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

Last Updated 2019

Basics of Infection Prevention
Healthcare-Associated Infections Program
Center for Health Care Quality
California Department of Public Health

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

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

NHSN Patient Safety Manual: Chapter 12

https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf

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

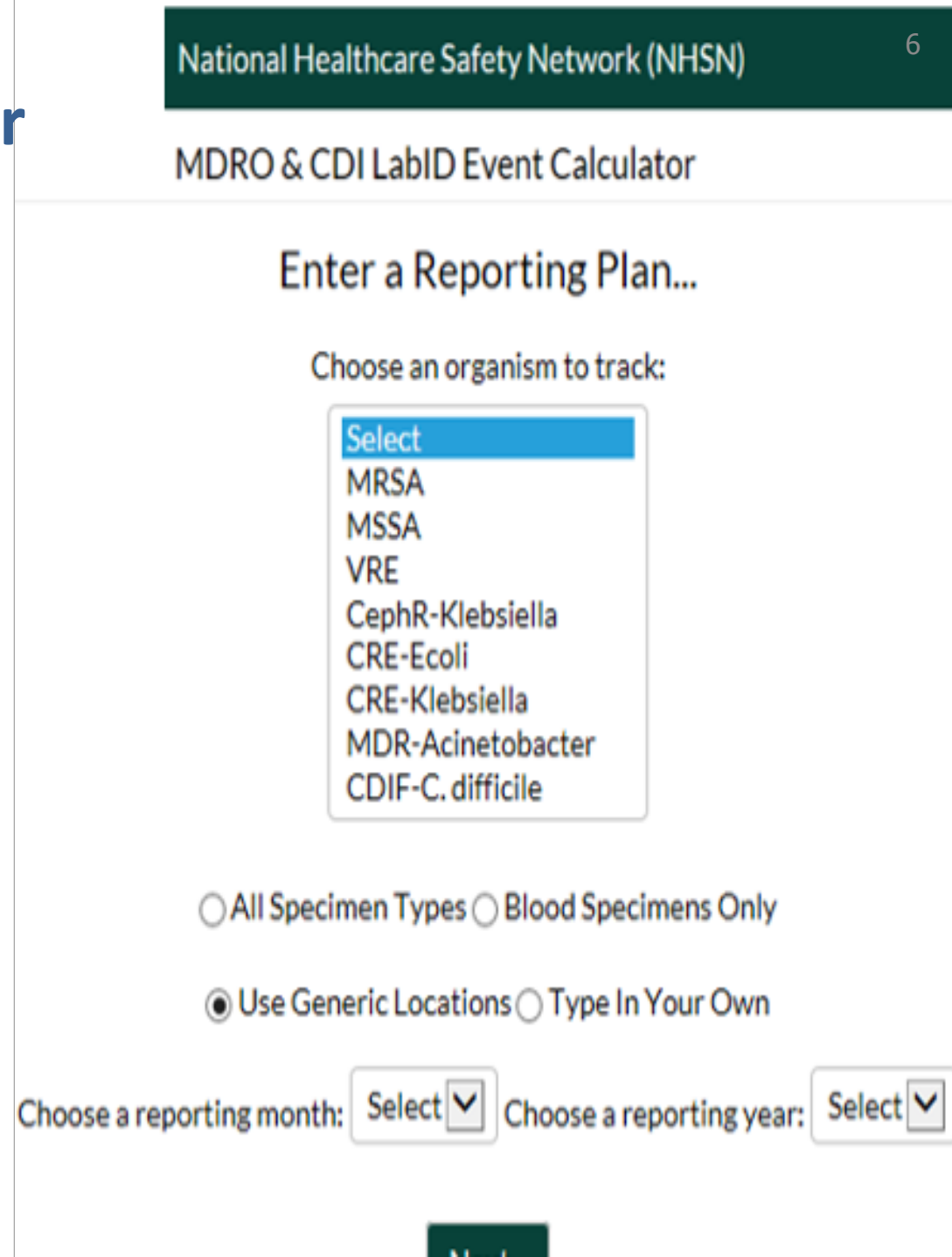
NHSN Patient Safety Manual: Chapter 12

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

MDRO & CDI LabID Event Calculator (https://nhsn.cdc.gov/nhsntraining/labid-calculator/mdrolabidcalc.html)



Reporting LabID Infections (Events)

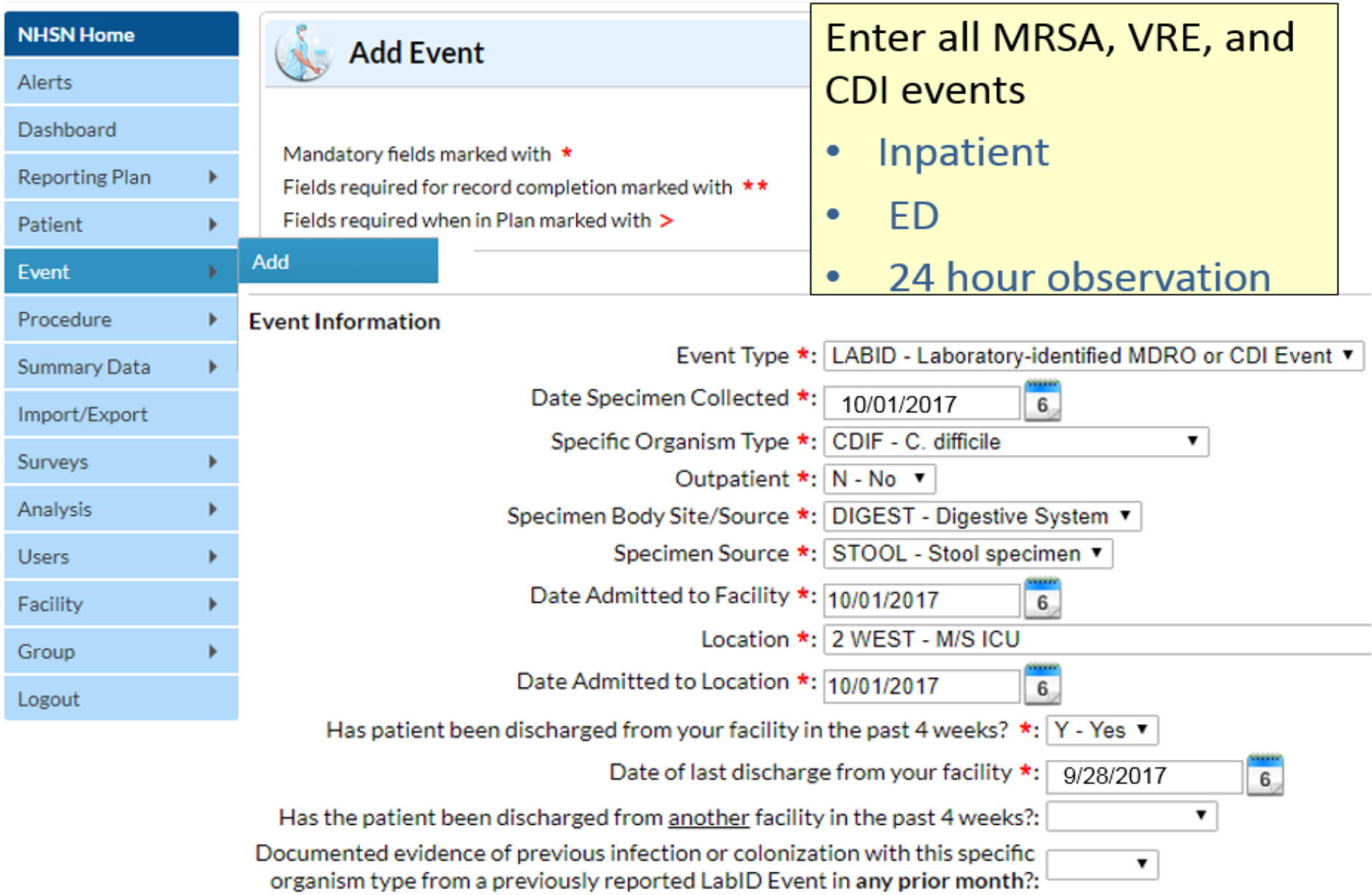
- **Report all** positive MRSA/VRE blood specimens and CDI specimens, including inpatient locations, ED, and 24 hour observation units
- Attribute the infection to the location where the **specimen** was **collected**
  - Exception: If specimen collected at an affiliated outpatient location and patient 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



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**

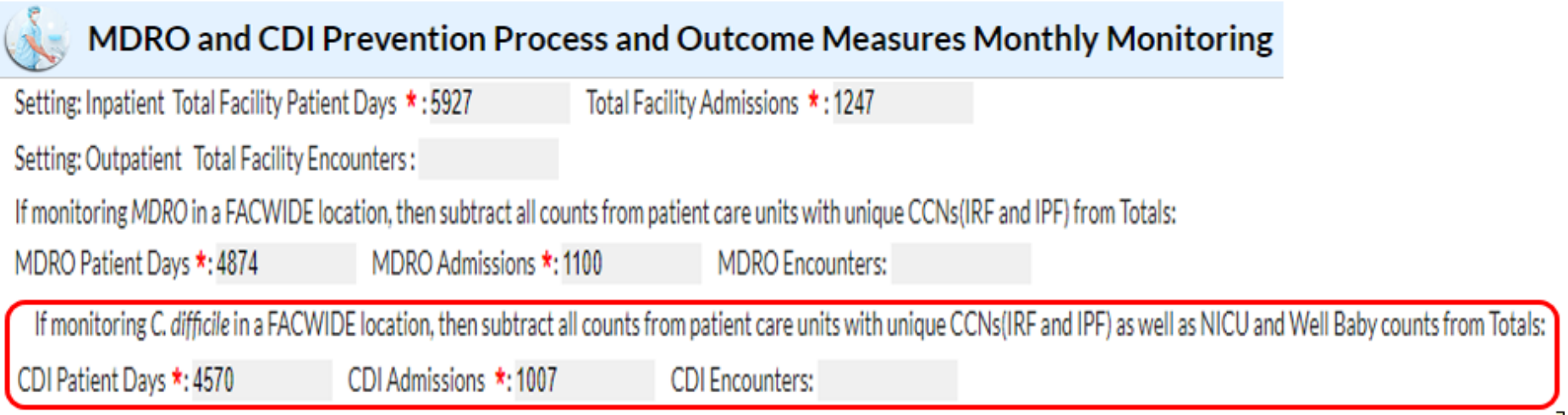
Reporting LabID Denominator (Summary) Data

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

Setting: Inpatient Total Facility Patient Days *: 5927 Total Facility Admissions *: 1247

Setting: Outpatient Total Facility Encounters:

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

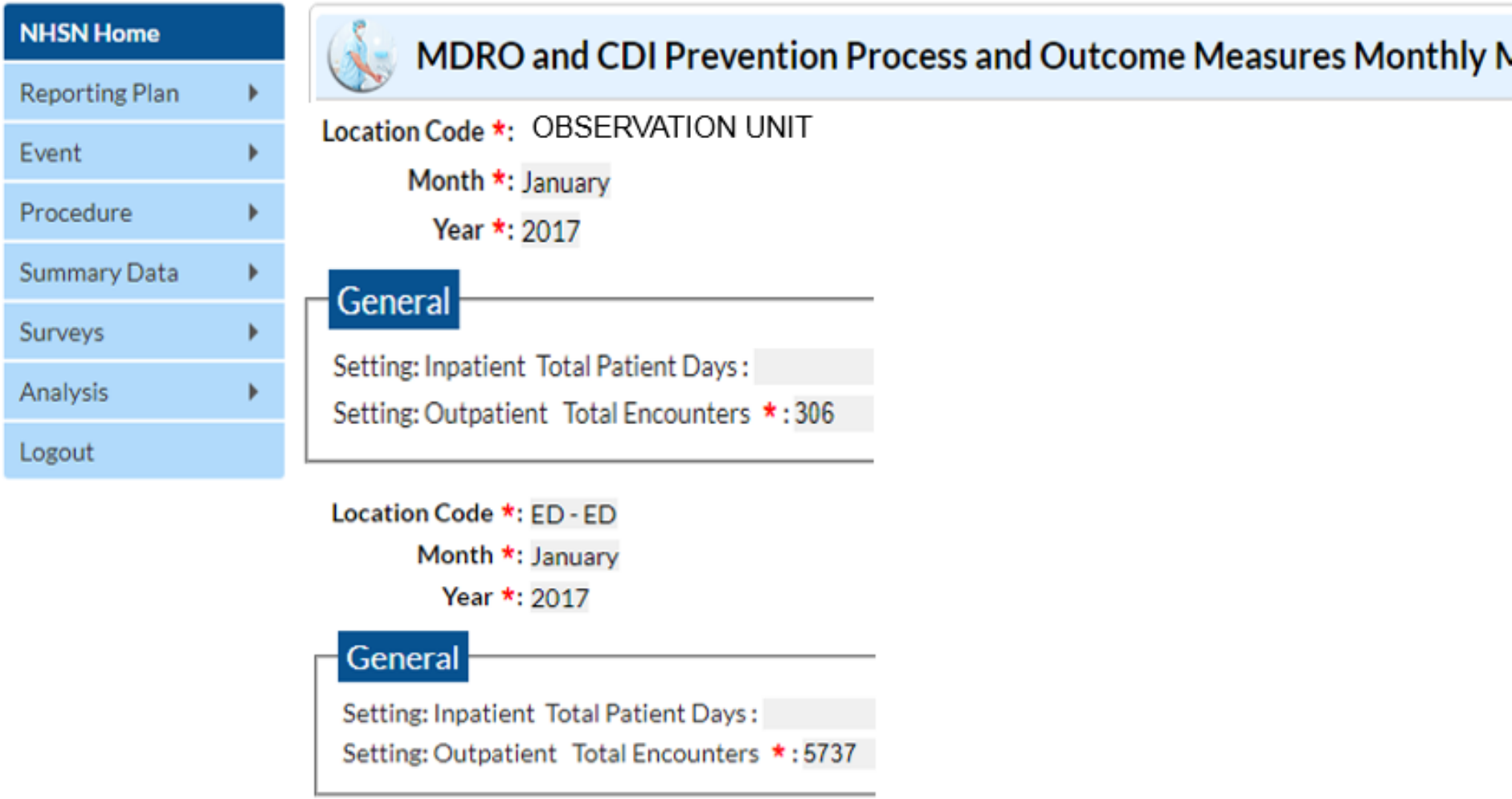
MDRO Patient Days *: 4874 MDRO Admissions *: 1100 MDRO Encounters:

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:

CDI Patient Days *: 4570 CDI Admissions *: 1007 CDI Encounters:

- **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
https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

Interpreting CDI Surveillance Data

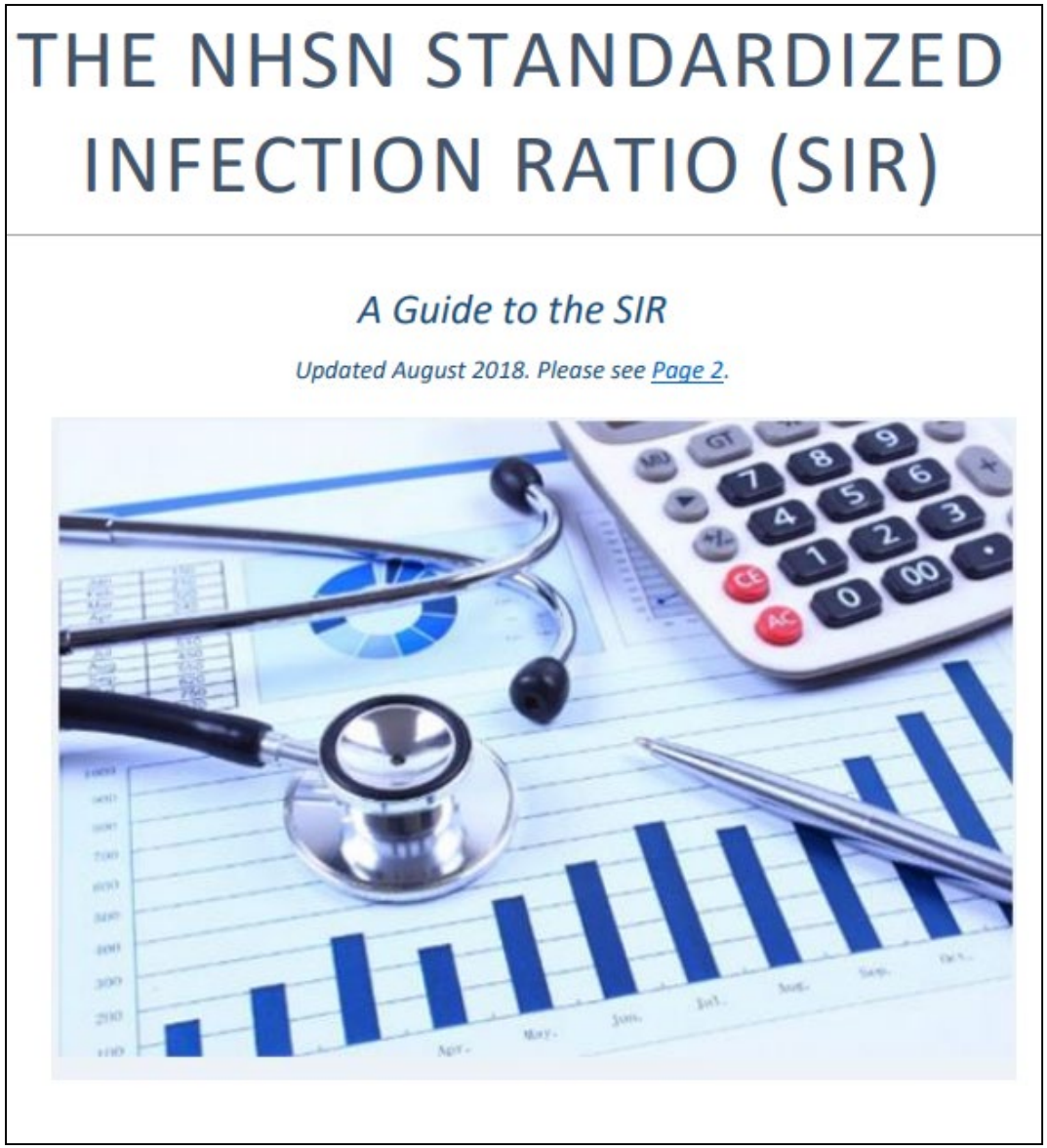
- NHSN has a risk model and calculates an SIR for CDI
- Risk adjustment factors used by NHSN for CDI SIR:
  - Type of laboratory test
  - Inpatient community onset CDI prevalence
  - Facility Type*
  - Medical school affiliation*
  - Facility bedsize*
  - Number of ICU beds*
  - Reporting from ED or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

* From Annual Facility Survey

NHSN: A Guide to the SIR
https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

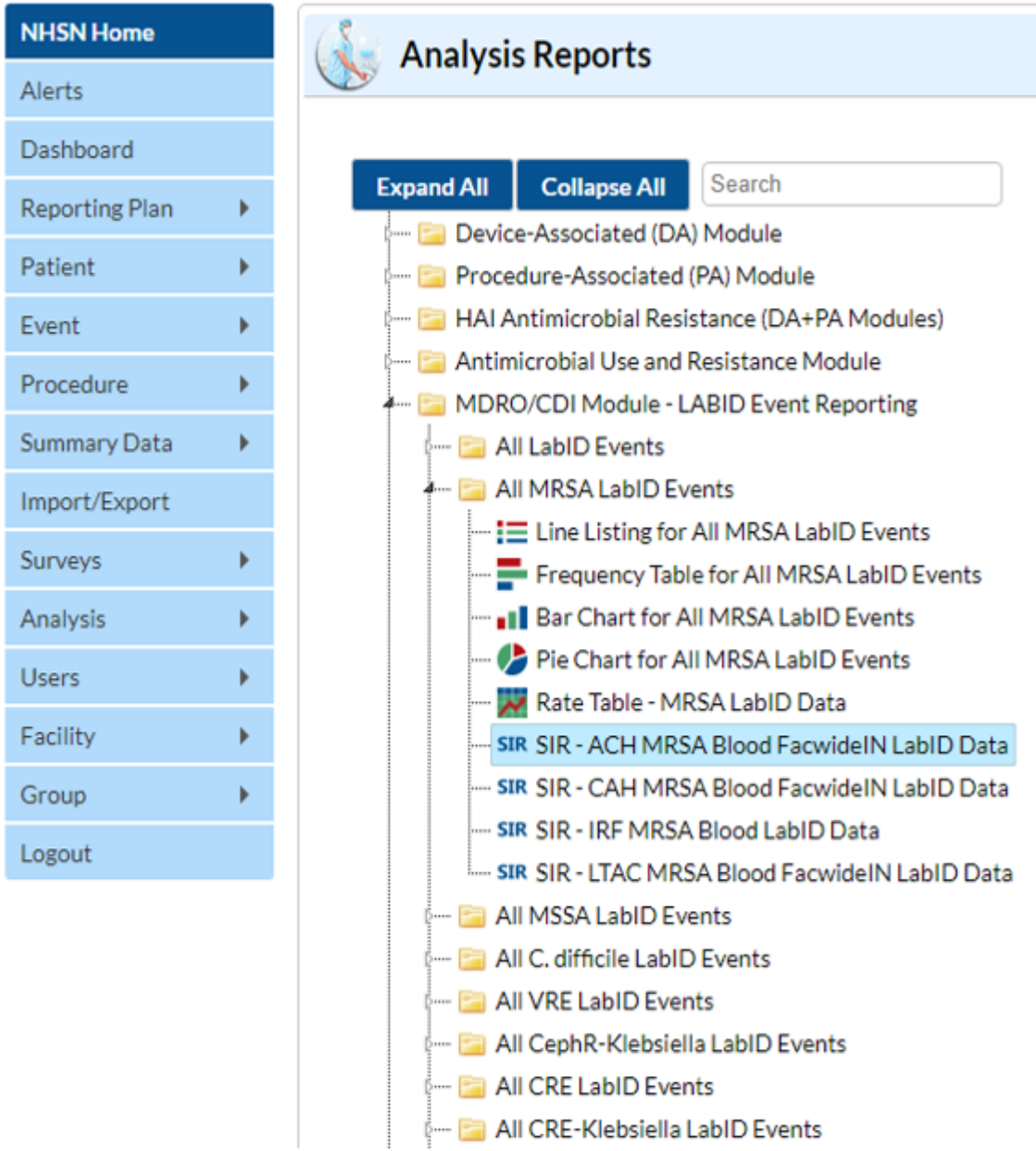
NHSN: A Guide to the SIR

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



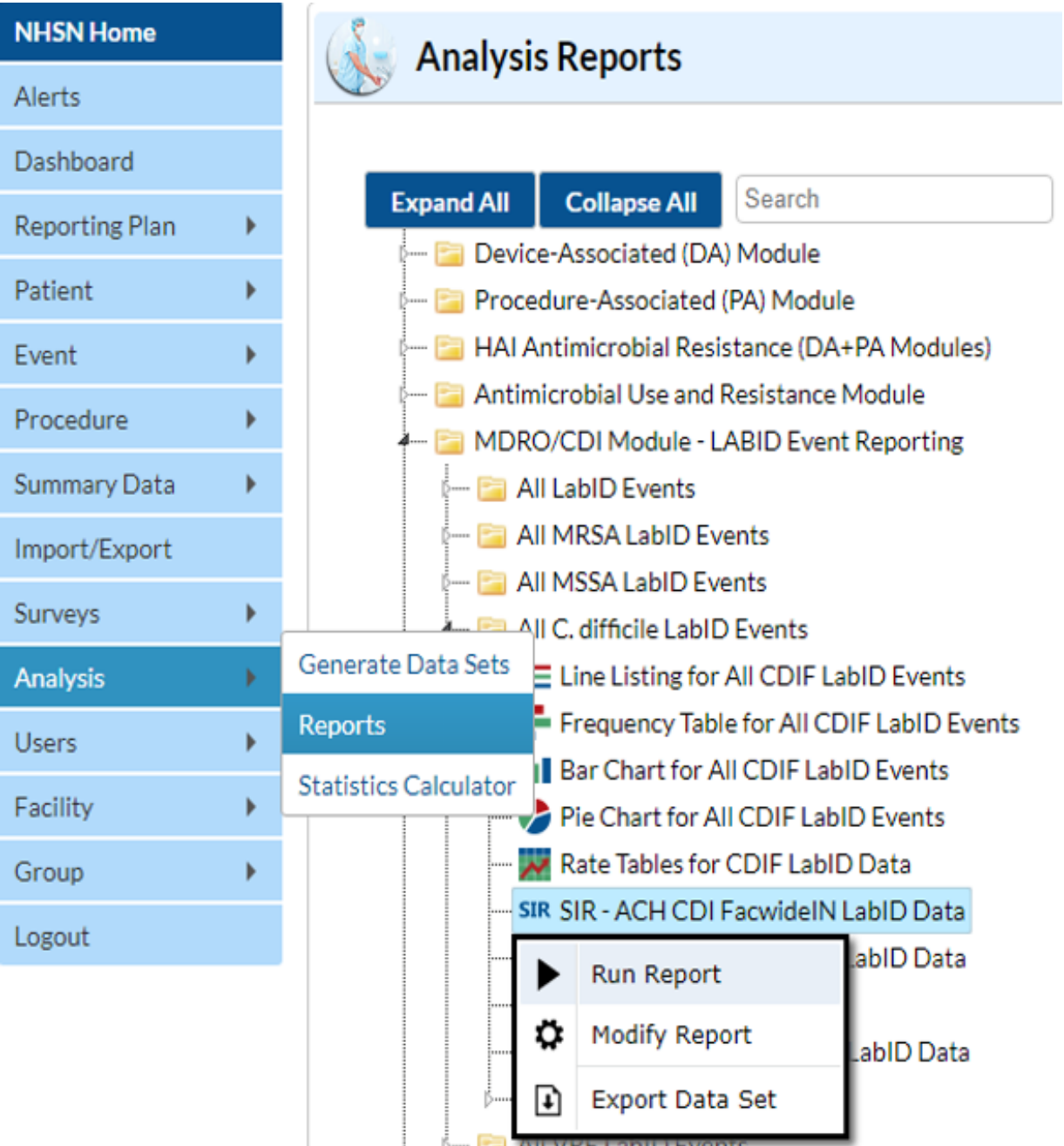
NHSN: A Guide to the SIR, Aug 2018
https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

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

NHSN CDI Analysis Reports

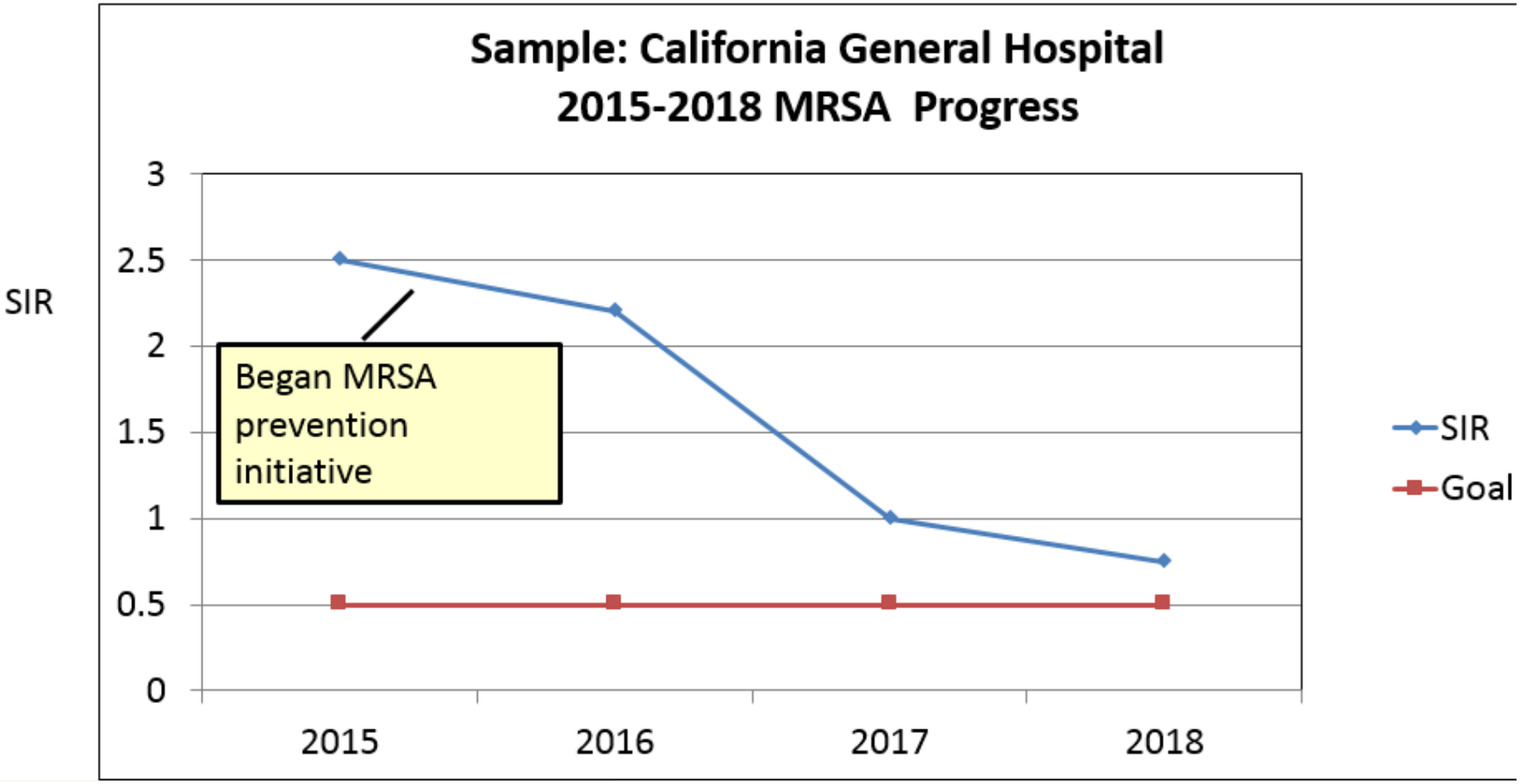


- Generate data set prior to creating a report
- Choose report according to need
  - SIR report- Your incidence compared to expected incidence
  - TAP report – Number of events that needed to be prevented to reach facility targeted goal

California Department of PublicHealth

Track Progress Over Time

- Feedback results to staff
- Celebrate successes!

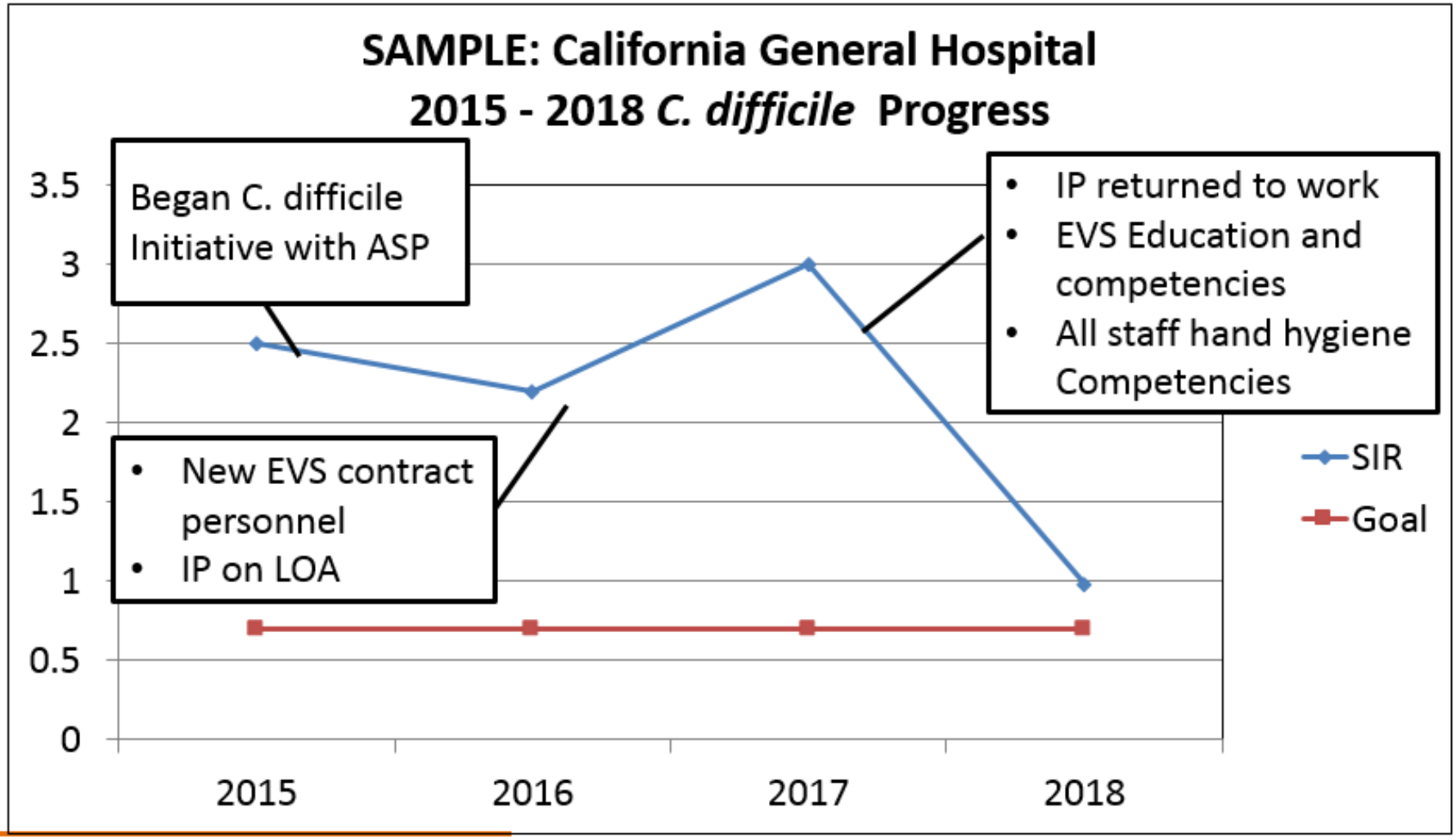


Targeted Assessment for Prevention (TAP) Reports - CDI

Number of Beds	Patient Days	COHCFA Prevalence	CDIF Facility Incident HO LabID Event Count	CDIF Facility Incident HO LabID Number Expected	Facility CAD	SIR
354	60059	0.14	61	55.034	22.48	1.108

- Identifies the **number of infections that needed to be prevented** to reach targeted goal (CAD)

Track CDI Progress Over Time



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