



Device-associated Analytics Frequently Asked Questions – A Review

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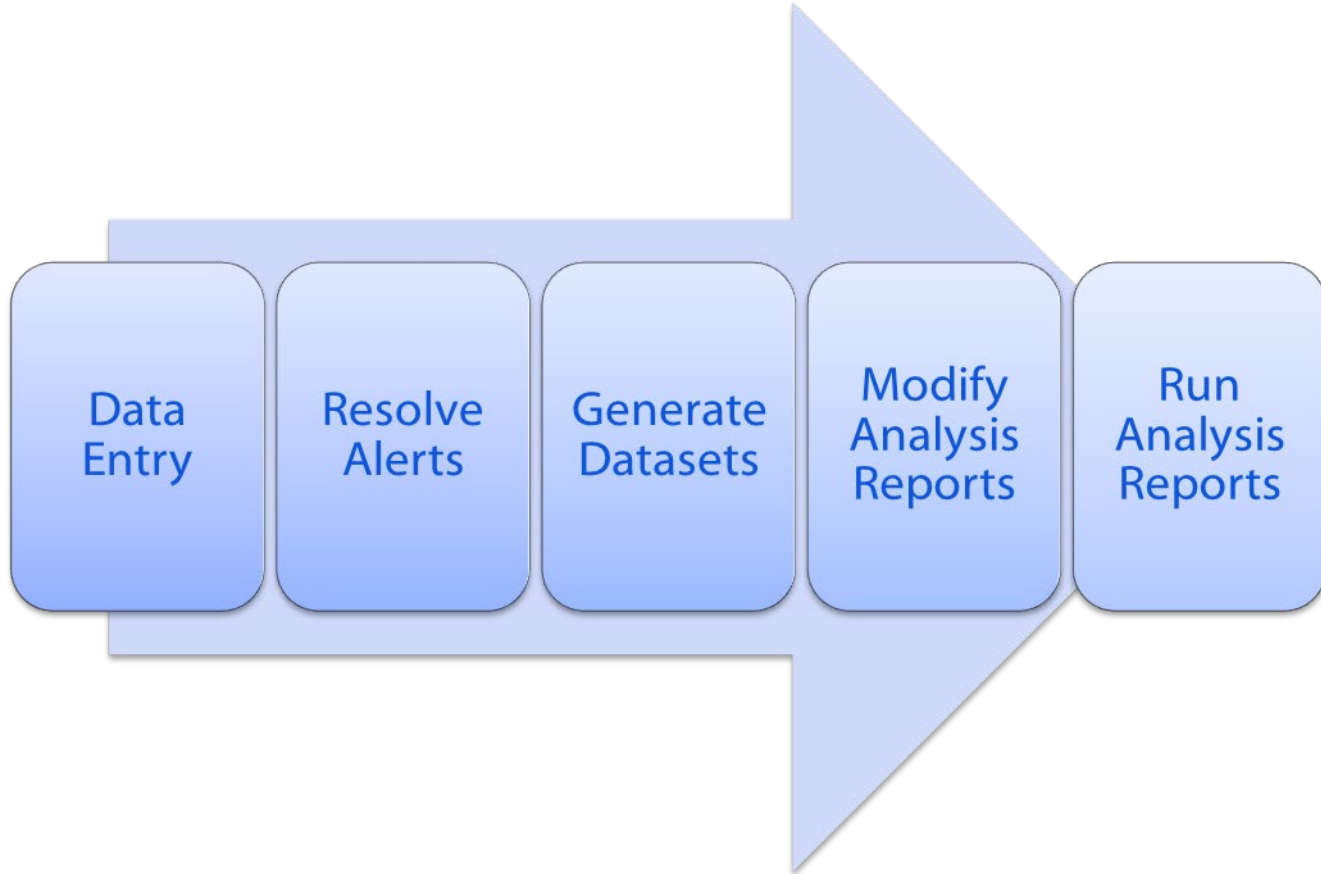
Objectives

We will demonstrate how to conduct analysis on **device-associated analysis reports** to answer some **frequently asked questions (FAQs)**.

By the end of this training, the audience will be able to:

- Discuss the importance of data analysis
- Navigate the NHSN application to run reports and determine solutions for the FAQs
- Execute and customize reports
- Interpret results

Review: Key steps in NHSN Data analysis

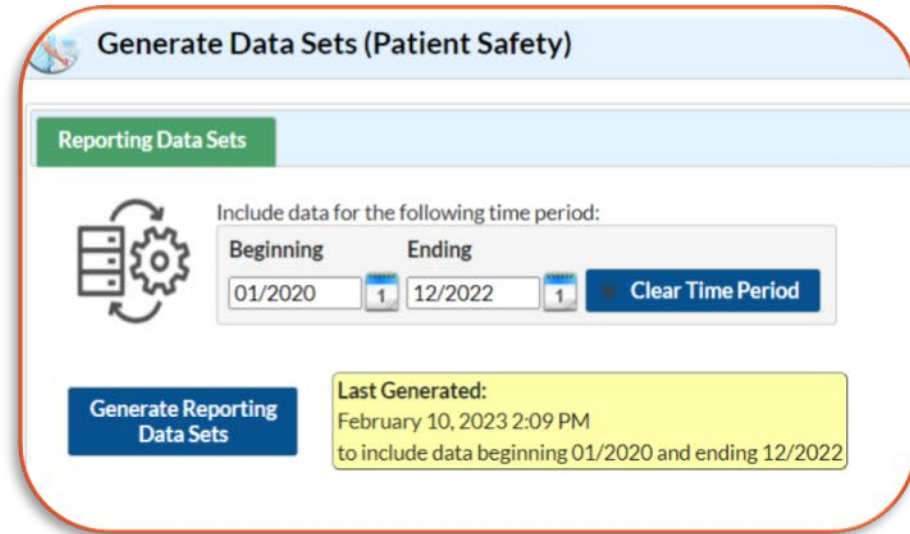


Review: Dataset Generation is the KEY for a successful NHSN Analysis

- Generate your datasets!
 - Generating data sets is the **FIRST STEP** to performing analysis in NHSN.
 - This process will freeze your NHSN data at a specific point in time and copy those data into defined data sets.
 - Edits made without generating datasets will **NOT** be included in the reports.

Review: Dataset Generation is the KEY for a successful NHSN Analysis

- A time period can be specified, to apply to all analysis data sets.
- The *Generate Reporting Data Sets* button will start the data set generation process.
- The *Last Generated* information will tell you when your data sets were last generated, and for which time period.
- This information will also appear in the footnotes on all reports.



The screenshot displays the 'Generate Data Sets (Patient Safety)' interface. At the top, there is a header 'Generate Data Sets (Patient Safety)'. Below this is a section titled 'Reporting Data Sets'. On the left, there is an icon representing a server rack and a gear. To the right of the icon, the text reads 'Include data for the following time period:'. Below this text, there are two input fields: 'Beginning' with the value '01/2020' and 'Ending' with the value '12/2022'. Each field has a small calendar icon to its right. To the right of these fields is a blue button labeled 'Clear Time Period'. Below the time period selection, there is a blue button labeled 'Generate Reporting Data Sets'. To the right of this button, there is a yellow box containing the text 'Last Generated: February 10, 2023 2:09 PM to include data beginning 01/2020 and ending 12/2022'.

Review: The Standardized Infection Ratio (SIR)

■ SIR

- Is a **summary measure** used to track healthcare-associated infections (HAIs) at a national, state, or local level over time.

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

- **Adjusted for risk factors** that were found to be significantly associated with differences in infection incidence
- Given the **standard population** (i.e., 2015 NHSN rebaseline)

Coming up

- VAE/PedVAE FAQs
- CLABSI/CAUTI FAQs

FAQs - VAE and PedVAE

Vaishnavi Pattabiraman

Objectives

- Review of the NHSN analysis options for Ventilator-Associated Events (VAEs) and Pediatric Ventilator-Associated Events (PedVAE).
- Walk through 3 commonly asked FAQs and their respective solutions

Review: VAE events analysis in NHSN

- Analysis of Ventilator-Associated Events (VAE) in NHSN is for the following types by Standardized Infection Ratio (SIR),
 - Total Ventilator Associated Events (VAE) comprised of,
 - Ventilator-Associated Complication (VAC)
 - Infection-related Ventilator- Associated Complication (IVAC)
 - Possible Ventilator-Associated Pneumonia (PVAP)
 - Infection-related Ventilator- Associated Complication (IVAC+) events comprised of,
 - IVAC
 - PVAP

Review: PedVAE events analysis in NHSN

- Analysis of Pediatric Ventilator-Associated Events (VAE) in NHSN is by **Rates**
PedVAE Rate by Device Days

$$= \frac{\textit{Count of PedVAE}}{\textit{Number of Ventilator Days}} * 1000$$

PedVAE Rate by Episodes of Mechanical Ventilation (EMV)

$$= \frac{\textit{Count of PedVAE}}{\textit{Episodes of Mechanical Ventilation}} * 100$$

FAQ#1: PVAP events and SIR calculations

FAQ:

Why are there NO SIR reports for PVAP events, when there are SIR reports for Total VAE and IVAC+ events in NHSN?

Review: Total VAE and IVAC+ events

- The “Total VAE” includes events identified as Ventilator-Associated Condition (VAC), Infection-related Ventilator-Associated complication (IVAC) and Possible Ventilator-Associated Pneumonia (PVAP)

National Healthcare Safety Network Line Listing for All Ventilator-Associated Events

As of: January 29, 2021 at 9:13 PM

Date Range: VA_EVENTS evntDateYQ After and Including 2018Q1

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location
10018	1098777	02/13/2012	M	04/29/2019	89453	05/06/2019	VAE	IVAC	5G
10018	123	01/01/1980	F	02/01/2018	68385	02/05/2018	VAE	PVAP	5G
10018	1234	10/01/1992	F	02/01/2018	68383	02/04/2018	VAE	PVAP	5G
10018	1CG	02/01/1960	F	02/01/2018	68947	02/05/2018	VAE	PVAP	5G
10018	101	05/14/1991	M	10/01/2020	99089	10/04/2020	VAE	PVAP	ICU
10018	2	01/01/1987	F	01/12/2020	99067	10/11/2020	VAE	PVAP	ICU
10018	654321	10/01/1992	M	07/15/2018	77743	07/20/2018	VAE	VAC	ICU-A
10018	1006_563	06/09/1969	M	09/20/2019	88672	09/26/2019	VAE	VAC	MCC

⇒ Total VAE

Total VAE Infection Count: 8

⇒ Total VAE

Review: Total VAE and IVAC+ events

- The “IVAC Plus” includes events identified as IVAC and PVAP.

National Healthcare Safety Network Line Listing for All Ventilator-Associated Events

As of: January 29, 2021 at 9:13 PM

Date Range: VA_EVENTS evtntDateYQ After and Including 2018Q1

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location
10018	1098777	02/13/2012	M	04/29/2019	89453	05/06/2019	VAE	IVAC	5G
10018	123	01/01/1980	F	02/01/2018	68385	02/05/2018	VAE	PVAP	5G
10018	1234	10/01/1992	F	02/01/2018	68383	02/04/2018	VAE	PVAP	5G
10018	1CG	02/01/1960	F	02/01/2018	68947	02/05/2018	VAE	PVAP	5G
10018	101	05/14/1991	M	10/01/2020	99089	10/04/2020	VAE	PVAP	ICU
10018	2	01/01/1987	F	01/12/2020	99067	10/11/2020	VAE	PVAP	ICU
10018	654321	10/01/1992	M	07/15/2018	77743	07/20/2018	VAE	VAC	ICU-A
10018	1006_563	06/09/1969	M	09/20/2019	88672	09/26/2019	VAE	VAC	MCC

⇒ IVAC+

IVAC+ Infection Count: 6

Review: Total VAE and IVAC+ events

National Healthcare Safety Network

SIR for Ventilator-Associated Event Data for Acute Care Hospitals (2015 Baseline) - By OrgID

As of: February 2, 2021 at 3:21 PM

Date Range: All BS2_VAE_RATE_SICU_SCA

vaeCategory=Total VAE orgid=10018 medType=G

orgid	ccn	summaryYH	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pctl	vaeCategory
10018	12345	2017H1	2	2.920	363	0.685	0.6529	0.115, 2.263	45	Total VAE
10018	12345	2017H2	3	0.039	5	.	.	.	.	Total VAE
10018	66666	2019H1	1	0.179	46	.	.	.	.	Total VAE
10018	66666	2019H2	1	0.525	117	.	.	.	.	Total VAE
10018	66666	2020H1	0	0.071	25	.	.	.	.	Total VAE
10018	66666	2020H2	0	0.021	7	.	.	.	.	Total VAE

National Healthcare Safety Network

SIR for Ventilator-Associated Event Data for Acute Care Hospitals (2015 Baseline) - By OrgID

As of: February 2, 2021 at 3:21 PM

Date Range: All BS2_VAE_RATE_SICU_SCA

vaeCategory=IVAC Plus orgid=10018 medType=G

orgid	ccn	summaryYH	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pctl	vaeCategory
10018	12345	2017H1	0	1.211	363	0.000	0.2978	2.473	20	IVAC Plus
10018	12345	2017H2	3	0.014	5	.	.	.	.	IVAC Plus
10018	66666	2019H1	1	0.077	46	.	.	.	.	IVAC Plus
10018	66666	2019H2	0	0.197	117	.	.	.	.	IVAC Plus
10018	66666	2020H1	0	0.042	25	.	.	.	.	IVAC Plus
10018	66666	2020H2	0	0.012	7	.	.	.	.	IVAC Plus

FAQ#1: PVAP events and SIR calculations

FAQ:

Why are there NO SIR reports for PVAP events, when there are SIR reports for Total VAE and IVAC+ events in NHSN?

Answer:

Individual metrics such as VAC, IVAC and PVAP were NOT intended for inter-facility comparisons which is why SIRs are not available for these metrics.

Summary of FAQ#1: PVAP events and SIR calculations

- Total VAE SIR reports include VAC, IVAC and PVAP events
- IVAC+ events SIR reports include IVAC and PVAP events
- There are no separate SIRs for any of the 3 specific VAE events

FAQ#2: Number of predicted VAEs and device days

FAQ:

*Why is the number of predicted **Total VAEs** higher in **2022Q2** when compared to **2022Q4** given that there were **more device days in 2022Q4** than in **2022Q2**?*

vaeCategory=Total VAE orgid=10018 medType=''

orgid	ccn	summaryYQ	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pctl	vaeCategory
10018	66666	2022Q2	1	0.118	64	.	.	.	.	Total VAE
10018	66666	2022Q3	1	0.484	214	.	.	.	.	Total VAE
10018	66666	2022Q4	1	0.092	72	.	.	.	.	Total VAE

Risk Factors in the Total VAE and IVAC+ Models based on the 2015 rebaseline: Acute Care Hospitals (ACHs)

Risk Factors	Total VAE	IVAC+
CDC Location	X	X
Facility Type	X	
Medical School Affiliation	X	X
Facility Bed Size	X	X

Parameters and parameter estimates for Total VAE in ACHs

Parameter	Parameter Estimate
<i>Intercept</i>	-6.8748
CDC Location: Adult Critical Care Units, Oncology Critical Care Units	0.5009
CDC Location: <i>Surgical Cardiothoracic Critical Care</i>	0.9418
CDC Location: <i>Medical-Surgical Critical Care</i>	1.0161
CDC Location: Burn/Medical Cardiac/Medical/Neurologic/Neurosurgical/Surgical Critical Care Units	1.1140
CDC Location: Adult Mixed Acuity Unit	1.3225
CDC Location: Trauma Critical Care Unit	1.4320
CDC Location: Adult Step-down Unit, Oncology Step-down Unit	0.4096
CDC Location: All other wards, Solid Organ Transplant Specialty Care Area	REFERENT

Parameters and parameter estimates for Total VAE in ACHs

Parameter	Parameter Estimate
<i>Intercept</i>	-6.8748
* Medical School Affiliation: Major	0.2905
* Medical School Affiliation: Graduate/Undergraduate	0.1395
* Medical School Affiliation: Non-teaching	REFERENT
* Facility bed size: 85-129 beds	0.1591
* Facility bed size: 130-425 beds	0.2513
* Facility bed size: 426-526 beds	0.5123
* Facility bed size: ≥ 527 beds	0.6471
* Facility bed size: ≤ 84 beds	REFERENT

* *Medical School Affiliation and Facility bed size were taken from the Annual ACH survey*

Parameters and parameter estimates for Total VAE in ACHs

Parameter	Parameter Estimate
<i>Intercept</i>	<i>-6.8748</i>
Facility Type: Acute Care Hospital, Veterans' Affairs Hospital	0.2154
Facility Type: Military, Psychiatry, Oncology, Orthopedic, Surgical, Women's, Women's and Children's Hospital	REFERENT

Using a Negative Binomial Regression Model for calculation of Number of Predicted Total VAE and IVAC+ infections

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

Number of predicted VAEs = $\text{Exp}[\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i]$ x Number of device days

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

Number of predicted VAEs and device days

Solution:

This is attributed to the *differences in the parameter estimates* for the locations within the facility used in the *Total VAE SIR* model for calculation of number of predicted infections.

vaeCategory=Total vae orgid=10018 medType=''

orgid	ccn	summaryYQ	infCount	numPred	numventdays	SIR	SIR_pval	SIR95CI	SIR_pctl	vaeCategory
10018	66666	2022Q2	1	0.118	64	.	.		.	Total VAE
10018	66666	2022Q3	1	0.484	214	.	.		.	Total VAE
10018	66666	2022Q4	1	0.092	72	.	.		.	Total VAE

← Medical Cardiac Critical Care
= 1.114

← Adult step-down unit
= 0.4096

Summary of FAQ#2: Number of predicted VAEs and device days

- Parameter estimates for risk factors in the respective SIR models for VAE events drive the number of predicted calculation.
- Number of device days is NOT directly proportional to the number of predicted infections when comparing 2 or more locations.

Number of predicted VAEs = $\text{Exp}[\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i]$ x Number of device days

FAQ#3: Data Quality - Entry of incorrect device days

Scenario:

- Summary data month: March 2022
- Number of ventilator days: 1
- PedVAE reported: Yes

Location Code *: WNICU - NICU
Month *: March
Year *: 2022

Birth Weights								
Birth Weight	Patient Days *	CL Days *	No CLABSI	Vent Days *	No PedVAE	No PedVAP	EMV	UrC Days
<=750	31	9	<input checked="" type="checkbox"/>	17	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
751-1000	124	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>		
1001-1500	91	8	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1501-2500	184	8	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	
>2500	67	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	

Data Quality: Entry of incorrect device days

Solution:

- Summary data month: March 2022
- ~~Number of ventilator days: 1~~
- Number of ventilator days: ≥ 3
- PedVAE reported: Yes

Location Code *: WNICU - NICU
Month *: March
Year *: 2022

Birth Weights								
Birth Weight	Patient Days *	CL Days *	No CLABSI	Vent Days *	No PedVAE	No PedVAP	EMV	UrC Days
<=750	31	9	<input checked="" type="checkbox"/>	17	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
751-1000	124	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>		
1001-1500	91	8	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1501-2500	184	8	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	
>2500	67	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	

Note: An *incorrect summary data* will lead to an *incorrect measure calculation*, in this case it would lead to an *incorrect PedVAE rates calculation*. Therefore, it is important to correct this DQ issue.

Resolution of incorrect device days entries

- Log on into NHSN
- Go to the summary data for the stated location → summary month/summary year → click 'Edit' and correct the Vent Days field
- Save the summary data and exit the page
- Generate the datasets after all changes are made
- Confirm the changes made by rechecking the summary data.

Location Code *: WNICU - NICU

Month *: March

Year *: 2022

Birth Weights								
Birth Weight	Patient Days	CL Days	No CLABSI	Vent Days	No PedVAE	No PedVAP	EMV	UrC Days
<=750	31	9	<input type="checkbox"/>	17	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
751-1000	124	0	<input checked="" type="checkbox"/>	10	<input type="checkbox"/>	<input type="checkbox"/>		
1001-1500	91	8	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1501-2500	184	8	<input type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	
>2500	67	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	

Summary of FAQ#3: Data Quality - Entry of incorrect device days

- Conduct routine **Data Quality checks** – **monthly** which in turn will improve the accuracy of data submitted to NHSN.

CLABSI and CAUTI FAQs

Prachi Patel

What qualifies as CLABSI events?

- For CLABSI surveillance, all LCBI and MBI-LCBI that are identified as central-line associated must be included.
- Exclusions from CLABSI numerator:
 - Mucosal Barrier Injury Laboratory-Confirmed Bloodstream Infections (MBI-LCBI)
 - Extracorporeal life support (ECLS or ECMO)
 - Ventricular Assist Device (VAD)
 - Patient Injection
 - Epidermolysis bullosa (EB)
 - Munchausen Syndrome by Proxy (MSBP)
 - Pus at the vascular access site

How to identify an excluded CLABSI?

- Line Listing – BSI Events Excluded from the CLABSI Numerator
 - Allows you to view a facility’s BSI events that will be excluded from the Central line-associated bloodstream infection DA module SIR, rate tables, and CMS CLABSI SIR reports.
 - Variable “clab_exclude” – identifies those events that will be excluded from CLABSI numerator or event count.

FAQ #4 CLABSI

- Hospital A is verifying their 2022Q3 CLABSI data. The infection preventionist identifies that there are some events missing from the CLABSI SIR reports. What can be the issue?

National Healthcare Safety Network
SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline) - By OrgID
As of: February 16, 2023 at 11:41 AM
Date Range: BS2 CLAB RATESALL summaryYQ 2022Q1 to 2022Q3

orgID=10000 medType=M

orgID	ccn	summaryYQ	infCount	numPred	numclays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	00000	2022Q1	3	1.150	1022	2.609	0.1394	0.664, 7.101	95
10000	00000	2022Q2	2	1.371	445	1.458	0.5579	0.245, 4.818	81
10000	00000	2022Q3	0	1.701	1248	0.000	0.1824	, 1.761	10

FAQ #4 CLABSI: Investigation of 2022 Q3 CLABSI Data

- Generate Datasets
- Run the BSI Events Excluded from the CLABSI Numerator line list

National Healthcare Safety Network Line Listing for BSI Events Excluded from the CLABSI Numerator

As of: February 16, 2023 at 12:02 PM
Date Range: CLAB_EVENTS evtDateYQ 2022Q1 to 2022Q3
if (((clab_exclude = "Y"))

orgID	patID	eventDate	eventType	spcEvent	location	ecmo	vad	mbi_lcbi	msbp	eb	siteBldMatch	matchSite	clab_exclude
10000	06050125	07/04/2022	BSI	LCBI	12 WEST3	N	N	Y	N	N	N		Y
10000	987	08/20/2022	BSI	LCBI	12 WEST3	N	N	Y	N	N	N		Y
10000	CM0201-PROD-C	09/29/2022	BSI	LCBI	CARDCRIT	Y	N	N	N	N	N		Y

FAQ #4 CLABSI: Results

- Hospital A is verifying their 2022Q3 CLABSI data. The infection preventionist identifies that there are some events missing from the CLABSI SIR reports. What can be the issue?
 - After running BSI Events Excluded...line list, there are three events for 2022 Q3 that are being excluded.
 - All three meet different exclusion criteria that will prevent them from being included in the CLABSI SIR event count.

FAQ #5 CLABSI

- Hospital X is verifying their 2022Q4 CLABSI data. The data analyst identifies there are some units that are missing from the CMS CLABSI SIR reports. What can be the issue?

National Healthcare Safety Network

SIR for CLAB Data for Hospital IQR (2015 Baseline) - By OrgID

As of: February 16, 2023 at 12:40 PM

Date Range: All BS2 CLAB RATES CMS

if (((bsiPlan = "Y") AND (locationType IN ("CC", "CC N", "CC ONC")) OR ((bsiPlan = "Y") AND (locCDC IN ("IN:ACUTE:WARD:M", "IN:ACUTE:WARD:MS", "IN:ACUTE:WARD:S", "IN:ACUTE:WARD:M PED", "IN:ACUTE:WARD:MS PED", "IN:ACUTE:WARD:S PED")))

orgID=10000 medType=M

orgID	ccn	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci
10000	XXXXX	2022Q4	0	1.987	1761	0.000	0.1371	, 1.508

National Healthcare Safety Network

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

As of: February 16, 2023 at 12:41 PM

Date Range: All BS2 CLAB RATESALL

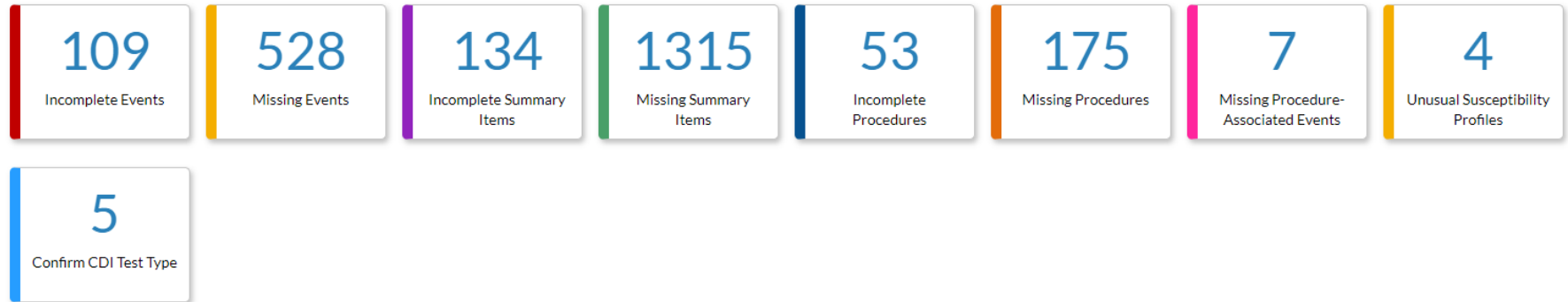
orgID=10000 medType=M

orgID	ccn	summaryYQ	infCount	numPred	numcldays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	XXXXX	2022Q4	1	2.158	1854	0.463	0.4804	0.023, 2.285	27

FAQ #5 CLABSI: Investigation of 2022Q4 data

- Any outstanding alerts?
 - Facilities must appropriately Report No Events for those locations and months for which no events of each type under surveillance were identified.
 - If unresolved, those units/months will be excluded from the SIR reports.

ALERTS



Differences between DA Reports and CMS Report

▪ **Device Associated Reports**

- CLABSI and CAUTI
 - Includes data regardless of whether the location(s) is in-plan or not
 - All locations included as listed in the 2015 SIR models

▪ **CMS Reports**

- CLABSI and CAUTI
 - In-plan data only
 - Will include only certain locations as defined by the CMS reporting requirements

Investigation of 2022Q4 data

- Are all units in the monthly reporting plan?

Mandatory fields marked with *

Facility ID *: DHQP Memorial Hospital (ID 10000)

Month *: December

Year *: 2022

No NHSN Patient Safety Modules Followed this Month

Device-Associated Module

Locations	CLABSI
CARDCRIT - CARDIO CRIT CARE	<input checked="" type="checkbox"/>
1 - 11	<input checked="" type="checkbox"/>
NICU III - NICU LEVEL 3	<input checked="" type="checkbox"/>
NICU2/3 - NICU II/III	<input checked="" type="checkbox"/>
NICU4 - NICU IV	<input checked="" type="checkbox"/>
20 - 22	<input type="checkbox"/>

Mandatory fields marked with *

Facility ID *: DHQP Memorial Hospital (ID 10000)

Month *: November

Year *: 2022

No NHSN Patient Safety Modules Followed this Month

Device-Associated Module

Locations	CLABSI
1 - 11	<input checked="" type="checkbox"/>
NICU III - NICU LEVEL 3	<input checked="" type="checkbox"/>
NICU2/3 - NICU II/III	<input checked="" type="checkbox"/>
NICU4 - NICU IV	<input checked="" type="checkbox"/>
CARDCRIT - CARDIO CRIT CARE	<input checked="" type="checkbox"/>

NHSN Home

- Alerts
- Dashboard
- Reporting Plan
- Patient
- Event
- Procedure
- Summary Data
- COVID-19
- Import/Export
- Surveys
- Analysis
- Users

View Monthly Reporting Plan

Mandatory fields marked with *

Facility ID *: DHQP Memorial Hospital (ID 10000)

Month *: November

Year *: 2022

No NHSN Patient Safety Modules Followed this Month

Device-Associated Module

Locations	CLABSI
1 - 11	<input checked="" type="checkbox"/>
NICU III - NICU LEVEL 3	<input checked="" type="checkbox"/>
NICU2/3 - NICU II/III	<input checked="" type="checkbox"/>
NICU4 - NICU IV	<input checked="" type="checkbox"/>
CARDCRIT - CARDIO CRIT CARE	<input checked="" type="checkbox"/>

FAQ #5 CLABSI: Verification of Location Mapping

- NHSN requires facilities map each patient care area in their facility to one or more locations as defined by NHSN in order to report surveillance data collected from these areas.
- Below are some resources for location mapping and some FAQs regarding locations
 - https://www.cdc.gov/nhsn/pdfs/pscmanual/15locationsdescriptions_current.pdf
 - <https://www.cdc.gov/nhsn/faqs/faq-locations.html>

FAQ #5 CLABSI: Verification of Location Mapping

Mandatory fields to Add or Edit a record marked with *

Your Code *:

Your Label *:

CDC Location Description *:

Status *:

Bed Size: A bed size greater than zero is required for most inpatient locations.

Location Table

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	Status	Your Code	Your Label	CDC Description	CDC Code	NHSN HL7 Code	Bed Size
<input type="checkbox"/>	Active	NICU	NICU	Neonatal Critical Care(Level II/III)	IN:ACUTE:CC_STEP:NURS	1039-7	30
<input type="checkbox"/>	Active	CARDCRIT	CARDIO CRIT CARE	Medical Cardiac Critical Care	IN:ACUTE:CC:C	1028-0	40
<input type="checkbox"/>	Active	1	11	Burn Ward	IN:ACUTE:WARD:B	1026-4	1

Facility | Customize Forms | Facility Info | Add/Edit Component | **Locations** | Surgeons | Direct Enroll

FAQ #5 CLABSI: Outcome of the Data Verification

- 3 units are included in the monthly reporting plan and are mapped as:
 - NICU
 - Medical Cardiac Critical Care Unit
 - Burn Ward
- All of the units are in plan for 2022Q4.
- No outstanding alerts.
- Datasets were generated before running the reports.

FAQ #5 CLABSI: Results

- According to the CMS reporting requirements, there are certain units that are included in the data sent to CMS
- Only those units will be included in the CMS reports in NHSN
- CMS Reporting Requirements
 - <https://www.cdc.gov/nhsn/pdfs/cms/cms-reporting-requirements.pdf>

FAQ #5 CLABSI: Results

- CMS reportable units for CLABSI reporting:

HAI Event	CDC Location Codes		
CLABSI	<input type="checkbox"/> IN:ACUTE:CC:B	<input type="checkbox"/> IN:ACUTE:CC:R	<input type="checkbox"/> IN:ACUTE:CC:ONC_M
	<input type="checkbox"/> IN:ACUTE:CC:B_PED	<input type="checkbox"/> IN:ACUTE:CC:R_PED	<input type="checkbox"/> IN:ACUTE:CC:ONC_MS
	<input type="checkbox"/> IN:ACUTE:CC:C	<input type="checkbox"/> IN:ACUTE:CC:S	<input type="checkbox"/> IN:ACUTE:CC:ONC_PED
	<input type="checkbox"/> IN:ACUTE:CC:CT	<input type="checkbox"/> IN:ACUTE:CC:S_PED	<input type="checkbox"/> IN:ACUTE:CC:ONC_S
	<input type="checkbox"/> IN:ACUTE:CC:CT_PED	<input type="checkbox"/> IN:ACUTE:CC:T	<input type="checkbox"/> IN:ACUTE:CC:NURS
	<input type="checkbox"/> IN:ACUTE:CC:M	<input type="checkbox"/> IN:ACUTE:CC:T_PED	<input type="checkbox"/> IN:ACUTE:CC:NURS_IV
	<input type="checkbox"/> IN:ACUTE:CC:MS	<input type="checkbox"/> IN:ACUTE:CC_STEP:NURS	
	<input type="checkbox"/> IN:ACUTE:CC:M_PED	<input type="checkbox"/> IN:ACUTE:WARD:M	
	<input type="checkbox"/> IN:ACUTE:CC:MS_PED	<input type="checkbox"/> IN:ACUTE:WARD:MS	
	<input type="checkbox"/> IN:ACUTE:CC:N	<input type="checkbox"/> IN:ACUTE:WARD:MS_PED	
	<input type="checkbox"/> IN:ACUTE:CC:NS	<input type="checkbox"/> IN:ACUTE:WARD:M_PED	
	<input type="checkbox"/> IN:ACUTE:CC:NS_PED	<input type="checkbox"/> IN:ACUTE:WARD:S	
	<input type="checkbox"/> IN:ACUTE:CC:PNATL	<input type="checkbox"/> IN:ACUTE:WARD:S_PED	

<https://www.cdc.gov/nhsn/pdfs/cms/Location-Mapping-Checklist.pdf>

FAQ #5 CLABSI: Results

- CMS reportable units for CAUTI reporting:

CAUTI	<input type="checkbox"/> IN:ACUTE:CC:B	<input type="checkbox"/> IN:ACUTE:CC:NS	<input type="checkbox"/> IN:ACUTE:WARD:M
	<input type="checkbox"/> IN:ACUTE:CC:B_PED	<input type="checkbox"/> IN:ACUTE:CC:NS_PED	<input type="checkbox"/> IN:ACUTE:WARD:MS
	<input type="checkbox"/> IN:ACUTE:CC:C	<input type="checkbox"/> IN:ACUTE:CC:PNATL	<input type="checkbox"/> IN:ACUTE:WARD:MS_PED
	<input type="checkbox"/> IN:ACUTE:CC:CT	<input type="checkbox"/> IN:ACUTE:CC:R	<input type="checkbox"/> IN:ACUTE:WARD:M_PED
	<input type="checkbox"/> IN:ACUTE:CC:CT_PED	<input type="checkbox"/> IN:ACUTE:CC:R_PED	<input type="checkbox"/> IN:ACUTE:WARD:S
	<input type="checkbox"/> IN:ACUTE:CC:M	<input type="checkbox"/> IN:ACUTE:CC:S	<input type="checkbox"/> IN:ACUTE:WARD:S_PED
	<input type="checkbox"/> IN:ACUTE:CC:MS	<input type="checkbox"/> IN:ACUTE:CC:S_PED	<input type="checkbox"/> IN:ACUTE:CC:ONC_M
	<input type="checkbox"/> IN:ACUTE:CC:M_PED	<input type="checkbox"/> IN:ACUTE:CC:T	<input type="checkbox"/> IN:ACUTE:CC:ONC_MS
	<input type="checkbox"/> IN:ACUTE:CC:MS_PED	<input type="checkbox"/> IN:ACUTE:CC:T_PED	<input type="checkbox"/> IN:ACUTE:CC:ONC_PED
	<input type="checkbox"/> IN:ACUTE:CC:N	<input type="checkbox"/> IN:ACUTE:CC_STEP:NURS	<input type="checkbox"/> IN:ACUTE:CC:ONC_S

FAQ #5 CLABSI: Results

- Burn wards are not included in the data sent to CMS
- Difference between the two different reports are due to the DA reports including the Burn ward data and the CMS reports excluding that unit.
- Recommended to save your SIR reports and Annual Survey line list in case of changes in the future.

FAQ #6 CAUTI

- In Hospital Z, an IP noticed that there was a drastic change in the number predicted and SIR in their CAUTI 2022 Q3 data from when the reports were run previously. What could be the cause?

Older Report ran
in November

SIR for Catheter-Associated UTI Data for Acute Care Hospitals (2015 baseline) - By OrgID

Date Range: BS2 CAU RATESICU SCA summaryYH After and Including 2021H1

orgID=10000 medType=M

orgID	ccn	summaryYQ	infCount	numPred	numucathdays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	00000	2022Q3	7	2.446	1562	2.862	0.0165	1.252, 5.661	99

New Report ran
in February

National Healthcare Safety Network

SIR for Catheter-Associated UTI Data for Acute Care Hospitals (2015 baseline) - By OrgID

Date Range: BS2 CAU RATESICU SCA summaryYH After and Including 2021H1

orgID=10000 medType=G

orgID	ccn	summaryYQ	infCount	numPred	numucathdays	SIR	SIR_pval	sir95ci	SIR_pctl
10000	00000	2022Q3	7	1.918	1562	3.649	0.0045	1.596, 7.219	100

FAQ #6 CAUTI: Further investigation offers more information

- No data was added or removed between the time the reports were ran (no alerts).
- No changes to the locations between the time the reports were run.
- Monthly reporting plans were not changed.
- Annual Survey was updated in January.
- Datasets were generated.

Survey changes? Can that really impact your data?

- At the beginning of each survey year, a new facility survey(s) must be completed to reflect data from the prior calendar year. For example, at the beginning of 2022, an acute care hospital completes a 2021 Annual Hospital Survey containing data from 2021.
- Survey year and surveillance year possible difference
 - To calculate SIR for current reporting year (for example, 2022) – SIR will use survey year for most recent completed calendar year (for example, 2021)
 - Once a new survey is entered, the data will be updated also

Survey changes? Can that really impact your data?

- To confirm annual survey is the cause:
 - Review SIR Guide for HAI of interest to observe HAI SIR risk factors.
 - Review survey variables of interest using survey line list and include completed date (completed date) to see when survey was submitted.
 - Confirm change in risk adjustment parameter estimate.

FAQ #6 CAUTI: Annual Survey Parameter Estimates for CAUTI ACH Model

Parameter	Parameter Estimate
Intercept	-10.2667
Medical School Affiliation– Major	0.3744
Medical School Affiliation– Graduate	0.1313
Medical School Affiliation– Undergraduate/Non-teaching	Referent
Facility Bed Size \geq 215 beds	0.4901
Facility Bed Size - 87-214 beds	0.2871
Facility Bed Size - \leq 86 beds	Referent

FAQ #6 CAUTI: Review Annual Survey Changes

National Healthcare Safety Network Line Listing - Hospital Survey (2021 and later)

As of: February 27, 2023 at 9:47 AM
Date Range: All HOSPSURVEYV7ALL
if (((completedFlag = "Y")))

orgID	surveyYear	name	facOwnerDesc	medAff	medTypeDesc	numBeds	numICUBeds	completeddate
10000	2021	DHQP MEMORIAL HOSPITAL	P - For Profit	Y	M - Major	300	50	01/03/2022
10000	2022	DHQP MEMORIAL HOSPITAL	P - For Profit	Y	G - Graduate	300	50	01/21/2023

FAQ #6 CAUTI: Annual Survey Parameter Estimates for CAUTI ACH Model

Parameter	Parameter Estimate
Intercept	-10.2667
Medical School Affiliation– Major	0.3744
Medical School Affiliation– Graduate	0.1313
Medical School Affiliation– Undergraduate/Non-teaching	Referent
Facility Bed Size \geq 215 beds	0.4901
Facility Bed Size - 87-214 beds	0.2871
Facility Bed Size - \leq 86 beds	Referent

FAQ #6 CAUTI: Results

- Change was identified in the medical school affiliation.
- The change from Major teaching facility to Graduate, cause for the decrease in the number predicted.
- This will cause an increase in the SIR.

Situations that can impact your data

- Entry or deletion of data.
- Changes to number of device days, patient days, or admissions.
- Removal or addition of monthly reporting plans.
- Changes to relevant factors in the annual survey.
- Changes to location mapping.
- Resolution of the “Report No Events” alerts or other alerts.

Analysis Resources

- Analysis Training Resources: <https://www.cdc.gov/nhsn/training/analysis/index.html>
- SIR Guide: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>
- Analysis Resources: <https://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html>
- VAE and PedVAE Analysis: [*Ventilator-Associated Event \(VAE\) and PedVAE Analysis \(cdc.gov\)*](#)
- BSI Events Excluded Line List: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/bsi-excluded-linelist-508.pdf>
- CMS Resources: <https://www.cdc.gov/nhsn/cms/ach.html>
- Data Quality Website: <https://www.cdc.gov/nhsn/ps-analysis-resources/data-quality/index.html>
- Annual Survey Resources: <https://www.cdc.gov/nhsn/psc/locations.html>

Analysis Resources

- NHSN Data Quality Resources
 - [Data Quality | NHSN | CDC](#)
 - Semi-annual Data Quality Webinars
 - Reach us at nhsn@cdc.gov, Subject: Data Quality

**For any questions or concerns,
contact the NHSN Helpdesk at nhsn@cdc.gov**

For more information please contact Centers for Disease Control and Prevention

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Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: 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.

