LabID Event Analysis in Acute Care Hospitals: FAQs and Troubleshooting

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2021 NHSN Annual Training

Agenda

- Common questions sent to the NHSN Helpdesk
  - *How I can see a monthly MRSA or CDI SIR for my facility?*
  - *My leadership has requested to see a CDI SIR for each of our ICUs. How do I get this out of NHSN?*
  - *I entered 3 MRSA LabID events in NHSN. I see 3 events on my line list, but only 2 are counted in the SIR. Something must be broken!*
  - *I have entered in all my data and cleared all my alerts, but when I run my quarterly SIR report my SIRs are missing. Why?*
  - *I think my SIR is inaccurate. What should I do?*
  - *My hospital's laboratory is considering a change to our CDI test type. How will this impact my facility's SIR?*
  - *Are there other steps I should take to ensure my data are ready for the upcoming CMS Quality Reporting deadline?*

LabID Event SIRs: A Quick Review

- How does MRSA (or CDI) in my facility compare to the rest of the country?"

$$SIR = \frac{\#\ observed\ HO\ LabID\ Events}{\#\ predicted\ HO\ LabID\ Events}$$

- **# Observed events**: Healthcare-onset (HO) events entered into NHSN *that meet the SIR criteria*

- **# Predicted events**: Calculated and risk adjusted specifically for your facility

How is the Predicted # of CDI Events Calculated?

- Negative binomial regression models were created using 2015 national data
- Incorporates several facility-level characteristics
- Review data table beneath the SIR report
  - Inaccurate risk adjustment factors will lead to inaccurate # of predicted events
  - Review this table whenever you run your SIR reports

Risk Adjustment Factors for FacwideIN CDI SIR

As of: December 18, 2020 at 1:35 PM
Date Range: BS2_LABID_RATESCDIF summaryYr After and Including 2015

summaryYQ	CDI_COprevRate	cdiTestType	numICUBeds	facType	numBeds	CDIF_EDOBSindicator	medType	numpatdays
2020Q2	0.000	NAAT	15	HOSP-GEN	115	0	G	800
2020Q3	0.000	EIA	15	HOSP-GEN	115	0	G	125

Details on LabID SIR Risk Adjustment: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

Spotlight: Inpatient Community-onset CDI Prevalence Rate

Risk Adjustme Factors for FacwideIN CDI SIR
As of: December 18, 2020 35 PM
Date Range: BS2_LABID ESCDIF summaryYr After and Including 2015

summaryYQ	CDI_COprevRate	cdiTestType	numICUBeds	facTy
2020Q2	0.000	NAAT	15	HOSP-C
2020Q3	0.000	EIA	15	HOSP-C

1. The table above displays the values that are included in the ca
2. If any risk factor data are missing, the record is excluded from

- **CDI_COprevRate**: Inpatient community-onset (CO) CDI prevalence rate
- CO events collected from all inpatient units
- Calculated for the **entire quarter**

$$\frac{\textit{\# unique CO events}}{\textit{\# inpatient admissions}} \times 100$$

Spotlight: CDI Test Type

Risk Adjustment Factors fo[...]acwideIN CDI SIR

As of: December 18, 2020 at 1:35 PM
Date Range: BS2_LABID_RATE SCDIF summary[...]er and Including 2015

summaryYQ	CDI_COprevRate	cdiTestType	numICUBeds	facTy[...]
2020Q2	0.000	NAAT	15	HOSP-[...]
2020Q3	0.000	EIA	15	HOSP-[...]

1. The table above displays the values that are included in the ca[...]
2. If any risk factor data are missing, the record is excluded from[...]

- **cdiTestType**: laboratory method used to detect *C. difficile*
- Reported on the facility-wide inpatient (FacWideIN) denominator form during the last month of each quarter

For this quarter, what is the primary testing method for *C. difficile* used most often by your facility's laboratory or the outside laboratory where your facility's testing is performed?

Note: PCR testing should be indicated by selecting NAAT *
  GDHNAAT - GDH plus NAAT

LabID SIRs are Quarterly Measures

- MRSA & CDI SIRs based on <u>quarterly</u> community-onset prevalence rates

- CDI SIRs use CDI test type, which is collected once per <u>quarter</u>

- LabID event SIRs are not accurate until the quarterly risk adjustment calculations can be performed

- Hospitals should review these SIRs after all 3 months of data are entered for that quarter

Q1: *How can I see a monthly SIR for my facility?*

- Monthly MRSA and CDI SIRs are not available for acute care hospitals

- You can review *some elements* of MRSA and CDI data on a monthly basis
  - Number of healthcare-onset events and their location
  - Number of community-onset events and their location
  - Patient days and admissions
  - Incidence and prevalence rates

- If interested in monthly metrics, NHSN recommends use of the Rate Tables
  - FacWideIN rates can be tracked over time, each month
    - Single rate for the entire facility, per organism
  - Use the NHSN Statistics Calculator for a statistical comparison, if interested

Q2: *My leadership has requested to see a CDI SIR for each of our ICUs. How do I get this out of NHSN?*

- Unit-specific CDI SIRs (or MRSA) are not available for acute care hospitals

- Due to the most commonly reported denominator data in NHSN, SIRs are only available for facility-wide inpatient (FacWideIN)

- If interested in unit-specific metrics, we recommend:

  - Add those units to the MDRO/CDI section of the monthly reporting plan

  - Enter unit-specific denominator records into NHSN

  - Utilize the LabID Event Rate Tables to see unit-specific rates

Q3: *I entered 3 MRSA LabID events in NHSN. I see 3 events on my line list, but only 2 are counted in the SIR. Something must be broken!*

- Not all MRSA LabID events reported to NHSN will be counted in your facility's SIR numerator

- The SIR numerator for MRSA bacteremia includes only **healthcare facility-onset** (HO), **non-duplicate** MRSA **blood** LabID events

- There is an indicator variable in Line Listing report; this variable will equal 1 on the line list for all events that are counted in the numerator of the SIR

- Indicator variables and SIR numerator algorithms can be found in the "Troubleshooting Guide," here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf

Q4: *I have entered in all my data and cleared all my alerts, but when I run my quarterly SIR report my SIRs are missing. Why?*

- The SIR will only be calculated when the number of predicted infections is at least 1.0
- When the predicted number of infections is less than 1.0, facilities have a few options for reviewing and interpreting data in NHSN:
  - A longer time period can be included in the SIR calculation in order to reach the threshold of 1.0 predicted infection (such as a *half year or full year*)
  - Infection rates can be used to track internal HAI incidence over time
  - Run the TAP Reports to review the CAD (cumulative attributable difference, which is the difference between the number of observed infections and the number of predicted infections, multiplied by the SIR goal)

Q5: *I think my SIR is inaccurate. What should I do?*

- *Concern*: Some facilities are entering in very low values for patient days or admissions on Line 2 and/or Line 3 of the facility-wide inpatient (FacWideIN) summary form compared to what is entered for Line 1 (total patient days and admissions)

Data Quality: Monthly FWI denominators (1 of 2)

- It is important that Line 2 and Line 3 on the summary form are accurately reported because those values are used in the quarterly MRSA and CDI SIR calculations

- Rare for a facility to be majority comprised of IRF and IPF units

Data Quality: Monthly FWI denominators (2 of 2)

- Currently only applies to Acute Care and Critical Access Hospitals

- A pop-up warning message will appear if a facility enters values on Line 2 or Line 3 that are less than 25% of the values entered on Line 1.

- Two choices to clear warning
  - Go Back and Edit
  - Confirm and Save

Data Quality Warning

Reminder: Patient Days and Admissions on Lines 2 and 3 should include **all** patients housed on select inpatient units, regardless of their infection status. Do NOT enter the number of events identified, or limit the counts to those patients with an MDRO or CDI. Please verify counts are correct.

- To return to the summary form and correct the data entry, press **Go Back and Edit**.
- To confirm your data entry is correct and save the form without making changes, press **Confirm and Save**.

Go Back and Edit   **Confirm and Save**

Q6: *My hospital's laboratory is considering a change to our CDI test type. How will this impact my facility's SIR?*

- The number of predicted events is based on several factors, see SIR Guide

- Moving to a more sensitive test such as PCR/NAAT, the number of predicted CDI events will increase

- Other variables
  - Number of patient days will naturally fluctuate
  - Inpatient community-onset prevalence rate

- SIR will change based on a combination variables, we are not able to calculate the degree of which the SIR will change.

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

Q7: *Are there other steps I should take to ensure my data are ready for the upcoming CMS Quality Reporting deadline?*

- Ensure all 3 months of data entry for quarter are complete
- Soft Alert
- If location or organism completed on Summary Form that is not listed on Monthly Reporting Plan

Alert

This location is NOT included on your monthly reporting plan for the organism indicated on the summary record. This summary record will save to NHSN as an off-pan record unless additional action is taken.

- Select **OK** to save this summary records and make no changes to your reporting plan.
- Select **Save & go to reporting plan** to save this summary record. You will then be re-directed to your monthly reporting plan for this month, where you can add this location/organism to your plan.
- Select **Cancel** to revisit the data entry screen. Your record will not save.

[OK] [Save & go to reporting plan] [Cancel]

Data Quality: Complete all 3 months of data entry for quarter (1 of 3)

- Ensure FacWideIN, ED, & OBS are included on monthly reporting plans for all 3 months
- Analysis folder: Advanced > Plan Data > Line Listing
- Possible filters: mrsa_labID, mrsa_LabIDBld, cdif_labID

```
Advanced
    Patient-level Data
    Event-level Data
    Procedure-level Data
    Summary-level Data
    Plan Data
        Line Listing - Patient Safety Plans
    Pathogen-level Data
    Facility-level Data
    Group-level Data
    Data Quality
```
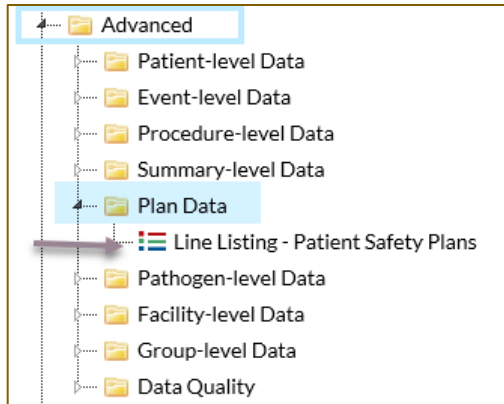
PSRptPlanID	orgID	CCN	planYM	location	locCDC	mrsa_labID	mrsa_labIDBld	cdif_labID
12941	10401	999999	2020M10	ED1	OUT:ACUTE:ED	N	Y	Y
12941	10401	999999	2020M10	FACWIDEIN		N	Y	Y
12941	10401	999999	2020M10	OBS	OUT:ACUTE:WARD	N	Y	Y
12953	10401	999999	2020M11	ED1	OUT:ACUTE:ED	Y	N	Y
12953	10401	999999	2020M11	FACWIDEIN		Y	N	Y
12953	10401	999999	2020M11	OBS	OUT:ACUTE:WARD	Y	N	Y
13000	10401	999999	2020M12	ED1	OUT:ACUTE:ED	Y	N	Y
13000	10401	999999	2020M12	FACWIDEIN		Y	N	Y
13000	10401	999999	2020M12	OBS	OUT:ACUTE:WARD	Y	N	Y

- Ensure FacWideIN, ED, & OBS completed denominator forms

- Analysis folder: Advanced > Summary-level Data > Line Listing

- Filter on SummaryType = MDRO

- Additional variables: eventType, location, cdiTestMeth, cdiTestMethOth, modifyDate, denominator data (numTotEncounters, numCdifEncounters, + see FacWideIN
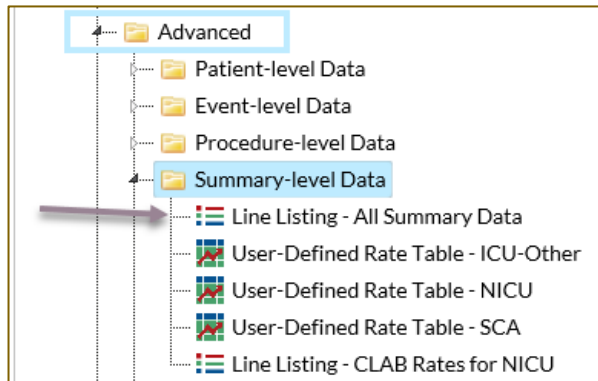
orgid	CCN	summaryYM	summarytype	location	loccdc	eventtype
10401	999999	2020M10	MDRO	FACWIDEIN		CDIF
10401	999999	2020M10	MDRO	ED1	OUT:ACUTE:ED	CDIF
10401	999999	2020M10	MDRO	OBS	OUT:ACUTE:WARD	CDIF
10401	999999	2020M10	MDRO	FACWIDEIN		MRSA
10401	999999	2020M10	MDRO	ED1	OUT:ACUTE:ED	MRSA
10401	999999	2020M10	MDRO	OBS	OUT:ACUTE:WARD	MRSA
10401	999999	2020M11	MDRO	ED1	OUT:ACUTE:ED	CDIF
10401	999999	2020M11	MDRO	FACWIDEIN		CDIF
10401	999999	2020M11	MDRO	OBS	OUT:ACUTE:WARD	CDIF
10401	999999	2020M11	MDRO	ED1	OUT:ACUTE:ED	MRSA

- Advanced
  - Patient-level Data
  - Event-level Data
  - Procedure-level Data
  - Summary-level Data
    - Line Listing - All Summary Data
    - User-Defined Rate Table - ICU-Other
    - User-Defined Rate Table - NICU
    - User-Defined Rate Table - SCA
    - Line Listing - CLAB Rates for NICU

Data Quality: Complete all 3 months of data entry for quarter (3 of 3)

- Review SIR report, look at months

orgID	ccn	location	summaryYQ	months	CDIF_facIncHOCount	numPred	numpatdays	SIR	SIR_pval	sir95ci
10401	99999	FACWIDEIN	2020Q1	3	2	5.795	2448	0.345	0.0924	0.058, 1.140
10401	99999	FACWIDEIN	2020Q2	3	0	2.709	2004	0.000	0.0666	, 1.106
10401	99999	FACWIDEIN	2020Q3	3	2	2.837	1448	0.705	0.6854	0.118, 2.329
10401	99999	FACWIDEIN	2020Q4	2	0	2.243	2004	0.000	0.1062	, 1.336

NHSN CMS Resources

- CMS Resources by Facility Type:
  https://www.cdc.gov/nhsn/cms/index.html

- More guidance about preparing for a CMS quarterly reporting deadline can be found in Monthly Checklist for Reporting

https://www.cdc.gov/nhsn/pdfs/cms/ACH-Monthly-Checklist-CMS-IQR.pdf

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