MRSA and VRE Bloodstream Infection and *C. difficile* Infection Surveillance
Objectives

• Review methicillin resistant *Staphylococcus aureus* (MRSA) and vancomycin resistant enterococcus (VRE) bloodstream infection (BSI) and *Clostridioides difficile* infection (CDI) surveillance methods and definitions

• Discuss importance of accurate data collection

• Demonstrate how to report MRSA and VRE BSI, and CDI data, using Lab ID, in National Healthcare Safety Network (NHSN)

• Discuss NHSN data analysis and feedback to staff
Perform Surveillance to Assess Prevention Progress

- LabID method is the nationally-recognized quality measure for the surveillance of MRSA/VRE BSI and CDI (NQF endorsed)
- Requires no clinical review or further evaluation of positive lab finding
- Track inpatients, ED patients, and 24-hour observation patients:
  - Report ALL MRSA and VRE positive blood specimens (only)
  - Report ALL *C. difficile* toxin-positive tests (final result)
MRSA/VRE and CDI LabID Surveillance

NHSN algorithm categorizes MRSA/VRE and CDI cases according to the admission date and specimen collection dates entered.

<table>
<thead>
<tr>
<th>Community-Onset (CO)</th>
<th>For Inpatient surveillance, a LabID event collected ≤3 days after admission to the facility (i.e., days 1, 2, 3 or admission)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare Facility-Onset (HO)</td>
<td>LabID event collected &gt;3 days after admission to the facility (on or after day 4)</td>
</tr>
</tbody>
</table>

| 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 |

NHSN Patient Safety Manual: Chapter 12
MRSA/VRE BSI and CDI LabID Surveillance

• NHSN also tracks if MRSA/VRE BSI and CDI cases are new or recurrent
  • Considered **recurrent** if >2 weeks and ≤8 weeks after last event reported for that patient

• All MRSA/VRE BSI and CDI cases should be identified and entered into NHSN
  • There is no advantage to **not** identifying and entering all cases into NHSN

NHSN Patient Safety Manual: Chapter 12
LabID Event Calculator

- Helps to accurately apply MDRO/CDI LabID Event algorithms
- Assists with MDRO/CDI LabID Event determinations

Note: When using calculator, CA hospitals required to report from inpatient, ED, and 24 hour observation locations

Reporting LabID Infections (Events)

- **Report all** positive MRSA/VRE blood specimens and CDI specimens, including inpatient locations, ED, and 24 hour observation units.

- Attribute the infection to the location where the **specimen** was **collected**.
  - Exception: If specimen collected at an affiliated outpatient location and patient is admitted to hospital on the same calendar day, attribute infection to the hospital admitting unit.

NHSN Patient Safety Module: Chapter 12
Reporting LabID Events

- Data needed
  - Patient admission date
  - Specimen collection date
  - Location at time of collection

- If a patient has a repeat positive specimen less than 14 days since the last positive specimen
  - Do not report if patient’s specimen from same location as already reported
  - Report if patient’s specimen from new location
Entering LabID Events in NHSN

Enter all MRSA, VRE, and CDI events
- Inpatient
- ED
- 24 hour observation

Event Information

- Event Type: LABID - Laboratory-identified MDRO or CDI Event
- Date Specimen Collected: 10/01/2017
- Specific Organism Type: CDIF - C. difficile
- Outpatient: N - No
- Specimen Body Site/Source: DIGEST - Digestive System
- Specimen Source: STOOL - Stool specimen
- Date Admitted to Facility: 10/01/2017
- Location: 2 WEST - M/S ICU
- Date Admitted to Location: 10/01/2017
- Has patient been discharged from your facility in the past 4 weeks?: Y - Yes
- Date of last discharge from your facility: 9/28/2017
- Has the patient been discharged from another facility in the past 4 weeks?: 
- Documented evidence of previous infection or colonization with this specific organism type from a previously reported LabID Event in any prior month?: 

NHSN Home
- Alerts
- Dashboard
- Reporting Plan
- Patient
- Event
- Procedure
- Summary Data
- Import/Export
- Surveys
- Analysis
- Users
- Facility
- Group
- Logout
Report Infection Twice if MRSA/VRE BSI Also a CLABSI

- All MRSA/VRE-positive blood cultures must be reported via the LabID module.
- Must also review if MRSA/VRE BSI from a patient with a central line and meets the CLABSI surveillance definition.
  - If yes, the **same BSI must be reported in both the LabID and CLABSI modules**
Reporting LabID Denominator (Summary) Data

Each month, enter numbers of

• Patient days (facility-wide)
• Hospital admissions
• ED and 24 hour observation visits (encounters)

NHSN Patient Safety Module: Chapter 12
### Entering Inpatient Summary Data in NHSN

**MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring**

<table>
<thead>
<tr>
<th>Setting: Inpatient</th>
<th>Total Facility Patient Days: 5927</th>
<th>Total Facility Admissions: 1247</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting: Outpatient</td>
<td>Total Facility Encounters:</td>
<td></td>
</tr>
</tbody>
</table>

If monitoring MDRO in a FACWIDE location, then subtract all counts from patient care units with unique CCNs (IRF and IPF) from Totals:

<table>
<thead>
<tr>
<th>MDRO Patient Days: 4874</th>
<th>MDRO Admissions: 1100</th>
<th>MDRO Encounters:</th>
</tr>
</thead>
</table>

If monitoring *C. difficile* in a FACWIDE location, then subtract all counts from patient care units with unique CCNs (IRF and IPF) as well as NICU and Well Baby counts from Totals:

<table>
<thead>
<tr>
<th>CDI Patient Days: 4570</th>
<th>CDI Admissions: 1007</th>
<th>CDI Encounters:</th>
</tr>
</thead>
</table>

- **Total facility patient days**
- **Total facility admissions**
- **Total facility MDRO patient days** (Facility Pt Days minus units with unique CCN such as IRF and IPF)
- **Total facility MDRO patient admissions** (Facility Pt Days minus units with unique CCN such as IRF and IPF)
- **CDI Patient Days** (Facility Pt Days minus NICU/Well baby and units with unique CCN such as IRF and IPF)
- **CDI Patient Admissions** (Facility Pt Days minus NICU/Well baby and units with unique CCN such as IRF and IPF)
- ED and 24 hour Observation encounters entered separately
Entering ED & Observation Unit Summary Data in NHSN
Interpreting MRSA and VRE Surveillance Data

• NHSN has a risk model and calculates an SIR for MRSA BSI (but not for VRE BSI)

• Risk adjustment factors used by NHSN for MRSA BSI SIR:
  • Inpatient and outpatient community-onset MRSA BSI prevalence reported by your hospital
  • Average length of stay*
  • Facility Type*
  • Medical school affiliation*
  • Number of ICU beds*

* From Annual Facility Survey

NHSN: A Guide to the SIR
Interpreting CDI Surveillance Data

- NHSN has a risk model and calculates an SIR for CDI

- Risk adjustment factors used by NHSN for CDI SIR:
  - Type of laboratory test
  - Inpatient community onset CDI prevalence
  - Facility Type*
  - Medical school affiliation*
  - Facility bedsize*
  - Number of ICU beds*
  - Reporting from ED or 24 hour observation unit

* From Annual Facility Survey

NHSN: A Guide to the SIR

NHSN: A Guide to the SIR

- How to interpret SIR
- How SIR is calculated
- Risk adjustment factors for specific HAI

THE NHSN STANDARDIZED INFECTION RATIO (SIR)

A Guide to the SIR

Updated August 2018. Please see Page 2.

NHSN: A Guide to the SIR, Aug 2018

NHSN MRSA and VRE Analysis Reports

- Generate data set prior to creating a report
- Choose report according to need
  - MRSA SIR report - Your incidence compared to expected incidence
  - VRE: Line list or rate tables and charts
**HEALTHCARE-ASSOCIATED INFECTIONS PROGRAM**

**NHSN CDI Analysis Reports**

- Generate data set prior to creating a report
- Choose report according to need
  - SIR report - Your incidence compared to expected incidence
  - TAP report – Number of events that needed to be prevented to reach facility targeted goal
Track Progress Over Time

- Feedback results to staff
- Celebrate successes!

Sample: California General Hospital
2015-2018 MRSA Progress

Began MRSA prevention initiative
Targeted Assessment for Prevention (TAP) Reports - CDI

- Identifies the number of infections that needed to be prevented to reach targeted goal (CAD)
Track CDI Progress Over Time

SAMPLE: California General Hospital
2015 - 2018 C. difficile Progress

- Began C. difficile Initiative with ASP
- New EVS contract personnel
- IP on LOA
- IP returned to work
- EVS Education and competencies
- All staff hand hygiene Competencies

SIR

2015  2016  2017  2018

Goal

SIR
MRSA, VRE and CDI Surveillance Summary

• Report all MRSA and VRE blood specimens to NHSN
• Report all CDI-positive stool specimens to NHSN
• Accurate data are necessary for NHSN to calculate SIR and perform analysis
  • Including data from Facility Annual Survey
• Feedback incidence for (MRSA and CDI) or rates (VRE) with adherence monitoring results to all units and leadership
Questions?

For more information, please contact any HAI Program Team member

Or email

HAIProgram@cdph.ca.gov