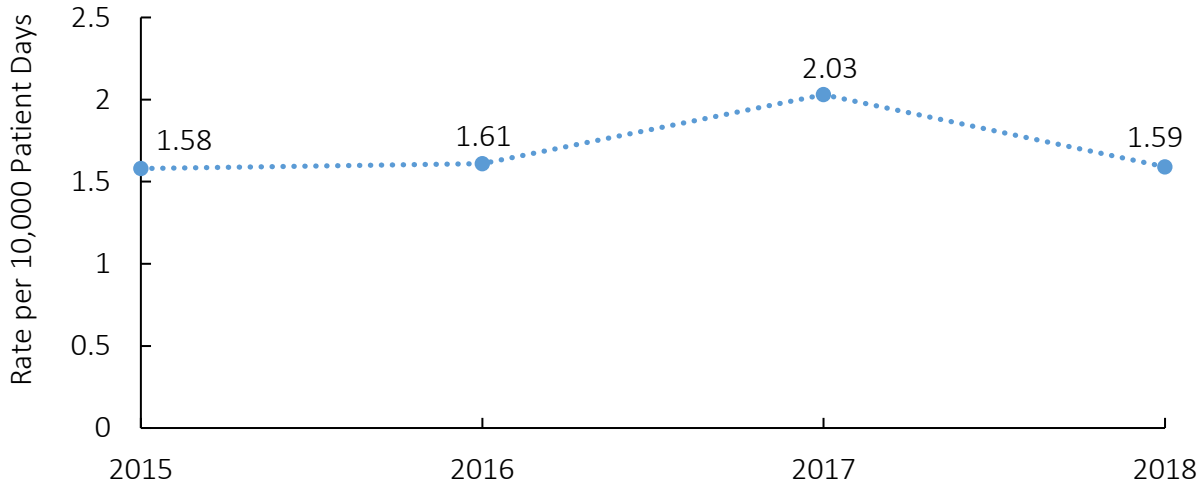
California LTAC hospitals must prevent 141 CLABSI, 59 MRSA bloodstream infections and 135 C. difficile infections to meet the 2020 HAI prevention goals.

VRE BSI in LTAC Hospitals

In 2018, 22 LTAC hospitals reported 72 VRE BSI. Although VRE BSI incidence was 22% lower in 2018 (1.59 per 10,000 patient days) compared with 2017 (2.03 per 10,000 patient days), LTAC hospitals continue to have the highest VRE BSI incidence among all other hospital types in California.

CDPH identified two LTAC hospitals with significantly high VRE BSI rates compared with other hospitals of the same type (Appendix A).

Figure 7. Unadjusted VRE Bloodstream Infection Rates among Long-Term Acute Care Hospitals, 2015-2018



CDI in LTAC Hospitals

California LTAC hospitals reported increases in CDI incidence each year from 2015 to 2017 (Figure 6). In 2018, LTAC hospitals reported 515 CDI, 112 infections fewer than the number reported in 2017. The statewide SIR among LTAC hospitals is 0.95, which represents an 18% reduction in CDI incidence compared with CDI reported in 2017. Despite reporting fewer CDI in

2018, LTAC hospitals' CDI incidence is the same as national baseline and LTAC hospitals are not on track to meet the 2020 prevention goal for a statewide SIR of 0.70. LTAC hospitals must prevent 135 CDI to meet the 2020 prevention goal.

Individual LTAC Hospitals' HAI Performance

One LTAC hospital, Vibra Hospital of Northern California (Shasta County), had significantly low CLABSI incidence for four consecutive years during 2015-2018. No LTAC hospitals were better than national baselines consecutively from 2015 to 2018 for MRSA BSI or CDI incidence.

Three LTAC hospitals had significantly high HAI incidence for four consecutive years from 2015 to 2018:

- Kindred Hospital, Westminster (Orange County), was worse than the national baseline for CLABSI incidence each year.
- Kindred Hospital, Los Angeles (Los Angeles County), had significantly high MRSA BSI incidence all four years.
- Kindred Hospital, Santa Ana (Orange County), had CDI incidence worse than the national baseline each year.

CRITICAL ACCESS HOSPITALS

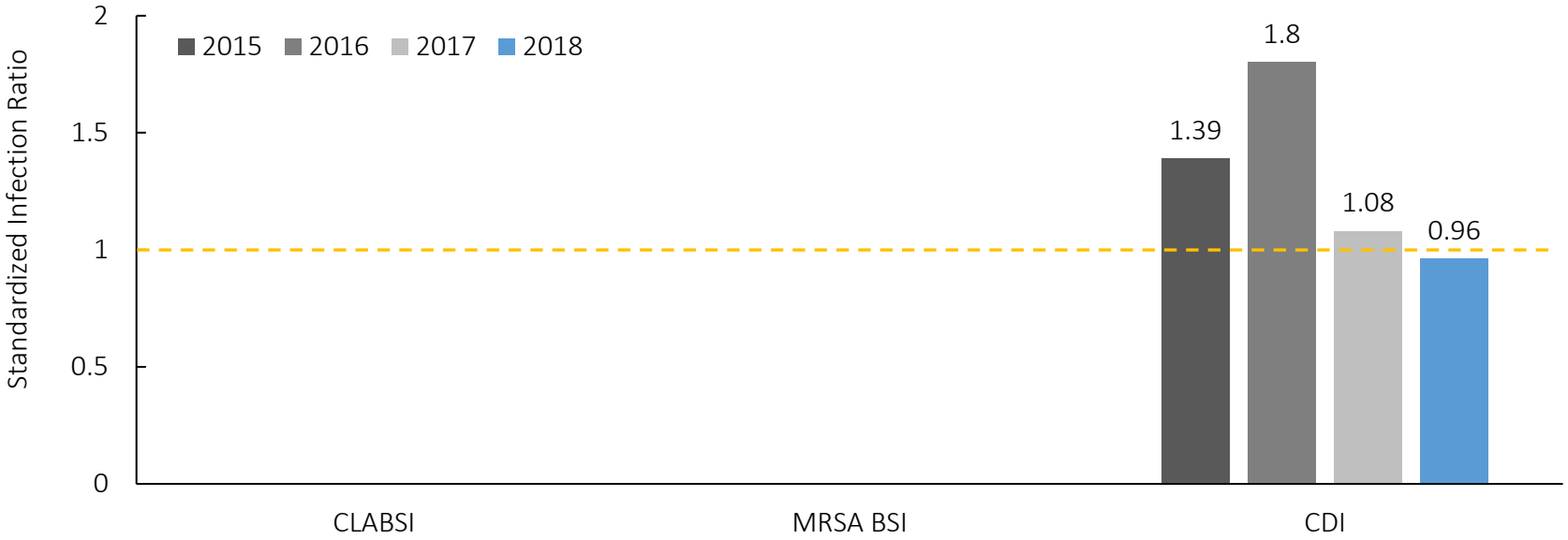
Critical access hospitals have 25 beds or less and are located more than 35 miles from another hospital (with some exceptions). Patients in critical access hospitals stay on average four days or less.

In 2018, California critical access hospitals reported zero CLABSI, zero MRSA BSI and zero VRE BSI.

Critical access hospitals reported 28 hospital-onset CDI, three infections fewer than the number reported in 2017. The statewide CDI SIR among critical access hospitals is 0.96, which represents an 11% reduction in CDI incidence compared with 2017. Despite reporting fewer CDI in 2018, critical access hospitals are still the same as national baseline for CDI incidence.

Statewide, critical access hospitals are not on track to meet the 2020 CDI prevention goal (SIR less than or equal to 0.70) and must prevent eight CDI to meet the prevention target.

Figure 8. Healthcare-Associated Infection Incidence in California Critical Access Hospitals, 2015-2018



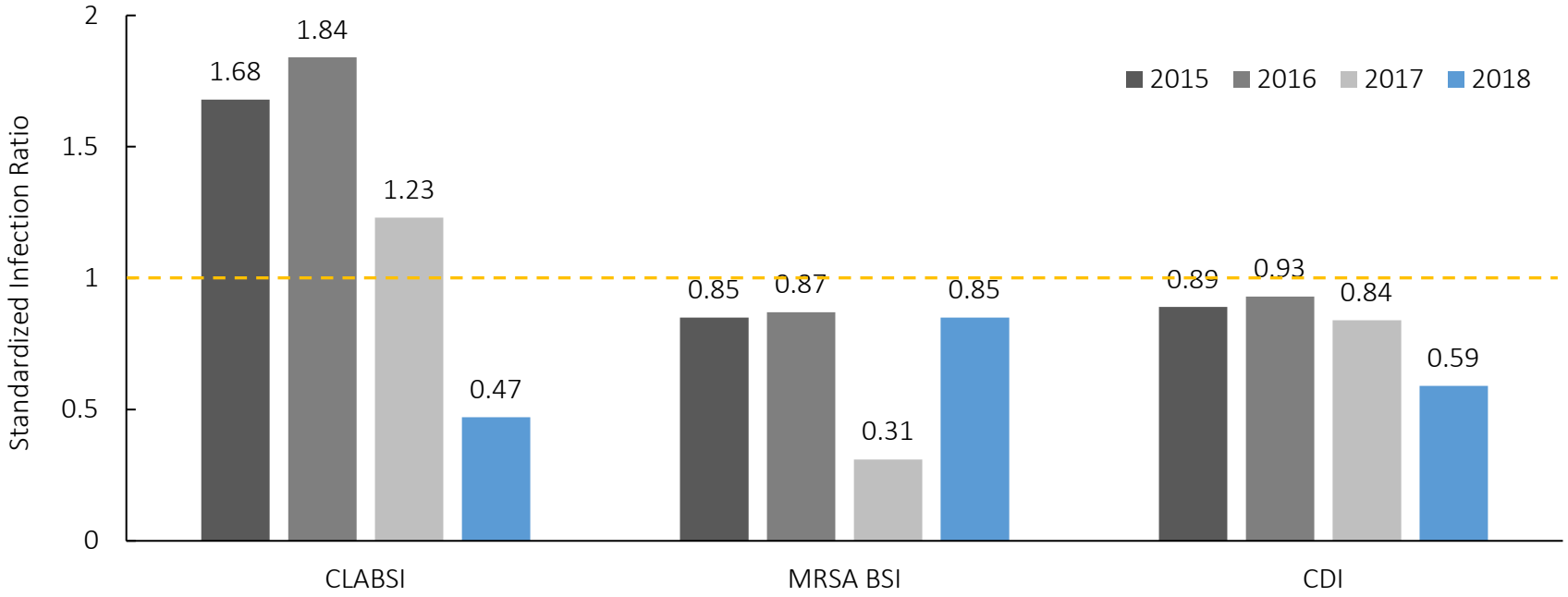
NOTE. Dashed horizontal line reflects the national baseline for the standardized infection ratio (SIR). An SIR below the dashed line represents HAI prevention progress.

REHABILITATION HOSPITALS AND UNITS

Acute care rehabilitation hospitals and units evaluate and restore function to patients who suffer from acute or chronic pain, musculoskeletal problems, stroke, and catastrophic events resulting in complete or partial paralysis.

In 2018, 11 freestanding rehabilitation hospitals and 65 hospital-based acute care rehabilitation units reported 8 CLABSI and 147 CDI, exceeding the 2020 prevention goals for both infection types (Figure 9). Rehabilitation hospitals and units reported 47 fewer CDI in 2018 compared with 2017, resulting in a 30% reduction in statewide CDI incidence. Rehabilitation hospitals and units also reported nine MRSA BSI and one VRE BSI. To achieve the 2020 reduction target goal for all reportable HAI types, rehabilitation hospitals and units need to prevent four MRSA BSI.

Figure 9. Healthcare-Associated Infection Incidence in California Rehabilitation Hospitals and Units, 2015-2018



NOTE. Dashed horizontal line reflects the national baseline for the standardized infection ratio (SIR). An SIR below the dashed line represents HAI prevention progress.

PUBLIC HEALTH ACTION

Most HAI can be prevented if hospital personnel consistently adhere to evidence-based infection prevention practices for all care encounters. In response to this report, the CDPH Licensing and Certification Program is prioritizing hospitals with significantly high HAI incidence for 2019-2020 annual relicensing surveys. The CDPH HAI Program is providing consultation to hospitals with high HAI incidence by offering assistance to assess infection prevention care practices and recommendations for improvement. Specifically, CDPH will:

CLABSI

- Continue to offer assistance to two hospitals targeted for multi-year high CLABSI incidence for the past four years (2015-2018)
- Continue collaboration with 20 hospitals that reported over 40% of all CLABSI in 2017 and add eight additional hospitals to the work group that had significantly high CLABSI in 2018

MRSA and VRE BSI

- Assist hospitals that reported MRSA BSI in 2018 with identifying the underlying cause of infection using information learned from the previous (2017) MRSA BSI hospital outreach project.
    - Among 128 reported hospital-onset MRSA BSI in 2017, CDPH found that 80% were due to two infection types: 56% were primary bloodstream infections (27% CLABSI and 29% not associated with a central line) and 24% were secondary to pneumonia
    - Hospitals can use the findings to develop infection-specific prevention strategies to reduce MRSA BSI incidence
- Target 40 hospitals in 13 counties that reported 44% of all MRSA BSI in 2018 to participate in a statewide prevention initiative
- Continue to follow up with 16 hospitals that reported 50% of all VRE BSI in 2017 to identify the actions they are taking to address high rates. Reach out to three additional hospitals that had significantly high VRE BSI in 2018

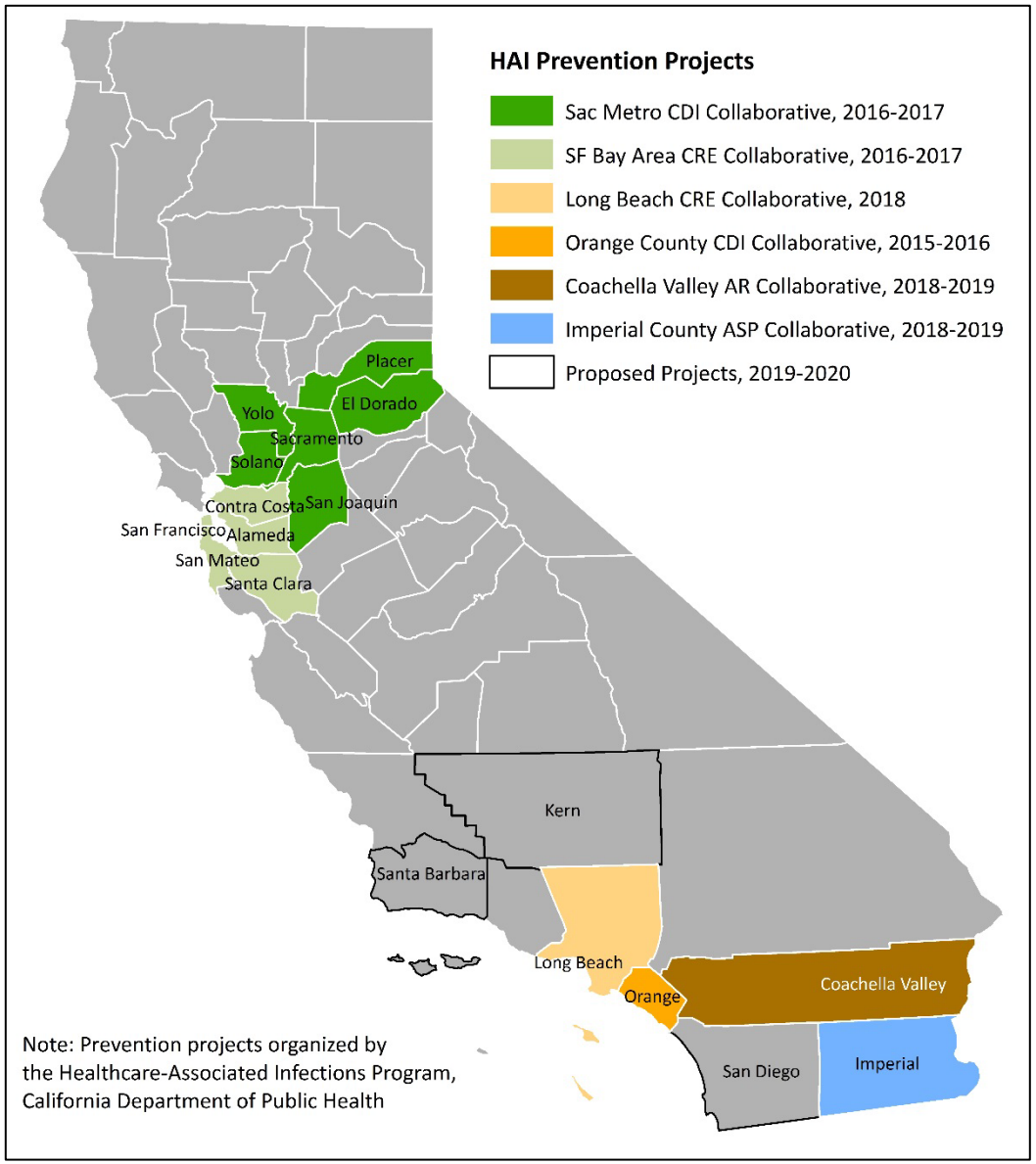
CDI

- Follow up with 6 hospitals that are not making progress in CDI prevention as demonstrated by significantly high CDI incidence for multiple years during 2015-18
- Continue to track CDI prevention progress among hospitals participating in regional prevention collaboratives (Figure 10)
- Engage with the Kern Antimicrobial Stewardship Consortium and local public health to expand an existing project

SSI

- Continue to provide assistance to 44 hospitals with SSI incidence in the top 10th and top 25th percentile for multiple procedure categories in 2017

Figure 10. CDPH and Local Public Health Regional Prevention Initiatives, 2015-2019



Additional CDPH Follow Up

- Seek partnerships to develop a statewide strategy to address continued high HAI incidence in California LTAC hospitals
- Provide 18 local health departments (with five or more hospitals) jurisdiction-specific HAI trend data, a summary of CDPH HAI Program activities involving hospitals and other healthcare providers within their regions, and a data for action plan aimed to reduce the jurisdiction's HAI incidence
- Continue to seek guidance and advice from the HAI Advisory Committee and other State partners engaged in HAI prevention
- Continue to build the infection prevention workforce by offering a two-day classroom course, "Basics of Infection Prevention" twice per year

PREVENTION STRATEGIES AND RECOMMENDATIONS FOR HOSPITALS

By 2020, hospitals should achieve the national HAI reduction targets as recommended by the HAI Advisory Committee. CDPH recommends that hospitals:

- Review CDPH CLABSI prevention guidance and implement recommendations as needed. Seek to achieve the 2020 CLABSI reduction goal (SIR ≤ 0.50)
- Review all MRSA BSI to identify the underlying cause of infection using CDC HAI definition checklists (https://www.cdc.gov/nhsn/hai-checklists/index.html). Develop a prevention plan that targets the most common causes of hospital-onset MRSA BSI. Seek to achieve the 2020 MRSA BSI reduction goal (SIR ≤ 0.50)
- For hospitals with hospital-onset VRE BSI, develop and implement hospital-specific VRE BSI prevention plan based on your hospital's at-risk population.
- Review SSI incidence (Complex A/R) for the past five years to identify procedures for which SSI have increased or no SSI prevention progress has occurred. Develop procedure-specific SSI prevention plans with the appropriate surgeons, surgical specialty services, and operating room staff. Seek to achieve 2020 reduction goals (SIR ≤ 0.70) for all procedure types
- Continue to track and limit use of antimicrobials associated with higher CDI risk. Promote use of lower risk antimicrobials and shortest effective duration of therapy. Optimize CDI treatment and stop unnecessary antimicrobials in patients with new CDI diagnoses. Incorporate CDI diagnostic testing stewardship practices to improve accuracy of CDI diagnosis [7]. Seek to achieve the 2020 CDI reduction goal (SIR ≤ 0.70)
- Sustain a facility-wide adherence monitoring and feedback (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/MonitoringAdherenceToHCPracticesThatPreventInfection.aspx) program to evaluate compliance with care practices known to prevent HAI occurrence. Utilize standardized adherence monitoring tools and feedback results to hospital personnel
- Participate in HAI-specific projects, infection prevention consultations, regional prevention collaboratives, and educational programs offered by the CDPH HAI Program
- Review past assessments by CDPH HAI Program liaison infection preventionists and follow through on implementing HAI prevention recommendations
- Continue to use CDC Targeted Action for Prevention resources (https://www.cdc.gov/hai/prevent/tap.html) and tools to continue HAI prevention efforts

PREVENTION STRATEGIES AND RECOMMENDATIONS FOR PATIENTS

Members of the public can take part in reducing infection rates by learning more about what can be done to prevent HAI and talking with their health care providers. CDPH recommends that members of the public:

- **Speak up** if you don't see your health care providers cleaning their hands before examining or treating you and ask if they should also be wearing gloves
- **Educate yourself** about HAI by visiting the CDPH HAI "Me and My Family" webpage (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/MeAndMyFamily.aspx)
- **Clean your hands** frequently
- Learn more about antibiotics (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/Antibiotics.aspx) and when antibiotics are and are not needed for common infections (https://www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/index.html)
- View 2018 HAI results for hospitals in your county (or adjacent counties) on the CDPH My Hospital's Infections map (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/HAImap.aspx)
- Print a copy of the 2-page HAI profile (https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/AnnualHAIReports.aspx) for your hospital and take it with you to your next scheduled appointment to discuss with your doctor and ask questions
- Ask your doctor and other members of your health care team if their facility has an infection prevention adherence monitoring program and what other actions they are taking to prevent HA

REFERENCES

1. Umscheid CA, Mitchell MD, Doshi JA, et al. Estimating the Proportion of Healthcare-Associated Infections that are Reasonably Preventable and the Related Mortality and Costs. *Infection Control and Hospital Epidemiology*; 32(2), 2011.

2. Centers for Disease Control and Prevention. CDC Vital signs: Making Health Care Safer by Reducing Bloodstream Infections, 2011. Accessed June 2018. https://www.cdc.gov/vitalsigns/pdf/2011-03-vitalsigns.pdf

3. Centers for Disease Control and Prevention. Paving the Path Forward: 2015 Rebaseline. Accessed June 2018. https://www.cdc.gov/nhsn/2015rebaseline/

4. Centers for Disease Control and Prevention. The NHSN Standardized Infection Ratio (SIR): A Guide to the SIR, March 2018. Accessed June 2018. https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

5. U.S. Department of Health and Human Services, U.S. Department of Defense, U.S. Department of Labor and U.S. Department of Veterans Affairs. National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination, 2013. Accessed June 2018. https://health.gov/hcq/prevent-hai-action-plan.asp

6. Rizzo, K., Yi, S., Garcia, E., Zahn, M., & Epson, E. Reduction in *Clostridium difficile* infection rates following a multifacility prevention initiative in Orange County, California: A controlled interrupted time series evaluation. *Infection Control & Hospital Epidemiology*, 1-8. doi:10.1017/ice.2019.135.

7. California Department of Public Health, Center for Health Care Quality, Healthcare-Associated Infections Program. Antimicrobial Stewardship Strategies to Prevent Clostridium difficile Infections, 2017. Accessed June 2018.

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
Alameda				
Alameda Hospital		✖		
Alta Bates Summit Medical Center	★			
Alta Bates Summit Medical Center, Alta Bates Campus	★			
Eden Medical Center	★			
Highland Hospital	★			
Kaiser Foundation Hospital, Oakland/Richmond	★			★
Kaiser Foundation Hospital, San Leandro	★			
St Rose Hospital	★			
Butte				
Enloe Medical Center, Esplanade		★		
Contra Costa				
Contra Costa Regional Medical Center	★			
John Muir Medical Center, Concord Campus	★			
John Muir Medical Center, Walnut Creek Campus	★			
Kaiser Foundation Hospital, Antioch	★			
Kaiser Foundation Hospital, Walnut Creek		★		
Sutter Delta Medical Center	★			
El Dorado				
Barton Memorial Hospital	✖			
Marshall Medical Center		★		
Fresno				
Clovis Community Medical Center	★			
Community Regional Medical Center	★			
Saint Agnes Medical Center	★			
Humboldt				
St. Joseph Hospital, Eureka	★			
Kern				
Adventist Health Bakersfield	★			
Kern Medical Center	★			
Mercy Southwest Hospital	★			
Kings				
Adventist Health Hanford	★	★		
Los Angeles				
Adventist Health Glendale	★			
Adventist Health White Memorial	★			
Alhambra Hospital Medical Center	★			
Antelope Valley Hospital	★			

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
California Hospital Medical Center, Los Angeles	★			
Cedars-Sinai Medical Center	★	★		
Centinela Hospital Medical Center	★	★	✖	
Children's Hospital Los Angeles	✖	★	★	
City of Hope Helford Clinical Research Hospital	✖			✖
College Medical Center	★			
Emanate Health Foothill Presbyterian Hospital		★	✖	
Emanate Health Inter-Community Hospital		★		
Emanate Health Queen of the Valley Hospital	★	★		
Encino Hospital Medical Center	★			
Garfield Medical Center	★	✖		✖
Glendale Memorial Hospital and Health Center	★			
Glendora Community Hospital	★			
Henry Mayo Newhall Hospital	★			
Hollywood Presbyterian Medical Center	★	✖		
Huntington Memorial Hospital		★		
Kaiser Foundation Hospital, Downey			★	
Kaiser Foundation Hospital, Los Angeles	★	✖		
Kaiser Foundation Hospital, Panorama City	★			
Kaiser Foundation Hospital, South Bay	★	★		
Kaiser Foundation Hospital, West LA		✖		
Keck Hospital of USC			★	
LAC/Harbor UCLA Medical Center	★			
LAC/Olive View UCLA Medical Center	★			
LAC+USC Medical Center	★	✖		
Martin Luther King Jr. Community Hospital	★			
Methodist Hospital of Southern California			★	
Mission Community Hospital	★			
Monterey Park Hospital			✖	
Northridge Hospital Medical Center	★			
Olympia Medical Center	★	✖	✖	
Pacifica Hospital of the Valley		✖		
PIH Health Hospital, Whittier	★			
Pomona Valley Hospital Medical Center	★			
Providence Holy Cross Medical Center	★			
Providence Little Company of Mary Medical Center Torrance	★	★	★	
Providence Saint John's Health Center		★		
Providence Saint Joseph Medical Center	★			

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
Providence Tarzana Medical Center	★			
Ronald Reagan UCLA Medical Center				✖
Saint Francis Medical Center		★		
Saint Vincent Medical Center	✖	✖		✖
San Gabriel Valley Medical Center	★			
Sherman Oaks Hospital	★			
Southern California Hospital at Culver City	✖	✖		
Southern California Hospital at Hollywood	★			
Torrance Memorial Medical Center	★		✖	
Valley Presbyterian Hospital	★			✖
West Hills Hospital & Medical Center	✖	✖		
Whittier Hospital Medical Center	★			
Madera				
Valley Children's Hospital		★		
Merced				
Mercy Medical Center	★			
Monterey				
Natividad Medical Center	★			
Salinas Valley Memorial Hospital		★		
Napa				
Adventist Health St. Helena			✖	
Queen of the Valley Medical Center		✖		
Nevada				
Sierra Nevada Memorial Hospital	★			
Orange				
Anaheim Global Medical Center	★			
College Hospital Costa Mesa	★			
Hoag Memorial Hospital Presbyterian	★			
Huntington Beach Hospital	✖			
Kaiser Foundation Hospital, Orange County, Anaheim		★		
Los Alamitos Medical Center	★			
MemorialCare Orange Coast Medical Center	★	★		
Mission Hospital Regional Medical Center	★			
Orange County Global Medical Center	★			
Placentia Linda Hospital	★			
St. Joseph Hospital, Orange		★		
St. Jude Medical Center	★	★	★	
University of California Irvine Medical Center	★	★		

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
West Anaheim Medical Center	★			
Placer				
Kaiser Foundation Hospital, Roseville	★		★	★
Sutter Roseville Medical Center	★	★	★	
Riverside				
Desert Regional Medical Center	★			
Hemet Valley Medical Center	★			
Riverside University Health System, Medical Center	★	★		
Temecula Valley Hospital	★			
Sacramento				
Kaiser Foundation Hospital, Sacramento	★	★		
Kaiser Foundation Hospital, South Sacramento	★	★		
Mercy General Hospital	★	★	★	
Mercy San Juan Medical Center	★	★		
Methodist Hospital of Sacramento	★			
Sutter Medical Center, Sacramento	★	★		★
University of California Davis Medical Center	★	★		
San Bernardino				
Arrowhead Regional Medical Center	★	★		
Desert Valley Hospital	★	★		
Kaiser Foundation Hospital, Fontana		★	★	
Loma Linda University Children's Hospital				★
Loma Linda University Medical Center				✖
Loma Linda University Surgical Hospital	✖			
Redlands Community Hospital	★	★		
St. Bernardine Medical Center	★			
St. Mary Medical Center, Apple Valley	★			
Victor Valley Global Medical Center	★	✖		
San Diego				
Grossmont Hospital	★	★	★	★
Palomar Medical Center	★			
Pomerado Hospital	★			
Scripps Memorial Hospital, Encinitas	★			
Scripps Memorial Hospital, La Jolla	★			
Scripps Mercy Hospital	★			
Scripps Mercy Hospital Chula Vista	★			
Sharp Chula Vista Medical Center	★	✖		
Sharp Mary Birch Hospital For Women And Newborns	★			★

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
Sharp Memorial Hospital	★		★	★
UC San Diego Health Hillcrest	★			✖
UC San Diego Health La Jolla	✖			
San Francisco				
California Pacific Medical Center, California West Campus Hospital	★			
California Pacific Medical Center, Davies Campus Hospital		★		
California Pacific Medical Center, Pacific Campus Hospital				✖
Kaiser Foundation Hospital, San Francisco	★			
Saint Francis Memorial Hospital	★			
UCSF Medical Center	✖			
UCSF Medical Center at Mission Bay				★
Zuckerberg San Francisco General Hospital and Trauma Center	★			★
San Joaquin				
Adventist Health Lodi Memorial	★			
San Joaquin General Hospital	★			
St. Joseph's Medical Center Of Stockton	★	★		
Sutter Tracy Community Hospital	★			
San Luis Obispo				
Twin Cities Community Hospital	★			
San Mateo				
Kaiser Foundation Hospital, Redwood City	★			
Kaiser Foundation Hospital, South San Francisco	★			
Santa Barbara				
Marian Regional Medical Center	★			
Santa Barbara Cottage Hospital				★
Santa Clara				
El Camino Hospital	★	★		
Good Samaritan Hospital, San Jose	★			
Kaiser Foundation Hospital, Santa Clara		★		
Lucile Packard Children's Hospital Stanford		★		
Regional Medical Center of San Jose	★			
St. Louise Regional Hospital	★			
Stanford Health Care		★	★	✖
Santa Cruz				
Dominican Hospital	★	★		
Shasta				

Appendix A. California Hospitals with Healthcare-Associated Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	CDI	CLABSI	MRSA BSI	VRE BSI
Mercy Medical Center Redding	★	★		
Shasta Regional Medical Center	★			
Solano				
Kaiser Foundation Hospital and Rehab Center, Vallejo	★			
Northbay Medical Center	★			
Northbay Vacavalley Hospital	★			
Sonoma				
Kaiser Foundation Hospital, Santa Rosa	★	★		
Petaluma Valley Hospital	★			
Stanislaus				
Doctors Medical Center	★	★		
Emanuel Medical Center	★			
Kaiser Foundation Hospital, Modesto	★			
Memorial Medical Center	★			
Tulare				
Kaweah Delta Medical Center	★	✖	✖	
Sierra View Medical Center	★			
Ventura				
Adventist Health Simi Valley	★			
Community Memorial Hospital, San Buenaventura	★			
Los Robles Hospital & Medical Center	★			
Ventura County Medical Center		✖		

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
Alameda		
Alta Bates Summit Medical Center		Pacemaker surgery
Eden Medical Center		Hip prosthesis; Knee prosthesis
Highland Hospital		Hip prosthesis; Open reduction of fracture
Kaiser Foundation Hospital, San Leandro		Cesarean section; Colon surgery
Butte		
Enloe Medical Center, Esplanade		Coronary bypass, chest and donor incisions
Contra Costa		
John Muir Medical Center, Concord Campus	Hip prosthesis	
John Muir Medical Center, Walnut Creek Campus	Knee prosthesis	
Kaiser Foundation Hospital, Walnut Creek		Cesarean section
Fresno		
Clovis Community Medical Center		Colon surgery; Gallbladder surgery; Hysterectomy, abdominal
Saint Agnes Medical Center		Knee prosthesis
Kern		
Adventist Health Bakersfield		Exploratory abdominal surgery (laparotomy)
Bakersfield Heart Hospital		Colon surgery; Coronary bypass, chest and donor incisions
Kings		
Adventist Health Hanford		Exploratory abdominal surgery (laparotomy)
Los Angeles		
Antelope Valley Hospital	Cesarean section	Open reduction of fracture
California Hospital Medical Center, Los Angeles		Small bowel surgery
Cedars-Sinai Marina Del Rey Hospital		Spinal fusion
Cedars-Sinai Medical Center	Liver transplant	Laminectomy
City of Hope Helford Clinical Research Hospital	Rectal surgery	

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
Garfield Medical Center		Bile duct, liver or pancreatic surgery
Good Samaritan Hospital, Los Angeles		Colon surgery
Kaiser Foundation Hospital, Downey		Bile duct, liver or pancreatic surgery
Kaiser Foundation Hospital, Los Angeles		Exploratory abdominal surgery (laparotomy)
Kaiser Foundation Hospital, Panorama City		Cesarean section
Kaiser Foundation Hospital, South Bay	Small bowel surgery	Bile duct, liver or pancreatic surgery
Kaiser Foundation Hospital, West LA	Small bowel surgery	
Keck Hospital of USC	Bile duct, liver or pancreatic surgery; Gastric surgery; Small bowel surgery	
LAC+USC Medical Center	Colon surgery	
LAC/Harbor UCLA Medical Center		Exploratory abdominal surgery (laparotomy)
Methodist Hospital of Southern California		Spinal fusion
Monterey Park Hospital		Colon surgery
PIH Health Hospital, Whittier	Small bowel surgery	Hip prosthesis
Palmdale Regional Medical Center		Appendix surgery; Colon surgery
Providence Saint Joseph Medical Center	Colon surgery; Small bowel surgery	
Providence Tarzana Medical Center		Coronary bypass, chest and donor incisions
Ronald Reagan UCLA Medical Center	Liver transplant	
Santa Monica - UCLA Medical Center and Orthopaedic Hospital	Hip prosthesis	
Torrance Memorial Medical Center		Exploratory abdominal surgery (laparotomy)
Valley Presbyterian Hospital		Gastric surgery
Madera		
Madera Community Hospital		Hysterectomy, abdominal
Marin		

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
Kaiser Foundation Hospital, San Rafael		Small bowel surgery
Monterey		
Salinas Valley Memorial Hospital		Gallbladder surgery; Hip prosthesis
Napa		
Adventist Health St. Helena		Coronary bypass, chest and donor incisions
Orange		
AHMC Anaheim Regional Medical Center		Pacemaker surgery
Hoag Memorial Hospital Presbyterian	Small bowel surgery	
Kaiser Foundation Hospital, Orange County, Anaheim		Bile duct, liver or pancreatic surgery
St. Jude Medical Center		Hysterectomy, abdominal; Open reduction of fracture
University of California Irvine Medical Center		Colon surgery, Hip prosthesis; Open reduction of fracture
Placer		
Kaiser Foundation Hospital, Roseville		Cesarean section
Riverside		
Kaiser Foundation Hospital, Riverside	Colon surgery	
Parkview Community Hospital Medical Center	Small bowel surgery	
Riverside Community Hospital		Pacemaker surgery
Riverside University Health System, Medical Center		Colon surgery; Open reduction of fracture
Southwest Healthcare System, Wildomar	Small bowel surgery	
Sacramento		
Kaiser Foundation Hospital, South Sacramento		Exploratory abdominal surgery (laparotomy)
Mercy General Hospital	Colon surgery; Coronary bypass, chest and donor incisions; Spinal fusion	
Mercy San Juan Medical Center	Small bowel surgery	
Methodist Hospital of Sacramento		Hip prosthesis

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
University of California Davis Medical Center	Hip prosthesis	Exploratory abdominal surgery (laparotomy)
San Bernardino		
Kaiser Foundation Hospital, Fontana	Cesarean section; Colon surgery	Spinal fusion
Kaiser Foundation Hospital, Ontario	Small bowel surgery	
Loma Linda University Medical Center		Exploratory abdominal surgery (laparotomy)
Redlands Community Hospital	Knee prosthesis	
St. Bernardine Medical Center	Small bowel surgery	
San Diego		
Alvarado Hospital Medical Center		Hip prosthesis
Kaiser Foundation Hospital Zion Medical Center		Hip prosthesis
Kaiser Foundation Hospital, San Diego		Laminectomy
Scripps Memorial Hospital, Encinitas		Hip prosthesis; Small bowel surgery
Scripps Mercy Hospital	Small bowel surgery	Bile duct, liver or pancreatic surgery; Knee prosthesis
Sharp Mary Birch Hospital For Women And Newborns		Cesarean section
Tri-City Medical Center		Appendix surgery; Colon surgery; Knee prosthesis, Rectal surgery
UC San Diego Health Hillcrest		Bile duct, liver or pancreatic surgery
San Francisco		
California Pacific Medical Center, Pacific Campus Hospital	Small bowel surgery	
Kaiser Foundation Hospital, San Francisco		Cesarean section
UCSF Medical Center at Mission Bay		Bile duct, liver or pancreatic surgery
Zuckerberg San Francisco General Hospital and Trauma Center		Cesarean section
San Joaquin		
Dameron Hospital		Hip prosthesis

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
San Luis Obispo		
Twin Cities Community Hospital		Colon surgery
San Mateo		
Kaiser Foundation Hospital, Redwood City		Open reduction of fracture
Kaiser Foundation Hospital, South San Francisco		Exploratory abdominal surgery (laparotomy)
Mills-Peninsula Medical Center	Colon surgery	
Seton Medical Center		Knee prosthesis
Santa Barbara		
Santa Barbara Cottage Hospital		Exploratory abdominal surgery (laparotomy); Rectal surgery
Santa Clara		
El Camino Hospital		Laminectomy
El Camino Hospital Los Gatos		Hip prosthesis
Good Samaritan Hospital, San Jose		Laminectomy
Kaiser Foundation Hospital, Santa Clara	Colon surgery	
Santa Clara Valley Medical Center	Cesarean section	Exploratory abdominal surgery (laparotomy)
Stanford Health Care	Liver transplant	Cardiac surgery; Exploratory abdominal surgery (laparotomy)
Shasta		
Mercy Medical Center Redding		Colon surgery
Solano		
Kaiser Foundation Hospital and Rehab Center, Vallejo		Cesarean section
Kaiser Foundation Hospital, Vacaville		Open reduction of fracture
Northbay Medical Center		Coronary bypass, chest and donor incisions; Small bowel surgery
Sonoma		
Kaiser Foundation Hospital, Santa Rosa		Cesarean section
Sonoma Valley Hospital		Knee prosthesis
Stanislaus		

Appendix B. California Hospitals with Surgical Site Infection Incidence Better (★) or Worse (✖) than National Baseline, 2018

Hospitals by County	Better ★	Worse ✖
Doctors Medical Center	Colon surgery; Small bowel surgery	
Kaiser Foundation Hospital, Modesto	Colon surgery	Cesarean section
Memorial Medical Center	Small bowel surgery	
Tulare		
Sierra View Medical Center		Exploratory abdominal surgery (laparotomy)
Ventura		
Los Robles Hospital & Medical Center		Hysterectomy, abdominal; Small bowel surgery
Yolo		
Woodland Memorial Hospital		Gallbladder surgery