

Welcome to *California*

Using NHSN Data Validation for Improved **CDI & MDRO** Surveillance and Prevention

Distance-learning Course
Part 2 of 3



Lynn Janssen, MS, CIC, CPHQ
Coordinator, HAI Liaison Program
Healthcare-Associated Infections Program
Center for Health Care Quality
California Department of Public Health

Today's Presentation

1. Review the attributes of quality surveillance
2. Identify best practices for CDI and MDRO case-finding
3. Review NHSN CDI / MDRO surveillance protocols and definitions, targeting key issues identified during validation
4. Demonstrate CDI and MDRO BSI data validation processes and forms for internal use by hospitals



Quality Surveillance for HAI

Requires

CONSISTENCY

COORDINATION

CONFIDENCE

COMPASSION



Consistency

Complete case-finding requires a comprehensive evaluation of a minimum clinical data set

| | Always Step 1 | Step 2 |
|-----------------|--|--|
| CDI | Identify all <i>C.difficile</i> toxin positive tests (PCR, assay, culture) | If positive CDI from ED or outpatient, assess if patient was admitted to hospital same day |
| MRSA BSI | Identify all final <i>S.aureus</i> -positive blood cultures resistant to oxacillin, methicillin, or ceftazidime and/or other MRSA+ blood tests | If positive MRSA or VRE blood from ED or outpatient, assess if patient was admitted to hospital same day |
| VRE BSI | Identify all final <i>Enterococcus</i> -positive blood cultures resistant to vancomycin and/or other VRE+ blood test | |



Coordination

- HAI surveillance needs to be a shared responsibility across hospital units, services, and disciplines



Confidence

CDC Home
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

National Healthcare Safety Network (NHSN)

NHSN
Join NHSN
About NHSN
Communication Updates
Enrollment Requirements
Long-term Care Facility Component
Patient Safety Component
Healthcare Personnel Safety Component
Biovigilance Component
Data Collection Forms
NHSN Training
Data & Statistics
Resource Library
Clinical Document Architecture
NHSN Manuals
► **Patient Safety Manual**
Healthcare Personnel Safety Manual
Biovigilance Manual
Contact NHSN

FAQs About...
• NHSN
• CMS Hospital Inpatient Quality Reporting Program
• Dialysis Event Reporting
• NHSN and CMS ESRD QIP Rule
• New NHSN agreement

NHSN > NHSN Manuals
Recommend Tweet Share

NHSN Patient Safety Component Manual

NHSN Forms Update

Table of Contents

1. [NHSN Overview](#) [PDF - 89 KB] January 2012
2. [Identifying Healthcare-associated Infections \(HAIs\) in NHSN](#) [PDF - 74 KB] January 2012
3. [Patient Safety Monthly Reporting Plan](#) [PDF - 41 KB] January 2012

Device-Associated Module

4. [Central Line-Associated Bloodstream Infection \(CLABSI\) Event](#) [PDF - 142 KB] Guidelines and procedures for monitoring CLABSI. January 2012
5. [Central Line Insertion Practices \(CLIP\) Adherence](#) [PDF - 76 KB] Guidelines and procedures for monitoring CLIP. January 2012
6. [Ventilator-Associated Pneumonia \(VAP\) Event](#) [PDF - 176 KB] Guidelines and procedures for monitoring VAP. January 2012
7. [Catheter-Associated Urinary Tract Infection \(CAUTI\) Event](#) [PDF - 254 KB] Guidelines and procedures for monitoring CAUTI. January 2012
8. [Dialysis Event Protocol](#)

Procedure-Associated Module

9. [Surgical Site Infection \(SSI\) Event](#) [PDF - 329 KB] January 2012 Guidelines and procedures for monitoring SSI.
10. [Post-Procedure Pneumonia \(PPP\) Event](#) [PDF - 52 KB] January 2012 Guidelines and procedures for monitoring PPP.

Medication-Associated Module

11. [Antimicrobial Use and Resistance \(AUR\) Option](#) [PDF - 172 KB] January 2012

MDRO/CDI Module

12. [Multidrug-Resistant Organism & Clostridium difficile Infection \(MDRO/CDI\) Module Protocol](#) [PDF - 255 KB] January 2012

Email page link
Print page

Get email updates
To receive email updates about this page, enter your email address:

What's this? Submit

Contact NHSN:
Centers for Disease Control and Prevention
National Healthcare Safety Network
MS-A24
1600 Clifton Rd
Atlanta, GA 30333
800-CDC-INFO (800-232-4636)
TTY: (888) 232-6348
New Hours of Operation
8am-8pm ET/Monday-Friday
Closed Holidays
nhsn@cdc.gov
[More contact info](#) »

- ✓ Know the MDRO/CDI protocol for LabID surveillance
- ✓ Apply rules with confidence the same way every time
- ✓ Seek assistance as needed



Compassion

- Patients want to feel safe
- Patient advocates want to know providers are doing everything possible to prevent infections
- Identify every HAI to guide prevention and monitor progress over time

Expert • Independent • Nonprofit
ConsumerReports.org

News Forums Videos

Cars Appliances Electronics Home & Garden Babies & Kids Money Shopping Health

Healthy Living Conditions & Treatments Drugs Natural Health Doctors & Hospitals Insurance

Home > Health > Doctors & Hospitals

Doctors & Hospitals

CR CONTENT AVAILABLE ONLY TO SUBSCRIBERS

How safe is your hospital?
Thousands of patients die in hospitals each year because of medical errors. Our Ratings of 1,159 hospitals nationwide can help you find a safe one.
[» Read the article](#)

More Features

- That CT scan costs how much?
- The top heart surgeons
- Dangerous medical devices
- Avoid unneeded medical procedures
- Pregnant? Here's what to know
- Your hospital survival guide

Find Ratings

Hospital Ratings
Use these Ratings to help you find the best hospital in your area.
[Find hospital Ratings](#)

News and Features

Heart bypass surgery ratings
Compare surgical groups based on benchmarks for survival, complications, and more.

- [Some hospitals getting better at infection prevention](#)

Not a member?
Subscribe Now!

Member sign-in
Username:
Password:
 Remember me
[Sign-in](#)
[Forgot username?](#)
[Forgot password?](#)



Quick Review of NHSN Reporting Rules for CDI, MRSA BSI, VRE BSI

For LabID inpatient surveillance:

- ✓ Report every positive lab test from inpatients and from ED/outpatient if admitted same calendar day

Ignore positive lab tests done in outpatient settings if patient not admitted

- ✓ Do not report another of the same positive lab if from same patient on the same hospital unit until >14 days after previous

If patient transferred to new unit, report repeat positive tests
(Note: These won't be included as new cases in NHSN rate calculations)



Validation Findings by Infection Type

| | CDI | MRSA BSI | VRE BSI |
|--|---|--|---|
| Description of labs reviewed | ED & inpatient <i>C difficile</i> toxin-positive tests, 3 mo. | ED & inpatient MRSA positive bloods, 3 mo. | ED & inpatient VRE positive bloods, 3 mo. |
| Labs reviewed by validators | 3000 | 1300 | 239 |
| Reported by hospitals | 2172 | 442 | 112 |
| Reported in error (should <i>not</i> have been reported) | 55 | 15 | 4 |
| Not identified by hospital (should have been reported) | 221 | 150 | 41 |
| | | | |
| Sensitivity | 90% | 74% | 73% |
| Specificity | 92% | 98% | 96% |
| PPV | 97% | 97% | 96% |



Cases Reported in Error

| | Reason should not have been reported |
|---|--|
| 55 of 2172 "CDI" reported did not meet NHSN criteria | <p>Specific info not captured on validation forms - 22</p> <p>For remaining 33, reasons were:</p> <p><i>Test prior to patient admission date - 19</i></p> <p><i>ER specimen, patient not admitted - 6</i></p> <p><i>Not CDI toxin+ per final lab result - 5</i></p> <p><i><14 days since prior - 2*</i></p> <p><i>Patient <1 year old - 1*</i></p> |
| 15 of 442 "MRSA BSI" did not meet NHSN criteria | <p><i>ER specimen, patient not admitted - 6</i></p> <p><i>Test prior to patient admission date - 5</i></p> <p><i>Not MRSA per final lab result - 2</i></p> <p><i>Specific info not captured - 2</i></p> |
| 4 of 112 "VRE BSI" reported did not meet NHSN criteria | <p><i>Not VRE per final lab result - 2</i></p> <p><i>ER specimen, patient not admitted - 1</i></p> <p><i><14 days since prior - 1*</i></p> |

*may be ok if on different unit than previous positive; validation process mistake



Cases Missed, Should Have Been Reported

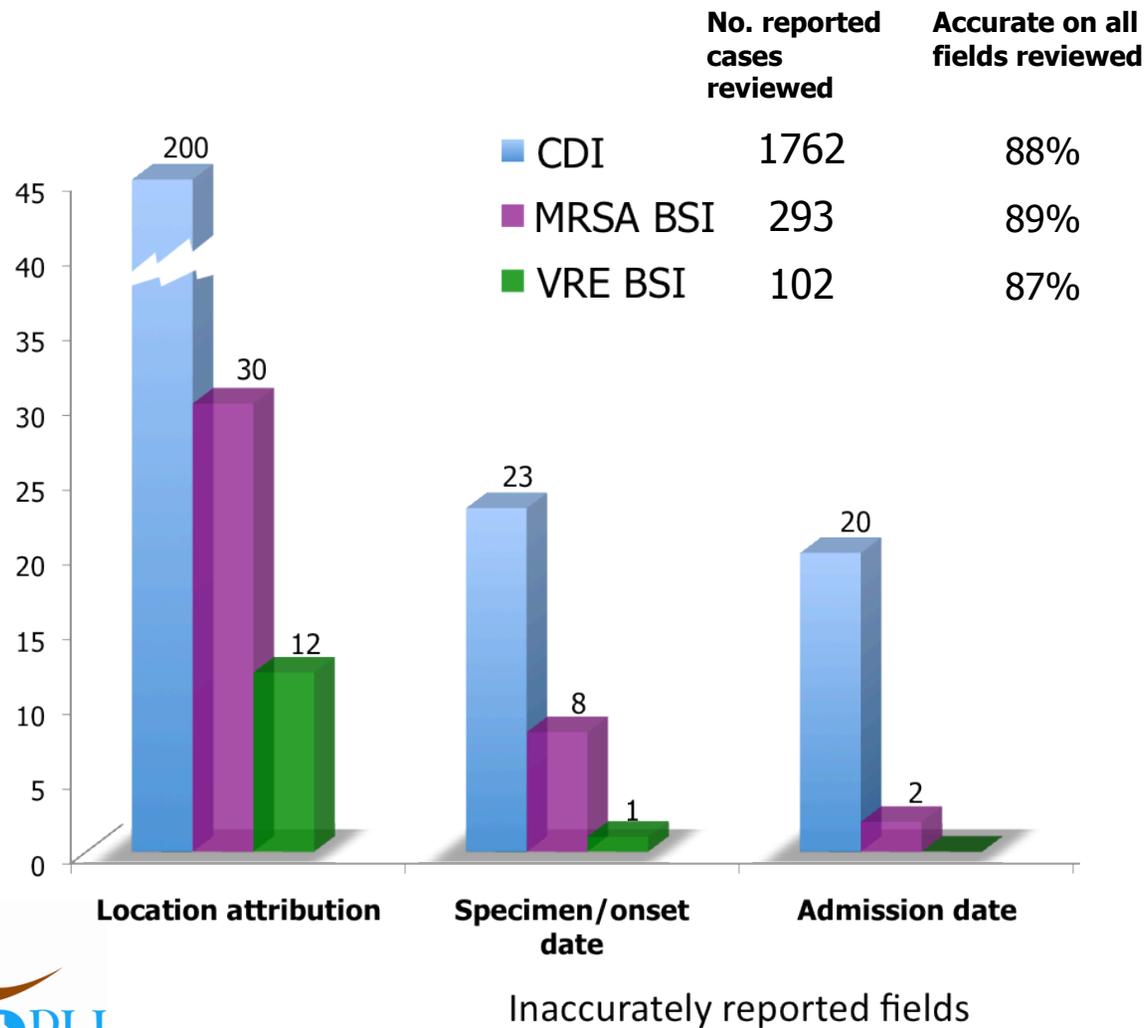
For all HAI types, many missed cases were due to inconsistencies between the final retrospective laboratory line lists and the lists or systems routinely used for IP surveillance

| | Reason Missed |
|--|--|
| 221 additional CDI identified | <i>Ruled duplicate but >14 days since last CDI – 17 ER specimen, thought patient not admitted – 11 Missed* - 193</i> |
| 42 additional MRSA BSI identified | <i>ER specimen, thought patient not admitted – 2 Missed* - 40</i> |
| 41 additional VRE BSI identified | <i>Not in IP surveillance lab report - 4 ER specimen, thought patient not admitted - 2 Reported only as CLABSI - 2 Delayed MICs – 2 Missed* - 31</i> |

* Specific details not captured on validation forms



Assessing Accuracy of Reported Data



Improving CDI Surveillance



CDI Surveillance

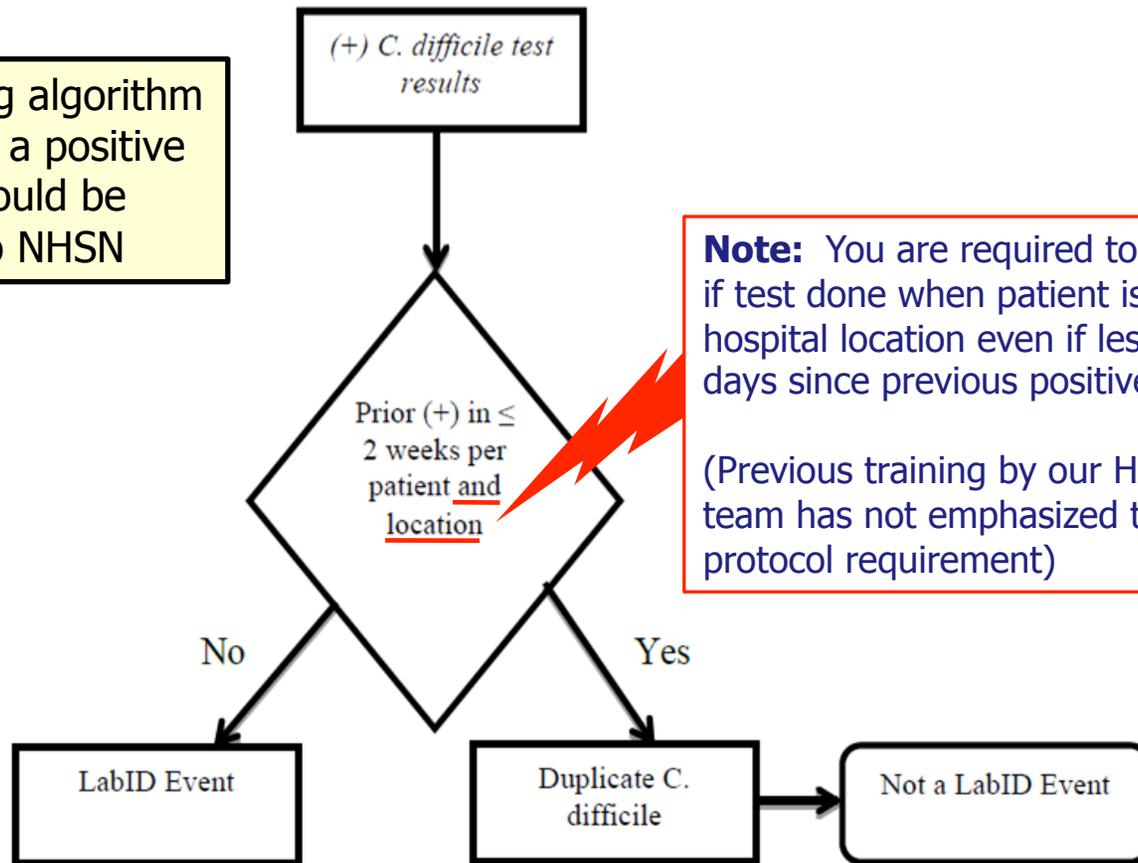
- LabID method is a nationally-recognized quality measure for the surveillance of CDI (NQF endorsed)
- Requires no clinical review or further evaluation of positive lab finding
- Facility-wide Inpatient LabID surveillance must be in your monthly reporting plan per CA reporting requirements
 - Report ALL *C. difficile* toxin-positive tests from inpatients, and from ED/outpatients if admitted to your hospital the same calendar day





Figure 2. *C. difficile* test Results Algorithm for Laboratory-Identified (LabID) Events

Decision-making algorithm to determine if a positive CDI test should be reported to NHSN



Note: You are required to report CDI if test done when patient is in a new hospital location even if less than 14 days since previous positive CDI test

(Previous training by our HAI Liaison team has not emphasized this NHSN protocol requirement)



CDI LabID Surveillance

- NHSN algorithm categorizes CDI cases according to the admission and testing dates you enter

| | |
|---------------------------------------|---|
| Community-Onset (CO) | For Inpatient surveillance, a LabID event collected ≤ 3 days after admission to the facility (i.e., days 1, 2, 3 or admission) |
| Healthcare Facility-Onset (HO) | LabID event collected > 3 days after admission to the facility (on or after day 4) |

| | |
|---|---|
| Community-Onset Healthcare Facility - Associated (CO-HCFA) | LabID event collected from a patient who was discharged from the facility ≤ 4 weeks prior to current date of stool specimen collection |
|---|---|



Same, Recurrent, or New CDI?

- Tracked in NHSN
 - Considered the same infection if a new CDI test reported for a patient on another hospital unit within 2 weeks of previous CDI test (not included in rate calculations)
 - Considered a recurrent infection if new positive CDI test greater than 2 weeks but less than 8 weeks after last CDI event reported for that patient
 - Considered a new infection if new CDI positive test greater than 8 weeks since previous
- There is no advantage to not entering cases, regardless of what you know of patient's history with CDI



To report or not report?

- Was the specimen collected in the ED or in an outpatient setting on a different day than admission?
 - Don't report. Only exception is if you are also doing outpatient surveillance (would be reported for outpatient location, ED). Remember, because you are required to do inpatient surveillance, you must *ALSO* report the 1st inpatient positive.
- We found a positive test that should be reported, but then realized we failed to report the 1st positive specimen. What should we do?
 - Report. But go back and report the 1st test date. Do not record a 2nd positive from the same unit until ≥ 14 days from previous.
- What about a patient known to have a recent history of CDI (or other reportable MDRO)?
 - Report. *ALL* non-duplicate specimens should be reported, regardless of history



CDI Reporting Tips

- Check for prior positives before entering a CDI Event into NHSN
 - Prevents you from inadvertently reporting “the 2nd event” when in fact the first positive CDI was missed
- Until you are sure of completeness, do not rely on only one source (e.g. daily reports) for your CDI data
 - Ask lab to run a monthly retrospective report of final results
- Enter all toxin-positives, including those from patients with a history of *C difficile*
 - Not JUST because of mandates; rather you need to know for your prevention efforts



Improving Completeness of CDI Reporting

Ensure you have identified and reported all CDI

- Ask your lab to run a retrospective line list of toxin-positive *C. difficile* for a given time period
 - i.e. the previous month or quarter
 - Sort by patient name or ID
- Using NHSN Analysis, run a line list of all CDI LabID events you reported in the same time period
- Compare the lists



Improving Accuracy of CDI Reporting

Verify that CDI are being attributed to the correct inpatient location

- Enter location where patient was when CDI specimen was collected
- If the CDI specimen was collected in the ED or other outpatient setting and the patient is admitted to the facility on the SAME date, report the location as the admitting inpatient location
- NHSN 48-hour “transfer rule” does **not** apply for LabID events



Improving MDRO BSI Surveillance



Difference Between CLABSI and MDRO BSI Surveillance and Reporting

CLABSI surveillance follows the protocol in the NHSN **Device-Associated Module**

- Requires positive blood culture plus review of clinical symptoms to ensure case definition is met
- CLABSI by definition are primary bloodstream infections

MRSA/VRE-BSI surveillance follows LabID method in NHSN **MDRO/CDI Module**

- Requires only the positive blood culture to meet the case definition for a LabID event
- Both primary and secondary bloodstream infections are included



When MRSA or VRE is the pathogen causing CLABSI, you must report the event twice to capture in both the **Device-Associated** and **MDRO/CDI** Modules



Improving MRSA/VRE Reporting

- Follow same reporting rules as for LabID CDI surveillance
- Check communications with your lab
 - Verify data you are receiving from your lab are complete and final culture results
 - Compare your daily lab reports to an end of month lab summary on all ED and inpatient MRSA/VRE BSI BSI



Improving MRSA/VRE Reporting (continued)

- Cases may be missed if unclear description of MDRO status on lab reports
 - Ask lab to report out MDROs as “MRSA” or “VRE” rather than relying on IP/HCPs review of the susceptibility profile
 - Work with lab so positive specimen results are straightforward
 - An unclear MDRO status can affect not only surveillance and reporting but also treatment, isolation, and cleaning practices



Improving MRSA/VRE Reporting (continued)

- Know how data are exchanged between laboratory system and third party surveillance software system (e.g. Medmined, Safety Surveillor)
 - Be aware of settings and filters used by third party software; may filter out data that should be reported to NHSN/CDPH
 - Duplicates: Must report cases if ≥ 2 wks from previous –OR- if patient has moved to a new hospital unit since last positive
 - CO cases: Some systems filter out positive blood cultures in first 48 hours after admission; must report all
 - Filters can vary for the same software (even within a hospital system!)
 - Check data from third party software sources against reports printed directly from your laboratory



Reporting and Using Surveillance Data

Remember that the "power of surveillance is in sharing findings with those who need to know and who can act on the findings to improve patient safety"

- Plan for distribution of surveillance data and findings
- Use NHSN analysis features to review and interpret your data
- Report to the health care providers most able to impact patient care
- Report in a manner to stimulate process improvement
 - Use visual displays of data - charts, graphs, tables



AJIC Am J Infect Control 2007; 35:427-40



Data Validation Process Review

Refer to CDI and MRSA/VRE Forms



en Español

-> [Su salud en su idioma](#)

Most Popular Links

- > [Birth, Death, & Marriage Certificates](#)
- > [Licensing and Certification](#)
- > [WIC](#)

Quick Links

- > [About Us](#)
- > [Decisions Pending & Opportunities for Public Participation](#)
- > [Diseases & Conditions](#)
- > [Job Opportunities](#)
- > [Local Health Services](#)
- > [Newsroom](#)
- > [Public Availability of Documents](#)

Related Links

- > [California Health and Human Services Agency](#)
- > [Department of Health Care Services \(includes Medi-Cal\)](#)
- > [State Agencies Directory](#)

[Home](#) > [Programs](#) > **Healthcare Associated Infections Program**

Healthcare Associated Infections (HAI) Program

The Healthcare Associated Infections (HAI) Program is one of three programs in the [Center for Health Care Quality](#) of the [California Department of Public Health](#). The Program is responsible for the surveillance, reporting, and prevention of infections in California's general acute care hospitals as mandated by Senate Bills 739, 1058, and 158. The Program was authorized in December 2009.

HAIs are the most common complication of hospital care and are listed among the top ten leading causes of death in the United States. It is estimated that each year there are more than 1.7 million infections, 99,000 deaths, and \$3.1 billion dollars in excess healthcare costs in acute care hospitals alone. Based on this data it is estimated that approximately 200,000 infections occur in California each year with an annual cost of about \$600 million - \$1.6 billion. The vision of the HAI Program is to eliminate HAIs for California patients.

Healthcare Associated Infections

[HAI Information and Reports](#)
 Links to All Pages on HAIs and Mandatory Public Reporting

Healthcare Associated Infections - Advisory Committee

[HAI-AC Recruitment Page](#)
 -> [HAI Advisory Committee](#)

Information for Infection Prevention Programs

- > [AFLs, Legislation, and Regulations](#)
- [Using NHSN Data Validation for Improved HAI Surveillance and Prevention \(New Page\)](#)
- [Using NHSN Analysis for Prevention Guidance Series](#)
- > [Basics of Infection Prevention 2 Day Mini Course](#)
- > [NHSN Guidance Specific to California Hospitals](#)
- > [California Infection Control and Prevention Guidelines](#)
- > [HAI Liaison Program - IP Assignments by County \(PDF, New Window\)](#)

Influenza Information

- > [Healthcare Personnel Influenza Vaccination](#)
- > [Influenza Vaccination Information for Consumers](#)

Resources

- > [Selected links to the Association of Professionals in Infection Control and Hospital Epidemiology \(APIC\)](#)
- > [Selected links to the Centers for Disease Control and Prevention \(CDC\)](#)
- > [Selected links to the Society for Healthcare Epidemiology of America \(SHEA\)](#)

Public Reporting - Healthcare Associated Infections

- [My Hospital - Healthcare Associated Infections Interactive Map](#)
- [Central Line associated Bloodstream Infection \(CLABSI\) 2011](#)
- [Methicillin-resistant Staphylococcus aureus \(MRSA\) and Vancomycin-resistant Enterococcus \(VRE\) 2011](#)
- [Surgical Site Infections 2011](#)
- > [Clostridium difficile Infection \(CDI\) 2011 data will be published soon](#)

Public Reporting – Prevention Measures

- [Central Line Insertion Practices \(CLIP\)](#)
- > [Surgical Site Infection Prevention Measures Mandatory Reporting](#)

Antimicrobial Resistance

- [California Antibiogram Project](#)
- > [The California Antimicrobial Stewardship Program Initiative](#)

Contact

- > [HAI Program](#)

Questions?

Email

InfectionControl@cdph.ca.gov

or

Your designated HAI Liaison IP
FirstName.LastName@cdph.ca.gov

Lynn.Janssen@cdph.ca.gov

