Analyzing Device-Associated HAI Data

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Today's Objectives

- Describe the standardized infection ratio (SIR) and its use in the interpretation of Device-associated data.
- Discuss the risk-adjustment methods for Device-associated SIR calculation and review example of applying the risk model.
- Explain the use of the SIR data and the analysis reports.
- Answer some frequently asked questions (FAQs).

Why Analyze?

- Analysis tools within NHSN help facilitate internal validation activities and help ensure accuracy.
- Results generated from NHSN reports can help inform prioritization and success of prevention activities.
- Data entered into NHSN may be used by: CDC, CMS, your state health department, your corporation, special study groups, etc…

A Review: The Standardized Infection Ratio (SIR)

- SIR – A summary statistic that compares the number of healthcare-associated infections (HAIs) that were reported to the number of HAIs that were predicted to occur, based on a calculation using data for HAI events that occurred in a given referent time period (2015).

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

A Review: The Standardized Infection Ratio (SIR)

- SIR interpretation:
  - 1 = number of infections reported as would be predicted given the US baseline data.
  - Greater than 1= more infections reported than what would be predicted given the US baseline data.
    - SIR of 1.25 = 25% more infections than predicted
  - Less than 1 = fewer infections reported than what would be predicted given the US baseline data.
    - SIR of 0.50 = 50% fewer infections than predicted

Number predicted less than 1.0

- SIR is only calculated when the number of predicted infections is at least 1.0.
- When the predicted number of infections is less than 1.0, facilities have a few options for reviewing and interpreting HAI data in NHSN
  - A longer time period.
  - Rates can be used.
  - 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).

Basis for Using SIRs and not Rates

- The SIR allows users to summarize data by more than a single stratum (e.g. location/unit), adjusting for differences in the incidence of infection among the strata. The SIR adjusts for various facility and/or patient-level factors that contribute to HAI risk within each facility.
- The SIR permits comparisons between the number of infections experienced by a facility, group, or state to the number of infections that were predicted to have occurred based on national data.
- Pooled mean rates cannot reflect differences in risk between populations, and therefore lose comparability over time and across entities.

Calculating the Number of Predicted Infections

- The number of predicted infections in NHSN is calculated based on the 2015 national HAI aggregate data and adjusted for each facility using variables found to be significant predictors of HAI incidence.
- Negative binomial regression models are used to calculate the number of predicted events for CLABSI, MBI-LCBI, CAUTI, VAE.
- Negative binomial regression models are used when estimating incidence from a summarized population (e.g., CLABSIs in a Medical ICU).

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

Using Models for Device-associated Infections

- General Negative Binomial Regression Model:

$$log\ (\lambda) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_i X_i$$, where:

α = Intercept

β_i = Parameter Estimate

X_i = Value of Risk Factor (Categorical variables= 1 if present, 0 if not.)

i = Number of Predictors

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

General Negative Binomial Regression Model

$$log\ (\lambda) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_i X_i$$, where:

α = Intercept

β_i = Parameter Estimate

X_i = Value of Risk Factor (Categorical variables= 1 if present, 0 if not.)

i = Number of Predictors

- For most variables shown in parentheses in the equation above, you would replace the variable name (and therefore, multiply each parameter estimate) with a “1” or “0” depending on whether that factor is present in your facility (Yes= “1”, No= “0”).

Factors Included in the Device-associated Models: Acute Care Hospitals (ACHs)

Factor	CLABSI	CLABSI (NICU)	CAUTI	Total VAE	IVAC Plus
CDC Location	✓		✓	✓	✓
Facility Type	✓		✓	✓	
Medical School Affiliation*	✓		✓	✓	✓
Birthweight		✓			
Facility Bed size*	✓		✓	✓	✓

*** Variables taken from the Annual Survey**

Device-associated SIR Risk Adjustment

CLABSI

Methods for Calculating the Predicted Number of CLABSI Infections in Acute Care Hospital (non-NICU)

Effect	Parameter Estimate
Intercept	-7.6325
CDC Location: Adult Critical Care Units, Oncology CC units	0.3257
CDC Location: Pediatric Critical Care	0.5695
CDC Location: Burn Critical Care	1.4269
CDC Location: Trauma Critical Care	0.6287
CDC Location: Specialty Care Areas	0.3766
CDC Location: Step-down Units	0.2155
CDC Location: Select Adult Wards	0.1797
CDC Location: Oncology Wards	0.3698
CDC Location Oncology Stem Cell Transplant Wards	0.6876
CDC Location: Pediatric Wards & Nurseries	0.1912
CDC Location: All Other Wards	REFERENT

Methods for Calculating the Predicted Number of CLABSI Infections in Acute Care Hospital (non-NICU)

Effect	Parameter Estimate
Intercept	-7.6325
Medical School Affiliation*: Major	0.2627
Medical School Affiliation*: Graduate	0.1494
Medical School Affiliation*: Undergraduate/Non-teaching	REFERENT
Facility Type: Children's, Military, Veteran's Affairs, Women's, Women's and Children's	0.1429
Facility Type: General Acute Care, Oncology, Orthopedic, Psychiatric, Surgical	REFERENT
Facility Bed Size*: ≥224 Beds	0.2571
Facility Bed Size*: 94 – 223 Beds	0.1160
Facility Bed Size*: ≤93 Beds	REFERENT

* Variables taken from the Annual Survey

Example: Applying Risk Model for CLABSI, NHSN 2015

= exp(-7.6325 +
0.3257*(Adult Critical Care and Oncology CC*) +
0.5695*(Pediatric Critical Care*) +
1.4269*(Burn Critical Care*) +
0.6287*(Trauma Critical Care*) +
0.3766*(Specialty Care Areas*) +
0.2155*(Step-down Units*) +
0.1797*(Select Adult Wards*) +
0.3798* (Oncology Wards*) +
0.6876* (Oncology Stem Cell Transplant*)+
0.1912*(Pediatric Wards & Nurseries)*+
0.2627*(Med School Aff: Major)*+
0.1494*(Med School Aff: Graduate)*+
0.1429*(Facility Type: Children's, Military, VA, Women's and Women's and Children's)*+
0.2571*(Facility Bed Size ≥224 Beds)*
0.1160*(Facility Bed Size 94-223 Beds)*) * **numCLDays**

* For these risk factors, if present = 1; if not = 0

Effect	Parameter Estimate
Intercept	-7.6325
CDC Location: Adult Critical Care Units, Oncology CC units	0.3257
CDC Location: Pediatric Critical Care	0.5695
CDC Location: Burn Critical Care	1.4269
CDC Location: Trauma Critical Care	0.6287
CDC Location: Specialty Care Areas	0.3766
CDC Location: Step-down Units	0.2155
CDC Location: Select Adult Wards	0.1797
CDC Location: Oncology Wards	0.3698
CDC Location Oncology Stem Cell Transplant Wards	0.6876
CDC Location: Pediatric Wards & Nurseries	0.1912
CDC Location: All Other Wards	REFERENT
Medical School Affiliation*: Major	0.2627
Medical School Affiliation*: Graduate	0.1494
Medical School Affiliation*: Undergraduate/Non-teaching	REFERENT
Facility Type: Children's, Military, Veteran's Affairs, Women's, Women's and Children's	0.1429
Facility Type: General Acute Care, Oncology, Orthopedic, Psychiatric, Surgical	REFERENT
Facility Bed Size*: ≥224 Beds	0.2571
Facility Bed Size*: 94 – 223 Beds	0.1160
Facility Bed Size*: ≤93 Beds	REFERENT

REMEMBER!

- The device associated models are applied for each individual location.
- Therefore, the only location-related parameter estimate that counts is the one linked to the location of interest.

Example: Applying Risk Model for CLABSI, NHSN 2015

- Facility Profile:
  - 215-beds
  - General Acute Care Hospital
  - Graduate Teaching Facility
  - Reporting for:
    - Medical Cardiac Critical Care
  - With 722 central line days for January 2022

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

Example: Applying Risk Model for CLABSI, NHSN 2015

= exp(-7.6325 +
0.3257*(1) +
0.5695*(0) +
1.4269*(0)+
0.6287*(0) +
0.3766*(0) +
0.2155*(0)+
0.1797*(0)+
0.3698*(0)+
0.6876*(0)+
0.1912*(0)+
0.2627*(0)+
0.1494*(1)+
0.1429*(0)*+
0.2571*(0)*+
0.1160*(1)) * **722 Central line days**

0.632 = predicted CLABSI events for the month of January

* For these risk factors, if present = 1; if not = 0

Table 1. CLABSI in Acute Care Hospitals (non-NICU locations)

Parameter	Parameter Estimate	Standard Error	P-value
Intercept	*-7.6325*	*0.0606*	*<0.0001*
CDC Location Code: Adult Critical Care Units, Oncology Critical Care Units *Medical Cardiac Critical Care* *Surgical Cardiothoracic Critical Care* *Medical Critical Care* *Medical/Surgical Critical Care* *Neurologic Critical Care* *Neurosurgical Critical Care* *Medical Oncology Critical Care* *Medical/Surgical Oncology Critical Care* *Pediatric Oncology Critical Care* *Surgical Oncology Critical Care* *Prenatal Critical Care* *Respiratory Critical Care* *Surgical Critical Care*	0.3257	0.0435	<0.0001
CDC Location Code: Pediatric Critical Care *Pediatric Burn Critical Care* *Pediatric Cardiothoracic Critical Care* *Pediatric Medical/Surgical Critical Care* *Pediatric Medical Critical Care* *Pediatric Neurosurgical Critical Care* *Pediatric Surgical Critical Care* *Pediatric Trauma Critical Care*	0.5695	0.0699	<0.0001
CDC Location Code: Burn Critical Care (Adult)	1.4269	0.1125	<0.0001
CDC Location Code: Trauma Critical Care (Adult)	0.6287	0.0835	<0.0001

Example: Applying Risk Model for CLABSI, NHSN 2015

= exp(-7.6325 +
0.3257*(1) +
0.5695*(0) +
1.4269*(0)+
0.6287*(0) +
0.3766*(0) +
0.2155*(0)+
0.1797*(0)+
0.3698*(0)+
0.6876*(0)+
0.1912*(0)+
0.2627*(0)+
0.1494*(1)+
0.1429*(0)*+
0.2571*(0)*+
0.1160*(1)) * **722 Central line days**

Facility bed size*: ≥ 224 beds	0.2571	0.0471	<0.0001
Facility bed size*: 94 - 223 beds	0.1160	0.0493	0.0187
Facility bed size*: ≤ 93 beds	REFERENT	-	-
Medical school affiliation*: Major	0.2627	0.0211	<0.0001
Medical school affiliation*: Graduate	0.1494	0.0244	<0.0001
Medical school affiliation*:Undergraduate/Non-teaching	REFERENT	-	-
Facility type: (based on NHSN enrollment) *Children's* *Military* *Veterans' Affairs* *Women's* *Women's and Children's*	0.1429	0.0526	0.0066
Facility type: (based on NHSN enrollment) *General Acute Care* *Oncology* *Orthopedic* *Psychiatric* *Surgical*	REFERENT	-	-

0.632 = predicted CLABSI events for the month of January

* For these risk factors, if present = 1; if not = 0

Calculating the CLABSI Number Predicted

= [exp (-7.6325 + 0.3257*(1) + 0.1494*(1) + 0.1160*(1))] * 722 central line days

= [exp (-7.0414)] * 722 central line days

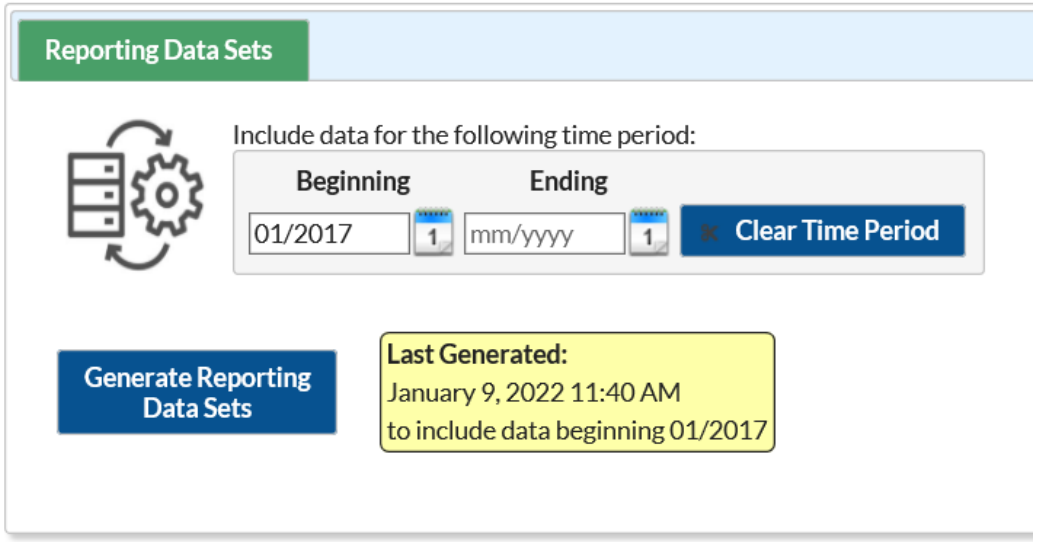
= 0.000874900 * 722 central line days

= 0.632 predicted CLABSIs for January 2022 in Medical Cardiac CC

SIR Reports in NHSN

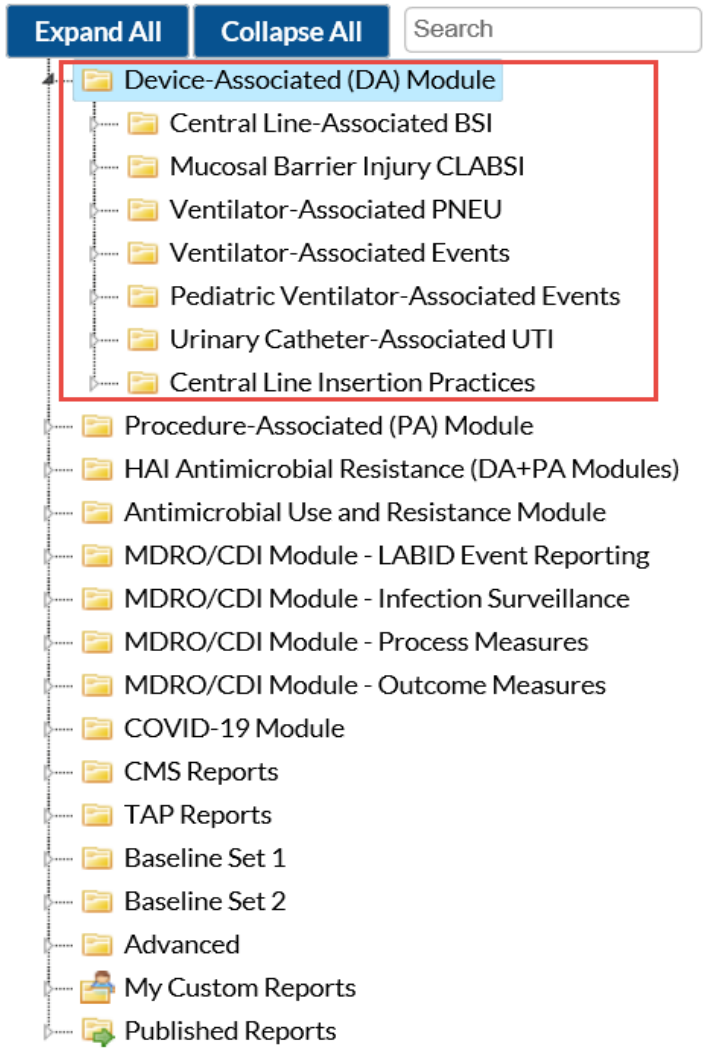
Generate Datasets

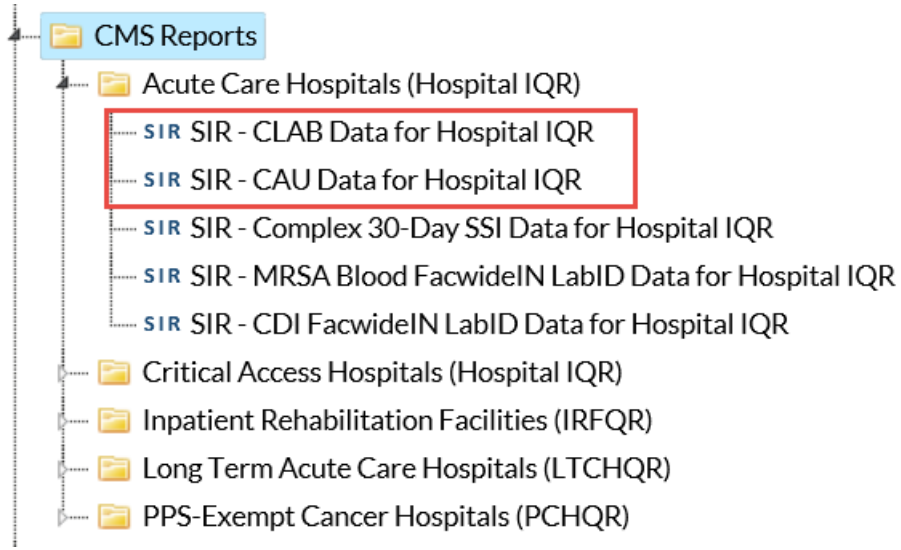
- Always generate your datasets before analyzing your data!!!
- This process will freeze your NHSN data at a specific point in time and copy those data into defined data sets.
- Data sets are user-specific; therefore, each user in NHSN who wishes to analyze data must generate data sets.



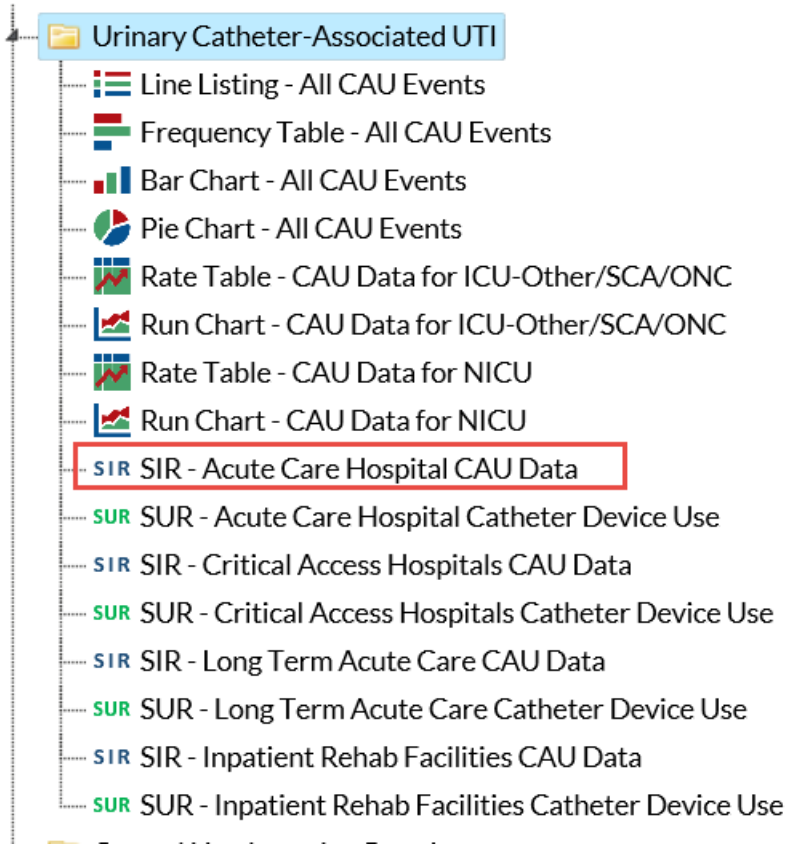
https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/generatedatasets-psc-508.pdf

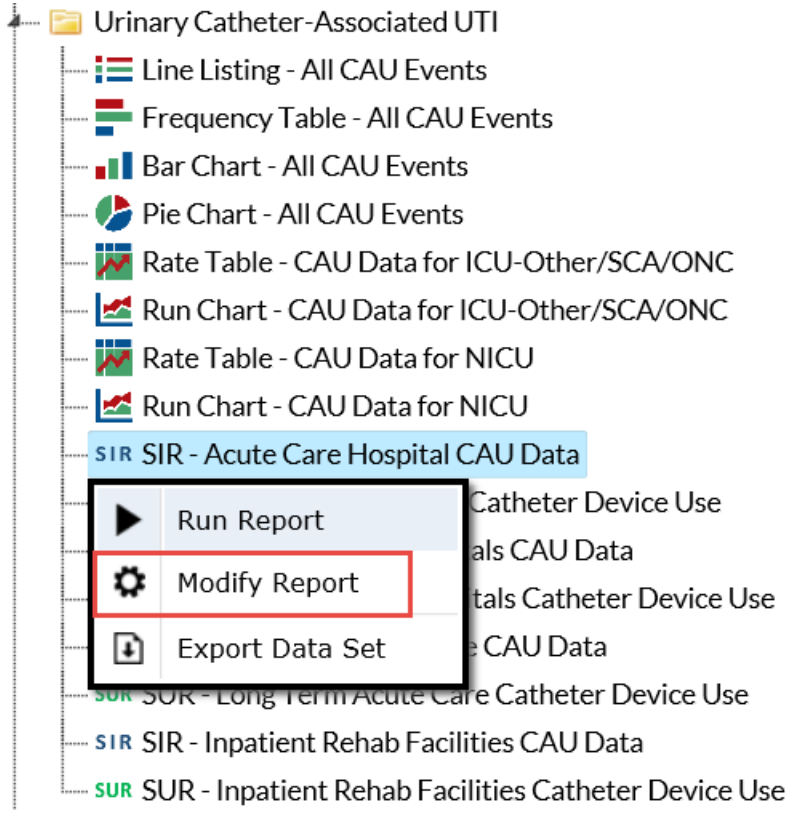
Device Associated Reports in NHSN





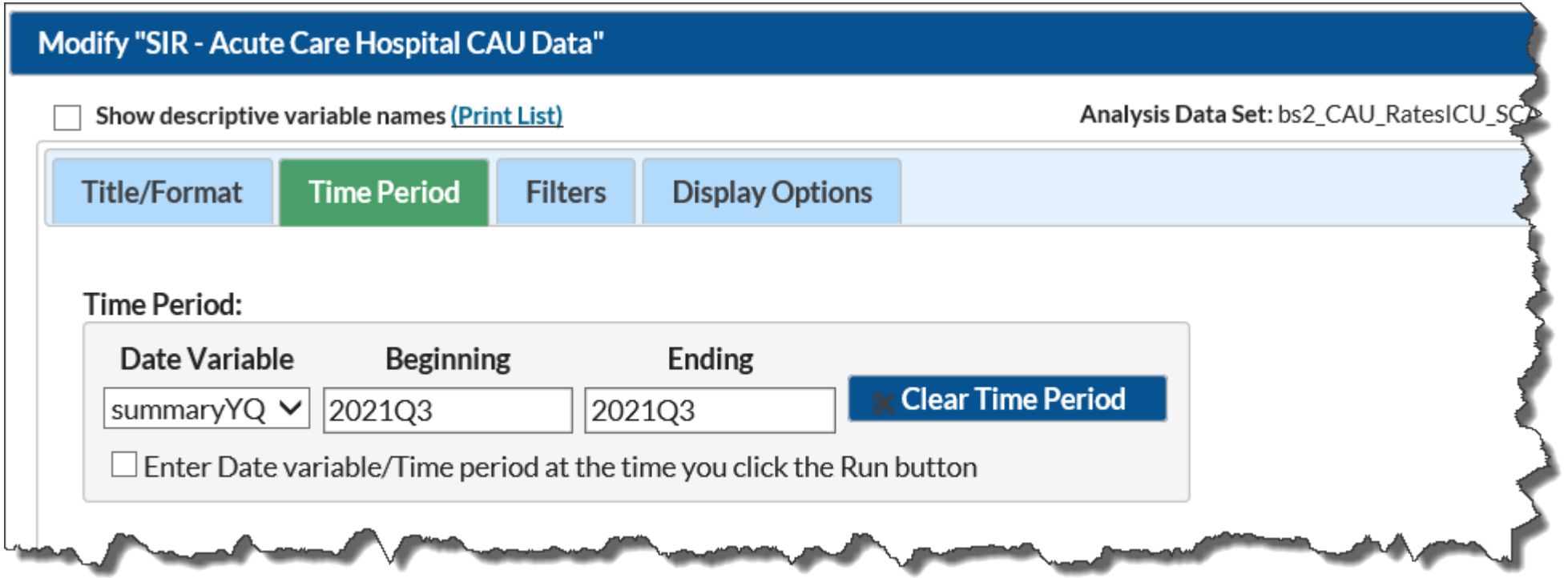
Standardized Infection Ratio (SIR) Table





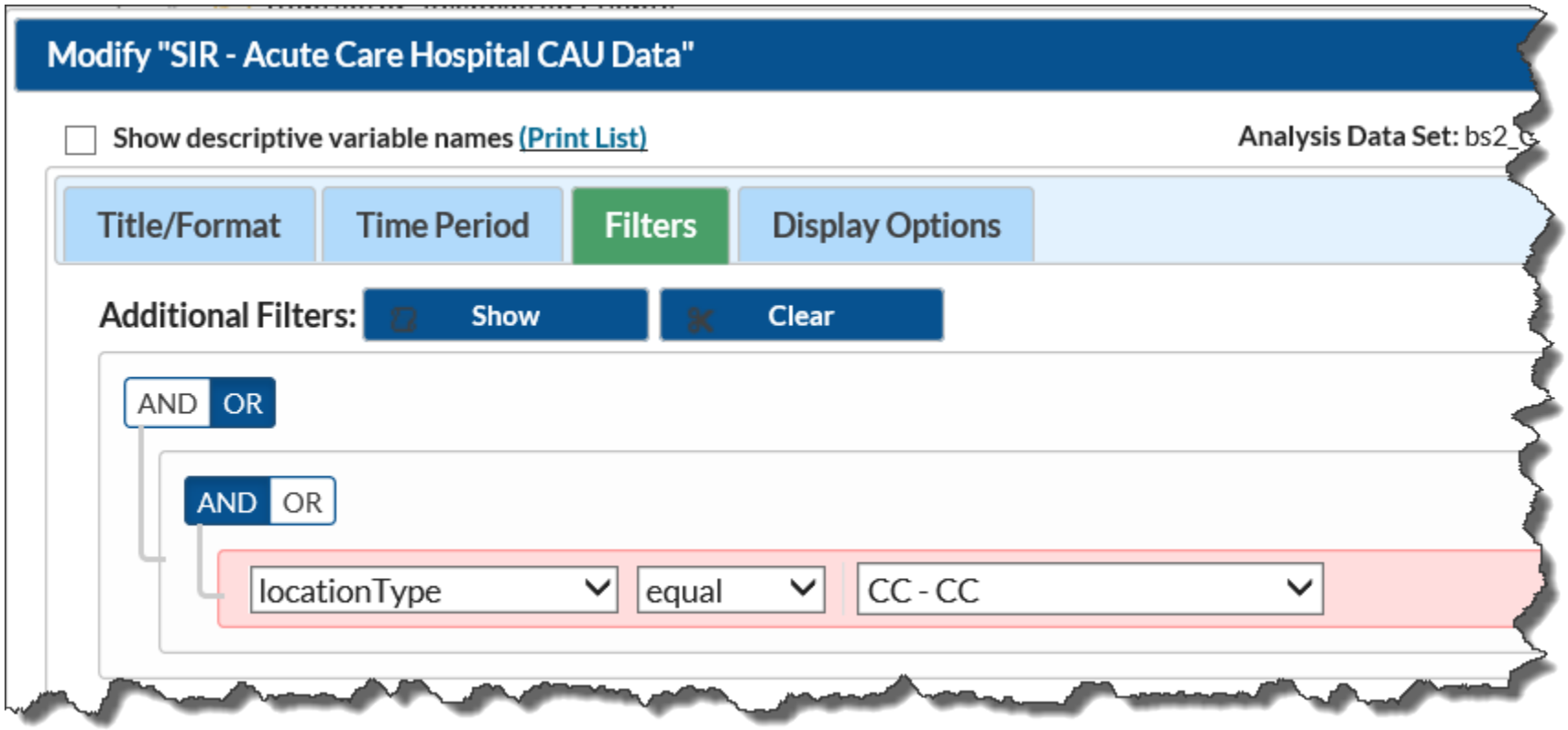
Standardized Infection Ratio (SIR) Table

- **Report Modification**: *For the purpose of this example, the modifications that have been made are: **summaryYQ was set to 2021Q3**, filtered by Critical Care (CC) locationType, and the report grouped by summaryYQ.*



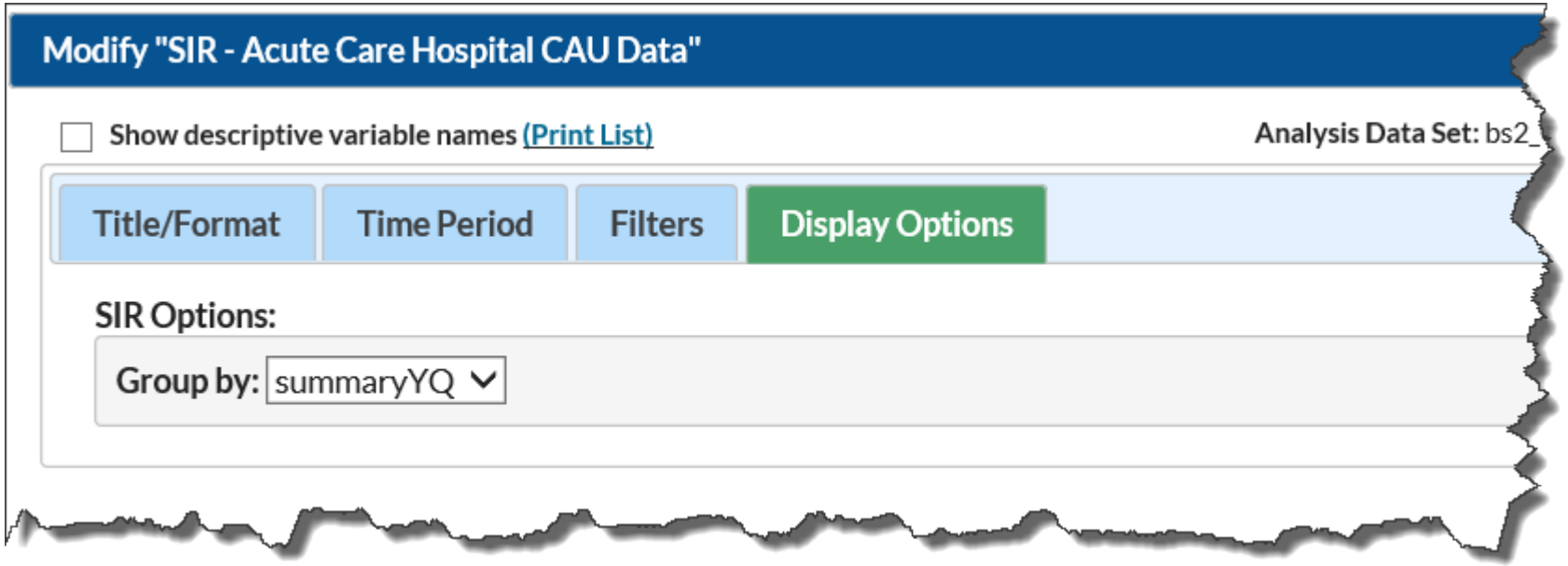
Standardized Infection Ratio (SIR) Table

- **Report Modification**: *For the purpose of this example, the modifications that have been made are: summaryYQ was set to 2021Q3, **filtered by Critical Care (CC) locationType**, and the report grouped by summaryYQ.*



Standardized Infection Ratio (SIR) Table

- **Report Modification**: *For the purpose of this example, the modifications that have been made are: summaryYQ was set to 2021Q3, filtered by Critical Care (CC) locationType, and* ***the report grouped by summaryYQ.***



Standardized Infection Ratio (SIR) Table

- **Output/Results**

National Healthcare Safety Network
SIR for Catheter-Associated UTI Data for Acute Care Hospitals (2015 baseline) - By OrgID
As of: January 9, 2022 at 12:14 PM
Date Range: BS2_CAU_RATE SICU_SCA summaryYQ 2021Q3 to 2021Q3
if (((locationType = "CC")))

orgID=10000 medType=M

orgID	ccn	summaryYQ	infCount	numPred	numucathdays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	31C0001043	2021Q3	5	1.260	791	3.969	0.0113	1.454, 8.798	100

1. This report includes CAUTI data from acute care hospitals for 2015 and forward.
2. The SIR is only calculated if the number predicted (numPred) is >= 1. Lower bound of 95% Confidence Interval only calculated when number of observed events > 0.
3. The number of predicted events is calculated based on national aggregate NHSN data from 2015. It is risk adjusted for CDC location, medical school affiliation type, hospital beds, and facility type.
4. If the risk factor data are missing, the record will be excluded from the SIR.

Source of aggregate data: 2015 NHSN CAUTI Data
Source of Percentile Distribution: 2018 National HAI Progress Report: https://www.cdc.gov/hai/data/portal/progress-report.html
Data contained in this report were last generated on January 9, 2022 at 12:11 PM to include data beginning January 2017 .

Fabricated data

Standardized Infection Ratio (SIR) Table-Interpretation

orgID	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	2021Q3	5	1.260	791	3.969	0.0113	1.454, 8.798	100

- This facility reported 5 catheter associated UTI (infCount) for CC or critical care units during the third quarter of 2021. This is the observed number of CAUTIs.
- The overall SIR for this facility during this time period is 3.969, indicating that this facility observed 3 times more infections than predicted. The number of CAUTIs predicted to occur for the third quarter of 2021 is 1.260.

Fabricated data

Interpreting your SIR Report : SIR p-value

orgID	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	2021Q3	5	1.260	791	3.969	0.0113	1.454, 8.798	100

- SIR p-value is a statistical measure that tells you if the observed number of infections is significantly different from what was predicted
- P-value less than 0.05 indicates that the number of observed CAUTIs is [statistically] significantly different (higher or lower) from the number predicted
- In this example, the p-value for the 2021Q3 SIR is less than 0.05 and thus there is significant difference between the number of infections observed and the number of infections predicted

Fabricated data

Interpreting your SIR Report : SIR Confidence Interval

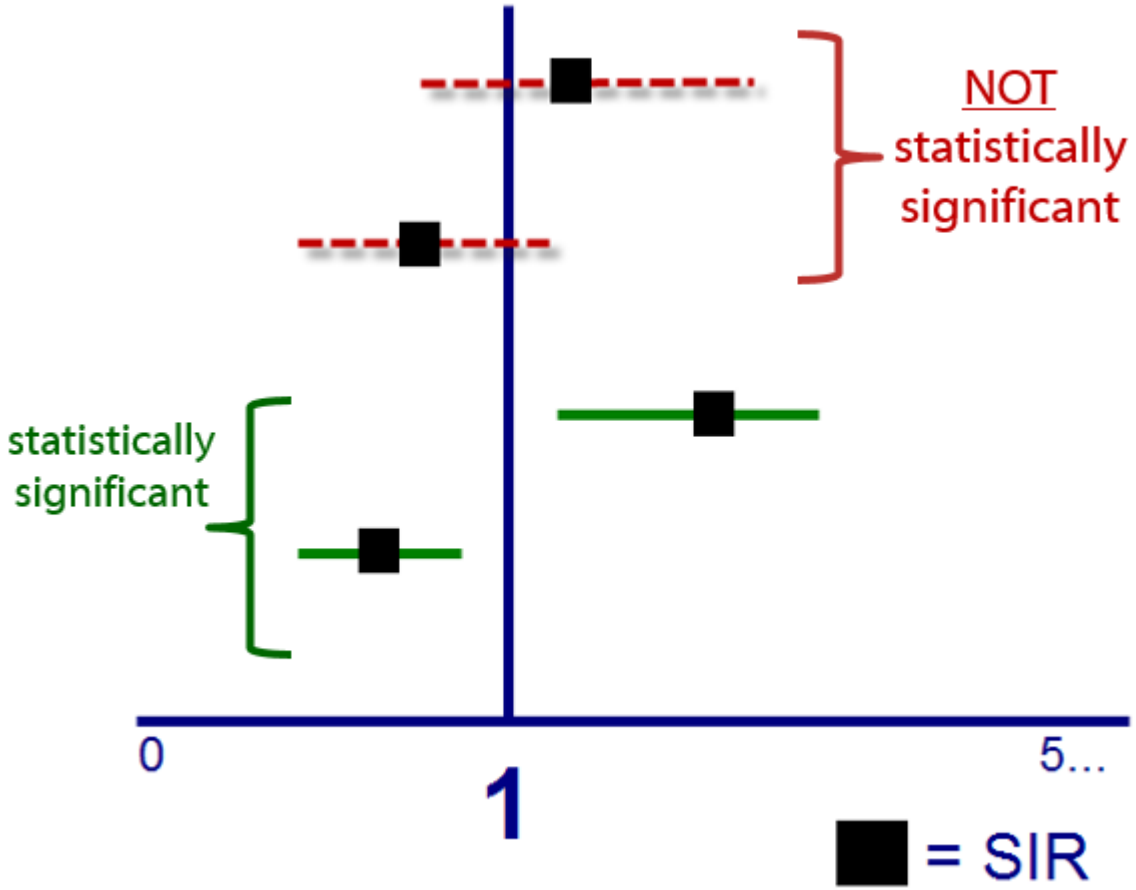
orgID	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	2021Q3	5	1.260	791	3.969	0.0113	1.454, 8.798	100

- The 95% Confidence interval is a range of values in which the true SIR is thought to lie
- If the confidence interval includes the value of 1, then the SIR is not significant (the number of observed infections is not significantly different from the number predicted, using the same convenient cut point)

Fabricated data

Interpreting your SIR Report : SIR Confidence Interval

- If the confidence interval includes the value of 1, then the SIR is not significant
  - i.e., if the lower bound is ≤ 1 and the upper bound is ≥ 1, then the SIR is not significant



Interpreting your SIR Report : SIR Percentile

orgID	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	2021Q3	5	1.260	791	3.969	0.0113	1.454, 8.798	100

- The percentile distribution of facility-specific SIRs are calculated along with the annual SIRs published in the healthcare-associated infections (HAI) Progress Report.
- These facility-specific SIRs are used to create national percentile distributions for each infection and device type if at least 20 facilities had sufficient data to calculate an SIR or SUR.
- SIR Percentile can be interpreted as, 100% of facilities in the nation (with at least 1 predicted device day) had a SIR equal to or lower than 3.969.

CLABSI (and CAUTI) SIR Reports in NHSN

- SIR Outputs will include 5 tables:
  1. Overall SIR for the facility
  2. SIR by location type
  3. SIR by CDC location
  4. SIR by individual locations
  5. Data Not Included in the SIR

CLABSI (and CAUTI) SIR Output- Table 1

- This table will include all the units for which your hospital reported data during that time period.
- For this example we used the Display Option Group by ‘Cumulative’

National Healthcare Safety Network
SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline) - By OrgID
As of: January 9, 2022 at 12:48 PM
Date Range: BS2_CLAB_RATE SALL summaryYr After and Including 2021

orgID=10000 medType=M

orgID	ccn	summaryYr	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	31C0001043	2021	3	6.974	5948	0.430	0.1133	0.109, 1.171	35

Fabricated data

CLABSI (and CAUTI) SIR Output- Table 2

- This table produces an SIR for each Location Type (eg. ICUs, WARDs)

National Healthcare Safety Network
SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline) - By OrgID/Location Type
As of: January 9, 2022 at 12:48 PM
Date Range: BS2_CLAB_RATE SALL summaryYr After and Including 2021

orgID=10000 medType=M

orgID	ccn	locationType	summaryYr	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	31C0001043	CC	2021	3	1.814	1608	1.653	0.3843	0.421, 4.500	90
10000	31C0001043	CC_N	2021	0	1.743	1394	0.000	0.1751	, 1.719	25
10000	31C0001043	CC_ONC	2021	0	1.255	1112	0.000	0.2852	, 2.388	15
10000	31C0001043	OTHER	2021	0	0.000	0	.	.		.
10000	31C0001043	WARD_ONC	2021	0	2.163	1834	0.000	0.1150	, 1.385	15

Fabricated data

CLABSI (and CAUTI) SIR Output- Table 3

- This table produces an SIR for each CDC location type that has CLABSI data entered in the facility.

National Healthcare Safety Network

SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline) - By OrgID/CDC Location Code

As of: January 9, 2022 at 12:48 PM

Date Range: BS2 CLAB RATESALL summaryYr After and Including 2021

orgID=10000 medType=M

orgID	ccn	locCDC	summaryYr	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci
10000	31C0001043	IN:ACUTE:CC:C	2021	3	1.785	1582	1.681	0.3717	0.427, 4.574
10000	31C0001043	IN:ACUTE:CC:M	2021	0	0.029	26	.	.	
10000	31C0001043	IN:ACUTE:CC:MS	2021	0	0.000	0	.	.	
10000	31C0001043	IN:ACUTE:CC:NURS	2021	0	0.056	80	.	.	
10000	31C0001043	IN:ACUTE:CC:NURS_IV	2021	0	0.828	568	.	.	
10000	31C0001043	IN:ACUTE:CC:ONC_MS	2021	0	0.978	867	.	.	
10000	31C0001043	IN:ACUTE:CC:ONC_S	2021	0	0.276	245	.	.	
10000	31C0001043	IN:ACUTE:CC_STEP:NURS	2021	0	0.858	746	.	.	
10000	31C0001043	IN:ACUTE:MIXED:ALL_ADULT	2021	0	0.000	0	.	.	
10000	31C0001043	IN:ACUTE:WARD:ONC_HONC	2021	0	1.823	1546	0.000	0.1615	, 1.643
10000	31C0001043	IN:ACUTE:WARD:ONC_LEUK	2021	0	0.340	288	.	.	

Fabricated data

CLABSI (and CAUTI) SIR Output- Table 4

- This table produces an SIR for each individual location that has CLABSI data entered in the facility.

orgid	ccn	location	summaryYr	months	infcount	numPred	numcldays	SIR	SIR_pval	SIR95CI
10000	31C0001043	12 WEST3	2021	1	0	0.029	26	.	.	
10000	31C0001043	23	2021	1	0	0.000	0	.	.	
10000	31C0001043	44	2021	1	0	0.340	288	.	.	
10000	31C0001043	9 WEST	2021	1	0	0.000	0	.	.	
10000	31C0001043	CARDCRIT	2021	7	3	1.785	1582	1.681	0.3717	0.427, 4.574
10000	31C0001043	CC_ONC	2021	3	0	0.978	867	.	.	
10000	31C0001043	HEMONC	2021	2	0	0.354	300	.	.	
10000	31C0001043	INHONCSCA	2021	1	0	0.024	20	.	.	
10000	31C0001043	NEWNICU	2021	1	0	0.056	80	.	.	
10000	31C0001043	NICU	2021	8	0	0.858	746	.	.	
10000	31C0001043	NICU4	2021	2	0	0.828	568	.	.	
10000	31C0001043	ONCGEN	2021	7	0	1.446	1226	0.000	0.2356	, 2.072
10000	31C0001043	ON_S	2021	2	0	0.276	245	.	.	

Fabricated data

CLABSI (and CAUTI) SIR Output- Table 5

- This table produces a list of the locations that are not included in the SIR (eg. missing data or outpatient locations)

National Healthcare Safety Network
CLABSI Data Not Included in SIR
As of: January 9, 2022 at 12:48 PM
Date Range: BS2_CLAB_RATE SALL summaryYr After and Including 2021

orgID=10000 medType=M

orgID	ccn	locationType	locCDC	location	summaryYM	infcount	numcldays
10000	31C0001043	OTHER	OUT:ACUTE:ED	0909	2021M01	0	14
10000	31C0001043	OTHER	OUT:ACUTE:ED	0909	2021M03	0	12

National Healthcare Safety Network
CLABSI Data - Months with Missing or 0 Device Days
As of: January 9, 2022 at 12:48 PM
Date Range: BS2_CLAB_RATE SALL summaryYr After and Including 2021

orgID=10000 medType=M

orgID	ccn	location	locationType	birthwtcode	summaryYM	numcldays	numumbcdays	numpcldays	numtcldays
10000	31C0001043	0909	OTHER		2021M02	.	.	.	.
10000	31C0001043	0909	OTHER		2021M04	.	.	.	.
10000	31C0001043	12 WEST3	CC		2021M01	.	.	.	.
10000	31C0001043	12 WEST3	CC		2021M02	.	.	.	.
10000	31C0001043	12 WEST3	CC		2021M03	.	.	.	.

Fabricated data

Review: FAQs

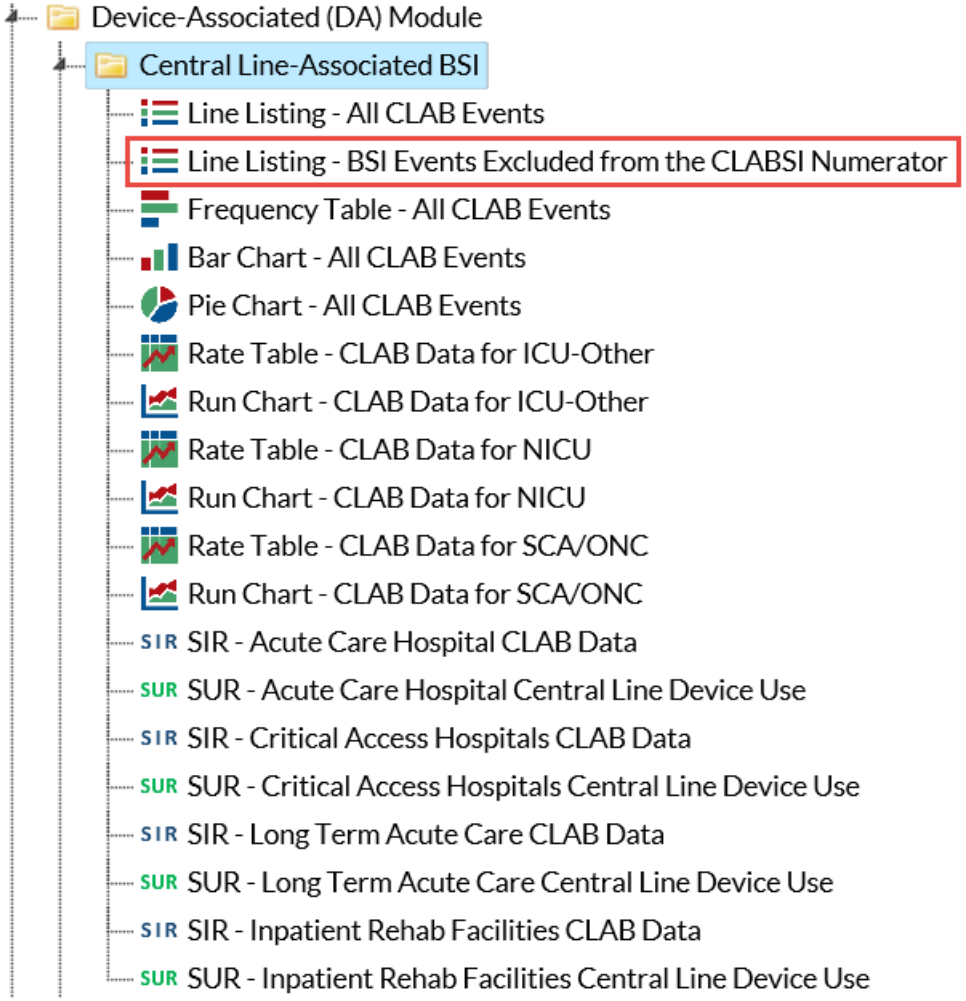
Missing CLABSI event from SIR reports

- NHSN, when running my DA SIR reports, I am unable to find a CLABSI that was entered in January 2022.
  - I have generated my datasets. It should be present!
  - Missing a CLABSI from my Medical Ward that appear in our line list but not in any of the SIR reports.

Can you tell me what is going on?

Missing CLABSI event from SIR reports

- Review CLABSI protocol for reviewing the exclusion criteria for BSI events.
- Run the “BSI Events excluded from the CLABSI numerator” line list.
  - This line list will allow you to view a facility’s BSI events that will be excluded from the CLABSI DA module SIR, rate tables, and CMS CLABSI SIR reports.



Identifying excluded events

- CLABSI events that are identified as Mucosal Barrier Injury Laboratory-Confirmed Bloodstream Infection (MBI-LCBI), Extracorporeal life support (ECMO) and Ventricular Assist Device (VAD) BSI events, Munchausen Syndrome by Proxy (MSBP), Epidermolysis bullosa (EB), Patient self-injection, and Pus at vascular access site and are indicated by the new variable clab_exclude.
  - MBI-LCBI reports used for analyzing MBI-LCBI events.

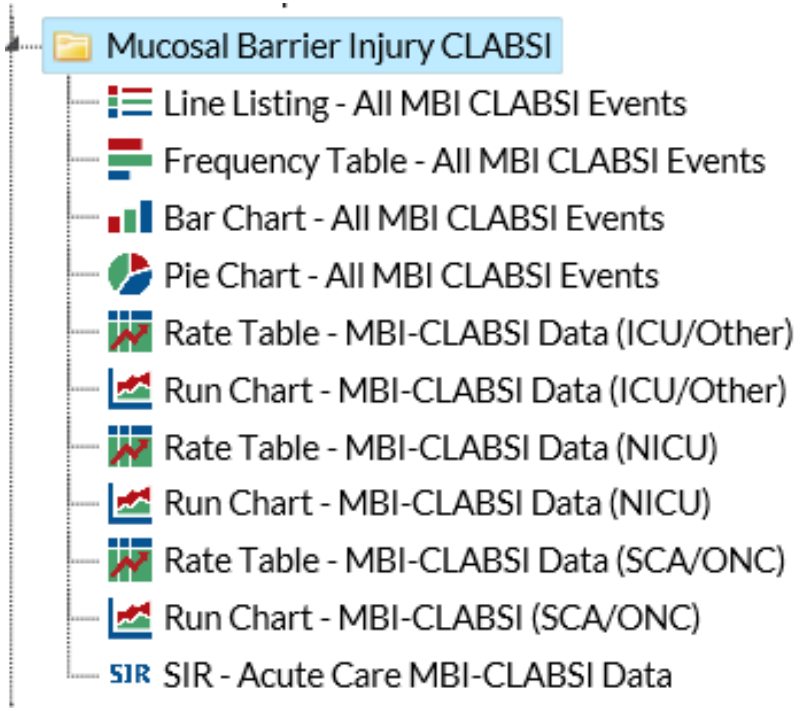
National Healthcare Safety Network
Line Listing for BSI Events Excluded from the CLABSI Numerator
As of: January 10, 2022 at 9:54 AM
Date Range: CLAB_EVENTS evntDateYr 2022 to 2022
if (((clab exclude = "Y")))

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location	ecmo	vad	mbi_lcbi	msbp	eb	siteBldMatch	matchSite	clab_exclude
10000	50000	01/01/1974	M	12/24/2021	50231621	01/08/2022	BSI	LCBI	MD WARD	Y	N	N	N	N	N		Y

Fabricated data

Measure	Exclusions	Calculation	Application
CLABSI SIR	MBI-LCBIs, ECMO, VAD, MSBP, EB, Patient self-injection, and Pus at vascular site	$\frac{\text{The number of Observed CLABSIs}}{\text{The number of Predicted CLABSIs}}$	Both location specific and summarized measure
CLABSI Rates	MBI-LCBIs, ECMO, VAD, MSBP, EB, Patient self-injection, and Pus at vascular site	$\left(\frac{\text{The number of CLABSIs for a location}}{\text{The number of Central Line Days for that location}}\right) \times 1000$	Location specific measure only
Central Line SUR		$\frac{\text{The number of Observed Central Line Days}}{\text{The number of Predicted Central Line Days}}$	Both location specific and summarized measure
DUR		$\frac{\text{Central Line Days for a location}}{\text{The Patient Days for that location}}$	Location specific measure only

Running the MBI-LCBI reports



National Healthcare Safety Network

SIR for MBI-CLABSI Data (2015 Data) - By OrgID

As of: March 5, 2019 at 11:47 AM

Date Range: All BS2 CLAB MBI RATESALL

orgID=10000 medType=' '

orgID	ccn	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci
10000	31C0001043	2019M1	1	0.250	150	.	.	
10000	31C0001043	2019M2	1	0.320	360	.	.	

Fabricated data

Missing CAUTI event from CMS IQR Report

- NHSN, when running my CMS IQR SIR reports, I am unable to find a CAUTI that was entered in October 2021.
  - Datasets have been generated.
  - Missing a CAUTI that appears in our Device-associated CAUTI SIR report but not in the CAUTI IQR SIR report.

Can you tell me why this CAUTI is not appearing in my reports?

Identifying excluded event/location

National Healthcare Safety Network
Line Listing for All Catheter-Associated UTI Events
As of: January 10, 2022 at 10:18 AM
Date Range: CAU_EVENTS evntDateYM 2021M10 to 2021M10

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location	locCDC
10000	4500	02/24/1966	M	10/07/2021	50232173	10/21/2021	UTI	SUTI	ONCGEN	IN:ACUTE:WARD:ONC_HONC

- Run CAUTI line list to identify the excluded event and determine location of event.
- Event occurred in the Oncology General Hematology-Oncology ward, which is not a location that will be included in the CMS IQR report for CAUTI

Hospital IQR reports for CLABSI and CAUTI

CLABSI
Start Q1 2011 - adult, pediatric, and neonatal ICUs
Start Q1 2015 - adult and pediatric medical, surgical, and medical/surgical wards
CAUTI
Start Q1 2012 - adult and pediatric ICUs
Start Q1 2015 - adult and pediatric medical, surgical, and medical/surgical wards

What changes can potentially impact my SIRs?

- Entry or deletion of events.
- Changes to number of patient days, device days, admissions.
- Removal or addition to monthly reporting plans.
- Changes to relevant factors in the annual survey (e.g., medical school affiliation, facility bedsize).
- Resolution of “Report No Events” alerts.

Summary

- These are YOUR data –know what your data says about your facility.
- Understand the data that derive your hospital's analytic reports.
- Understand how you can customize the reports in NHSN to give you the data you need.
- Data from your facility can help drive prevention measures and reduce HAI burden.

Device Associated Analysis Resources

- A Guide to the SIR: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf
- Analysis Output Quick Reference Guides: http://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html
- Analysis Resources: https://www.cdc.gov/nhsn/ps-analysis-resources/index.html
- CMS Requirements: https://www.cdc.gov/nhsn/cms/index.html
- NHSN Analysis Training: https://www.cdc.gov/nhsn/training/analysis/index.html

Help with any analysis outputs: email NHSN@cdc.gov

Thank you!

NHSN@cdc.gov

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

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.