Troubleshooting the MRSA Bacteremia and CDI LabID Event SIR
2022 Baseline

We suggest that you review the [General Tips for NHSN Analysis](#) document before reviewing this troubleshooting guide any further. **This guide assumes recent dataset generation and no 'Alerts' on the home screen.**

MRSA Bacteremia and *C. difficile* (CDI) LabID Event SIR general information:

- LabID event SIRs calculated under the 2022 baseline are available for acute care hospitals, critical access hospitals, long-term acute care hospitals, and inpatient rehabilitation facilities.
    - SIRs under the 2015 baseline are available for acute care hospitals, critical access hospitals, long-term acute care hospitals, and inpatient rehabilitation facilities and can be found at the following analysis folder pathway: HAI Risk Adjusted Measures Reports > 2015 Baseline (Baseline Set 2) > MRSA Blood LabID or CDI LabID.
    - SIRs under the original baseline time period (2010–2011) are available for acute care hospitals and can be found at the following analysis folder pathway: HAI Risk Adjusted Measures Reports > Original Baseline (Baseline Set 1) > MDRO/CDI – LabID Events.

➢ **Problem #1: How can I tell which events are being counted in the numerator of the SIR?**

Solution:

- **MRSA Bacteremia:** Run a "Line Listing for all MRSA LabID events" limited to the appropriate time period and review the appropriate indicator variable on the line list (see table below for the names of indicator variables). This variable will = 1 on the line list for all events that are counted in the numerator of the SIR. See page 5 of this document for more information about the algorithms used to determine which events are counted in the SIR.

- **CDI:** Run the "Line Listing for all CDIF LabID events" limited to the appropriate time period and review the appropriate indicator variable on the line list (see table below for the names of indicator variables). This variable will = 1 for all events that are counted in the numerator of the SIR. See page 5 of this document for more information about the algorithms used to determine which events are counted in the SIR.

Facility Type	MRSA SIR Indicator Variable	CDI SIR Indicator Variable
Acute Care Hospital	FWMRSA_bldIncCount	FWCDIF_facIncHOCount
CMS-certified Inpatient Rehabilitation (IRF) unit located within a hospital	MRSA_IRFbldIncCount	CDIF_IRFIncCount
Critical Access Hospital	FWMRSA_bldIncCount	FWCDIF_facIncHOCount
Long-term Acute Care Hospital	FWMRSA_bldIncCount	FWCDIF_facIncHOCount
Free-standing Inpatient Rehab Facility	FWMRSA_bldIncCount	FWCDIF_facIncHOCount

➢ **Problem #2: My LabID event SIRs are not being calculated.**

Solution:
- Step 1: Check that the number of predicted events is at least 1. The number of predicted events must be ≥ 1 for the MRSA and CDI SIRs to be calculated. If you have less than 1 predicted event, your data are still considered "complete" and will still be sent to CMS provided all other requirements are met. However, in this situation, a SIR, p-value, and 95% confidence interval will not be calculated.

- Step 2 **(applies to CDI SIRs for all facility types, and MRSA SIRs for acute care and critical access hospitals**): Verify that your facility has completed all denominator data entry for the entire quarter. Summary data for all three months of the quarter must be complete before the SIR for that quarter is calculated. This is because the quarterly inpatient community-onset prevalence rate and quarterly outpatient community-onset prevalence rate are used in the SIR calculation. Additionally, for CDI SIRs, the CDI test type used in the SIR calculation is selected on the FacWideIN or IRF unit's summary data record for the 3rd month of each quarter (i.e., March, June, September, December). Until the CDI test type is reported for the last month of the quarter, the SIR cannot be calculated.

  Note: In this situation, you will see an additional table towards the bottom of the SIR output titled "Months Excluded from SIR Due to Missing Risk Factors" that will display your entered data for those months.

- Step 3: **(applies to CDI SIRs for all facility types, and MRSA SIRs for acute care and critical access hospitals hospitals):** Revisit report modifications if you are running the SIR report before the calendar quarter is over. The LabID event SIRs are calculated on the quarter-level by default. SIRs, including monthly, can only be calculated after the calendar quarter has finished. If you have the 'Group by' option set to summaryYM (to display data by month) on the modification screen prior to the quarter ending, the SIR will not be calculated.

- Step 4: If you are reviewing the CMS SIR report for Quality Reporting, confirm that your monthly reporting plans and monthly summary data list 'FacWideIN' (or applicable IRF unit) as the location designation for MRSA and CDI LabID event surveillance.

➢ **Problem #3: One or more months is missing from my SIR.**

Solution:
- **Step 1:** Confirm that Summary data for the 'FacWideIN' (or applicable IRF unit) location, including all required fields for patient days and admissions, have been entered for every month in the quarter.

- **Step 2:** If reviewing the CMS SIR Report for Quality Reporting, confirm that MRSA (All Specimens or Blood Only) and/or *C. difficile* is listed in your monthly reporting plan for each month of the quarter, under the location designation of 'FacWideIN' (or applicable IRF unit). Any mapped ED and/or Observation locations should also be listed on your reporting plan for both MRSA and *C. difficile*.

- **Step 3:** If no LabID events for an organism were identified, the 'Report No Events' boxes should be checked for each month, as necessary. The 'Report No Events' boxes can be found on the summary data entry screen.

➢ **Problem #4: The number of events listed in the SIR is not accurate.**

Solution:
- **Step 1:** Ensure that all 3 months of the quarter are being included in the SIR (see problem #3 above for troubleshooting steps).

- **Step 2:** Review event line lists to look at details of the MRSA Bacteremia and/or *C. difficile* LabID events entered in NHSN. Be sure you are counting the appropriate events (see algorithms starting on page 3).

➢ **Problem #5: How can I calculate monthly SIRs?**

Solution:

- **Step 1 (applies to CDI SIRs for all facility types, and MRSA SIRs for acute care and critical access hospitals hospitals)**: Ensure that all 3 months of data for the quarter are entered into NHSN before running monthly SIRs for any month in that quarter. SIR reports are available at the quarter-level by default. Users will have the option to generate monthly SIRs after the quarter has finished.

- **Step 2:** Use the modify screen of the SIR report to change the "Group by" option, select summaryYM and run report

➢ **Problem #6: Is my SIR being risk-adjusted for the correct CDI test type?**

The CDI laboratory test type used in the SIR calculations (if applicable) is taken from the value selected on the FacWideIN or IRF unit's MDRO monthly denominator form, for the last month of the quarter. The CDI test type used in your facility's SIR calculation is also listed in the SIR output from NHSN, in the table titled "Risk Adjustment Factors for FacWideIN CDI SIR."

CDI test methods are grouped into categories for risk adjustment as shown below. The categories are different for each facility type model (acute care hospitals, critical access hospitals, and inpatient rehabilitation hospitals). **Note**: CDI test type is *not* used in the long-term acute care hospital CDI LabID 2022 Baseline SIR calculation. Refer to the 2022 Baseline SIR Guide to see how each CDI test type category contributes to the number of predicted events.

Acute Care Hospitals

CDI Test Type category for risk adjustment	CDI Test Method(s)
NAAT	- NAAT (nucleic acid amplification test, including PCR) - GDH plus NAAT (2-step algorithm) - GDH plus EIA for toxin, followed by NAAT for discrepant results
NAATEIA	- NAAT plus EIA, if NAAT positive
EIA or Other	- Enzyme immunoassay (EIA) for toxin - GDH antigen plus EIA for toxin (2-step algorithm) - Cell cytotoxicity neutralization assay - Toxigenic culture (CDI culture followed by detection of toxins) - "Other"

Critical Access Hospitals

CDI Test Type category for risk adjustment	CDI Test Methods
NAAT	- NAAT (nucleic acid amplification test, including PCR) - GDH plus NAAT (2-step algorithm) - GDH plus EIA for toxin, followed by NAAT for discrepant results -
EIA or Other	- Enzyme immunoassay (EIA) for toxin - GDH antigen plus EIA for toxin (2-step algorithm) - NAAT plus EIA, if NAAT positive - Cell cytotoxicity neutralization assay - Toxigenic culture (CDI culture followed by detection of toxins) - "Other"

Inpatient Rehabilitation Hospitals

CDI Test Type category for risk adjustment	CDI Test Methods
EIA	- Enzyme immunoassay (EIA) for toxin - GDH antigen plus EIA for toxin (2-step algorithm) - NAAT plus EIA, if NAAT positive
NAAT or Other	- NAAT (nucleic acid amplification test, including PCR) - GDH plus NAAT (2-step algorithm) - GDH plus EIA for toxin, followed by NAAT for discrepant results - Cell cytotoxicity neutralization assay - Toxigenic culture (CDI culture followed by detection of toxins) - "Other"

Algorithms for Determining Which LabID Events are Counted in the Numerator of the SIR

> *Section 1: Acute Care Hospital (ACH), Critical Access Hospital (CAH), Long-term Acute Care Hospital (LTACH), and Free-standing Inpatient Rehabilitation Facility (IRF)*

The following algorithms are used to determine which LabID events are counted in the numerator of the SIR sent to CMS for participation in CMS Quality Reporting Programs:

MRSA:
1. Positive MRSA LabID event was identified from a blood specimen.

2. Specimen was collected in an inpatient location. For ACHs and CAHs, the location must **NOT** be a CMS-certified inpatient rehabilitation (IRF) or inpatient psychiatric (IPF) location with a separate CCN.

3. Specimen is classified as "healthcare facility-onset" or "HO." This means the specimen collection date is > 3 days after the patient's facility admission date, where the facility admission date is Day 1.

4. The patient did not have any prior positive MRSA *blood specimen* LabID events in the previous 14 days in any inpatient location (including IRF/IPF units), emergency department, or 24-hour observation location. Specimen collection date is considered Day 1.

    a) If a patient's second MRSA bacteremia event is on Day 14 or earlier (where the first specimen date is considered Day 1), the second event will not be counted in the SIR. This 14-day deduplication crosses calendar months. See the example below, from an acute care hospital:

Patient's MRSA bacteremia Event	Date of specimen collection	Location	Onset	Counted in the FacWideIN SIR?
1st event	1/25/2025	Medical ICU	Healthcare facility-onset (HO)	Yes
2nd event	1/30/2025	Step-down Unit	HO	No - previous event exists within 14 days
3rd event	2/8/2025	Medical Ward	HO	No - previous event exists within 14 days

    b) If a patient has two positive specimens that were collected on the same date, the algorithm will treat the first event *entered* into NHSN as the patient's first event.

C. difficile **(CDI):**

1. Specimen was collected in an inpatient location. For ACHs and CAHs, the location must **NOT** be a CMS-certified inpatient rehabilitation (IRF) or inpatient psychiatric (IPF) location with a separate CCN.

2. Specimen is classified as "healthcare facility-onset" or "HO." This means the specimen collection date is > 3 days after the patient's facility admission date, where the facility admission date is Day 1.

3. Positive CDI LabID event is classified as "Incident" by NHSN, meaning that the event occurred > 56 days after the most recent CDI LabID Event for that patient that occurred in any inpatient location (including IRF/IPF units), emergency department, or 24-hour observation location. If a patient has two positive specimens that were collected on the same date, the algorithm will treat the first event *entered* into NHSN as the patient's first event. **Note**: the date of first specimen collection is considered Day 1.

> ### Section 2: CMS-certified Inpatient Rehabilitation (IRF) Units Located within a Hospital

The following algorithms are used to determine which *C. difficile* or MRSA Bacteremia LabID events from an IRF unit are counted in the numerator of the IRF unit's SIR sent to CMS for participation in CMS IRF Quality Reporting Program.

MRSA:

1. Positive MRSA LabID event was identified from a blood specimen.

2. Specimen was collected in a CMS-certified IRF unit. Refer to the Locations Chapter of the NHSN Manual to determine proper set-up of a CMS-certified IRF unit.

3. The specimen collection date is > 3 days after the IRF unit admission date, where the IRF unit admission date is considered Day 1.

4. The patient did not have any prior positive MRSA *blood specimen* LabID events in the previous 14 days in any CMS-certified IRF unit. Specimen collection date is considered Day 1.

   a. If a patient's second MRSA bacteremia event in the IRF unit is on Day 14 or earlier (where the first specimen date in the IRF unit is considered Day 1), the second event will not be counted in the IRF SIR.

C. difficile (CDI):

1. Specimen was collected in a CMS-certified IRF unit. Refer to the Locations Chapter of the NHSN Manual to determine proper set-up of a CMS-certified IRF unit.

2. The specimen collection date is > 3 days after the IRF unit admission date, where the IRF unit admission date is considered Day 1.

3. The patient did not have any prior positive CDI LabID events in the previous 14 days in any CMS-certified IRF unit. Specimen collection date is considered Day 1.

   a. If a patient's second CDI LabID event in the IRF unit is on Day 14 or earlier (where the first specimen date in the IRF unit is considered Day 1), the second event will not be counted in the IRF SIR.

Additional Resources

1. [NHSN's Guide to the SIR 2022 Baseline](#)
2. [Mapping Locations in NHSN](#)
3. [NHSN Analysis Resources](#)
4. [How to Run and Interpret MRSA/CDI LabID Event SIRs](#)
5. [Resources for Reporting NHSN Data for Participation in CMS Quality Reporting Programs](#)