California Department of Public Health
Healthcare-Associated Infections in California Hospitals Annual Report For January to December 2015

Key Findings and Public Health Action

Public reporting of healthcare-associated infection (HAI) data allows California consumers to make informed health care choices and assess the quality of care in hospitals across the State. The annual statewide report provides performance data to hospital executives and healthcare providers for the control and prevention of HAIs. In 2015, 392 acute care hospitals reported 19,847 HAIs to the California Department of Public Health (CDPH) as required by Health and Safety Code section 1288.55. All acute care hospitals must perform ongoing surveillance for all cases of *Clostridium difficile* diarrheal infections (CDI), central line-associated bloodstream infections (CLABSI), bloodstream infections due to methicillin-resistant *Staphylococcus aureus* (MRSA BSI) and vancomycin-resistant enterococci (VRE BSI), and surgical site infections (SSI) following 29 types of surgical procedures. CDPH presents HAI data for California hospitals for 2015 and comparisons with current national baselines (Table 1).

Table 1. Numbers of Healthcare-Associated Infections (HAI) Reported by California Hospitals and Comparisons with Statewide HAI Incidence with National Baselines, 2015

	No. of HAI Reported by California Hospitals in 2015	2015 California HAI Data Compared with National Baselines*
CDI	10,771	↑ **8% since 2011**
CLABSI	2,894	↓ **39% since 2008**
MRSA BSI	751	↓ **10% since 2011**
VRE BSI	674	*No national baseline*
SSI – All Reportable Surgeries	4,757	↓ **34% since 2008**

**National baselines are based on surveillance data reported by U.S. hospitals to the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) to create national population standards for comparisons over time. California HAI data are compared to the NHSN national standard populations. The population standard used for CLABSI and SSI comparisons are from 2006-2008 national data. The population standard used for CDI and MRSA BSI comparisons are from 2011 national data.*

CDPH recommends caution if comparing these 2015 HAI data with previous California hospital HAI annual reports. CDPH completed a three-year data validation plan that helped hospitals identify infections and resulted in more HAI reported in 2015 than in previous years. In 2015, we also recommended and helped hospitals implement an improved method for identifying SSI, resulting in more SSI reported in 2015 than previous years. In addition, NHSN implemented several data classification and reporting changes in 2015, which changed how certain infections were counted and how incidence was calculated. This resulted in higher overall CLABSI and MRSA BSI incidence and higher CDI incidence for some hospitals in 2015 compared with previous years. All of these changes will improve the quality of the HAI data going forward, allowing more accurate comparisons in 2016 and beyond. (Additional details about these changes are described in Interpreting 2015 HAI Data).

Methodology

CDPH began publishing HAI data from California hospitals in 2010. Beginning April 1, 2010, all licensed general acute care hospitals were required to report HAI data using the National Healthcare Safety Network (NHSN) and provide permission to CDPH to access the data. SSI reporting via NHSN began April 1, 2011. This report covers HAIs that occurred as a result of hospital care during the period from January 1, 2015 through December 31, 2015. CDPH extracted the CDI, CLABSI, MRSA BSI, and VRE BSI data used to produce this 2015 report from NHSN on March 1, 2016. SSI data were extracted on May 3, 2016.

CDPH publishes these 2015 HAI data via a web page that includes a summary report of key findings and public health actions, data tables, an interactive map designed to help the public interpret hospital-specific findings, and technical reports for each infection type that include detailed information on statistical analysis methods and risk adjustment. The 2015 HAI data tables report hospital findings sorted alphabetically by county. All components of this annual public report are available on the CDPH HAI Program webpage at (www.cdph.ca.gov/HAI). These 2015 HAI data will also be available via CDPH's Open Data Portal at (https://chhs.data.ca.gov/).

As in past years, CDPH reports hospital infection incidence using the NHSN risk-adjustment method called the standardized infection ratio (SIR). The SIR is calculated by comparing the number of HAI that occurred and were reported by the hospital with the number of HAI that were predicted based on national baseline data. The NHSN system calculates an SIR only when the predicted number of HAI is greater than 1.0. However, in this 2015 report, CDPH calculated and reported SIRs when 0.2 infections were predicted. This change allowed more hospitals (e.g., small and rural hospitals) to compare their infection incidence to the national baselines. CDPH was able to report HAI results (i.e. incidence higher than or the same as predicted) for more California hospitals (Table 2). In the past, these hospital results would have been missing, with an indication that there were "too few data to calculate." CDPH also displayed these additional hospital HAI results on the 2015 web-based interactive map. NHSN announced that they are considering making this change based on a minimum precision estimate calculated using the national baseline data; they will re-calculate the estimate following the 2015 re-baselining.

Table 2. Number of Additional California Hospitals with Comparison Data Included in the Healthcare-Associated Infections in California Hospitals Annual Report, 2015, Compared with 2014

	Difference in Number of Hospitals with Calculated SIRs* in 2015 Compared with 2014
CDI	**24**
CLABSI	**38**
MRSA BSI	**86**
SSI (SIR for at least one surgery type)	**33**

** Using 0.2 predicted HAI as the minimum precision criterion instead of 1.0*

Data Quality

CDPH initiated a three-year validation plan in 2013 to help hospitals improve the accuracy and consistency of reported HAI data. Validation allows a hospital to be more confident it is identifying all HAI necessary to determine which patient care units, surgical services, and/or specific infections the hospital needs to prioritize for prevention efforts. Validation also helps improve the accuracy of CDPH's annual public HAI report. In 2013, CDPH asked hospitals to attest to performing six HAI surveillance, reporting, and review best practices. In 2014, CDPH validation efforts helped hospitals to assess and improve the complete identification and reporting of CDI, CLABSI, MRSA BSI, VRE BSI, and colon SSI; 346 of 392 (88%) hospitals participated in 2014 case finding validation. CDPH HAI Program validators helped hospital identify gaps in their routine surveillance practices that resulted in missing reportable HAIs. Eighty-six hospitals were found to have low HAI case finding, defined as missing any CLABSI events or having surveillance sensitivity less than 85 percent for CDI or MRSA/VRE BSI in 2014; each received another case finding validation visit by a CDPH HAI Program liaison infection preventionist in 2015. CDPH will return to 30 hospitals with continued case finding problems and perform another re-validation review in 2016.

In 2015, CDPH asked all hospitals to participate in a validation process to assess the completeness of SSI case finding and the accuracy of denominator data elements used for risk adjustment. CDPH invited all hospitals that perform colon surgery, abdominal hysterectomy, cesarean section, and/or hip prosthesis procedures to participate in the 2015 SSI validation process. Of 332 eligible hospitals, 312 (94%) participated. Hospital staffs were instructed to use an SSI validation workbook developed by CDPH and to submit results electronically to CDPH. To perform validation, hospital staff queried post-operative records for International Classification of Diseases **(**ICD) diagnosis infection codes that may indicate an SSI, thus "flagging" patient records for further review. Hospital staff reviewed all flagged records to rule out or identify SSI. SSIs found during validation were compared with what had previously been reported by the hospital in NHSN. Four data elements used for SSI risk adjustment were also validated to determine and improve accuracy. These data elements included surgical duration, wound class, body mass index, and diabetes status. CDPH validators instructed hospitals to correct any errors identified during validation and address problems in routine surveillance practices that led to these errors. In 2016, CDPH will follow up with hospitals that missed SSI to ensure they are using ICD flag codes as part of routine SSI surveillance methods.

Twenty of 332 eligible hospitals (6%) did not participate in 2015 SSI validation (Appendix A). CDPH cannot be assured of the completeness or accuracy of 2015 SSI reported data from non-participating hospitals; findings from these hospitals are highlighted in the SSI data tables.

CDPH cites for deficiencies hospitals that do not completely report all required HAI data. Twenty-nine hospitals (7%) failed to report complete HAI data in 2015 (Appendix B), compared with eight hospitals in 2014. This was primarily due to confusion about reporting deadlines. CDPH requires hospitals to report data quarterly, and allows hospitals 30 days after the end of the quarter to complete data entry. Hospitals should have reported all 2015 data by January 31, 2016 (except for SSI data with a longer surveillance period, which is due by March 31, 2016). The reporting deadline for hospitals participating in the Center for Medicare and Medicaid Services (CMS) quality reporting program is 4-1/2 months after the end of the quarter, or April 15, 2016. Hospitals, consumers, and payers requested that CDPH publish HAI data more timely. To accomplish that, CDPH began data analysis shortly after the CDPH

deadline instead of waiting until after the CMS deadline. Throughout the last quarter of 2015, we notified all hospitals to remind them of the deadline. However, some hospitals still did not report their HAI data in time to be included in the data set used to produce this report. We contacted all hospitals with incomplete data in 2015 to ensure they understand and can comply with CDPH reporting deadlines next year.

Interpreting 2015 HAI Data

In 2015, HAI data were affected by improved infection identification, resulting in more complete HAI reporting by California hospitals, and by data classification changes, resulting in more accurate capture of infections. NHSN is using HAI data reported by all U.S. hospitals in 2015 to establish new risk adjustment models and new national baselines against which future HAI prevention progress will be measured. Next year's annual report will show how California hospitals compare with the new 2015 national baselines and demonstrate if HAI prevention progress was made in 2016.

The differences observed in 2015 HAI data are the result of the following improvements and changes:

- Data validation improved the quality of the data reported by California hospitals and the quality of this CDPH annual report. Validation conducted by CDPH in 2014 and 2015 was designed to help hospitals assess and improve HAI reporting. These validation efforts appear to have been successful. More HAI were reported in 2015 than in previous years. CDPH now has greater assurance that the annual HAI public report reflects all California hospitals are performing standardized surveillance and are accurately and completely reporting their infections. Hospitals need accurate and complete HAI data to know their true infection incidence, to implement targeted interventions, and to track HAI prevention progress over time.

- Data validation in 2014 revealed that hospitals were not completely finding all SSI cases. In March 2015, to improve SSI surveillance, CDPH promulgated International Classification of Diseases (ICD) diagnosis "flag" codes for each reportable surgical procedure type for use by hospitals to screen surgical patient records. CDPH encouraged hospitals to apply these flag codes in the post-operative period to identify patient records that should be reviewed for possible SSI. CDPH also suggested that hospitals use these ICD flag codes to help improve the efficiency and effectiveness of their routine SSI surveillance practices. This resulted in more SSI identified and reported in 2015 than in previous years.

- Yeast (e.g., *Candida* species) can cause bloodstream infections, often associated with extended use of central lines. Beginning in 2015, NHSN reporting rules changed regarding yeast identified in blood cultures. Yeast in the blood of a patient with a central line could no longer be attributed to a urinary tract infection or pneumonia (for most hospitalized patients) as in past years. NHSN instructed hospitals to report a CLABSI for a patient with a yeast bloodstream infection and a central line. This resulted in more CLABSI reported in 2015 than previous years.

- NHSN changed how hospitals reported infections identified in the emergency department and 24-hour hold units. In past years, a positive CDI, MRSA BSI, or VRE BSI test result from a patient in the hospital emergency department or 24-hour hold location was attributed as a community-onset infection if the patient was admitted to the hospital on the same day that the test was ordered. In

2015, CDI, MRSA BSI, or VRE BSI test results from these locations were no longer included in the hospital's inpatient community-onset prevalence, even if the patient was admitted to the hospital. Community-onset prevalence is an important risk adjustment factor used to report CDI and MRSA BSI data. Hospitals that reported fewer community-onset cases in 2015 had fewer hospital-onset infections predicted. This resulted in higher calculated HAI incidence when the numbers of infections that occurred in 2015 was compared with the number of infections predicted by the national baseline data from 2008 or 2011. This change especially affected 2015 MRSA BSI results.

- HAI are less common in inpatient rehabilitation and psychiatric facilities. In 2015, NHSN required hospitals with inpatient rehabilitation and psychiatric units to report data separately from other general acute care hospital data. Rehabilitation and psychiatric patient days were no longer included in the overall hospital-wide patient days reported for 2015. This resulted in calculations of higher infection incidence than in past years for some hospitals.

Key Findings

From 2014 to 2015, 23 hospitals significantly reduced CDI incidence, 10 reduced CLABSI, 1 reduced MRSA BSI, 5 reduced VRE BSI, and 22 reduced SSI (Appendix C). Overall, 56 hospitals demonstrated significant improvement in preventing one or more HAI type. Five hospitals made significant improvements for more than one HAI type, and one hospital reported significant improvement in SSI prevention for two surgical procedure types in 2015 compared with 2014. The HAI incidence in all other California hospitals appears to have increased in 2015 compared with previous years, or remained the same compared with 2014. This is inconsistent with the downward trends in California hospital HAI incidence in the past several years compared to the national 2008 and 2011 baselines (with the exception of CDI). Rather, many of the "increases" this year are the result of 2015 NHSN changes in case classification and risk adjustment, improved case-finding following CDPH validation efforts, and/or improved post-operative surveillance by using flag codes to identify SSI.

CDI. *Clostridium difficile* (*C. difficile*) is a frequent cause of diarrhea in healthcare settings, and recent studies indicate that CDI is now the most common cause of HAIs. Infection control practices including consistent hand hygiene, adherence to contact precautions, thorough environmental cleaning, and the judicious use of antibiotics as monitored and directed by hospital antimicrobial stewardship programs, are equally important in preventing CDI infections.

CDPH reports hospital CDI incidence using the SIR, which is calculated by comparing the number of CDI that were observed and reported by the hospital with the number of CDI that would be predicted based on national baselines. In this report, CDPH calculated the CDI SIR when at least 0.2 infections were predicted. Lower SIRs are better. CDI cases are classified as hospital-onset when the positive stool test was obtained on day four or later during the hospital stay. Risk factors found to be significant in predicting hospital-onset CDI include CDI test method, major teaching hospital, bed size, and burden of community-onset CDI in patients admitted to the hospital. Adjusting for these factors provides a more accurate comparison of hospitals' infections. All references to CDI in this report refer to hospital-onset infections.

The statewide CDI SIR in 2015 was 1.08, compared with the national baseline SIR of 1.0 and represents a 1% statewide decrease since 2014 (SIR=1.09). However, as noted above, such comparisons need to be made with caution due to changes in data classification and reporting

requirements. In 2015, CDPH calculated CDI SIRs for 332 hospitals. Of these, 48 hospitals had significantly fewer CDI than predicted (low SIR), and 66 hospitals had significantly more CDI than predicted (high SIR).

For LTAC hospitals, rehabilitation acute care hospitals, and rehabilitation units with their own CMS certification number (CCN), CDPH reports CDI rates that are not risk-adjusted. Differences in rates can result from differences in laboratory testing methods, patient populations, infection prevention practices, antibiotic use, and/or CDI community-onset rates among patients admitted to the facility.

Additional CDI Findings:

- In 2015, 368 (94%) California hospitals reported 12 months of CDI data. Of these, 35 (9%) hospitals reported no hospital-onset CDI cases.
- Twenty-five hospitals reported incomplete CDI data in 2015, including those reporting less than 12 months of CDI data or incorrectly entering data, compared with six hospitals in 2014.
- Eleven hospitals reported extreme outlier (i.e., unusually high) community-onset CDI prevalence rates for one or two quarters in 2015. NHSN excluded data in those time periods from further analyses. The CDI SIR for these hospitals was presented for 2015 but included only six or nine months of data.
- Five hospitals (1%) had no CDI SIR calculated due to having a predicted number of CDI cases less than 0.2 in 2015. In 2014, 29 hospitals (8%) had no CDI SIR calculated due to having a predicted number of CDI cases less than 1.0.

Interpreting CDI Findings:

- Changes made to NHSN surveillance protocols in 2015 limit the comparability of 2015 data with previous years. NHSN changes that most affected CDI data include
    - CDI identified from the emergency department and 24-hour observation locations were not attributed as inpatient CDI; this reduced the hospital inpatient community-onset prevalence used in the risk-adjustment and resulted in higher calculated CDI SIRs for some hospitals; and
    - Hospitals with inpatient rehabilitation and psychiatric facilities no longer included those patient days in the denominator data for the CDI SIR calculations. This resulted in higher calculated CDI incidence in 2015 for hospitals with those unit types.

Four CDI data tables accompany this 2015 HAI data report. CDI Table 1 presents the hospital-onset CDI SIRs for general acute care hospitals other than LTAC and rehabilitation acute care. CDI Table 2 presents CDI rates in LTAC hospitals. CDI Table 3 presents CDI rates in free standing rehabilitation acute care hospitals and rehabilitation units within hospitals having their own CCN. CDI Table 4 presents the 25 hospitals that reported incomplete CDI data in 2015.

CLABSI. Central line-associated bloodstream infections (CLABSI) result from contamination of a central line, either during insertion or during the time the line is in use during patient care. A central line is a catheter (tube) that is inserted in a large vein in the neck, chest, or groin to give medication or fluids or to collect blood for medical tests. CLABSI are important markers for patient safety because most can be prevented with sustained and consistent adherence to infection control recommendations.

CDPH reports hospital-specific CLABSI SIRs as a single value for each hospital's CLABSI incidence; lower SIRs are better. CLABSI SIRs are adjusted to account for differences in numbers of patients with central lines and the distribution of patients admitted to the various types of intensive care units (ICUs) and wards within each participating hospital. To enable comparisons for more hospitals in 2015, CDPH calculated the CLABSI SIR when at least 0.2 infections were predicted. The baseline national CLABSI SIR of 1.0 was established in 2008. In 2015, the California-wide CLABSI SIR was 0.61, which represents a 39% decrease compared with the national baseline. For the first time, CDPH is also reporting CLABSI SIRs for LTAC hospitals, compared with the national LTAC hospital baseline established in 2013. In 2015, the California LTAC hospital CLABSI SIR was 2.22. Despite progress in CLABSI prevention, in 2015, 21 California hospitals, including 16 LTAC hospitals, had a CLABSI SIR significantly higher than the 2008 and 2013 (for LTACs) national baselines.

This report also provides hospital-specific CLABSI rates with comparisons with California pooled mean rates (i.e., average rates). CLABSI data are grouped by patient care locations where patients with similar medical conditions receive similar levels of care across hospitals. The data are risk-stratified by hospital unit type, but are not risk-adjusted by individual patient risk factors. Hospital CLABSI rates are identified as statistically significantly higher, statistically significantly lower, or not significantly different than the comparable California rate for that unit or ward. The California average CLABSI rate in ICUs was 1.16 and in general patient wards was 0.96 per 1,000 central line days in 2015.

California hospitals are also required to report adherence to central line insertion practices (CLIP) for each central line inserted in an ICU. CLIP indicates adherence to eight practices known to prevent CLABSI: hand hygiene, use of a recommended skin preparation agent, allowing the skin preparation agent to dry prior to line insertion, and use of five maximal sterile barriers during central line insertion (i.e., cap, mask, gown, gloves, and drape). Among 323 reporting hospitals with an ICU, 312 (97%) submitted CLIP data in 2015. Adherence to all eight clinical care practices of the CLIP bundle occurred in 80,291 out of 82,425 central line insertions reported in 2015 for an overall adherence of 97%. This percentage is unchanged from adherence reported in 2014, 2013, and 2012. Adherence was similar across ICU types, with 98% in adult ICUs, 97% in pediatric ICUs, and 97% in neonatal ICUs.

Decreases in the number and rates of CLABSI are not occurring uniformly across all patient care locations and all hospitals. Reporting hospital-wide CLABSI SIRs and CLABSI rates by patient care locations provides specific, current information to target infection prevention efforts, to monitor CLABSI prevention progress within California hospitals over time, and to enable patients to make more informed health care choices.

Additional CLABSI Findings:

- Of 393 California hospitals in continuous operation in 2015, nine (2%) reported no central line days (i.e., had no patients at risk for developing CLABSI). The remaining 384 (98%) hospitals reported at least one central line day or one CLABSI.
- Fifteen (4%) hospitals reported less than 12 months of CLABSI data in 2015, compared with zero in 2014.
- 367 hospitals (93%) were included in this report; two hospitals were excluded because data could not be risk stratified since the hospital defined all of their patient care locations as "mixed acuity."

- 23 hospitals (7%) had no CLABSI SIR calculated due to having a predicted number of CLABSI cases less than 0.2 in 2015. In 2014, 61 hospitals (17%) had no CLABSI SIR calculated due to having a predicted number of CDI cases less than 1.0.

Interpreting CLABSI Findings:

- Changes made to NHSN surveillance protocols in 2015 limit the comparability of 2015 data with previous years. The change that most affected CLABSI was blood cultures positive for yeast no longer met criteria to be attributed as secondary bloodstream infections to urinary tract infections or pneumonia. This resulted in yeast bloodstream infections being considered CLABSI in the presence of a central line and caused rates to increase even if other factors remained the same.
- CDPH 2014 validation activities may also have improved CLABSI case finding in 2015.
- Differences in hospital CLABSI rates may be due to clinical and infection control practices related to the insertion and ongoing care of central lines, risk factors of patients in varying types of care locations, and hospital surveillance methods.

Forty-seven CLABSI and CLIP data tables accompany this 2015 HAI data report. CLABSI Table 1 presents the risk-adjusted CLABSI SIR for hospitals (other than LTAC and rehabilitation acute care), identifying hospitals statistically higher, lower, or no different from the 2008 national baseline. CLABSI Table 2 presents the risk-adjusted CLABSI SIR for LTAC hospitals, identifying hospitals statistically higher, lower, or no different from the 2013 national LTAC baseline. CLABSI Table 3 presents the percent change in statewide CLABSI rates from 2014 to 2015 by patient care locations (ICUs and wards). CLABSI Table 4 presents statewide average and distributions of CLABSI rates and CLIP adherence percentages by patient care locations. CLABSI Table 5 presents an alphabetical list of California counties and hospitals demonstrating hospital-specific locations where 2015 CLABSI rates were statistically higher (H), lower (L), or no different (N) from state average rates. CLABSI Tables 6 to 46 present detailed, hospital-specific CLABSI information for each patient care location, including numbers of CLABSI, central line days, CLABSI rates and their interpretations (confidence intervals and higher, lower, or no different from statewide averages) and CLIP adherence percentages for ICUs. CLABSI Table 47 lists hospitals and mixed acuity locations excluded from analyses.

MRSA BSI and VRE BSI. Methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE) are two of the most common organisms resistant to multiple antimicrobial drugs that cause infections in hospital patients. Bloodstream infections (BSIs) due to these resistant pathogens are among the most serious HAIs, resulting in increased lengths of hospital stay, higher hospital costs, and risk of death.

This report presents data for hospital-onset MRSA BSI and VRE BSI. MRSA BSI incidence is presented as SIRs. Risk of infection is adjusted for bed size, medical school affiliation, and the community-onset MRSA BSI prevalence rate of patients admitted to the hospital. The 2015 statewide MRSA BSI SIR was 0.90. Ten hospitals had significantly fewer MRSA BSI than predicted (low SIR), and 12 hospitals had significantly more MRSA BSI than predicted (high SIR).

MRSA BSI SIR risk adjustment is not available for LTAC and rehabilitation hospitals; therefore, this report presents rates of MRSA BSI for these settings. The average MRSA BSI rate among 24 LTAC hospitals was 2.50 per 10,000 patient days in 2015. Two LTAC hospitals had rates significantly higher than the statewide average rate, and three had rates significantly lower. Among the 63 free-standing

rehabilitation acute care hospitals or rehabilitation units within hospitals with their own CCN, only four reported one or more MRSA BSI. MRSA BSIs are unusual events in rehabilitation facilities.

The statewide VRE BSI rate in 2015 was 0.43 per 10,000 patient days compared with 0.50 in 2014. NHSN provides no risk-adjustment method for VRE BSI. This report presents risk-stratified VRE BSI rates by grouping hospitals into categories based on the types of patients served and type of care delivered (Table 3).

Table 3. Vancomycin-Resistant Enterococci (VRE) BSI Rates per 10,000 Patient Days, by Hospital Type

Hospital Type	No. of Hospitals Reporting in 2015*	2015 Rate
Long Term Acute Care	**24**	**1.58**
Major Teaching	**36**	**0.84**
Community	**261**	**0.28**
Pediatric	**11**	**0.09**
Critical Access	**27**	**0.00**
Rehabilitation	**57**	**0.00**

**27 hospitals reported less than 12 months of VRE BSI data (19 community, 7 critical access, and 1 pediatric hospital)*

Additional MRSA BSI and VRE BSI Findings:

- Twenty-seven hospitals reported incomplete MRSA and/or VRE BSI data in 2015, including those that reported less than 12 months of data or entered data incorrectly, compared with five hospitals in 2014.
- One hospital reported extreme outlier (i.e., unusually high) community-onset MRSA BSI prevalence rates for one quarter in 2015. NHSN excluded that data from further analyses. The MRSA BSI SIR for the hospital was presented for 2015 but included only nine months of data.
- Thirty-three (10%) hospitals had no MRSA BSI SIR calculated due to having a predicted number of MRSA BSI cases less than 0.2 in 2015. In 2014, 119 hospitals (33%) had no MRSA BSI SIR calculated due to having a predicted number of MRSA BSI cases less than 1.0.
- In 2015, 366 (93%) California hospitals reported 12 months of MRSA BSI data. Of these, 194 (53%) hospitals reported no hospital-onset cases of MRSA BSI.
- The pooled mean rate of VRE BSI in LTAC hospitals was 1.58 per 10,000 patient days in 2015; this is the highest pooled mean VRE BSI rate of any hospital type. Two LTAC hospitals had VRE BSI rates significantly lower than the average statewide rate. No LTAC hospitals had VRE BSI rates significantly higher. Five (21%) LTAC hospitals reported no VRE BSIs.
- Three (8%) major teaching hospitals had VRE BSI rates significantly higher than the average statewide rate, and eleven (31%) had VRE BSI rates significantly lower than the statewide rate.
- No pediatric hospitals had significantly higher or lower VRE BSI rates than the average statewide rate. Seven (64%) pediatric hospitals reported no VRE BSIs.
- No VRE BSIs were reported by rehabilitation acute care hospitals or critical access hospitals. VRE BSIs are unusual events in these types of facilities.

Interpreting MRSA BSI and VRE BSI Findings:

- Changes in NHSN surveillance protocols in 2015 limit the comparability of 2015 data to previous years. Changes that most affected 2015 MRSA BSI data and resulted in higher calculated MRSA BSI SIRs include:
    - MRSA BSI identified from the emergency department and 24-hour observation locations were not attributed as inpatient MRSA BSI; this reduced the hospital inpatient community-onset prevalence used in the risk-adjustment; and
    - Hospitals with inpatient rehabilitation and psychiatric facilities no longer included those patient days in the denominator data for the MRSA BSI SIR calculations.

- CDPH 2014 validation activities may also have improved MRSA BSI and VRE BSI case finding in 2015.

- The higher rates of MRSA BSI and VRE BSI in LTAC and major teaching hospitals likely reflect the increased severity of illness in patients in these hospitals compared with community hospitals and critical access hospitals.

- The lower rates of MRSA BSI and VRE BSI in pediatric hospitals likely result from factors specific to age rather than the measure of severity of illness, as the case mix index for pediatric hospital patients is similar to major teaching hospitals.

Twelve MRSA and VRE BSI data tables accompany this 2015 HAI data report. MRSA BSI Table 1 presents the statewide MRSA BSI incidence for general acute care, LTAC, and rehabilitation hospitals in 2015. MRSA BSI Table 2 lists the hospital-onset MRSA BSI SIR for hospitals other than LTAC and rehabilitation acute care. MRSA BSI Table 3 lists the MRSA BSI rates in LTAC hospitals. MRSA BSI Table 4 lists the MRSA BSI rates in rehabilitation hospitals and rehabilitation units within hospitals having their own CCN. VRE BSI Tables 5 through 11 present hospital-specific VRE BSI rates stratified by seven hospital categories: major teaching, LTAC, pediatric, rehabilitation, critical access, or community hospital. MRSA/VRE BSI Table 12 lists the hospitals that reported fewer than 12 months in 2015.

SSI. A surgical site infection (SSI) is an infection that occurs after surgery in the part of the body where the surgery took place due to contamination during the time of the operation. SSIs often result in longer hospitalization or readmission to the hospital.

All 355 licensed California hospitals performing one or more reportable surgery types reported SSI data in 2015. California hospitals reported 744,961 surgical procedures resulting in 4,757 SSI in 2015 compared with 737,519 surgical procedures resulting in 4,316 SSI in 2014.

This report presents SSI data as procedure-specific SIRs, which use both patient-level and hospital-level factors for risk adjustment. Currently, there is no risk adjustment process for five of the 29 California-mandated reportable surgical procedure categories: heart transplant, kidney surgery, ovarian surgery, pacemaker surgery, and spleen surgery. SIRs cannot be calculated for these five categories; CDPH reports only the numbers of procedures performed and SSI reported by each hospital.

In this report, 18 of 24 surgical procedures demonstrated overall statewide SSI SIRs that were statistically lower compared with the national baseline of 1.0. Two surgical procedures, appendectomy

and colon surgery, had statistically higher SIRs in 2015 compared with national baselines. Exploratory abdominal surgery, gallbladder surgery, abdominal hysterectomy, and vaginal hysterectomy SSI SIRs were not statistically different from the number of SSI predicted by the national baseline data (Table 4).

Table 4. California Surgical Site Infection (SSI) Incidence and Standardized Infection Ratios (SIR) with Comparisons to National Baselines, 2015

Surgical Procedure Category	No. Hospitals Performing Surgery, 2015	2015 Statewide SSI SIR Compared with National Baselines^	
Abdominal aortic aneurysm repair	127	0.31	Lower
Appendix surgery	319	1.30	Higher
Bile duct, liver or pancreatic surgery	255	0.25	Lower
Cardiac surgery	169	0.59	Lower
Cesarean section	250	0.23	Lower
Colon surgery	321	1.11	Higher
Coronary bypass, chest incisions only	113	0.51	Lower
Coronary bypass, chest & donor incisions	126	0.51	Lower
Exploratory abdominal surgery (laparotomy)	323	0.90	No Difference
Gallbladder surgery	327	0.99	No Difference
Gastric surgery	295	0.63	Lower
Hip prosthesis	311	0.72	Lower
Hysterectomy, abdominal	311	0.88	No Difference
Hysterectomy, vaginal	281	0.92	No Difference
Kidney transplant	27	0.25	Lower
Knee prosthesis	297	0.52	Lower
Laminectomy	235	0.52	Lower
Liver transplant	12	0.27	Lower
Open reduction of fracture	315	0.52	Lower
Rectal surgery	270	0.79	Lower
Small bowel surgery	306	0.75	Lower
Spinal fusion	223	0.62	Lower
Spine re-fusion	152	0.59	Lower
Thoracic surgery	263	0.53	Lower

^2015 statistical interpretation indicates SSI SIRs that were statistically higher, lower, or no different than the predicted number of infections.

For 2015, CDPH calculated hospital-specific SSI SIRs for each surgical procedure type when at least 0.2 infections were predicted. Each hospital may not have SSI SIRs for every surgical procedure category. In 2015, one or more SSI SIRs were calculated for 326 hospitals, compared with 293 hospitals in 2014. Of these, 121 hospitals had one or more type of surgery with fewer SSIs than predicted (low SIR), and 65 hospitals had one or more type of surgery with more SSIs than predicted (high SIR).

Interpreting SSI Key Findings:

CDPH 2014 and 2015 data validation efforts appear to have resulted in more complete SSI case finding and reporting in 2015. Comparing California hospitals' reported 2015 SSI data with previous years' SSI data should be done cautiously.

Thirty-one SSI data tables accompany this 2015 HAI data report. SSI Tables 1 through 29 present the 29 different reportable surgical procedure categories with data from 355 general acute care hospitals. SSI Table 30 presents data from two LTAC hospitals. No SSI information was reported by rehabilitation acute care hospitals. SSI Table 31 lists the 38 hospitals that submitted confirmation that they performed no surgeries among the 29 reportable surgical procedure categories in 2015.

Public Health Action

CDPH developed this annual HAI report for multiple stakeholders. State and local public health may use the report to understand local trends and to determine needs for public health outreach. Hospitals may use the report to compare their infection incidence and to develop priorities for HAI prevention. Consumers may use the report to make decisions about where to seek care.

Infections that occur as a result of healthcare are largely preventable if healthcare providers adhere consistently with recommended infection prevention practices. Improvement in HAI prevention is not occurring uniformly across all California hospitals. To use these HAI data to leverage prevention activities where needed, CDPH developed and implemented an HAI "data for action" strategy to identify hospitals with high HAI incidence and ensure they are responding to the need for improvement. CDPH identified 73 hospitals with high HAI incidence in both 2014 and 2015 (Table 5).

Table 5. Data for Action Strategy Targeting California Hospitals with High Healthcare-Associated Infection (HAI) Incidence, 2015

HAI	Criteria Used to Target Hospitals for Data for Action Outreach	# of Hospitals Targeted, 2015
CDI	Hospitals with significantly high CDI SIR in 2014 and 2015 compared with 2011 national baseline.	**34**
CLABSI	Hospitals with significantly high CLABSI SIRs in 2014 and 2015 compared with 2008 (or 2013 for LTACs) national baselines; hospitals with the same patient care location (ICU or ward) with a significantly high CLABSI rates in 2014 and 2015; hospitals with two or more locations with significantly high CLABSI rates in 2014 and 2015	**13**
MRSA BSI	Hospitals with significantly high MRSA BSI SIR in 2014 and 2015 compared with 2011 national baseline, and LTAC/rehabilitation hospitals with significantly high rates in 2014 and 2015 compared with other hospitals in their strata.	**3**
VRE BSI	Hospitals with significantly high VRE BSI rates in 2014 and 2015 compared with other hospitals in their strata (i.e., community, major teaching, pediatric, LTAC, rehabilitation, critical access).	**7**

SSI	Hospitals with significantly high SSI SIR for the same procedure type in 2014 and 2015 compared with 2008 national baseline.	**16**

Note: CDPH targeted a total of 39 hospitals with high HAI incidence for more than one infection type.

These 73 hospitals with high infection incidence in both 2014 and 2015 have been targeted for onsite consultations by the CDPH HAI Program in 2016; 31 hospitals also had high infection incidence in 2013 (Appendix D). Regionally based CDPH HAI Program liaison infection preventionists provide assistance and support to hospitals for local implementation of prevention action plans. We contacted the targeted hospitals and encouraged a prevention assessment onsite visit. Liaison infection preventionists perform tailored assessments specific to the HAI problem, which include observational measurements to assess healthcare provider adherence to core prevention strategies, such as hand hygiene, clinical practices, environmental cleaning, and adherence to standard and contact precautions. In 2016, CDPH will also request that all previously targeted hospitals provide a written summary update to report on progress and barriers to implementing the infection prevention strategies they committed to in the past.

CDPH Action Steps:

1. Encourage all hospitals to actively monitor front line provider adherence to care practices known to prevent HAI by conducting regularly scheduled audits (ideally, covert) and providing results with feedback.
2. Target hospitals with high CDI rates and work with hospital medical providers (e.g., hospitalists, infectious disease physicians) to implement strategies to prevent transmission of *C. difficile* and reduce inappropriate use of antimicrobials through enhanced antimicrobial stewardship efforts.
3. For those hospitals with high CDI incidence, recommend and offer assistance to assess adherence to core CDI prevention practices, including thoroughness of environmental cleaning, antimicrobial stewardship, and consistent use of contact precautions and hand hygiene. Hospitals must also establish clear communication with other local healthcare facilities for sharing information about potentially transmissible CDI patients.
4. Engage with hospitals that have patient care locations with CLABSI rates statistically lower than national or statewide averages to identify and share best practices for improving CLABSI prevention and control.
5. Recommend to hospitals with high CLABSI incidence that they review central line insertion and central line maintenance practices, monitor adherence to CDC core CLABSI prevention recommendations including evaluating central line utilization and performing daily assessment of central line necessity, and consider monitoring CLIP in all locations where central lines are inserted (e.g., interventional radiology/cardiology, emergency department, oncology units) in addition to ICUs.
6. Continue to explore opportunities for preventing MRSA BSI and VRE BSI, including recommending that hospitals monitor adherence to hand hygiene, isolation precautions, environmental cleaning, and antimicrobial stewardship practices.
7. Encourage hospitals to report SSI surveillance data to their surgical and operating room staff. Encourage infection control departments to provide surgeon-specific SSI feedback to each surgeon with comparisons with the hospital surgical group or national data. Surgeons and surgical staff should examine adherence to surgical infection prevention practices.

8. Consult with hospitals on their planned infection prevention strategies, sustainability issues, and use of HAI validation tools available on the CDPH HAI Program webpage.
9. Continue prevention collaboratives to adopt regional approaches where HAI incidence is high.
10. Assist with identifying local networking opportunities for infection prevention education.
11. Continue to monitor the accuracy and completeness of reported HAI data.
12. Continue to provide assistance to hospitals to improve surveillance and detection of HAI.
13. Discuss findings with local public health officials and encourage regional HAI prevention collaboratives that can address high infection incidence across multiple healthcare facilities using a coordinated approach.

Recommended Hospital Action Steps:

1. Hospitals with high infection incidence should partner with the CDPH HAI Program by scheduling an assessment visit with an HAI Program liaison infection preventionist and following through on HAI prevention recommendations.

2. Ensure front line staff is aware of the 2015 reported HAI findings compared with state averages and national baselines. Hospitals should provide training to front line clinical staff on implementing and monitoring adherence of recommended infection prevention practices.

3. Review and implement CDI prevention strategies to include:

    - Actively monitoring adherence to infection control practices known to decrease *C. difficile* transmission, including contact precautions, hand hygiene, environmental cleaning, and prompt identification of patients admitted with or who develop hospital-onset CDI or CDI symptoms. Monitor the processes more frequently if the hospital has a high SIR or there is evidence of transmission;
    - Periodically observing cleaning processes to ensure that all surfaces in hospital rooms housing patients with CDI are thoroughly and effectively cleaned daily and that cleaning implements (e.g., mops) are not used in subsequent patient rooms;
    - Ensuring environmental services staff have sufficient resources including time to thoroughly and effectively terminally clean rooms upon discharge of CDI patients and prior to admitting another patient;
    - Considering implementing touchless technology to reduce the likelihood of microorganisms remaining after manual cleaning; and
    - Identifying antimicrobials and prescribing practices most strongly associated with CDI and targeting antimicrobial stewardship strategies;
    - Ensuring that stool samples sent for *C. difficile* testing are appropriate for testing per CDC/NHSN guidelines.
    - Ensuring the accuracy and completeness of CDI data for monitoring prevention progress over time by strictly following NHSN protocols and by performing periodic validation of CDI data.

4. Review and implement CLABSI prevention strategies to include:
    - Investigating patient care locations with the highest rates of CLABSI to identify opportunities to improve CLABSI prevention;
    - Actively monitoring adherence to evidence-based CLABSI prevention measures including catheter choice and insertion site;
    - Actively monitoring adherence to central line maintenance practices, including disinfecting the hubs, connectors, and injection ports prior to accessing the line and maintaining clean, dry, intact dressings that are changed on a routine basis (i.e., every two days for gauze dressings, every seven days for semipermeable dressings);
    - Reviewing and documenting the necessity of the central line on a daily basis and removing lines promptly when no longer needed.
    - Using CLIP bundle adherence as a quality improvement tool to identify care component(s) with low percentages and targeting interventions to improve adherence;
    - Expanding CLIP adherence monitoring to all patient care areas and units where central lines are inserted;
    - Analyzing CLIP data to target avoidance of femoral insertion sites;
    - Evaluating CLIP adherence for each CLABSI as part of a root cause analysis (or other case review) to identify specific areas for practice improvement; and
    - Ensuring the accuracy and completeness of CLABSI data for monitoring prevention progress over time by a) reviewing all positive blood cultures to confirm or rule out CLABSI and b) strictly following NHSN definitions and protocols for identifying, classifying, and reporting CLABSI.

5. Review and implement MRSA BSI and VRE BSI prevention strategies to include:
    - Monitoring the adherence of prevention practices for preventing MRSA and VRE BSI recommended by CDC and other professional organizations for those hospitals with a high SIR or rate or evidence of MRSA or VRE transmission.
    - For central line-related MRSA and BSI, following recommendations for adherence to CLIP and central line maintenance bundles.
    - For MRSA BSI and VRE BSI that are secondary infections related to another site of infection (e.g., urinary tract infection), monitoring adherence to practices known prevent those primary infection types.
    - Monitoring environmental cleaning and hand hygiene compliance to minimize transmission of MRSA and VRE.

6. Review and implement strategies to prevent SSI to include:
    - Reporting to all surgical services and operating room staff surgery-specific SSI surveillance findings and comparisons;

- Tracking surgeon-specific SSI incidence and providing feedback to individual surgeons with comparisons with their surgical group's SSI incidence;
- Monitoring adherence to evidence-based SSI prevention practices; and
- Ensuring complete identification and accurate reporting of all SSIs for the 29 required surgical procedure categories. Routine SSI surveillance should incorporate the use of ICD-10 diagnosis codes to flag patient records for SSI case review. CDPH published post-operative ICD-10 flag codes for each surgical procedure type and encouraged use beginning in 2015 (http://www.cdph.ca.gov/programs/hai/Documents/UsingICD%20DiagnosisFlagCodesForSSISurveillance041515.pdf)

Recommended Public Action Steps:

- Review the infection information presented for your hospital and ask your healthcare provider questions you have about the data they reported.
- Ask your healthcare provider about the actions your hospital is taking to ensure patient safety and prevent HAI.
- Ask your healthcare provider about what actions you can take to ensure your safety in the hospital and protect yourself against HAI.
- Ask your healthcare provider about what actions they are taking to prevent CDI, including whether they have an antimicrobial stewardship program to ensure appropriate use of antibiotics.
- Ask your healthcare provider about what actions they are taking to prevent the transmission of MRSA and VRE.
- Observe whether your healthcare provider performs hand hygiene or hand washing just prior to examining you.
- Speak up if you do not understand or have a question. Clear communication between you and your healthcare provider is one of the first steps you can take toward ensuring your own safety.

Appendix A. California Hospitals That Did Not Participate in 2015 Healthcare-Associated Infections Data Validation

County	Nonparticipating Hospital
Alameda	Washington Hospital
Butte	Feather River Hospital
Fresno	Community Regional Medical Center
Fresno	Clovis Community Medical Center
Fresno	Fresno Heart and Surgical Hospital
Kern	Delano Regional Medical Center
Los Angeles	Citrus Valley Medical Center - IC Campus
Los Angeles	Foothill Presbyterian Hospital-Johnston Memorial
Los Angeles	LAC/Harbor-UCLA Medical Center
Los Angeles	Gardens Regional Hospital and Medical Center
Los Angeles	Southern California Hospital at Culver City
Los Angeles	Hollywood Presbyterian Medical Center
Los Angeles	Henry Mayo Newhall Hospital
Placer	Sutter Roseville Medical Center
Placer	Sutter Auburn Faith Hospital
Sacramento	Sutter General Hospital
San Bernardino	Montclair Hospital Medical Center
Santa Cruz	Watsonville Community Hospital
Solano	Sutter Solano Medical Center
Yolo	Sutter Davis Hospital

Appendix B: Hospitals with Incomplete Healthcare-Associated Infections Reporting, 2015

County	Hospital	Missing Data	Facility Category
Butte	Orchard Hospital	CDI, MRSA BSI, VRE BSI	Critical Access
Colusa	*Colusa Regional Medical Center	CDI, MRSA BSI, VRE BSI	Community
Inyo	Southern Inyo Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Critical Access
Kern	Ridgecrest Regional Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Critical Access
Los Angeles	*Motion Picture & Television Hospital	CDI, MRSA BSI, VRE BSI	Community
Los Angeles	*Shriners Hospitals for Children	CDI, MRSA BSI, VRE BSI	Pediatric
Los Angeles	Alhambra Hospital Medical Center	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Antelope Valley Hospital	VRE BSI	Community
Los Angeles	Catalina Island Medical Center	CLABSI	Critical Access
Los Angeles	Coast Plaza Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Gardens Regional Hospital and Medical Center	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Glendora Community Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Greater El Monte Community Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Henry Mayo Newhall Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Monterey Park Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Providence Saint Joseph Medical Center	VRE BSI	Community
Los Angeles	Southern California Hospital at Culver City	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Los Angeles	Southern California Hospital at Hollywood	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Modoc	*Surprise Valley Community Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Critical Access
Monterey	Salinas Valley Community Hospital	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Orange	College Hospital Costa Mesa	CDI, CLABSI, MRSA BSI, VRE BSI	Community
Plumas	Eastern Plumas Hospital – Portola Campus	CDI, MRSA BSI, VRE BSI	Critical Access
Plumas	Seneca District Hospital	CDI	Critical Access
Riverside	Temecula Valley Hospital	VRE BSI	Community
San Bernardino	*Mountains Community Hospital	CDI, MRSA BSI, VRE BSI	Critical Access
Sonoma	*Sonoma Developmental Center	CDI, MRSA BSI, VRE BSI	Community
Stanislaus	*Oak Valley District Hospital	CDI, MRSA BSI, VRE BSI	Community
Sutter	Sutter Surgical Hospital – North Valley	CDI, MRSA BSI, VRE BSI	Community
Trinity	*Trinity Hospital	CDI, MRSA BSI, VRE BSI	Critical Access

* Incomplete reporting due to data entry errors.

Appendix C. California Hospitals with Statistically Significantly Lower Incidence (Standardized Infection Ratios (SIR) or Rates) of Healthcare-Associated Infections in 2015 Compared with 2014

Clostridium difficile Diarrheal Infections (CDI)

County	Reporting hospital	No. of Infections 2015 Observed	No. of Infections 2015 Predicted	SIR 2015	No. of Infections 2014 Observed	No. of Infections 2014 Predicted	SIR 2014	Percent Change
Alameda	Kaiser Foundation Hospital, Fremont	**10**	**12.76**	**0.78**	47	23.89	1.97	**-60.4**
Alameda	Kaiser Foundation Hospital, Oakland/Richmond	**69**	**71.64**	**0.96**	73	51.21	1.43	**-32.9**
Butte	Oroville Hospital	**9**	**27.19**	**0.33**	29	21.82	1.33	**-75.2**
Fresno	Saint Agnes Medical Center	**32**	**64.09**	**0.50**	39	45.01	0.87	**-42.5**
Los Angeles	Kaiser Foundation Hospital, Baldwin Park	**40**	**34.46**	**1.16**	53	22.35	2.37	**-51.1**
Los Angeles	LAC/Olive View-UCLA Medical Center	**30**	**49.89**	**0.60**	50	50.92	0.98	**-38.8**
Los Angeles	Lakewood Regional Medical Center	**14**	**21.60**	**0.65**	27	21.54	1.25	**-48.0**
Los Angeles	Ronald Reagan UCLA Medical Center	**142**	**132.47**	**1.07**	181	115.30	1.57	**-31.8**
Merced	Mercy Medical Center	**13**	**22.20**	**0.59**	24	20.46	1.17	**-49.6**
Placer	Kaiser Foundation Hospital, Roseville	**35**	**60.49**	**0.58**	43	46.15	0.93	**-37.6**
Riverside	Kaiser Foundation Hospital, Riverside	**47**	**32.33**	**1.45**	69	24.03	2.87	**-49.5**
Sacramento	Kaiser Foundation Hospital, Sacramento	**37**	**46.09**	**0.80**	52	35.53	1.46	**-45.2**
San Bernardino	Kaiser Foundation Hospital, Fontana	**77**	**72.13**	**1.07**	60	37.26	1.61	**-33.5**
San Bernardino	Kaiser Foundation Hospital, Ontario	**44**	**33.23**	**1.32**	47	17.85	2.63	**-49.8**
San Francisco	San Francisco General Hospital	**49**	**91.78**	**0.53**	72	81.55	0.88	**-39.8**
San Joaquin	St. Joseph's Medical Center Of Stockton	**63**	**55.41**	**1.14**	79	46.24	1.71	**-33.3**
Santa Clara	Kaiser Foundation Hospital, San Jose	**33**	**33.18**	**1.00**	51	26.20	1.95	**-48.7**
Santa Clara	Lucile Packard Children's Hospital Stanford	**21**	**61.29**	**0.34**	45	51.17	0.88	**-61.4**
Santa Clara	Regional Medical Center of San Jose	**25**	**30.97**	**0.81**	47	35.10	1.34	**-39.6**
Santa Clara	Stanford Health Care	**153**	**136.42**	**1.12**	204	138.36	1.47	**-23.8**
Solano	Kaiser Foundation Hospital, Vacaville	**22**	**20.46**	**1.08**	44	16.90	2.60	**-58.5**
Stanislaus	Kaiser Foundation Hospital, Manteca	**32**	**27.16**	**1.18**	41	20.74	1.98	**-40.4**
Yuba	Rideout Memorial Hospital	**43**	**39.82**	**1.08**	63	34.13	1.85	**-41.6**

Appendix C. California Hospitals with Statistically Significantly Lower Incidence (Standardized Infection Ratios (SIR) or Rates) of Healthcare-Associated Infections in 2015 Compared with 2014 (continued)

Central Line-Associated Bloodstream Infections (CLABSI)

County	Reporting hospital	No. of Infections 2015 Observed	No. of Infections 2015 Predicted	SIR 2015	No. of Infections 2014 Observed	No. of Infections 2014 Predicted	SIR 2014	Percent Change
Los Angeles	Mission Community Hospital	**2**	**5.07**	**0.39**	9	3.57	2.52	**-84.4**
Los Angeles	Saint Francis Medical Center	**7**	**12.90**	**0.54**	19	13.10	1.45	**-62.6**
Marin	Marin General Hospital	**3**	**10.22**	**0.29**	9	8.46	1.06	**-72.5**
Orange	AHMC Anaheim Regional Medical Center	**5**	**15.57**	**0.32**	12	12.92	0.93	**-65.4**
San Bernardino	Kaiser Foundation Hospital, Fontana	**9**	**31.95**	**0.28**	19	28.35	0.67	**-57.9**
Stanislaus	Memorial Medical Center	**5**	**27.94**	**0.18**	14	27.68	0.51	**-64.6**

CLABSI in Long-Term Acute Care Hospitals

County	Reporting hospital	Infection Count 2015	Central Line Days 2015	Incidence Rate 2015	Infection Count 2014	Central Line Days 2014	Incidence Rate 2014	Percent Change
Los Angeles	Monrovia Memorial Hospital	**8**	**5797**	**1.38**	13	5528	2.35	**-41.3**
Marin	Kentfield Rehabilitation & Specialty Hospital	**1**	**11423**	**0.09**	6	9227	0.65	**-86.2**
Stanislaus	Central Valley Specialty Hospital	**12**	**11557**	**1.04**	15	7639	1.96	**-46.9**

CLABSI in Rehabilitation Hospitals

County	Reporting hospital	Infection Count 2015	Central Line Days 2015	Incidence Rate 2015	Infection Count 2014	Central Line Days 2014	Incidence Rate 2014	Percent Change
Orange	Healthsouth Tustin Rehabilitation Hospital	**0**	**861**	**0**	1	1255	0.8	**-100.0**

Appendix C. California Hospitals with Statistically Significantly Lower Incidence (Standardized Infection Ratios (SIR) or Rates) of Healthcare-Associated Infections in 2015 Compared with 2014 (continued)

Methicillin Resistant *Staphylococcus aureus* Bloodstream Infections (MRSA BSI)

County	Reporting Hospital	No. of Infections 2015 Observed	No. of Infections 2015 Predicted	SIR 2015	No. of Infections 2014 Observed	No. of Infections 2014 Predicted	SIR 2014	Percent Change
Los Angeles	Lakewood Regional Medical Center	**3**	**4.61**	**0.65**	7	2.41	2.91	**-77.6**

Vancomycin-resistant Enterococci Bloodstream Infections (VRE BSI)

County	Reporting Hospital	Infection Count 2015	Patient Days 2015	Incidence Rate 2015	Infection Count 2014	Patient Days 2014	Incidence Rate 2014	Percent Change
Alameda	Alta Bates Summit Medical Center	**0**	**61891**	**0.00**	4	53427	0.75	**-100.0**
Fresno	Saint Agnes Medical Center	**1**	**92615**	**0.11**	9	89412	1.01	**-89.3**
Los Angeles	Kindred Hospital, South Bay, Gardena	**0**	**17119**	**0.00**	6	17067	3.52	**-100.0**
San Diego	University of California, San Diego Medical Center	**12**	**167072**	**0.72**	31	163312	1.90	**-62.2**
San Francisco	California Pacific Medical Center - Pacific Campus Hospital	**8**	**79339**	**1.01**	20	69623	2.87	**-64.9**

Appendix C. California Hospitals with Statistically Significantly Lower Incidence (Standardized Infection Ratios (SIR) or Rates) of Healthcare-Associated Infections in 2015 Compared with 2014 (continued)

Surgical Site Infections (SSI)

County	Reporting Hospital	SSI Procedure	No. of Infections 2015 Observed	No. of Infections 2015 Predicted	SIR 2015	No. of Infections 2014 Observed	No. of Infections 2014 Predicted	SIR 2014	Percent Change
Ventura	Ventura County Medical Center	Appendix surgery	**1**	**1.68**	**0.60**	8	1.12	7.13	**-91.6**
Riverside	Riverside Community Hospital	Bile duct, liver or pancreatic	**0**	**5.29**	**0.00**	7	7.38	0.95	**-100.0**
San Francisco	California Pacific Medical Center - Pacific Campus Hospital	Bile duct, liver or pancreatic	**2**	**44.87**	**0.05**	8	39.97	0.20	**-75.0**
Riverside	Eisenhower Medical Center	Gallbladder surgery	**1**	**2.18**	**0.46**	7	2.28	3.07	**-85.0**
Sacramento	Mercy General Hospital	Colon surgery	**0**	**5.44**	**0.00**	8	4.98	1.61	**-100.0**
San Bernardino	Arrowhead Regional Medical Center	Colon surgery	**4**	**4.50**	**0.89**	12	3.91	3.07	**-71.0**
Riverside	Desert Regional Medical Center	Colon surgery	**0**	**6.01**	**0.00**	6	5.37	1.12	**-100.0**
Sonoma	Sutter Santa Rosa Regional Hospital	Colon surgery	**0**	**1.44**	**0.00**	5	1.07	4.69	**-100.0**
Alameda	Alta Bates Summit Medical Center - Alta Bates Campus	Colon surgery	**0**	**2.47**	**0.00**	5	2.24	2.23	**-100.0**
Orange	University of California Irvine Medical Center	Colon surgery	**6**	**14.28**	**0.42**	16	13.34	1.20	**-65.0**
Ventura	Thousand Oaks Surgical Hospital	Spinal fusion	**0**	**2.00**	**0.00**	5	2.14	2.34	**-100.0**
Los Angeles	Huntington Memorial Hospital	Open reduction of fracture	**0**	**6.99**	**0.00**	5	6.48	0.77	**-100.0**
Orange	Saddleback Memorial Medical Center	Hip prosthesis	**1**	**2.48**	**0.40**	8	2.31	3.47	**-88.5**
Orange	Mission Hospital Regional Medical Center	Hip prosthesis	**1**	**1.85**	**0.54**	7	1.62	4.34	**-87.6**

Appendix C. California Hospitals with Statistically Significantly Lower Incidence (Standardized Infection Ratios (SIR) or Rates) of Healthcare-Associated Infections in 2015 Compared with 2014 (continued)

Surgical Site Infections (SSI)

County	Reporting Hospital	SSI Procedure	No. of Infections 2015 Observed	No. of Infections 2015 Predicted	SIR 2015	No. of Infections 2014 Observed	No. of Infections 2014 Predicted	SIR 2014	Percent Change
Los Angeles	Antelope Valley Hospital	Knee prosthesis	**0**	**1.83**	**0.00**	5	2.17	2.31	**-100.0**
Los Angeles	Cedars-Sinai Medical Center	Laminectomy	**3**	**13.73**	**0.22**	10	13.10	0.76	**-71.1**
San Diego	Alvarado Hospital Medical Center	Laminectomy	**0**	**2.45**	**0.00**	4	2.09	1.91	**-100.0**
Los Angeles	Methodist Hospital of Southern California	Small bowel surgery	**1**	**2.05**	**0.49**	4	1.02	3.91	**-87.5**
Los Angeles	Ronald Reagan UCLA Medical Center	Small bowel surgery	**3**	**16.06**	**0.19**	13	14.01	0.93	**-79.6**
Los Angeles	Kaiser Foundation Hospital, Los Angeles	Small bowel surgery	**0**	**7.24**	**0.00**	4	6.37	0.63	**-100.0**
Los Angeles	Cedars-Sinai Medical Center	Thoracic surgery	**2**	**3.65**	**0.55**	9	3.36	2.68	**-79.5**
Monterey	Community Hospital of The Monterey Peninsula	Exploratory abdominal surgery	**0**	**1.60**	**0.00**	7	1.10	6.37	**-100.0**
San Francisco	Kaiser Foundation Hospital, San Francisco	Exploratory abdominal surgery	**1**	**2.41**	**0.42**	7	2.00	3.49	**-88.0**

Appendix D. Hospitals with Significantly High Healthcare-Associated Infection (HAI) Incidence in both 2014 and 2015 and Targeted for Public Health Outreach. Hospitals in *bold also reported statistically high incidence for the same infection type in 2013.

HAI Type	*Criteria*	County	Targeted Hospitals, 2015
***Clostridium difficile* diarrheal infections (CDI)**	***Hospitals with significantly high CDI SIR in 2014 and 2015 compared with 2011 national baseline.***	**Alameda**	**St Rose Hospital**
		Alameda	**Valleycare Medical Center**
		**Alameda*	**Washington Hospital*
		**Butte*	**Feather River Hospital*
		**Contra Costa*	**Kaiser Foundation Hospital, Walnut Creek*
		**Los Angeles*	**Beverly Hospital*
		**Los Angeles*	**Cedars-Sinai Medical Center*
		**Los Angeles*	**City of Hope Helford Clinical Research Hospital*
		Los Angeles	**Garfield Medical Center**
		**Los Angeles*	**Kaiser Foundation Hospital, South Bay*
		Los Angeles	**Kaiser Foundation Hospital, West LA**
		**Los Angeles*	**Long Beach Memorial Medical Center*
		Los Angeles	**Marina Del Rey Hospital**
		**Los Angeles*	**Olympia Medical Center*
		**Los Angeles*	**Pomona Valley Hospital Medical Center*
		**Los Angeles*	**Providence Saint Joseph Medical Center*
		Los Angeles	**Sherman Oaks Hospital**
		**Los Angeles*	**USC Kenneth Norris Jr. Cancer Hospital*
		Orange	**Hoag Memorial Hospital Presbyterian**
		Orange	**La Palma Intercommunity Hospital**
		Orange	**Los Alamitos Medical Center**
		**Orange*	**University of California Irvine Medical Center*
		Riverside	**Corona Regional Medical Center**
		**Riverside*	**Kaiser Foundation Hospital, Riverside*
		**Riverside*	**Menifee Valley Medical Center*
		**Riverside*	**Riverside Community Hospital*
		**Riverside*	**San Gorgonio Memorial Hospital*
		**San Bernardino*	**Redlands Community Hospital*
		San Diego	**Kaiser Foundation Hospital, San Diego**
		San Diego	**Sharp Chula Vista Medical Center**
		**San Diego*	**Sharp Memorial Hospital*
		**San Diego*	**University of California, San Diego Medical Center*
		**San Mateo*	**Seton Medical Center*
		**Ventura*	**St Johns Pleasant Valley Hospital*

Appendix D. Hospitals with Significantly High Healthcare-Associated Infection (HAI) Incidence in both 2014 and 2015 and Targeted for Public Health Outreach. Hospitals in *bold also reported statistically high incidence for the same infection type in 2013.

HAI Type	*Criteria*	County	Targeted Hospitals, 2015
Central line-associated bloodstream infections (CLABSI)	***Hospitals meeting criteria for both 2015 and 2014. Criteria: Hospitals with significantly high CLABSI SIRs compared with 2008 or 2013 (for LTACs) national baselines; hospitals with one or more patient care location (ICU or ward) with a significantly high CLABSI rate in two consecutive years; hospitals with two or more identical locations with significantly high CLABSI rates.***	*Fresno* ***Los Angeles** *Los Angeles* ***Los Angeles** ***Los Angeles** ***Los Angeles** *Los Angeles* *Los Angeles* ***Los Angeles** ***Orange** ***Riverside** *San Bernardino* ***Santa Clara**	*Community Regional Medical Center* ***Antelope Valley Hospital** *Barlow Respiratory Hospital* ***Childrens Hospital Los Angeles** ***Kaiser Foundation Hospital, Woodland Hills** ***Olympia Medical Center** *Pacifica Hospital of the Valley* *Ronald Reagan UCLA Medical Center* ***USC Kenneth Norris Jr. Cancer Hospital** ***Hoag Memorial Hospital Presbyterian** ***Loma Linda University Medical Center - Murrieta** *Loma Linda University Medical Center* ***Regional Medical Center of San Jose**
Methicillin-resistant *Staphylococcus aureus* bloodstream infections (MRSA BSI)	***Hospitals with significantly high MRSA BSI SIR in 2014 and 2015 compared with 2011 national baseline, and LTAC/Rehab hospitals with significantly high rates in 2014 and 2015 compared with all hospitals in their strata.***	*Los Angeles* *Orange* ***San Bernardino**	*Los Angeles Community Hospital* *Kindred Hospital, Westminster* ***Loma Linda University Medical Center**
Vancomycin-resistant enterococci bloodstream infections (VRE BSI)	*Hospitals with significantly high VRE BSI rates in 2014 and 2015 compared with other California hospitals in their strata, i.e. community, major teaching, pediatric, LTAC, rehabilitation, critical access, or prison hospital.*	****Los Angeles*** Los Angeles ****Los Angeles*** ****Los Angeles*** ****San Bernardino*** San Francisco Santa Clara	****City of Hope Helford Clinical Research Hospital*** Olympia Medical Center ****Ronald Reagan UCLA Medical Center*** ****USC Kenneth Norris Jr. Cancer Hospital*** ****St. Bernardine Medical Center*** California Pacific Medical Center - Pacific Campus Hospital Stanford Health Care

Appendix D. Hospitals with Significantly High Healthcare-Associated Infection (HAI) Incidence in both 2014 and 2015 and Targeted for Public Health Outreach. Hospitals in bold also reported statistically high incidence for the same infection type in 2013.

HAI Type	*Criteria*	Procedure	County	Targeted Hospitals, 2015
Surgical site infections (SSI)	*Hospitals with significantly high SSI SIR in 2015 and 2014 compared with 2008 national baseline.*	Appendix surgery	Alameda	Kaiser Foundation Hospital, Oakland/Richmond
		Appendix surgery	****Los Angeles***	****Pomona Valley Hospital Medical Center***
		Appendix surgery	Los Angeles	Providence Saint Joseph Medical Center
		Appendix surgery	Riverside	Riverside Community Hospital
		Appendix surgery	San Bernardino	Arrowhead Regional Medical Center
		Appendix surgery	San Bernardino	Kaiser Foundation Hospital, Fontana
		Appendix surgery	****San Bernardino***	****San Antonio Regional Hospital***
		Appendix surgery	Santa Clara	Regional Medical Center of San Jose
		Gallbladder surgery	San Diego	Scripps Memorial Hospital - Encinitas
		Colon surgery	Alameda	Highland Hospital
		Colon surgery	Kern	Kern Medical Center
		Colon surgery	Riverside	Riverside Community Hospital
		Colon surgery	San Bernardino	San Antonio Regional Hospital
		Colon surgery	Santa Clara	Santa Clara Valley Medical Center
		Colon surgery	Santa Clara	Stanford Health Care
		Spinal fusion	Los Angeles	Presbyterian Intercommunity Hospital
		Spinal fusion	****San Diego***	****Scripps Memorial Hospital - La Jolla***
		Hip prosthesis	San Diego	Pomerado Hospital