# Introduction to the NHSN 2022 Baseline Models and Standardized Infection Ratio (SIR) Analysis Reports: MRSA Bacteremia

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*Presented on behalf of the NHSN Rebaseline Team, DHQP, NCEZID, CDC*

December 19, 2024

# What you need to know before we begin

- **This webinar is designed to deepen your understanding of the SIR and the Rebaseline updates, helping you effectively apply these concepts in your healthcare facility.**
- **Prerequisites:**
  - A working understanding of the SIR, including its purpose and calculation
  - Familiarity with the concept of a baseline in healthcare surveillance data
  - Basic knowledge of NHSN's Rebaseline process and how it impacts interpretation of SIR data
- **Resources to review:**
  - An Introduction to Updating the National Baseline
  - Prep Like a Pro: What to Expect from the 2022 HAI Rebaseline
  - Rebaseline Fact Sheet: What is the Rebaseline and Why it is Important?
  - How Will My SIR Change; Understanding the Impact of the 2022 HAI Rebaseline
  - Rebaseline FAQs

# Disclaimers and Disclosures

- **No timeline has been established for the adoption of the 2022 baseline SIRs into CMS programs.**
  - The NHSN team continues to have ongoing discussions with colleagues from CMS about the future incorporation of the 2022 baseline SIRs into the various CMS Programs.
  - **Questions about CMS Programs**:
    - **Acute Care Hospitals** (including PPS-Exempt Cancer Hospitals) - QualityNet Question and Answer Tool - select “Ask a Question”, then select “HACRP – Hospital-Acquired Condition Reduction Program”
    - **Inpatient Rehabilitation Facilities (IRF)** - irf.questions@cms.hhs.gov
    - **Long-term Acute Care Hospitals (LTACH)** - ltchqualityquestions@cms.hhs.gov

# Disclaimers and Disclosures (continued)

- **This presentation does not include Patient Health or Identifiable Information (PHI/PII) data.**
  - Images of fictitious data and facility information are for illustrative purposes only and do not represent actual NHSN data

- **Currently available 2022 baseline SIRs in NHSN:**
  - **MRSA** bacteremia LabID
  - **SSI** Complex-30 day model for adult inpatient colon (COLO) and abdominal hysterectomy (HYST)
- This webinar only covers **MRSA bacteremia LabID**.
- A separate training webinar is available for **SSI Complex-30 day model** for adult inpatient colon (COLO) and abdominal hysterectomy (HYST).

# Rebaseline Progress Tracker

- Additional 2022 baseline SIR and SUR reports will be added into NHSN in the future. Track our progress using the Rebaseline Progress Tracker

## Model Implementation: Availability of SIR and SUR Reports in NHSN

*Last updated 11/21/2024*

New SIR and SUR reports are being built in the NHSN application as part of the 2022 HAI Rebaseline. These reports provide NHSN users with SIR and SUR values calculated using new risk adjustment models. Use the table below to view the current status and progress in the development of these new analysis reports in NHSN.

| SIR/SUR Reports (2022 Baseline) Available in NHSN | SIR/SUR Reports (2022 Baseline) Under Development in NHSN |
|---|---|
| • MRSA Blood LabID<br>• SSI – Complex 30-day | • CLABSI and MBI-LCBI<br>• CAUTI<br>• CDI LabID<br>• VAE and pedVAE<br>• SSI – Complex Admission/Readmission<br>• SSI – All SSI<br>• SUR models |

# Objectives

**At the end of this presentation, participants will be able to:**

- Identify, locate, and use key components and resources for the MRSA Bacteremia LabID SIR 2022 baseline, including:
  - Risk adjustment factors
  - Calculation for number of predicted events
  - 2022 Baseline SIRs and Data Quality Analysis Reports
  - 2022 Baseline Training Materials
- Explain the importance of risk adjustment factors and where these data are reported within NHSN
- Analyze the new MRSA SIR reports and evaluate the impact of different risk adjustment factors on the MRSA bacteremia SIR

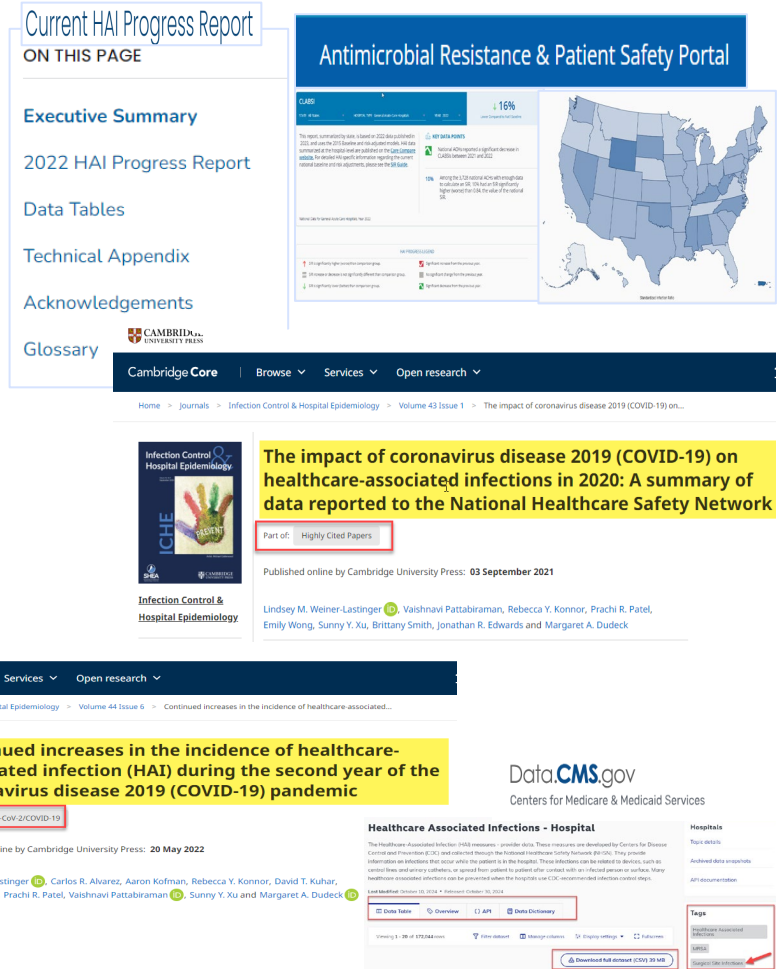
# Plan for Today

1. Matt will present the **new risk adjustment models** for **MRSA bacteremia**, discuss **statistical methods** for developing the new model, and will provide an example of how to manually calculate the number of predicted events (**SIR denominator**).
2. Sunny and Robyn will then provide details about the **new MRSA SIR reports**, information about each **risk factor** used in the model, and guidance on how to review those risk factors in NHSN.
3. **Live Q&A** at the end for all presenters
   - Please submit questions in the Q&A box throughout the presentation. NHSN staff are standing by to answer questions.

# MRSA Bacteremia LabID SIR 2022 baseline

# Who Uses SIR Data?

- **The SIR value provides information about the number of HAIs reported in your facility**
- **This summary statistic is used by various organizations:**
  - CMS: public reporting on Care Compare
  - State health departments may publish SIRs
  - Corporations
  - Non-profit or research groups
    - Leapfrog
  - CDC: national and state-level SIRs
  - Your facility!




HAI Progress Report: [Current HAI Progress Report | HAIs | CDC](#) Care Compare: [Healthcare Associated Infections - Hospital | Provider Data Catalog](#)

# Brief Pause - Burning Questions Answered!

- **2022 Baseline for SIRs and CMS Quality Reporting Programs:**
  - Yes, the model type used for risk adjustment for the MRSA Bacteremia SIR is the same type CMS has historically used for Quality Reporting Programs.
  - Currently, CMS continues to use the 2015 baseline models for Inpatient Prospective Payment System (IPPS).
  - No timeline has been announced by CMS regarding the adoption of the new 2022 baseline models into Quality Reporting Programs.
- The **2022 Baseline** for **MRSA Bacteremia SIR** is **now available** in the NHSN application for facility and group users:
  - Use for internal analyses and to aid in your surveillance and prevention efforts
  - Begin to get comfortable with SIR values under the 2022 baseline – see how your facility compares to 2022 national data
  - Check out the new Which baseline/report should I use? fact sheet

# Standardized Infection Ratio (SIR)

$$SIR = \frac{\#\ observed\ HAIs}{\#\ predicted\ HAIs}$$

HAIs reported to NHSN

Calculated by CDC

- When # of observed HAIs is greater than the # predicted, the SIR will be greater than 1

$$\frac{\text{5 observed CLABSIs}}{\text{3.2 predicted CLABSIs}} = \text{SIR of } \mathbf{1.6}$$

- If # observed HAIs is less than # predicted, the SIR will be less than 1
- P-values and 95% confidence intervals (CI) provide information about statistical significance
- NHSN Resources:
  - Statistics Calculator (https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/statscalc.pdf)
  - Guide to the 2022 Baseline SIRs (https://www.cdc.gov/nhsn/2022rebaseline/sir-guide.pdf)

# Methods for obtaining the SIR formula

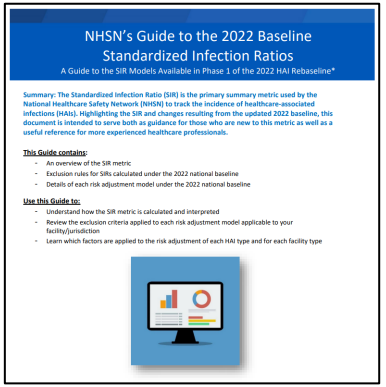
- **CDC obtains the formula (model) for the number of predicted events by obtaining the parameters based on a single baseline year**
  - We use facility data reported to NHSN (with exclusion criteria applied) with the characteristics (covariates) that will be assessed for the model
- **CDC uses negative binomial regression for MRSA Bacteremia LabID events**
  - Models use characteristics (factors) reported to NHSN that significantly impact HAI incidence
  - Each covariate is first evaluated in isolation in the ("univariate") model to determine the optimal parameterization for that variable
  - The final model is a linear combination of the optimal set of statistically significant validated covariates
  - Levels of covariates included in the optimal model that were not statistically significant were collapsed
- **Standard model diagnostics are used to ensure the assumptions of the technique are appropriately met**

# Where do I find details of the risk adjustment models?

- **2022 NHSN Rebaseline webpage and resources:**
  https://www.cdc.gov/nhsn/2022rebaseline

- **Updated SIR Guide (pdf):**
  https://www.cdc.gov/nhsn/2022rebaseline/sir-guide.pdf

- **NHSN SIR Model Explorer, which includes parameters estimates for models:**
  https://www.cdc.gov/nhsn/2022rebaseline/sir-risk-factors.html

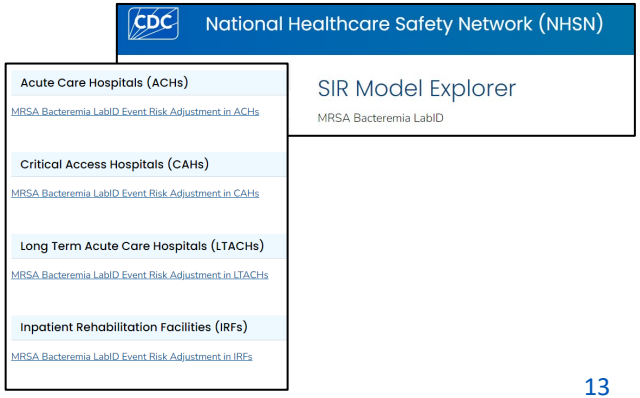

NHSN's Guide to the 2022 Baseline Standardized Infection Ratios

A Guide to the SIR Models Available in Phase 1 of the 2022 HAI Rebaseline*

Summary: The Standardized Infection Ratio (SIR) is the primary summary metric used by the National Healthcare Safety Network (NHSN) to track the incidence of healthcare-associated infections (HAIs). Highlighting the SIR and changes resulting from the updated 2022 baseline, this document is intended to serve both as guidance for those who are new to this metric as well as a useful reference for more experienced healthcare professionals.

This Guide contains:
- An overview of the SIR metric
- Exclusion rules for SIRs calculated under the 2022 national baseline
- Details of each risk adjustment model under the 2022 national baseline

Use this Guide to:
- Understand how the SIR metric is calculated and interpreted
- Review the exclusion criteria applied to each risk adjustment model applicable to your facility/jurisdiction
- Learn which factors are applied to the risk adjustment of each HAI type and for each facility type


CDC National Healthcare Safety Network (NHSN)

SIR Model Explorer

MRSA Bacteremia LabID

Acute Care Hospitals (ACHs)

MRSA Bacteremia LabID Event Risk Adjustment in ACHs

Critical Access Hospitals (CAHs)

MRSA Bacteremia LabID Event Risk Adjustment in CAHs

Long Term Acute Care Hospitals (LTACHs)

MRSA Bacteremia LabID Event Risk Adjustment in LTACHs

Inpatient Rehabilitation Facilities (IRFs)

MRSA Bacteremia LabID Event Risk Adjustment in IRFs

# MRSA 2022 baseline model for Acute Care Hospitals (ACH)

- **ACH 2022 baseline model includes 7 factors:**
  - Inpatient community-onset prevalence rate
  - Outpatient community-onset prevalence rate
  - Average length of stay
  - Proportion of total beds that are ICU
  - Total number of beds
  - Medical school affiliation
  - Facility type (based on NHSN enrollment)
- **See updated SIR guide for full details and footnotes:**

  https://www.cdc.gov/nhsn/2022rebaseline/sir-guide.pdf

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -11.6685 |
| Outpatient CO prevalence rate | ≥0.085 per 100 encounters | 0.6112 |
| | 0.064-0.084 per 100 encounters | 0.4703 |
| | 0.040-0.063 per 100 encounters | 0.3537 |
| | 0.013-0.039 per 100 encounters | 0.2471 |
| | <0.013 per 100 encounters or no applicable locations | REFERENT |
| Inpatient CO prevalence rate | ≥0.071 per 100 admissions | 0.3538 |
| | 0.042-0.070 per 100 admissions | 0.2238 |
| | 0.001-0.041 per 100 admissions | 0.1259 |
| | 0 per 100 admissions | REFERENT |
| Average length of stay | ≥5.2 days | 0.7650 |
| | 4.8-5.1 days | 0.6104 |
| | 2.6-4.7 days | 0.5149 |
| | 1-2.5 days | REFERENT |
| Proportion of total beds that are ICU | ≥0.232 | 0.4254 |
| | 0.161-0.231 | 0.2758 |
| | 0.061-0.160 | 0.1856 |
| | 0-0.060 | REFERENT |
| Total number of beds | ≥67 beds | 0.2204 |
| | 1–66 beds | REFERENT |
| Medical school affiliation | Major | 0.1188 |
| | Graduate/Undergraduate/Non-teaching | REFERENT |
| Facility type | General Acute Care (GEN); Oncology (ONC) Children's (CHLD); Military (MIL); Orthopedic (ORTHO); Surgical (SURG); Women's Hospital (WOM); Women and Children's (WOMCHILD) | 0.2477 REFERENT |

# How do I interpret an SIR model?

- **Synthetic values for an <u>example</u> ACH facility:**

  - Outpatient CO prev. rate=0.012
  - Inpatient CO prev. rate=0.042
  - Average length of stay=6.0
  - Proportion of total beds that are ICU=0
  - Total number of beds=66
  - Medical school affiliation=M
  - Facility type=HOSP-GEN
  - Number of patient days=36,030

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
As of: November 12, 2024 at 3:16 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

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| Total number of beds | ≥67 beds | 0.2204 |
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| Medical school affiliation | Major | 0.1188 |
| | Graduate/Undergraduate/Non-teaching | REFERENT |
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| | Children's (CHLD); Military (MIL); Orthopedic (ORTHO); Surgical (SURG); Women's Hospital (WOM); Women and Children's (WOMCHILD) | REFERENT |

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  - Proportion of total beds that are ICU=0
  - Total number of beds=66
  - Medical school affiliation=M
  - Facility type=HOSP-GEN
  - Number of patient days=36,030

**Model for predicted number of events:**

*Exp*[-11.6685 + 0 [Outpatient prevalence rate falls in referent category]
+ 0.2238×(Inpatient CO prev. rate : 0.42-0.070)
+ 0.7650 ×(Average length of stay: ≥ 5.2 days)
+ 0 [Proportion of total beds that are ICU falls in referent category]
+ 0 [Total number of beds falls in referent category]
+ 0.1188 ×(Medical school affiliation: Major)
+ 0.2477 ×(Facility type: HOSP-GEN; HOSP-ONC) ]

× 36030 (MRSA Bacteremia Patient Days) = **1.196**

# How do I interpret an SIR model?

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× 36030 (MRSA Bacteremia Patient Days) = **1.196**

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

# Critical Access Hospitals (CAHs) Model Details/Risk Factors

- **CAH 2022 baseline model includes 2 factors:**
  - Outpatient Community-Onset Prevalence Rate (MRSA_EDObsPrevRate)
  - Inpatient Community-Onset Prevalence Rate (MRSA_admPrevBldRate)

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -11.3451 |
| Outpatient CO prevalence rate | >0 per 100 encounters | 0.9991 |
| | 0 per 100 encounters or no applicable locations | REFERENT |
| Inpatient CO prevalence rate | >0 per 100 admissions | 0.8824 |
| | 0 per 100 admissions | REFERENT |

# Long-term Acute Care Hospitals (LTACs) Model Details/Risk Factors

- **Proportion of patients on hemodialysis (AdmHemoProp)**
- **Average length of stay (LOS)**
- **Total number of beds (numBeds)**

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -11.1269 |
| Proportion of admissions on hemodialysis | ≥0.218 | 1.9602 |
| | 0.075-0.217 | 1.2618 |
| | 0-0.074 | REFERENT |
| Average length of stay | ≥31.9 days | 0.5414 |
| | 1-31.8 days | REFERENT |
| Total number of beds | ≥69 | 0.4252 |
| | 1–68 | REFERENT |

# Inpatient Rehabilitation Facilities (IRFs) Model Details/Risk Factors

- **CMS-Certified IRF Unit vs Free-standing Rehabilitation Hospital (factype or CMSIRF)**
- **Average length of stay (LOS)**

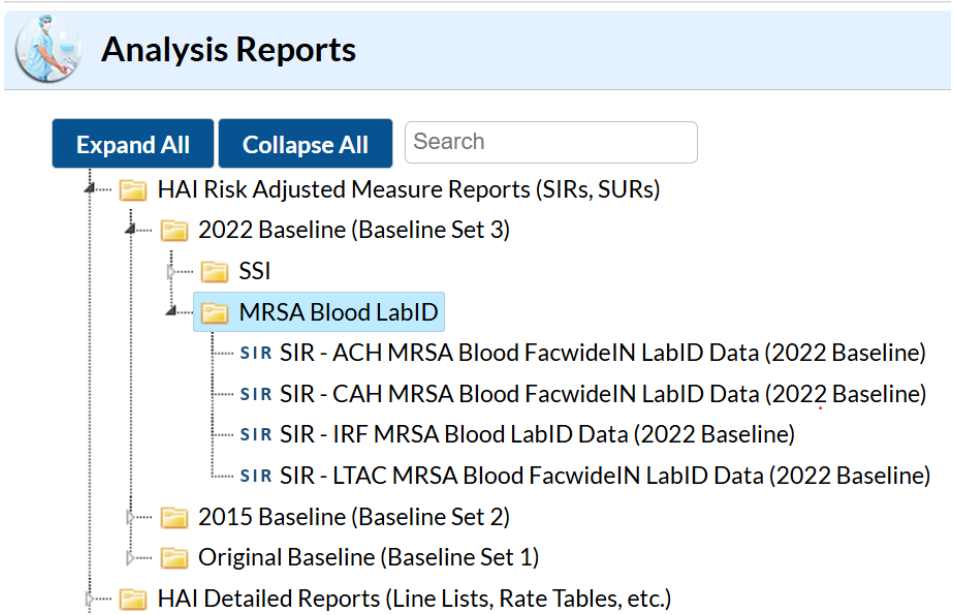
| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -12.4554 |
| CMS-Certified IRF Unit vs Free-standing | IRF Unit | 0.9396 |
| | Free-standing Rehabilitation Hospital | REFERENT |
| Average length of stay | ≥12.1 days | 0.8929 |
| | 1-12.0 days | REFERENT |

# MRSA Bacteremia LabID SIR Reports (2022 baseline)

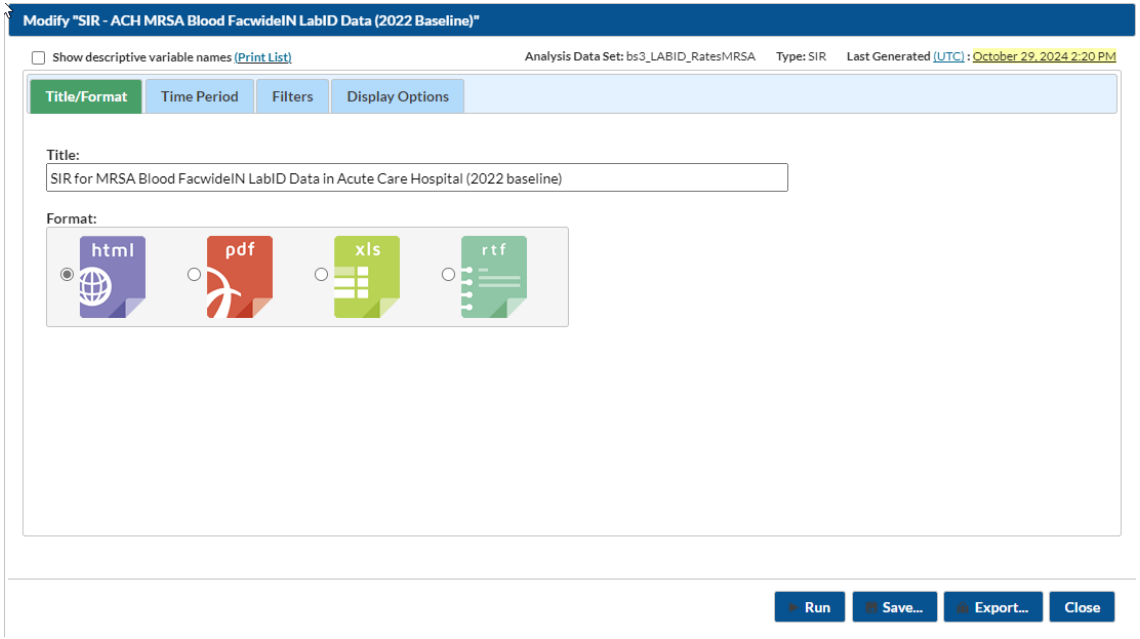
How to run and use the new reports

# Analysis and Reporting Treeview

- **Required:** Generate datasets before running the new reports
- Analysis treeview has been updated to include a new folder for the 2022 Baseline (Baseline Set 3) SIR reports under the ‘HAI Risk Adjustment Measure Reports’ folder
- New MRSA SIR (2022 Baseline) reports can be found under the ‘MRSA Blood LabID’ subfolder



# Report Modifications




- Users will have the same options to modify the 2022 Baseline SIR reports in the NHSN application as the current reports
- The following can be modified
  - Title / Format
  - Time Period
  - Filters
  - Display Options

For more information on how to modify NHSN reports: [How to Modify a Report (cdc.gov)]

# Details for the SIR Report for Acute Care Hospital (ACH)

Note: Details for other facility types (CAHs, IRFs, LTACs) can be found in the Appendix of this presentation

# Getting Started: Fundamentals for the new MRSA SIR Reports (Part 1)

- **The MRSA blood SIR for acute care hospitals (ACHs) is only calculated on the facility-wide inpatient (FacWideIN) level and cannot be calculated for any individual location**
  - Note: IRF units within a hospital will receive a separate SIR
- **The new SIR reports under the 2022 Baseline folder will only run for data from 2022 and forward**
- **Footnotes have been updated with new details specific for the 2022 baseline model**

# Getting Started: Fundamentals for the new MRSA SIR Reports (Part 2)

- **Report Cadence: The MRSA SIR reports are available at the quarterly-level by default. Users will have the option to generate monthly SIRs.**
  - For Acute Care Hospitals and Critical Access Hospitals, the monthly SIRs will use quarterly inpatient community-onset and outpatient community-onset prevalence rates, and monthly number of patient days.
  - More details about running monthly SIRs are coming later in the presentation!

- **Psych & VA Hospitals are excluded**
  - These facilities can still run 2015 baseline SIR reports, line listings and rate tables

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
As of: November 22, 2024 at 6:38 PM UTC
Date Range: BS3_LABID_RATESMRSA ummaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

1. The SIR is only calculated if number predicted (numPred) is >=1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
2. The number of predicted events is calculated based on national 2022 NHSN data. Please see the SIR Guide for details on the HAI-specific risk adjustment and inclusion/exclusion criteria: https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html.
3. By default, this report includes all data that meet the report criteria, which includes data not specified on the monthly reporting plans.
4. This report includes facility-wide inpatient data from hospitals for 2022 and forward.
5. Events from rehabilitation wards and behavioral health/psych wards with a unique CCN are excluded. Information on how to determine which events are counted in the SIR can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf.
6. If any risk factor data are missing, the record is excluded from the SIR.

Source of aggregate data: 2022 NHSN MRSA Blood LabID Data
Data contained in this report were last generated on November 5, 2024 at 6:34 PM UTC to include data beginning January 2021 .

*Fictitious data used for illustrative purposes only.*

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**

**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**

**As of: November 12, 2024 at 3:16 PM UTC**

**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

- The display of the first table in the SIR report has not changed
- Bs3_LabID_ RatesMRSA analysis dataset is being used for the 2022 baseline report
- SIRs are still not calculated when the number of predicted infections is less than 1.0

*Fictitious data used for illustrative purposes only.*

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**

**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**

**As of: November 12, 2024 at 3:16 PM UTC**

**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

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|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

- **Months: 3**
- **SIR numerator (MRSA_bldIncCount): 1**
- **SIR denominator (numPred): 1.196**
- **Total MRSA patient days for the quarter (numpatdays): 36,030**
- **SIR: 1 / 1.196 = 0.836**

***Note: The methods for calculating/displaying SIR numerator, patient days, p-value and 95% CI are not changing***

*Fictitious data used for illustrative purposes only.*

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

- **SIR denominator (numPred): 1.196**
  - This is calculated using the 2022 baseline MRSA model for acute care hospitals (ACHs)

*Fictitious data used for illustrative purposes only.*

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

- **If the SIR < 1.0, then fewer MRSA LabID events were observed than predicted, based on the 2022 national aggregate data.**
- **If the p-value > 0.05, then we can conclude that the number of observed infections is not statistically significantly different than the number of predicted infections.**
- **If the confidence interval includes the value of 1, then the SIR is not significantly different than 1.**

*Fictitious data used for illustrative purposes only.*

# Example MRSA SIR Report

Table #1

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

- **P-value is > 0.05**
- **The 95% confidence interval includes 1.0**
  - 95% CI: (0.042, 4.124)
- **SIR is not statistically significantly different than 1.0 in this example**
- ***Note: The SIR, SIR p-value and confidence intervals are displayed because the number of predicted MRSA events is ≥ 1.***

*Fictitious data used for illustrative purposes only.*

# What if numPred is less than 1?

- SIR, p-value, and 95% confidence interval would be missing/blank

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 4:12 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYr After and Including 2022**

orgID=10315

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 10315 | | FACWIDEIN | 2023Q1 | 3 | 0 | 0.038 | 1365 | . | . | |
| 10315 | | FACWIDEIN | 2023Q3 | 2 | 0 | 0.031 | 1105 | . | . | |
| 10315 | | FACWIDEIN | 2023Q4 | 3 | 0 | 0.040 | 1440 | . | . | |

*Fictitious data used for illustrative purposes only.*

# What if numPred is less than 1?

- A longer time period can be included in the SIR calculation in order to reach the threshold of 1.0 predicted infection.
- Infection rates can be used to track internal MRSA 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).
  - New TAP reports for the 2022 Baseline will be coming soon

*Fictitious data used for illustrative purposes only.*

# How is the # of predicted MRSA events calculated?

- Negative binomial regression models were created using 2022 national data
- MRSA ACH model inputs: 7 different factors & total patient days
- The second table in the SIR report displays the risk factors used to calculate your facility's number of predicted MRSA events (SIR denominator) using the 2022 baseline model

Table #2

**National Healthcare Safety Network**

**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**

As of: November 12, 2024 at 3:16 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

*Fictitious data used for illustrative purposes only.*

# MRSA Risk Factors: Community-onset prevalence rates

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
As of: November 12, 2024 at 3:16 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

**Inpatient community-onset (CO) prevalence rate (MRSA_admPrevBldRate)**

$$\frac{\#\ inpatient\ CO\ MRSA\ events}{\#\ of\ admissions\ (quarter)}\ x\ 100$$

(based on FACWIDEIN)

**Outpatient community-onset (CO) prevalence rate (MRSA_EDObsPrevRate)**

$$\frac{\#\ outpatient\ CO\ MRSA\ events}{\#\ of\ encounters\ (quarter)}\ x\ 100$$

(based on Emergency depts & 24-hour Observation locations)

*Fictitious data used for illustrative purposes only.*

# MRSA Risk Factors: Annual Survey and Enrollment

*Note: The survey used for risk adjustment aligns with the year of data being analyzed (i.e., 2022 survey would be used for 2022 SIR calculations, if available). If corresponding survey isn't reported in NHSN yet, the SIR will use most recent survey available.*

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
As of: November 12, 2024 at 3:16 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

**These values are collected from the annual hospital survey or during NHSN enrollment:**

- **Facility type (facType)**
- **Medical school affiliation (medType)**
- **Total number of beds (numBeds)**
- **Proportion of total beds that are ICU (ICUBedprop = numICUbeds / numBeds)**
- **Average length of stay (LOS = numPatDaysSurv / numAdmitsSurv)**

*Fictitious data used for illustrative purposes only.*

# MRSA Patient Days

Table #2

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

**Patient days are collected on the FacWideIN denominator form and summed for the quarter (numpatdays)**

*Fictitious data used for illustrative purposes only.*

# MRSA Exclusions

- **The number of predicted events cannot be calculated if any risk factors are missing in NHSN**
- **If number of predicted events cannot be calculated, a third table will display at the bottom of the SIR report**
- **The 'months excluded' table can be used to troubleshoot**
- **Common reasons for missing data**
  - Newly enrolled facility has not completed annual survey → missing required survey factors needed to calculate number of predicted events
  - Zero admissions for a quarter → the inpatient community-onset prevalence rate cannot be calculated if the number of admissions summed for the quarter (collected on the FacWideIn denominator form) is zero

# MRSA Exclusions

**National Healthcare Safety Network**

**MRSA Data - Months Excluded from SIR Due to Missing Risk Factors**

As of: November 12, 2024 at 4:12 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYr After and Including 2022

Table #3

orgID=10315

| orgID | ccn | summaryYM | MRSA_bldIncCount | medType | numBeds | numICUBeds | numPatDaysSurv | numAdmitsSurv | numAdms | numPatDays |
|---|---|---|---|---|---|---|---|---|---|---|
| 10315 | | 2023M04 | 0 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |
| 10315 | | 2023M05 | 0 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |
| 10315 | | 2023M06 | 1 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |

- Example where MRSA admissions entered on the FacWideIN summary form are zero for every month of 2023 Q2 (April, May, June), and summed for the quarter is zero
- Inpatient community-onset prevalence rate cannot be calculated (MRSA_admPrevBldRate)
- Facility should review data entry to ensure accurate denominators were provided on the monthly summary forms

*Fictitious data used for illustrative purposes only.*

# How do I view monthly SIRs for MRSA bacteremia?

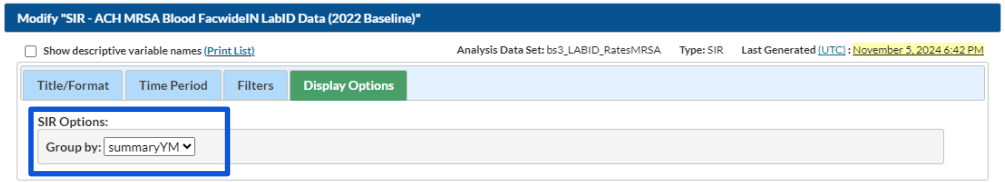
- **Step 1: If you are from an Acute Care Hospital or Critical Access Hospital, wait for the quarter to be finished**
  - All 3 months of data for a calendar quarter must be entered into NHSN before running monthly SIRs for any month in that quarter (e.g., January, February, and March) due to requirements for the ACH and CAH risk adjustment models

- **Step 2: Ensure new analysis datasets have been generated to capture all monthly data entry**

- **Step 3: Use the Modify screen of the SIR Report to change the "Group by" option to SummaryYM**

# How do I view monthly SIRs for MRSA bacteremia?

- **Navigate to the Display Options tab**
- **Select SummaryYM**




**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
As of: November 22, 2024 at 8:36 PM UTC
Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2

orgID=15328

| orgID | ccn | location | summaryYM | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023M04 | 1 | 0.398 | 12000 | . | . | |
| 15328 | | FACWIDEIN | 2023M05 | 0 | 0.399 | 12010 | . | . | |
| 15328 | | FACWIDEIN | 2023M06 | 0 | 0.399 | 12020 | . | . | |

*Fictitious data used for illustrative purposes only.*

# Data Quality

How to ensure the quality and accuracy of the SIR report

# Data Quality: SIR numerator

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

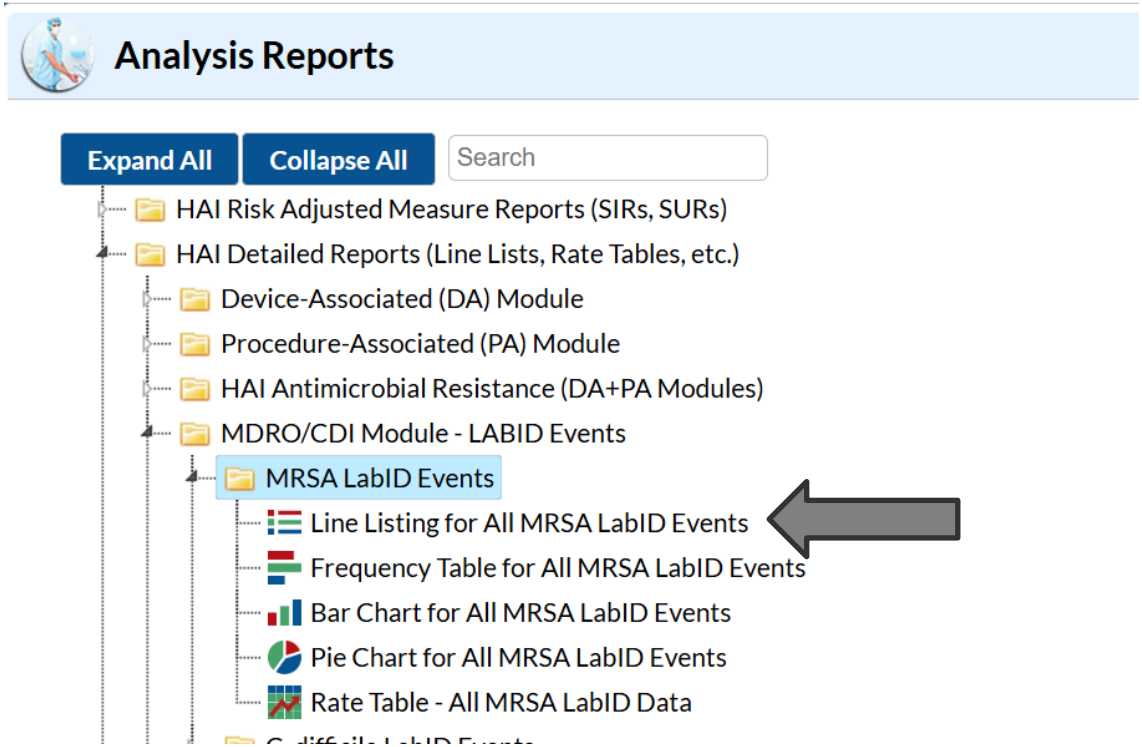
orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

**To confirm the accuracy of the MRSA SIR numerator (MRSA_bldIncCount), run and review the 'Line Listing for All MRSA LabID Events' report**

*Fictitious data used for illustrative purposes only.*

# MRSA Line Listing Report




*Fictitious data used for illustrative purposes only.*

# Data Quality: SIR numerator

**National Healthcare Safety Network**
**Line Listing - All MRSA LabID Events**
**As of: November 12, 2024 at 6:28 PM UTC**
**Date Range: LABID_EVENTS specDateYQ 2023Q2 to 2023Q2**
**if (((spcOrgType = "MRSA" ) ))**

| orgID | patID | eventID | spcOrgType | location | outpatient | onset | admitDate | locationAdmitDate | specimenSource | specimenDate | ageAtSpec | facToSpecDays | FWMRSA_admPrevBldCount | FWMRSA_bldIncCount |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | 003 | 123250 | MRSA | BURN | N | HO | 04/05/2023 | 04/05/2023 | BLDSPC | 04/12/2023 | 35 | 8 | 0 | 1 |
| 15328 | 004 | 123251 | MRSA | CARDCRIT | N | CO | 04/11/2023 | 04/11/2023 | BLDSPC | 04/12/2023 | 30 | 2 | 1 | 0 |
| 15328 | 005 | 123252 | MRSA | ED | Y | CO | . | . | BLDSPC | 04/28/2023 | 23 | . | 0 | 0 |

- **Indicator variable on the Line Listing for all MRSA LabID Events report can be used to verify the events counted in the SIR numerator (FWMRSA_bldIncCount)**
  - If FWMRSA_bldIncCount = 1, the event is counted in the SIR numerator
  - There is an additional indicator variable for the events counted in the inpatient CO prevalence rate (FWMRSA_admPrevBldCount)

For more information on the LabID SIR numerator algorithm: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf

*Fictitious data used for illustrative purposes only.*

# Data Quality: SIR denominator

**National Healthcare Safety Network**

**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**

**As of: November 12, 2024 at 3:16 PM UTC**

**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

**To confirm the accuracy of the MRSA SIR denominator (numPred), review the second table (Risk Adjustment Factors) or the third table (Months Excluded) within the SIR report**

*Fictitious data used for illustrative purposes only.*

# Data Quality: SIR denominator

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

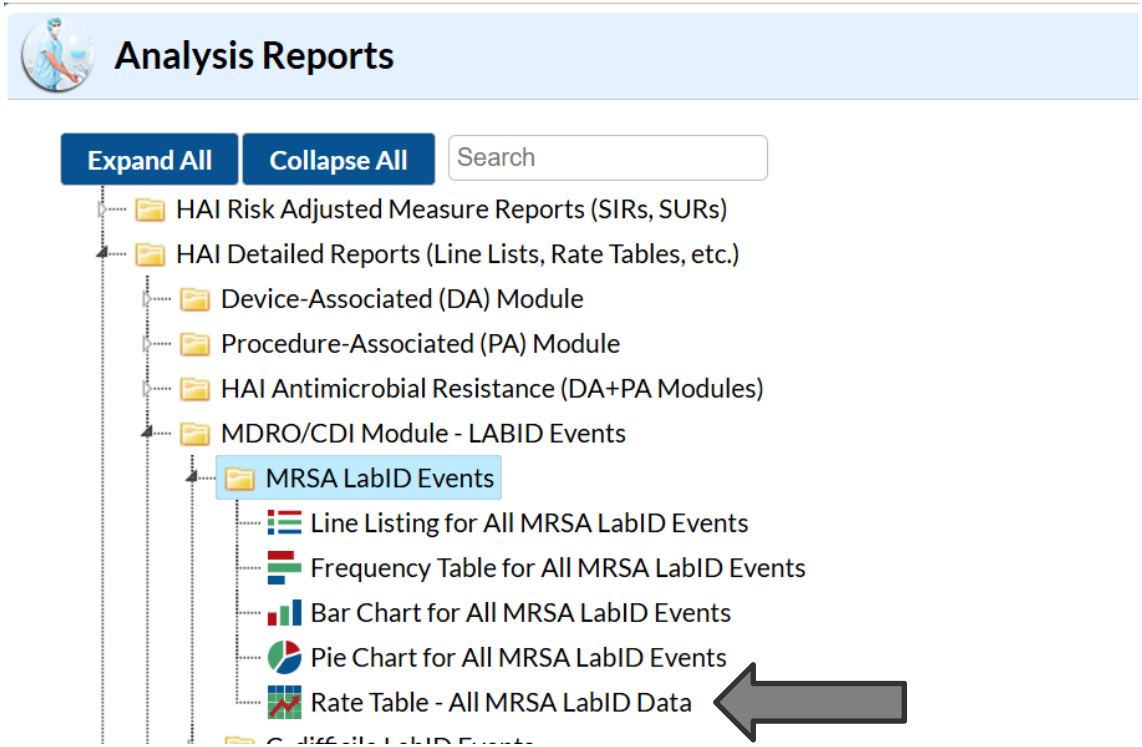
orgID=15328

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | facType | medType | numBeds | ICUBedprop | LOS | numpatdays |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | 2023Q2 | 0.042 | 0.012 | HOSP-GEN | M | 66 | 0.000 | 6.0 | 36030 |

- **The second table generated by the MRSA SIR report displays the values of the covariates used when calculating number of predicted events**
  - To confirm the prevalence rates in this table, run and review the Rate Table – All MRSA LabID Data (HAI Detailed Reports > MDRO/CDI Module-LabID Events)
  - To confirm the survey risk factors in this table, manually review the hospital annual survey or run the 'Line Listing – Hospital Survey' report (Supplemental Reports > Facility-level Data)

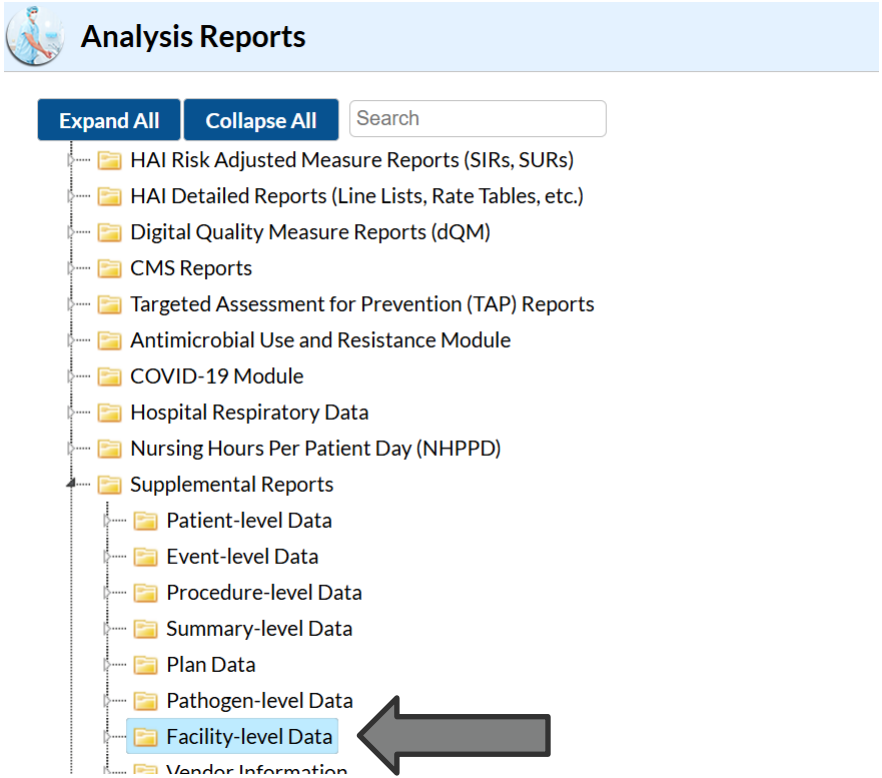
*Fictitious data used for illustrative purposes only.*

# MRSA Rate Table Report




*Fictitious data used for illustrative purposes only.*

# Hospital Survey Line Listing Report




*Fictitious data used for illustrative purposes only.*

# Data Quality: SIR denominator

**National Healthcare Safety Network**
**MRSA Data - Months Excluded from SIR Due to Missing Risk Factors**
**As of: November 12, 2024 at 4:12 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYr After and Including 2022**

orgID=10315

| orgID | ccn | summaryYM | MRSA_bldIncCount | medType | numBeds | numICUBeds | numPatDaysSurv | numAdmitsSurv | numAdms | numPatDays |
|---|---|---|---|---|---|---|---|---|---|---|
| 10315 | | 2023M04 | 0 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |
| 10315 | | 2023M05 | 0 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |
| 10315 | | 2023M06 | 1 | G | 975 | 90 | 15005 | 2831 | 0 | 0 |

- **The third table (if applicable) generated by the MRSA SIR report will display if there are any missing covariates, which is preventing number of predicted events to be calculated**
  - If any of the following are missing, review the annual survey: medType, numBeds, numICUBeds, numPatDaysSurv, numAdmitsSurv
  - If numAdms is zero for all three months of the quarter, review the MDRO summary forms for the months listed

*Fictitious data used for illustrative purposes only.*

# Data Quality: Patient days

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Acute Care Hospital (2022 baseline)**
**As of: November 12, 2024 at 3:16 PM UTC**
**Date Range: BS3_LABID_RATESMRSA summaryYQ 2023Q2 to 2023Q2**

orgID=15328

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 15328 | | FACWIDEIN | 2023Q2 | 3 | 1 | 1.196 | 36030 | 0.836 | 0.9665 | 0.042, 4.124 |

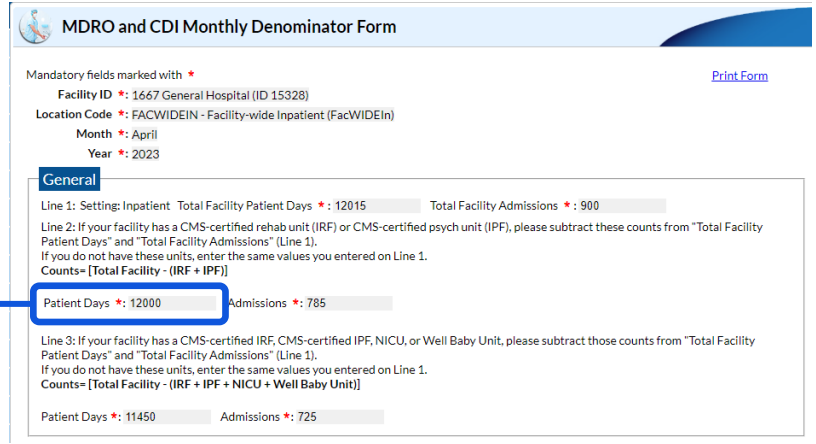
**To confirm the accuracy of the patient days used to calculate number of predicted events, review the MDRO summary forms (Line 2 patient days) or review the 'Line Listing for All Summary Data' report**

*Fictitious data used for illustrative purposes only.*

# Data Quality: Patient days

**National Healthcare Safety Network**
**Line Listing for All Summary Data**
**As of: November 12, 2024 at 6:39 PM UTC**
**Date Range: PSSUMMARY summaryYM 2023M04 to 2023M06**
**if (((eventType = "MRSA" ) AND (location = "FACWIDEIN" ) ))**

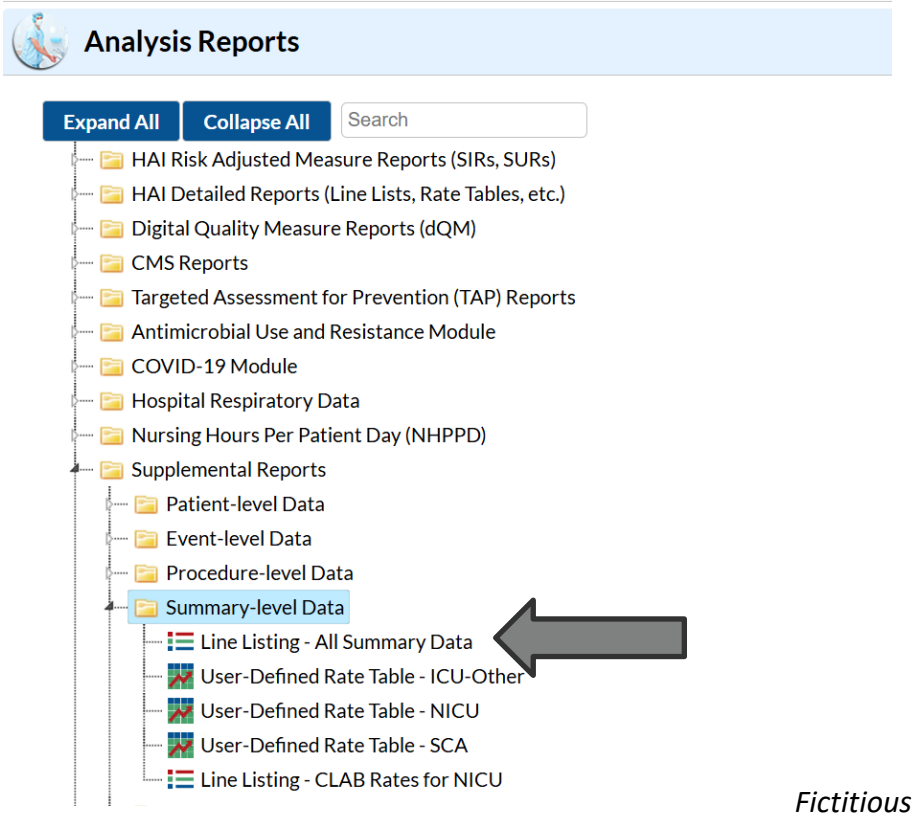
| orgid | summaryYM | summarytype | location | loccdc | eventtype | birthwtcode | numpatdays |
|---|---|---|---|---|---|---|---|
| 15328 | 2023M04 | MDRO | FACWIDEIN | | MRSA | | 12000 |
| 15328 | 2023M05 | MDRO | FACWIDEIN | | MRSA | | 12010 |
| 15328 | 2023M06 | MDRO | FACWIDEIN | | MRSA | | 12020 |




- **Apply filters for eventType = MRSA and location = FACWIDEIN when running the 'Line Listing for All Summary Data' report for this reason**
  - The 'Line Listing for All Summary Data' report can be found under Supplemental Reports > Summary-level Data

*Fictitious data used for illustrative purposes only.*

# Summary Line Listing Report

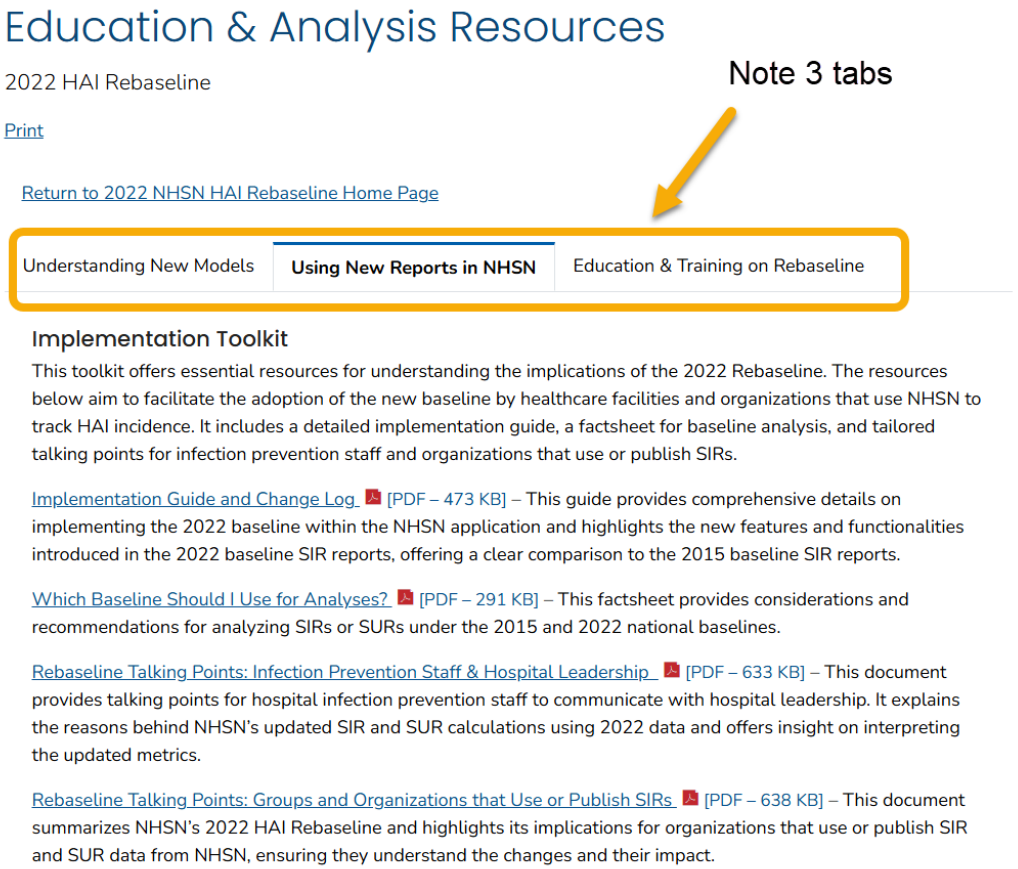



*Fictitious data used for illustrative purposes only.*

# New Resources for Understanding the Rebaseline

# Education & Analysis Resources Webpage

- **Explore three tabs on this webpage:**
  - Understanding New Models
  - Using New Reports in NHSN
  - Education & Training on the Rebaseline




https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html

# Need more information on the new MRSA SIR Reports?

- **Review Implementation Guide & Change Log**
  - Covers inclusion & exclusion rules
  - Lists the differences in functionality between the 2022 baseline SIR report and the 2015 baseline SIR report
  - Highlights minor changes made to other MRSA reports due to rebaseline implications (e.g., names of analysis datasets)

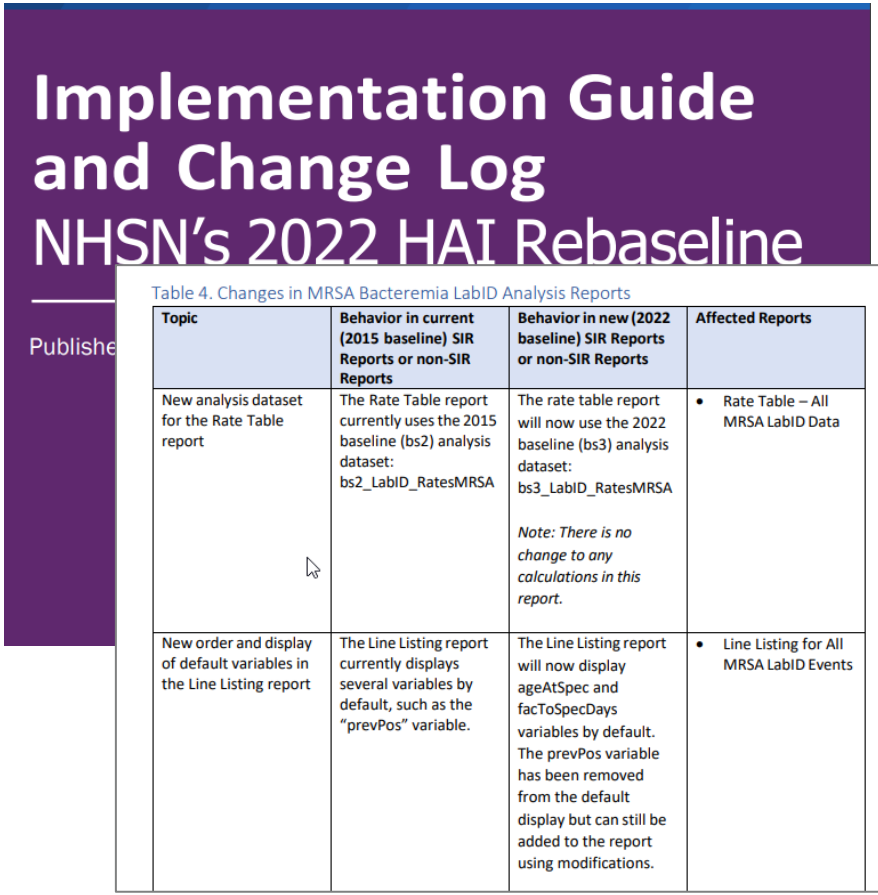



Table 4. Changes in MRSA Bacteremia LabID Analysis Reports

| Topic | Behavior in current (2015 baseline) SIR Reports or non-SIR Reports | Behavior in new (2022 baseline) SIR Reports or non-SIR Reports | Affected Reports |
|---|---|---|---|
| New analysis dataset for the Rate Table report | The Rate Table report currently uses the 2015 baseline (bs2) analysis dataset: bs2_LabID_RatesMRSA | The rate table report will now use the 2022 baseline (bs3) analysis dataset: bs3_LabID_RatesMRSA<br><br>*Note: There is no change to any calculations in this report.* | • Rate Table – All MRSA LabID Data |
| New order and display of default variables in the Line Listing report | The Line Listing report currently displays several variables by default, such as the "prevPos" variable. | The Line Listing report will now display ageAtSpec and facToSpecDays variables by default. The prevPos variable has been removed from the default display but can still be added to the report using modifications. | • Line Listing for All MRSA LabID Events |

https://www.cdc.gov/nhsn/pdfs/rebaseline/Implementation -Guide-Change-Log.pdf

# Explaining the Rebaseline to Colleagues

**2022 HAI Rebaseline Talking Points: Infection Prevention Staff & Hospital Leadership**

*Note: While the talking points below focus on the SIR, the concepts apply to the SUR as well.*

**Bottom Line:** The 2022 healthcare-associated infection (HAI) Rebaseline will update the national baseline year from 2015 to 2022 for calculations of the standardized infection ratio (SIR) and standardized utilization ratio (SUR). This update will allow hospitals to compare their incidence of HAIs to more recent national data (i.e., data reported to NHSN for 2022). This document can assist hospital infection prevention staff by providing talking points to share with hospital leadership about why NHSN has updated SIR and SUR calculations using 2022 data, and how to interpret the updated metrics.

**Explaining the 2022 Rebaseline to Hospital**

Currently, NHSN used data reported from 2015 as the baseline year for SIR ca
there have been updates to surveillance definitions, diagnostic testing & practi
science, technology, and hospital operations that make it useful for CDC to upd
this process of updating the national baseline is conveniently referred to as the

- NHSN has updated the national baseline data used to calculate the S predicted infections).
- This new baseline is derived from national HAI rate data reported to N
- In more detail, the national baseline comprises HAI data from a single risk adjustment models. These models are crucial for calculating the S the 2022 NHSN data were used to re-fit the statistical models in NHS updated baseline for predicting the number of HAIs that might occur i

The Rebaseline will ensure that the risk adjustment models are better able to capture relevant

The NHSN application has built-in analysis reports that calculate SIRs for each

**2022 HAI Rebaseline Talking Points: Organizations & Private Payors**

*These talking points summarize NHSN's 2022 HAI Rebaseline and highlight implications for organizations that may use or publish SIR and/or SUR data from NHSN.*

**Bottom Line:** The Centers for Disease Control and Prevention (CDC) is updating the national baseline used to calculate the denominators of healthcare-associated infection (HAI) standardized infection ratios (SIRs) and standardized utilization ratios (SURs) to 2022 data. This Rebaseline effort is important to continually improve patient safety and to drive efforts to reduce HAI rates. At the same time, this Rebaseline will impact the way facilities and organizations interpret HAI incidence and device utilization metrics.

**The Situation:**

The National Healthcare Safety Network (NHSN) 2022 HAI Rebaseline refers to the process of updating the risk adjustment models used to calculate the denominators of all healthcare-associated infection (HAI) standardized infection ratios (SIRs) and standardized utilization ratios (SURs) in the Patient Safety Component of NHSN using data reported from 2022. CDC will use 2022 data to update the source of aggregate data and the risk adjustment models used to create the denominators for the SIRs and SURs and will serve as the new baseline to measure HAI prevention progress at the local, state, and national levels.

The prior NHSN baseline used data reported from 2015. Since then, there

The Rebaseline will ensure that the risk adjustment models are better able to

New reports are being built in the NHSN application for NHSN facility and

No timeline has been established for the adoption of the 2022

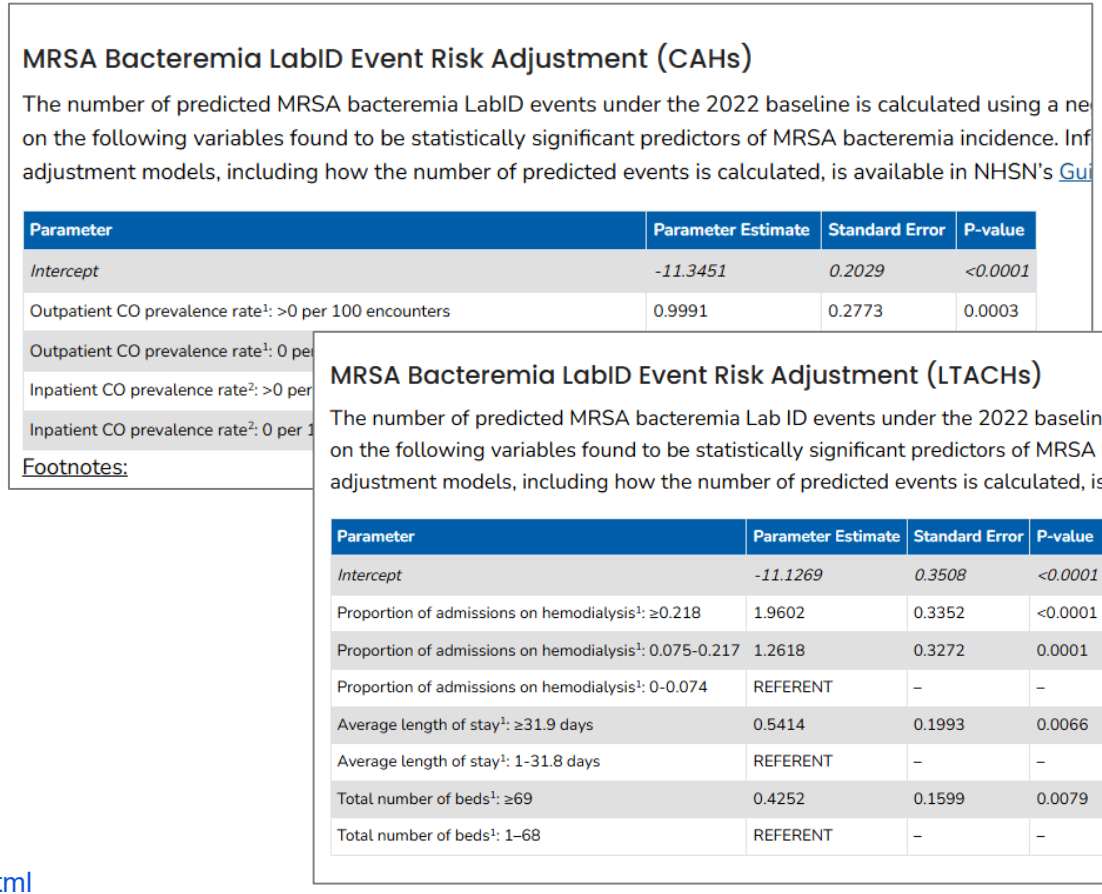
https://www.cdc.gov/nhsn/pdfs/rebaseline/Talking-Points-Hospital-Leadership.pdf

https://www.cdc.gov/nhsn/pdfs/rebaseline/Groups-Organizations-Use-Publish-SIRs.pdf

- **Talking Points to help you present the Rebaseline to colleagues, leadership, or other organizations that may use NHSN data**

# Model Explorer

- **Review risk adjustment factors used in the calculation of number of predicted events**
- **View risk adjustment tables directly in web browser, organized by facility type**



### MRSA Bacteremia LabID Event Risk Adjustment (CAHs)

The number of predicted MRSA bacteremia LabID events under the 2022 baseline is calculated using a ne
on the following variables found to be statistically significant predictors of MRSA bacteremia incidence. Inf
adjustment models, including how the number of predicted events is calculated, is available in NHSN's Gui

| Parameter | Parameter Estimate | Standard Error | P-value |
|---|---|---|---|
| *Intercept* | *-11.3451* | *0.2029* | *<0.0001* |
| Outpatient CO prevalence rate[1]: >0 per 100 encounters | 0.9991 | 0.2773 | 0.0003 |
| Outpatient CO prevalence rate[1]: 0 per | | | |
| Inpatient CO prevalence rate[2]: >0 per | | | |
| Inpatient CO prevalence rate[2]: 0 per 1 | | | |

Footnotes:

### MRSA Bacteremia LabID Event Risk Adjustment (LTACHs)

The number of predicted MRSA bacteremia Lab ID events under the 2022 baseline is
on the following variables found to be statistically significant predictors of MRSA bac
adjustment models, including how the number of predicted events is calculated, is av

| Parameter | Parameter Estimate | Standard Error | P-value |
|---|---|---|---|
| *Intercept* | *-11.1269* | *0.3508* | *<0.0001* |
| Proportion of admissions on hemodialysis[1]: ≥0.218 | 1.9602 | 0.3352 | <0.0001 |
| Proportion of admissions on hemodialysis[1]: 0.075-0.217 | 1.2618 | 0.3272 | 0.0001 |
| Proportion of admissions on hemodialysis[1]: 0-0.074 | REFERENT | – | – |
| Average length of stay[1]: ≥31.9 days | 0.5414 | 0.1993 | 0.0066 |
| Average length of stay[1]: 1-31.8 days | REFERENT | – | – |
| Total number of beds[1]: ≥69 | 0.4252 | 0.1599 | 0.0079 |
| Total number of beds[1]: 1–68 | REFERENT | – | – |

https://www.cdc.gov/nhsn/2022rebaseline/sir-risk-factors.html

# NHSN 2022 Rebaseline Resources

| Title | Link |
|---|---|
| 2022 NHSN Rebaseline Webpage | https://www.cdc.gov/nhsn/2022rebaseline |
| MRSA/CDI Troubleshooting Guide (2015 baseline) | https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf |
| 2022 Baseline SIR Guide | https://www.cdc.gov/nhsn/2022rebaseline/sir-guide.pdf |
| Implementation Guide | https://www.cdc.gov/nhsn/pdfs/rebaseline/Implementation-Guide-Change-Log.pdf |
| Model Explorer | https://www.cdc.gov/nhsn/2022rebaseline/sir-risk-factors.html |
| Which baseline should I use? Fact Sheet | https://www.cdc.gov/nhsn/pdfs/rebaseline/Which-Baseline-Should-I-Use.pdf |

# NHSN 2022 Rebaseline Resources

| Title | Link |
|---|---|
| Infection Prevention Staff & Hospital Leadership Talking Points | https://www.cdc.gov/nhsn/pdfs/rebaseline/Talking-Points-Hospital-Leadership.pdf |
| Groups and Organizations that Use or Publish SIRs Talking Points | https://www.cdc.gov/nhsn/pdfs/rebaseline/Groups-Organizations-Use-Publish-SIRs.pdf |
| Rebaseline FAQs | https://www.cdc.gov/nhsn/pdfs/rebaseline/22-Rebaseline-FAQs-Final-Version.pdf |
| Intro to Rebaseline Quick Learn | https://www.youtube.com/watch?v=pMYwYIV86Ek |

# NHSN Patient Safety Analysis Resources

| Title | Link |
|---|---|
| Patient Safety Analysis Resources Webpage | https://www.cdc.gov/nhsn/ps-analysis-resources/index.html |
| Patient Safety Analysis Quick Reference Guides | https://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html |
| Patient Safety Data Quality Webpage | https://www.cdc.gov/nhsn/ps-analysis-resources/data-quality/index.html |
| How to Modify a Report | https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/howtomodifyreport.pdf |
| NHSN's Statistics Calculator | https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/statscalc.pdf |

# NHSN Rebaseline Questions

- **NHSN Users with SAMS access:**
  - Submit questions through **NHSN-ServiceNow** (https://servicedesk.cdc.gov/nhsncsp)

- **Those without SAMS or ServiceNow access:**
  - Email the NHSN Help Desk at nhsn@cdc.gov

- **Questions about CMS Programs:**
  - **Acute Care Hospitals** (including PPS-Exempt Cancer Hospitals) - QualityNet Question and Answer Tool - select "Ask a Question", then select "HACRP – Hospital-Acquired Condition Reduction Program"
  - **Inpatient Rehabilitation Facilities (IRF)** - irf.questions@cms.hhs.gov
  - **Long-term Acute Care Hospitals (LTACH)** - ltchqualityquestions@cms.hhs.gov

# Critical Access Hospitals (CAHs) Model Details/Risk Factors

- **CAH 2022 baseline model includes 2 factors:**
  - Outpatient Community-Onset Prevalence Rate (MRSA_EDObsPrevRate)
  - Inpatient Community Onset Prevalence Rate (MRSA_admPrevBldRate)

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -11.3451 |
| Outpatient CO prevalence rate | >0 per 100 encounters | 0.9991 |
| | 0 per 100 encounters or no applicable locations | REFERENT |
| Inpatient CO prevalence rate | >0 per 100 admissions | 0.8824 |
| | 0 per 100 admissions | REFERENT |

# Example SIR Report: Critical Access Hospitals (CAHs)

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Critical Access Hospital (2022 Baseline)**
As of: November 12, 2024 at 7:28 PM UTC
Date Range: BS3_LABID_RATESMRSACAH summaryYQ 2023Q1 to 2023Q1

orgID=13941

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 13941 | 012545 | FACWIDEIN | 2023Q1 | 3 | 0 | 0.280 | 3603 | . | . | |

1. The SIR is only calculated if number predicted (numPred) is >=1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
2. The number of predicted events is calculated based on national 2022 NHSN data. Please see the SIR Guide for details on the HAI-specific risk adjustment and inclusion/exclusion criteria: https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html.
3. By default, this report includes all data that meet the report criteria, which includes data not specified on the monthly reporting plans.
4. This report includes facility-wide inpatient data from hospitals for 2022 and forward.
5. Events from rehabilitation wards and behavioral health/psych wards with a unique CCN are excluded. Information on how to determine which events are counted in the SIR can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf.
6. If any risk factor data are missing, the record is excluded from the SIR.

Source of aggregate data: 2022 NHSN MRSA Blood LabID Data
Data contained in this report were last generated on November 8, 2024 at 2:27 PM UTC to include data beginning January 2023 .

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
As of: November 12, 2024 at 7:28 PM UTC
Date Range: BS3_LABID_RATESMRSACAH summaryYQ 2023Q1 to 2023Q1

orgID=13941

| orgID | ccn | summaryYQ | MRSA_admPrevBldRate | MRSA_EDObsPrevRate | numpatdays |
|---|---|---|---|---|---|
| 13941 | 012545 | 2023Q1 | 0.211 | 0.236 | 3603 |

The table above displays the values that are included in the calculation of your acute care hospital's MRSA Bacteremia LabID Event SIR.

*Fictitious data used for illustrative purposes only.*

# Long-term Acute Care Hospitals (LTACs) Model Details/Risk Factors

- **Proportion of patients on hemodialysis (AdmHemoProp)**
- **Average length of stay (LOS)**
- **Total number of beds (numBeds)**

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -11.1269 |
| Proportion of admissions on hemodialysis | ≥0.218 | 1.9602 |
| | 0.075-0.217 | 1.2618 |
| | 0-0.074 | REFERENT |
| Average length of stay | ≥31.9 days | 0.5414 |
| | 1-31.8 days | REFERENT |
| Total number of beds | ≥69 | 0.4252 |
| | 1–68 | REFERENT |

# Example SIR Report: Long-term Acute Care Hospitals (LTACs)

**National Healthcare Safety Network**
**SIR for MRSA Blood FacwideIN LabID Data in Long-Term Acute Care Hospitals (2022 baseline)**
**As of: November 12, 2024 at 7:39 PM UTC**
**Date Range: BS3_LABID_RATESMRSALTAC summaryYQ 2023Q1 to 2023Q1**

orgID=16198

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 16198 | | FACWIDEIN | 2023Q1 | 3 | 0 | 0.482 | 3015 | . | . | |

1. The SIR is only calculated if number predicted (numPred) is >=1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
2. The number of predicted events is calculated based on national 2022 NHSN data. Please see the SIR Guide for details on the HAI-specific risk adjustment and inclusion/exclusion criteria: https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html.
3. By default, this report includes all data that meet the report criteria, which includes data not specified on the monthly reporting plans.
4. This report includes facility-wide inpatient data from hospitals for 2022 and forward.
5. Events from rehabilitation wards and behavioral health/psych wards with a unique CCN are excluded. Information on how to determine which events are counted in the SIR can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf.
6. If any risk factor data are missing, the record is excluded from the SIR.

Source of aggregate data: 2022 NHSN MRSA Blood LabID Data
Data contained in this report were last generated on October 9, 2024 at 7:39 PM UTC to include data beginning January 2023 .

**National Healthcare Safety Network**
**Risk Adjustment Factors for FacWideIN MRSA Bacteremia SIR**
**As of: November 12, 2024 at 7:39 PM UTC**
**Date Range: BS3_LABID_RATESMRSALTAC summaryYQ 2023Q1 to 2023Q1**

orgID=16198

| orgID | ccn | summaryYQ | numBeds | AdmHemoProp | LOS | numpatdays |
|---|---|---|---|---|---|---|
| 16198 | | 2023Q1 | 69 | 0.218 | 25.2 | 3015 |

1. The table above displays the values that are included in the calculation of the hospital's MRSA Blood LabID Event SIR.

*Fictitious data used for illustrative purposes only.*

# Inpatient Rehabilitation Facilities (IRFs) Model Details/Risk Factors

- **CMS-Certified IRF Unit vs Free-standing Rehabilitation Hospital (factype or CMSIRF)**
- **Average length of stay (LOS)**

| Risk factors | Levels | Parameter Estimate |
|---|---|---|
| Intercept | | -12.4554 |
| CMS-Certified IRF Unit vs Free-standing | IRF Unit | 0.9396 |
| | Free-standing Rehabilitation Hospital | REFERENT |
| Average length of stay | ≥12.1 days | 0.8929 |
| | 1-12.0 days | REFERENT |

# Example SIR Report: Inpatient Rehabilitation Facilities (IRFs)

**National Healthcare Safety Network**
**Standardized Infection Ratio for MRSA Blood LabID Data in Inpatient Rehabilitation Facilities (2022 Baseline)**
**As of: November 12, 2024 at 7:43 PM UTC**
**Date Range: BS3_LABID_RATESMRSAIRF summaryYQ 2023Q1 to 2023Q1**

orgID=10661

| orgID | ccn | location | summaryYQ | months | MRSA_bldIncCount | numPred | numpatdays | SIR | SIR_pval | sir95ci |
|---|---|---|---|---|---|---|---|---|---|---|
| 10661 | 03T069 | FACWIDEIN | 2023Q1 | 3 | 0 | 0.034 | 3618 | . | . | |

1. The SIR is only calculated if number predicted (numPred) is >=1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
2. The number of predicted events is calculated based on national 2022 NHSN data. Please see the SIR Guide for details on the HAI-specific risk adjustment and inclusion/exclusion criteria: https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html
3. By default, this report includes all data that meet the report criteria, which includes data not specified on the monthly reporting plans.
4. This report includes data from IRFs for 2022 and forward.
5. Events from behavioral health/psych wards with a unique CCN are excluded. Information on how to determine which events are counted in the SIR can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf
6. If any risk factor data are missing, the record is excluded from the SIR.

Source of aggregate data: 2022 NHSN MRSA Blood LabID Data
Data contained in this report were last generated on October 31, 2024 at 2:36 PM UTC to include data beginning January 2023 .

**National Healthcare Safety Network**
**Risk Adjustment Factors for IRF MRSA Blood SIR**
**As of: November 12, 2024 at 7:43 PM UTC**
**Date Range: BS3_LABID_RATESMRSAIRF summaryYQ 2023Q1 to 2023Q1**

orgID=10661

| orgID | ccn | summaryYQ | facType | LOS | numpatdays |
|---|---|---|---|---|---|
| 10661 | 03T069 | 2023Q1 | HOSP-REHAB | 12.1 | 3618 |

1. The table above displays the values that are included in the calculation of the IRF's MRSA Blood LabID Event SIR.

*Fictitious data used for illustrative purposes only.*

# For any questions or concerns, contact the NHSN Helpdesk

- **Use subject line: “2022 HAI Rebaseline”**
- **NHSN-ServiceNow** to submit questions to the NHSN Help Desk.
- Access new portal at **https://servicedesk.cdc.gov/nhsncsp**.
- If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.
- All media inquiries please contact CDC Media Office at media@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov