



NHSN Analysis Fundamentals

For Users at Every Level

ND Infection Prevention Conference

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Objectives

By the end of this presentation, you will be able to:

1. **Identify** use cases for different analytic output options.
2. **Discuss** the importance of regular, ongoing analysis of surveillance data by using NHSN reports.
3. **Summarize** the use of healthcare-associated infection (HAI) data for actionable results.

Today's session will focus on the basics of using NHSN Analysis. Mostly discussion on the different types of analytic outputs you can obtain from NHSN *rather* than all the technical steps to follow in the application.

About NHSN +

Enroll Facility Here +

CMS Requirements +

Change NHSN Facility Admin

Resources by Facility +

Patient Safety Component -

Nurse Staffing Hours Indicator

Patient Safety Structural Measure

Annual Surveys, Locations & Monthly Reporting Plans

Analysis Resources +

HAI Rebaseline +

Antimicrobial Use & Resistance +

Bacteremia & Fungemia

Patient Safety Analysis Resources

[Print](#)

The NHSN application provides various options that allow NHSN users to analyze their surveillance data. The resources listed below are intended to help you use the analysis tool, and interpret data analyzed from the Patient Safety Component of NHSN.

Analysis Resources

Guides and Training ^


[NHSN Analysis Training](#)


[Analysis Quick Reference Guides](#)


NHSN Codes and Variables v

Statistical Tools v

Spotlight

[NHSN's Guide to the SIR \(2022 Baseline\)](#)  [PDF – 901 KB] – A comprehensive guide to NHSN's SIR, including risk factors used in the SIR calculations under the 2022 baseline.

[NHSN Treeview Quick Reference Guide](#)  [PDF – 544 KB]

[Slidedeck: Updates to Patient Safety Analysis Treeview Menu](#)  [PDF – 2 MB]

[The 2024 National and State](#)

Patient Safety Analysis Quick Reference Guides

[Print](#)

These quick reference guides were created to help you understand, modify, and interpret your data using the NHSN application's various analysis output (report) options for the NHSN Patient Safety Component. These guides serve as companions to the "Introduction to NHSN Analysis" training slideset.

[SIR Aggregation for Facilities with a Shared CCN](#) [PDF – 433 KB]

[NHSN Treeview Quick Reference Guide](#) [PDF – 544 KB]

[PSC Data Quality](#)

[NHSN's Guide to the SAAR](#) [PDF – 2 MB]

[NHSN's Guide to the SUR \(2015 Baseline\)](#) [PDF – 28 Pages]

A comprehensive guide to the NHSN's SUR, including significant factors used in the SUR calculations under the 2015 baseline.

[NHSN's Guide to the SIR \(2022 Baseline\)](#) [PDF – 901 KB] – A comprehensive guide to NHSN's SIR, including risk factors used in the SIR calculations under the 2022 baseline.

[NHSN's Guide to the SIR \(2015 Baseline\)](#) [PDF – 50 Pages]

A comprehensive guide to NHSN's SIR, including risk factors used in the SIR calculations under the 2015 baseline.

- [SIR Guide Addendum: SSI SIR Models – July 2021](#) [XLS – 98 KB]

[NHSN SRIR/pSIR Guide](#) [PDF – 2 MB]

SIR Aggregation for CMS Programs

NHSN Aggregation Process

1. Data Submission
 - Each facility submits CMS [required measures](#) into NHSN separately under their unique OrgID/Facility ID.
2. SIR Calculation
 - The SIR is calculated separately by NHSN for each facility by the OrgID/Facility ID. This means that risk adjustment and calculation of the predicted number of infections is done at the OrgID-level, not CCN-level. In other words, each OrgID receives its own calculation for the number of predicted infections, based on characteristics of that individual OrgID (e.g., number of beds).
 - While the SIR is calculated for each facility, within each facility the calculation for the SIR occurs at the most granular level first (e.g., device-associated infection SIRs are first calculated at the location level, whereas procedure-associated infection SIRs are calculated at the procedure-level).
3. Aggregation at the CCN-level
 - Once the numbers of observed and predicted infections are calculated for each individual OrgID, CDC aggregates those counts to calculate the SIR at the CCN-level. See example below.

Fictitious Example – Calculations:

Facility	OrgID	CCN	infCount	numPred	SIR
Hospital A	10018	100001	4	2.124	1.883
Hospital B	10000	100001	3	1.652	1.816

$4 + 3 = 7$ $2.124 + 1.652 = 3.776$

CCN - Level	OrgID	CCN	infCount	numPred	SIR
-	-	100001	7	3.776	1.854

How to Determine the SSI SIR Numerator Inclusion Indicators

The CCN-level cal

1. infCount

Updated February 2025

Description

Under the current NHSN baseline, there are five surgical site infections (SSI) models, each having its own set of inclusion criteria for the numerator of the standardized infection ratio (SIR). One of the challenges users experienced is how to determine which SSI events are included in the different SSI SIR models. With the current baseline, SSI events have indicator variables that assign them to the corresponding SSI SIR model. The indicator variables take into account both the procedure details as well as the SSI details for determining if the SSI should be counted in the SIR numerator. There are five SSI event indicators, each one preceded by the prefix, **bs2** or **bs3**. The BS2 prefix indicates that the indicator variables apply to 2015 baseline and the bs3 apply to the 2022 baseline. The SSI events indicator variables and their corresponding descriptions are listed in Table 1. The purpose of this quick reference guide (QRG) is to describe how to run line list report and interpret the SSI event indicator variables for the 2015 baseline SIRs.

Table 1. SSI Event Indicators

If the value of the following variables = 1, then the SSI is included in the corresponding SIR numerator count.

SSI Event Indicator	Description*
Bs2_SSIAll Bs3_SSIAll	The indicator for All SSI SIR model for adult patients
Bs2_SSIpedAll Bs3_SSIpedAll	The indicator for All SSI SIR model for pediatric patients
Bs2_SSIComplex Bs3_SSIComplex	The indicator for Complex A/R SSI SIR model for adult patients
Bs2_SSIpedComplex Bs3_SSIpedComplex	The indicator for Complex A/R SSI SIR model for pediatric patients

Why Analyze?

Data ownership means more than just submission:

- Your NHSN data reflects *your* patients, *your* units, and *your* facility's story
- No one knows your facility better than you, that same should be said for the data

Analysis puts you in the driver's seat:

- Bring data-backed answers to leadership
- Demonstrate the impact of prevention efforts with evidence, not just narrative

Empowerment through regular analysis:

- Analyzing data within NHSN help facilitate internal validation and helps ensure accuracy
- At the end of the day, these are *YOUR* data and you should know your data better than anyone else

The data doesn't work for you until you work with it.



Let's take a Poll!

How familiar are you with using NHSN analytic reports?

A. I don't use any NHSN reports...yet!

B. I use them sporadically.

C. I frequently use them as part of my core responsibilities.

D. I use them only to export data for use in other applications.

Join at menti.com | use code 5610 8374

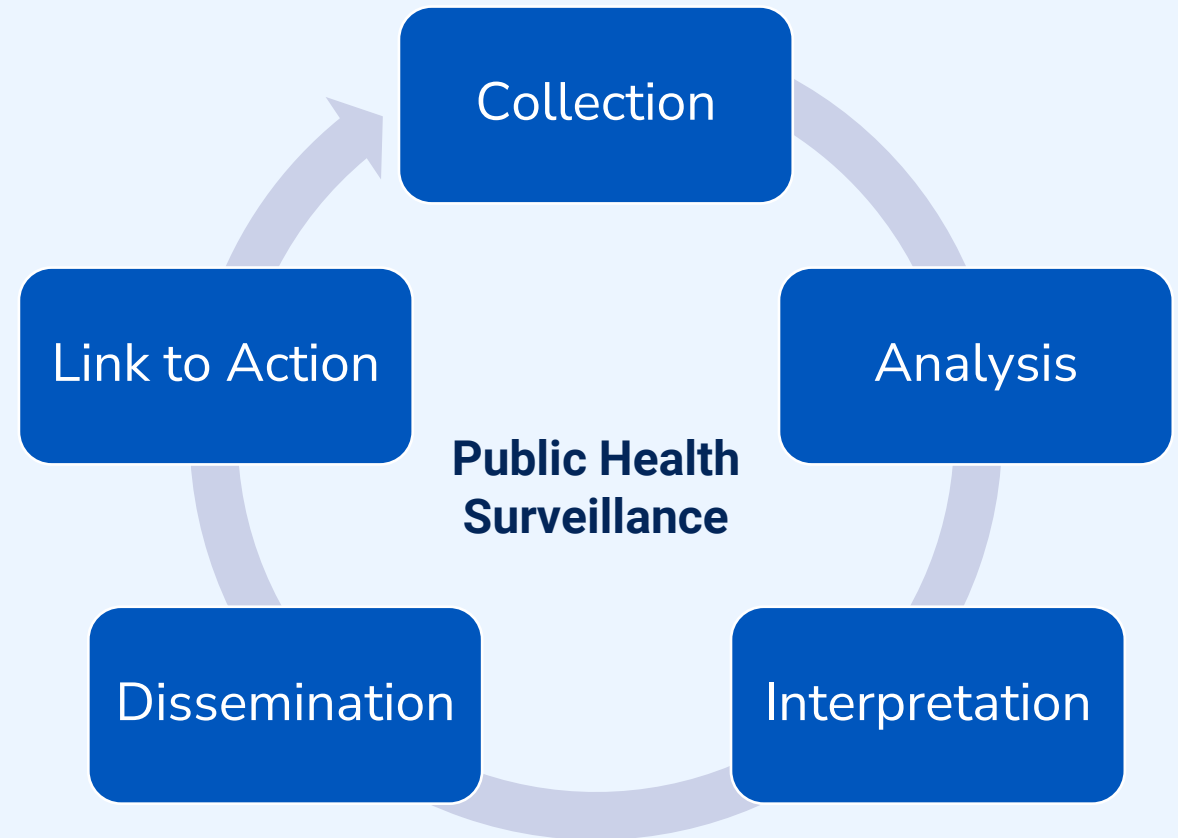
Enter your response in Menti

Where Does Analysis Fit? The Surveillance Cycle

Public health surveillance is a continuous cycle:

- NHSN supports every step of this cycle
- Data you enter goes in - useful, actionable information comes out
- Analysis is not a one-time event; it is part of ongoing surveillance practice

Without analysis, data never moves forward - interpretation stalls, there is nothing meaningful to disseminate, and the link to action is broken; analysis is what keeps the cycle turning!



GENERATING DATA SETS

Generating data sets is the **first** step to performing analysis in NHSN

- **Generating datasets in NHSN**
 - Organizes data into defined data sets for analysis
 - Copies and **freezes** data
 - Allows for quicker generation of reports
 - When analyzing data in NHSN, you are using a *copy* of your data, not the live database
- **Each user has their own analysis data sets**
 - Based on a user's rights
- Data set generation may take several minutes depending on the time period included
- You may navigate or leave NHSN while data sets are generating
- For more information on generating data sets in NHSN, refer to: [Generate Datasets_PSC](#)

Generate Data Sets (Patient Safety)

Reporting Data Sets | Participation Alerts Data Set (Optional)

Include data for the following time period:

Beginning: 01/2022 | Ending: 12/2025 | Clear Time Period

Generate Reporting Data Sets

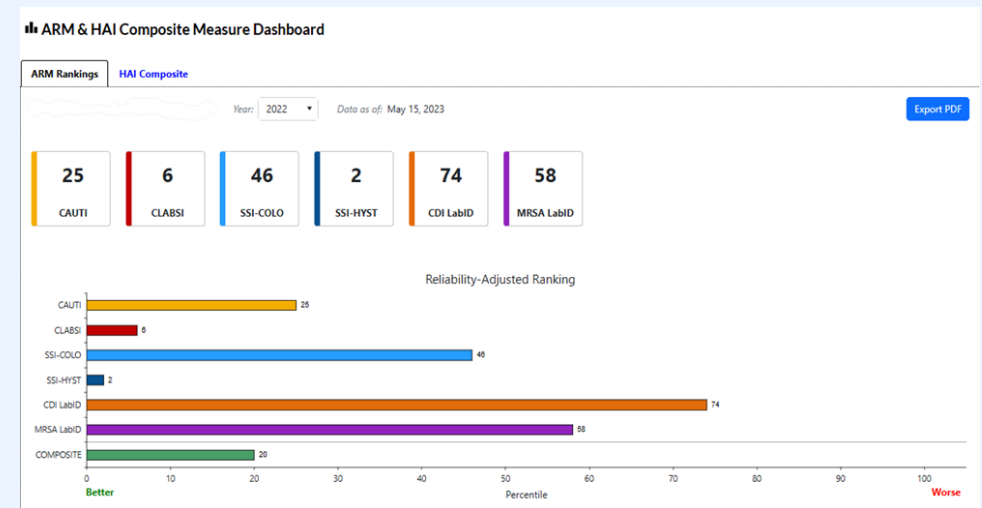
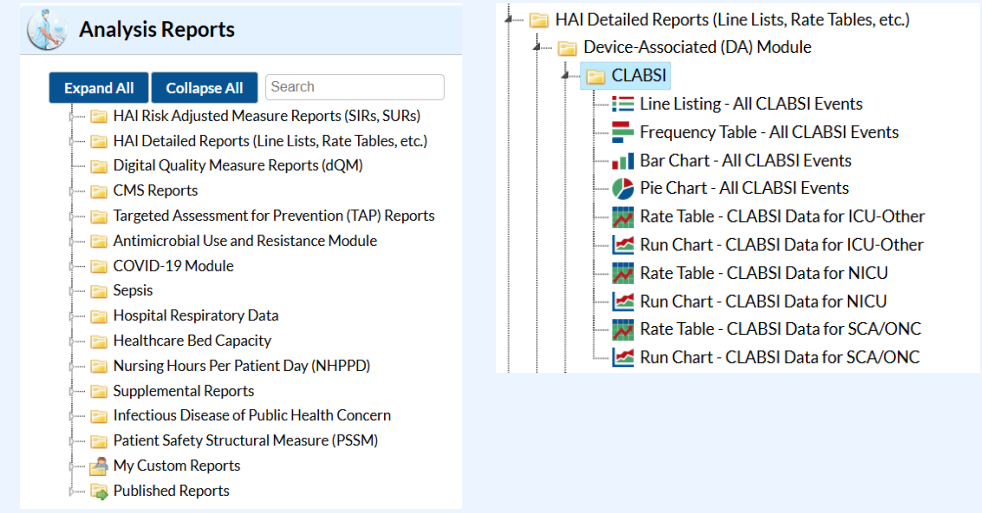
Last Generated: (UTC)
April 15, 2026 6:36 PM
to include data beginning 01/2022 and ending 12/2025

[Clear data sets and processing](#)

What Data Can You Get Out of NHSN?

Anything reported *into* NHSN can be obtained *out* of NHSN

- All required and optional fields entered during data entry are available in reports
- Additional calculated metrics are provided:
 - **Rates** (e.g., CLABSI rate per 1,000 central line days)
 - **Risk-adjusted measures** (SIR, SUR)
 - **Excess infection counts** (CAD)
- Reports are organized in the Analysis treeview by report type and HAI category
- **Supplemental Reports** folder contains additional line lists (all events, procedures, surveys)
- **Dashboards** on the NHSN Home screen turn data into actionable information



Aligning Your Needs with the Right Report Type

If you need:

- All information entered for an event or procedure
- Timestamp of data entry/modification
- Event-level details
- Survey-level details

Then use:
Line Lists

Line lists show you exactly what was entered - row by row, record by record.

They are your go-to for: reviewing individual events and procedures, checking data completeness, understanding what events are included in the rate and SIR numerators, identifying potential data quality issues, and more.

Resource: [Line List](#)

LINE LISTS

Example Scenario: Using line list to identify procedures excluded from SSI SIR models

Scenario: In reviewing your CMS SIR report for COLO, you notice that only 44 procedures are being included in the SIR. However, you know by looking at a frequency table of COLO procedures entered into NHSN, 45 COLO procedures were entered. You need a line list that will identify what procedures are being excluded and why.

National Healthcare Safety Network

Standardized Infection Ratio for Complex 30-Day SSI Data for Acute Care Hospitals for CMS IPPS (2022 Baseline) - By OrgID/ProcCode

As of: April 21, 2026 at 2:15 PM UTC

Date Range: BS3_SIR_CMPX30DS SIPROC summaryYM 2025M03 to 2025M03

if (((procCode = "COLO")))

orgid	ccn	proccode	procCount	summaryYM	infCountComplex30d	numPredComplex30d	SIRComplex30d	SIRComplex30d_pval	SIRComplex30d95CI
15731	012521	COLO	44	2025M03	3	1.371	2.188	0.210	0.556, 5.954

What analysis report could be used?

Line Listing – Procedures Excluded from the SSI SIR

Resource: [line-list-procedures-excluded-sir.pdf](#)

- SSI
- SIR - Adult Complex AR SSI Data (2022 Baseline)
- SIR - Adult Complex AR SSI Data by Surgeon (2022 Baseline)
- SIR - Adult All SSI Data (2022 Baseline)
- SIR - Adult All SSI Data by Surgeon (2022 Baseline)
- SIR - Complex 30-Day SSI Data (2022 Baseline)
- SIR - Complex 30-Day SSI Data by Surgeon (2022 Baseline)
- SIR - Adult All HOPD SSI Data (2022 Baseline)
- SIR - Adult All HOPD SSI Data by Surgeon (2022 Baseline)
- SIR - Pediatric Complex AR SSI Data (2022 Baseline)
- SIR - Pediatric Complex AR SSI Data by Surgeon (2022 Baseline)
- SIR - Pediatric All SSI Data (2022 Baseline)
- SIR - Pediatric All SSI Data by Surgeon (2022 Baseline)
- SIR - Pediatric All HOPD SSI Data (2022 Baseline)
- SIR - Pediatric All HOPD SSI Data by Surgeon (2022 Baseline)
- Line Listing - Procedures Excluded from SSI SIR (2022 Baseline)

LINE LISTS

Example Scenario: Using line lists to identify procedures excluded from SSI SIR models - *Continued*

National Healthcare Safety Network

Standardized Infection Ratio for Complex 30-Day SSI Data for Acute Care Hospitals for CMS IPPS (2022 Baseline) - By OrgID/ProcCode

As of: April 21, 2026 at 2:15 PM UTC

Date Range: BS3_SIR_CMPX30DSIPROC summaryYM 2025M03 to 2025M03

if (((procCode = "COLO")))

orgid	ccn	proccode	procCount	summaryYM	infCountComplex30d	numPredComplex30d	SIRComplex30d	SIRComplex30d_pval	SIRComplex30d95CI
15731	012521	COLO	44	2025M03	3	1.371	2.188	0.210	0.556, 5.954

National Healthcare Safety Network

Line Listing for Procedures Excluded from SSI SIR (2022 Baseline)

As of: April 21, 2026 at 2:15 PM UTC

Date Range: PROCEDURES procDateYM 2025M03 to 2025M03

if (((excluded_bs3 = "Y") AND (procCode = "COLO") AND (ageAtProc >= "18") AND (outpatient = "N")))

orgID	patID	procID	procCode	bs3_cmpx30dExcl	patos	procDate	dob	sex	procDurationHr	procDurationMin	exclMissingVarInd	exclMissingVarList	exclDurThresholdInd_bs3	exclAgeGT109Ind
15731	REBASE_22_1031	132748	COLO	1	Y	03/01/2025	02/10/1952	M	4	27	Y	PATOS	N	N

Additional variables included in line listing

exclOutpatientInd	exclIPedIndcmpx30d	exclSexInd	exclInvalidJointRepHemi	exclBMIThresholdInd	excluded_bs3
N	N	N	N	N	Y

- The line listing for procedures excluded from the SSI SIR is a great resource for quickly identifying procedures excluded from the SSI SIR.
- Reviewing the included/excluded procedures is important as procedures are what are used to calculate number of predicted SSI events.

LINE LISTS

Example Scenario: Using line lists to identify potential data quality issues

Line Lists can also be a **valuable** resource for identifying potential data quality issue – for example, is the admission date correct?

National Healthcare Safety Network Line Listing - All MRSA LabID Events

As of: April 21, 2026 at 1:54 PM UTC
Date Range: All LABID_EVENTS
if (((spcOrgType = "MRSA")))

orgID	patID	eventID	spcOrgType	location	outpatient	onset	admitDate	locationAdmitDate	specimenSource	specimenDate	ageAtSpec	facToSpecDays	FWMRSA_admPrevBldCount	FWMRSA_bldIncCount
16195	001	123241	MRSA	CMS REHAB	N	HO	02/23/2023	02/23/2023	BLDSPC	02/28/2023	47	6	0	0
16195	002	123242	MRSA	CMS REHAB	N	CO	03/30/2023	03/30/2023	BLDSPC	03/31/2023	25	2	0	0
16195	003	123243	MRSA	CMS REHAB	N	HO	05/12/2022	05/12/2023	BLDSPC	05/28/2023	37	382	0	0
16195	004	124027	MRSA	CMS REHAB	N	CO	06/16/2023	06/16/2023	BLDSPC	06/17/2023	39	2	0	0
16195	005	123371	MRSA	OBS1	Y	CO	.	.	BLDSPC	01/11/2023	38	.	0	0
16195	006	123372	MRSA	ED1	Y	CO	.	.	BLDSPC	03/28/2023	29	.	0	0
16195	007	133293	MRSA	CMS REHAB	N	HO	10/05/2023	10/05/2023	BLDSPC	10/15/2023	39	11	0	0
16195	008	133294	MRSA	BURN	N	HO	10/15/2023	10/15/2023	BLDSPC	10/26/2023	35	12	0	1
16195	12345	161896	MRSA	CMS REHAB	N	CO	02/20/2025	02/20/2025	BLDSPC	02/20/2025	22	1	0	0

Does your facility routinely confirm/verify data entered into NHSN?

Aligning Your Needs with the Right Report Type

If you need:

- All information entered for an event or procedure
- Timestamp of data entry/modification
- Event-level details
- Survey-level details

Then use:
Line Lists

If you need:

- Summarized counts
- Unadjusted rates/ratios
- Visualization of counts
- Visualization of unadjusted rates/ratios

Then use:
Frequency Tables
Rate Tables
Pie/Bar/Run
Charts

- Frequency and rate tables provide summaries of your data across different locations, time frames, and event categories.
- Valuable for tracking trends and making internal comparisons, such as evaluating your facility's performance over time, within a specific location, or against its own past results.



Caution

These rates are not risk-adjusted. Use them to monitor your own trends - not to benchmark against other facilities.

FREQUENCY TABLE

Example Scenario: Using a frequency table to identify events where the associated organism met one or more of the antimicrobial resistant phenotypes

Scenario: You were running a line list of CLABSI events in 2022 where the associated organism was *Escherichia coli* (EC). You identified 4 CLABSI events and you are wanting to know if any of the 7 CLABSI events met the definition for Extended-spectrum cephalosporin-resistant *E. coli*

What analysis report could be used?

Frequency Table – Antimicrobial Resistant Organisms

Resource: [How to Create a Frequency Table](#)

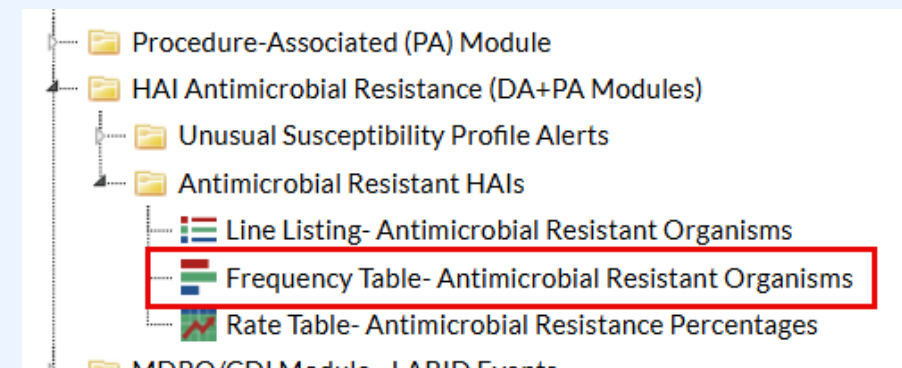
National Healthcare Safety Network Line Listing for All Central Line-Associated BSI Events

As of: April 21, 2026 at 2:15 AM UTC

Date Range: CLAB_EVENTS evtDateYr 2022 to 2022

if (((pathogen1 = "EC")) OR ((pathogen2 = "EC")) OR ((pathogen3 = "EC")))

orgID	patID	dob	sex	admitDate	eventID	eventDate	eventType	spcEvent	location
10401	1234614	07/04/1934	F	02/22/2022	113109	03/03/2022	BSI	LCBI	ICU
10401	1435	01/01/2001	F	01/21/2022	113152	02/02/2022	BSI	LCBI	MED
10401	2378	01/01/1999	F	02/01/2022	113153	02/22/2022	BSI	LCBI	ICU
10401	5246	01/01/2002	M	06/01/2022	113364	06/07/2022	BSI	LCBI	ICU



FREQUENCY TABLE

Example Scenario: Using a frequency table to identify events where the associated organism met one or more of the antimicrobial resistant phenotypes - *continued*

National Healthcare Safety Network
Frequency Table- Antimicrobial Resistant Organisms
As of: April 21, 2026 at 2:23 AM UTC
Date Range: ANTIBIOGRAM_HAI evntDateYr 2022 to 2022
if (((phenotype IN ("MRSA_HAI", "CREall_HAI", "ESCecoli_HAI", "ESCKlebsiella_HAI", "carbNS_Acine_HAI"),

Frequency Col Pct	Table of phenotype by eventType	
	phenotype	eventType
		BSI Total
	CREall_HAI	5 20.83
	ESCecoli_HAI	3 12.50
	ESCKlebsiella_HAI	1 4.17
	MDR_Acine_HAI	2 8.33
	MDR_PA_HAI	1 4.17
	MRSA_HAI	7 29.17
	carbNS_Acine_HAI	3 12.50
	carbNS_PA_HAI	2 8.33
	Total	24 24

In CY 2022, 4 CLABSI events had *E. Coli* included as an associated organism. Of those, 3 met the definition for Extended-spectrum cephalosporin-resistant *E. coli*

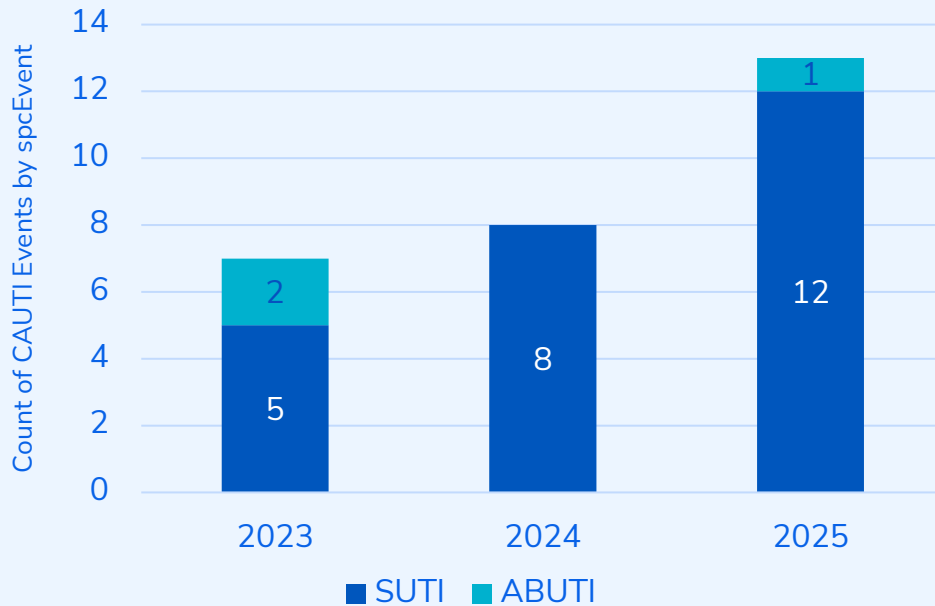
Antimicrobial-Resistant Phenotype Definitions
https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/phenotype_definitions.pdf

FREQUENCY TABLE

Frequency tables can also be used to look at events overtime – Example looking at the type of CAUTI events over time

Based on the output:

- The number of CAUTI events has increased over time from 2023 to 2025
- The proportion of ABUTI decreased in 2024



Data can be exported for use in other software!

National Healthcare Safety Network
Frequency Table for All Catheter-Associated UTI Events
As of: April 21, 2026 at 2:59 PM UTC
Date Range: All CAU_EVENTS

Frequency Percent Row Pct Col Pct	Table of evntDateYr by spcEvent		
	evntDateYr	spcEvent	
	SUTI	ABUTI	Total
2023	5	2	7
	20.00	66.67	25.00
	71.43	28.57	
	20.00	66.67	
2024	8	0	8
	32.00	0.00	28.57
	100.00	0.00	
	32.00	0.00	
2025	12	1	13
	48.00	3.33	46.43
	92.31	7.69	
	48.00	3.33	
Total	25	3	28
	89.29	10.71	100.00

RATE TABLE

Rate tables can be a go to report to make timely, monthly-level assessments of HAI incidence and exposure for each location

Example: Rate table of CLABSI Data in ICU/Other units

National Healthcare Safety Network

Rate Table for Central Line-Associated BSI Data for ICU-Other

As of: April 21, 2026 at 3:30 PM UTC

Date Range: BS3_CLAB_RATESICU summaryYM 2025M01 to 2025M03

orgID=10401 locCDC=IN:ACUTE:CC:M

location	summaryYM	CLABCount	numCLDays	CLABRate	numPatDays	LineDU
ICU	2025M01	2	635	3.150	1204	0.527
ICU	2025M02	0	452	0.000	1218	0.371
ICU	2025M03	1	568	1.761	1254	0.453

- In 2025M01, 2 CLABSI events were observed in the ICU location, corresponding to a rate of 3.150 per 1,000 central line days.
- In 2025Q1 the device utilization was highest in 2025M01 with approximate 53% of patient days were also central line days.

Rate Tables Can:
Support internal trend assessments – where have we seen reductions? How has the device use changed over time? How is this location performing compared to itself over time?

Resource: [How to Create a Rate Table](#)

Aligning Your Needs with the Right Report Type

If you need:

- All information entered for an event or procedure
- Timestamp of data entry/modification
- Event-level details
- Survey-level details

Then use:
Line Lists

If you need:

- Summarized counts
- Unadjusted rates/ratios
- Visualization of counts
- Visualization of unadjusted rates/ratios

Then use:
Frequency Tables
Rate Tables
Pie/Bar/Run
Charts

If you need:

- Risk-adjusted measures
- Comparison to National benchmark
- Metric for excess infections

Then use:
SIRs
SURs
CAD/TAP

- SIRs and SURs provide risk-adjusted measures that account for differences in HAI incidence – making meaningful comparison possible.

Understanding the Standardized Infection Ratio (SIR) in 60 seconds

$$SIR = \frac{\text{Observed (O) HAIs}}{\text{Predicted (P) HAIs}}$$

- The SIR takes into account the national data at the baseline year (e.g., 2015 or 2022), and your hospital's experience when calculating the number of predicted events.
- The SIR is a comparison to a National standard – in our case, the NHSN baseline.
- The SIR is risk-adjusted, using the data reported to NHSN.
 - The SIR should be used when aggregating data from multiple locations, procedures, hospitals, etc.
- Your hospital is being compared to other hospitals with similar patient population, during the baseline year
 - P-value and 95% CI provided as statistical evidence with each SIR

Note on the SIR vs. SUR:

- The SIR and SUR are both risk-adjusted summary measures comparing observed to predicted values using the NHSN national baseline.
- The difference is what they measure – the SIR tracks **HAI incidence**, while the SUR tracks **device utilization** (central line, urinary catheter, or ventilator days).

STANDARDIZED INFECTION RATIO (SIR)

Example Scenario: Using the CLABSI SIR report to compare how your hospital performed in 2024Q1 compared to the 2022 national baseline

National Healthcare Safety Network

Standardized Infection Ratio for Central Line-Associated BSI Data for Acute Care Hospitals (2022 Baseline) - By OrgID

As of: April 21, 2026 at 4:28 PM UTC

Date Range: BS3_CLAB_RATE\$ALL.summaryYQ 2024Q1 to 2024Q1

orgID=10063

orgID	ccn	summaryYQ	CLABCount	numPred	numclays	SIR	SIR_pval	sir95ci
10063	M0074	2024Q1	8	20.214	101717	0.396	0.0025	0.184, 0.752

Interpretation based on the SIR Report:

- The SIR is 0.396 which means approximately 60% fewer CLABSI events were observed than predicted under the 2022 baseline.
- We can conclude that the SIR is statistically significantly different than the number predicted since the p-value ≤ 0.05 and the 95% confidence interval does not include the null value, 1.

Reminder the SIR reports also include SIRs at different aggregation levels:

- **Overall** (orgID)
- **Location Type** (i.e., CC, Ward, Step, Other)
- **CDC Location Code** (e.g., IN:ACUTE:CC:C)
- **Facility Defined Location**

CUMULATIVE ATTRIBUTABLE DIFFERENCE (CAD)

Example Scenario: Measuring excess infections and infections prevented using the Cumulative Attributable Difference (CAD)

The CAD is the number of infections that need to be prevented to reach a target, or SIR goal.

National Healthcare Safety Network

TAP Report for CLABSI Data for Acute Care and Critical Access Hospitals (2022 Baseline)

Locations Ranked by CAD Within a Facility

SIR Goal : HHS Goal = 0.6

A TAP Report is the first step in the CDC TAP Strategy. For more information on the TAP strategy, please visit: <https://www.cdc.gov/healthcare-associated-infections/php/toolkit/tap-strategy.html>

As of: April 21, 2026 at 6:04 PM UTC

Date Range: BS3_CLABSI_TAP summaryYQ 2026Q1 to 2026Q1

FACILITY			LOCATION										
Facility Org ID	Facility Name	Facility CAD	Location Rank	Location	CDC Location	Events	Number Predicted	Central Line Days	DUR %	CAD	SIR	SIR Test	No. Pathogens (CNS,YS,SA,ES,KS,EC)
10401	DHQP MEMORIAL ANNEX	-3.68	1	SICU	IN:ACUTE:CC:S	5	4.562	1825	43	0.26	0.754		5 (0, 3, 1, 1, 0, 0)
			2	NERUO	IN:ACUTE:CC:N	3	3.526	1325	62	-0.32	0.851		3 (0, 0, 1, 0, 2, 0)
			3	BURN	IN:ACUTE:CC:B	2	2.987	865	25	-0.59	0.670		2 (1, 0, 0, 0, 0, 0)
			3	2 SOUTH	IN:ACUTE:WARD:MS	1	2.325	562	25	-0.80	0.430		1 (0, 0, 0, 0, 0, 1)
			5	2 NORTH	IN:ACUTE:WARD:M	0	1.589	547	29	-0.95	0.000		
			6	6 SOUTH	IN:ACUTE:WARD:M	0	2.132	523	27	-1.28	0.000		

- A **positive** CAD value indicates excess infections, or additional burden of infections, than what would be predicted based on the SIR goal.
- A **negative** CAD value indicates fewer infections than predicted based on the same SIR goal.
- The higher the CAD, the larger burden of excess infections within the facility or location.

The TAP Report/ CAD is also a great resource to use when the SIR cannot be calculated (i.e., numPred < 1.0)

When the SIR can't be calculated – what to do?

Small numbers can prevent a meaningful SIR from being generated. That doesn't mean you're stuck.

Option 1: Aggregate Across a Longer Time Period

- Instead of running a quarterly SIR, run an annual SIR – pooling more data increases the predicted number and may make the SIR calculable
- *Example: Your CAUTI SIR for Q1 shows numPred = 0.867. Run the SIR for the full calendar year – numPred rises to 1.412 and the SIR can now be calculated*

Option 2: Aggregate Across Locations

- If looking at individual locations, consider rather than viewing individually – aggregate to the locCDC, location type, or orgID level
- *Example: Your 2 South location (IN:ACUTE:WARD:M) alone has numPred = 0.412, but your WARD Location Type which includes 3 other ward locations has a numPred = 2.321 and the SIR can now be calculated*

Option 3: Consider looking at other metrics

- If the SIR still cannot be calculated, consider looking at the cumulative attributable difference (CAD), rates, or the Adjusted-Risk Metric (ARM)

REVIEW

Summarized Data Can Include

Rate

- May use person-time as the denominator, along with a multiplier.
- Useful for internal comparisons.

SIR

- Risk-adjusted, scalable, summary measure.
- Ratio of observed to predicted **infections**.
- Uses a single baseline to measure progress.

CAD

- Difference between observed and predicted infections.
- May use SIR goal as a multiplier to heighten prevention targets.
- First step in TAP strategy.

DUR

- Ratio of device days to patient days.
- No multiplier (in some cases)
- Available by location only.

SUR

- Risk-adjusted, scalable summary measure.
- Ratio of observed to predicted **device days**.
- Uses a single baseline to measure progress.

Knowledge Check

You're interested in reviewing the central line days for each unit/location for 2024Q1. Which report(s) can be used for this purpose?

- A. CLABSI SIR Report
- B. Central Line SUR Report
- C. CLABSI Rate Table(s)
- D. Summary Data Line List
- E. All of the above

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Three Options to Review Changes in Central line Days

- **Option 1: “SIR – CAH CLABSI Data”**
 - Benefit: scalable - will include an aggregate for all locations, in addition to location-specific results
- **Option 2: “SUR – CAH Central Line Device Use”**
 - Benefit: scalable, risk-adjusted measurement of device utilization
- **Option 3: “Rate Table – CLAB Data for ICU-Other”**
 - Benefit: will include location-specific results for pinpointing changes
 - Downside: additional reports needed for NICU and Oncology locations

Note: CAH Reports are used in this example, same can be applied for other facTypes.

Option 1

National Healthcare Safety Network Standardized Infection Ratio for Central Line-Associated BSI Data for Critical Access Hospitals (2022 Baseline) - By OrgID

As of: April 21, 2026 at 10:06 PM UTC
Date Range: BS3_CLAB_RATECAH summaryYQ 2024Q1 to 2024Q1

orgID=10063

orgID	ccn	summaryYQ	CLABCount	numPred	numcldays	SIR	SIR_pval	sir95ci
10063	M0074	2024Q1	8	20.214	101717	0.396	0.0025	0.184, 0.752

Option 2

National Healthcare Safety Network Standardized Utilization Ratio for Central Line Device Use for Critical Access Hospitals (2022 baseline) - By OrgID

As of: April 21, 2026 at 10:10 PM UTC
Date Range: BS3_CLAB_RATECAH summaryYQ 2024Q1 to 2024Q1

orgID=10063

orgID	ccn	summaryYQ	numcldays	numPredDDays	numPatDays	SUR	SUR_pval	SUR95CI
10063	M0074	2024Q1	101717	6832.1626	116617	14.888	0.0000	14.797, 14.980

Option 3

National Healthcare Safety Network Rate Table for Central Line-Associated BSI Data for ICU-Other

As of: April 21, 2026 at 10:15 PM UTC
Date Range: BS3_CLAB_RATEICU summaryYQ 2024Q1 to 2024Q1

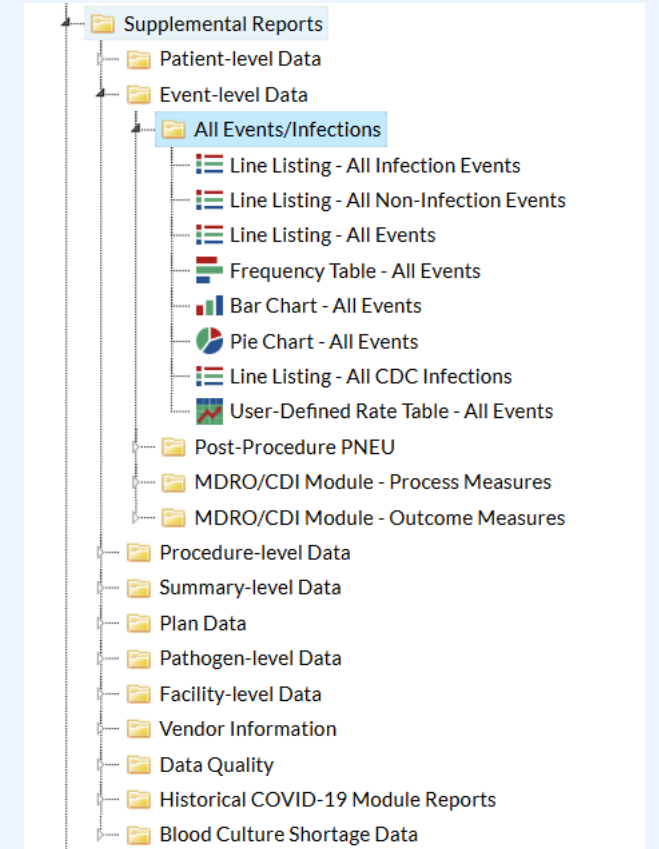
orgID=10063 locCDC=IN:ACUTE:CC:M

location	summaryYQ	months	CLABCount	numcldays	CLABRate	numpatdays	LineDU
RBCLABCCM	2024Q1	3	1	5400	0.185	6000	0.900

SUPPLEMENTAL REPORTS

Taking a closer look: Supplemental Reports

- The Supplemental Reports folder contains reports not found in the standard HAI folders.
- **The Supplemental Report folder will include:**
 - Patient, Event, and Procedure Line Lists, frequency tables, and charts
 - Summary Data Line Lists and rate tables
 - Monthly Reporting Plan Line Lists
 - Pathogen-level data
 - Annual Survey Line Lists
 - Data Quality Line List
- **When to use Supplemental Reports:**
 - You want to see all events across multiple HAI types at once (e.g., all infections in the ICU this quarter)
 - You need to confirm denominator data was entered correctly for a specific month and location
 - You are reviewing procedure records for SSI surveillance



Event-level data subfolder expanded for example

SUPPLEMENTAL REPORTS

Using NHSN Analysis for Data Quality

“At the end of the day, these are **YOUR** data and you should know your data better than anyone else”

Regular analysis supports complete and accurate surveillance by helping you:

- **Verify denominator data** – confirm summary data was entered for all expected locations and months
- **Check event records** – use line lists to spot missing fields, unusual values, or records that need review
- **Reconcile numerators and denominators** – compare event counts in line lists to what appears in rate tables and SIR reports
- **Identify late entries** – some line lists include data entry timestamps that reveal when records were added or modified and by who
- **Verify location mapping** – confirm that events are attributed to the correct unit, particularly after location changes or unit renaming in your facility
- And much more!

SUPPLEMENTAL REPORTS

Example Scenario: Using supplemental reports for denominator verification

Scenario: It is the first week of February. Before finalizing January data, you want to confirm that summary (denominator) data including patient days, central line days and urinary catheter days were entered for all in-plan locations for January. You also want to check that no locations are missing.

National Healthcare Safety Network Line Listing for All Summary Data

As of: April 21, 2026 at 8:52 PM UTC
Date Range: PS SUMMARY summaryYM 2024M01 to 2024M01
if (((daPlan = "Y") AND (eventType IN ("CAU", "CLAB", "PCLAB", "TCLAB", "UCAB")))

orgid	summaryYM	summarytype	location	loccdc	eventtype	birthwtcode	numpatdays	numddays	createDate	createUserID	modifyDate	modifyUserID	noEvents
10401	2024M01	ICU	PEDMED	IN:ACUTE:WARD:M_PED	CLAB		1500	1000	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	ICU	SURG	IN:ACUTE:CC:S	CLAB		40	25	05FEB2024:14:26	9133	05FEB2024:14:26	9133	N
10401	2024M01	ICU	5 NORTH	IN:ACUTE:CC:B	CLAB		1000	800	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	ICU	ICU	IN:ACUTE:CC:M	CLAB		1000	800	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	NICU	NEO1	IN:ACUTE:CC_STEP:NURS	CLAB	A	400	300	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	NICU	NEO1	IN:ACUTE:CC_STEP:NURS	CLAB	B	300	250	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	NICU	NEO1	IN:ACUTE:CC_STEP:NURS	CLAB	C	300	250	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	NICU	NEO1	IN:ACUTE:CC_STEP:NURS	CLAB	D	300	250	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	NICU	NEO1	IN:ACUTE:CC_STEP:NURS	CLAB	E	250	200	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	SCA	ONC ICU	IN:ACUTE:CC:ONC_M	PCLAB		1500	500	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y
10401	2024M01	SCA	ONC ICU	IN:ACUTE:CC:ONC_M	TCLAB		1500	100	05FEB2024:14:26	9133	05FEB2024:14:26	9133	Y

Is there denominator data missing from 2024M01 based on the locations included in the Monthly Reporting Plan?

National Healthcare Safety Network Line Listing - Monthly Plans

As of: April 21, 2026 at 8:58 PM UTC
Date Range: PLAN planYM 2024M01 to 2024M01

orgID	CCN	planYM	PSNoPlan	location	locationType	locCDC	bsiPlan	utiPlan	modifyDate	modifyUserID	scriptDate	scriptID	createDate	createUserID
10401	000000	2024M01	N	5 NORTH	CC	IN:ACUTE:CC:B	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	ICU	CC	IN:ACUTE:CC:M	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	NEO1	CC_N	IN:ACUTE:CC_STEP:NURS	Y	N	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	ONC ICU	CC_ONC	IN:ACUTE:CC:ONC_M	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	PEDMED	WARD	IN:ACUTE:WARD:M_PED	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	PEDPSYCH	WARD	IN:ACUTE:WARD:BHV_PED	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929
10401	000000	2024M01	N	SURG	CC	IN:ACUTE:CC:S	Y	Y	09JUL25:13:54	9133	.	.	22MAR24:18:40	5929

Category	Report Name
Summary-level Data	Line Listing - All Summary Data
Summary-level Data	User-Defined Rate Table - ICU-Other
Summary-level Data	User-Defined Rate Table - NICU
Summary-level Data	User-Defined Rate Table - SCA
Summary-level Data	Line Listing - CLAB Rates for NICU
Plan Data	Line Listing - Monthly Patient Safety Plans
Plan Data	Line Listing - Digital Measures Reporting Plan
Database-level Data	

Where to find these reports in the Analysis Reports Treeview

NHSN Analysis Resources:

- [Analysis Resources | NHSN | CDC](#)
- [Analysis Quick Reference Guides | NHSN | CDC](#)
- [FAQs: Analysis | NHSN | CDC](#)
- [NHSN HAI Rebaseline | NHSN | CDC](#)
- [Data Quality | NHSN | CDC](#)
- [NHSN Reports | NHSN | CDC](#)

Cannot find a specific resource that meets your needs or answers one of your commonly asked questions?

- We want to hear from you!

Analysis Quick Reference Guides

General Tips

- [SIR Aggregation for Facilities with a Shared CCN](#)  [PDF – 433 KB]
- [NHSN Treeview Quick Reference Guide](#)  [PDF – 544 KB]
- [General Tips for NHSN Analysis](#)  [PDF – 111 KB]
- [How to Generate Data Sets](#)  [PDF – 400 KB]
- [How to Generate Participation Alerts Data Set \(Group Users\)](#)  [PDF – 400 KB]
- [Keys to Success with the SIR](#)
- [How to Modify a Report](#)  [PDF – 375 KB]
- [Exporting Modified Analysis Data Sets](#)  [PDF – 574 KB]
- [Reporting Height and Weight for Procedures in NHSN, January 2025](#)  [PDF – 361 KB]
- [Reporting Procedure Duration](#)  [PDF – 500 KB]
- [How to Add and Find the Patient Safety Component Annual Survey](#)  [PDF – 574 KB]

Troubleshooting Guides

Frequently Requested Output/Reports

Targeted Assessment Prevention (TAP) Strategy Reports

Antimicrobial Use and Resistance Module Reports

Targeted Assessment for Antimicrobial Stewardship (TAS) Strategy

Output/Report Option Types

Tips for Customizing Your Output/Reports

Detailed Guides for Specific Analysis Options

For any questions or concerns, contact the NHSN Helpdesk using

Thank You

- **NHSN-ServiceNow** to submit questions to the NHSN Help Desk. The new portal can be accessed at <https://servicedesk.cdc.gov/nhsncsp>.
- Users will be authenticated using CDC's Secure Access Management Services (SAMS) the same way you access NHSN.
- 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.

For more information, contact CDC
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