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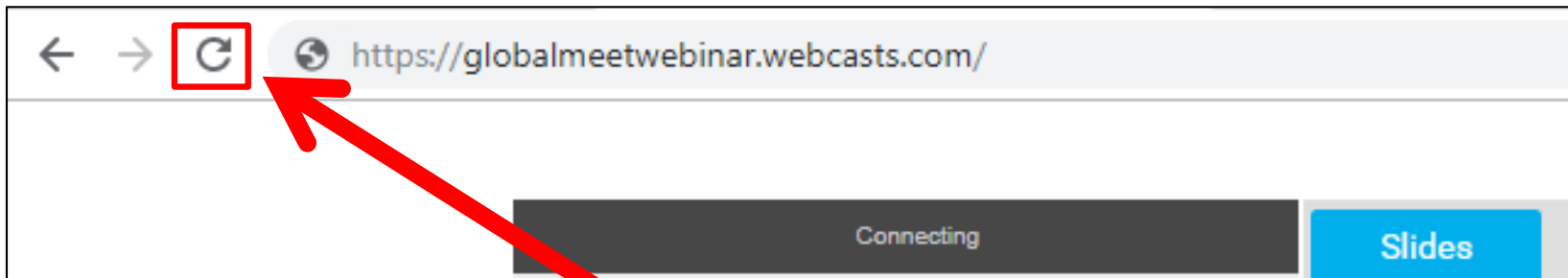
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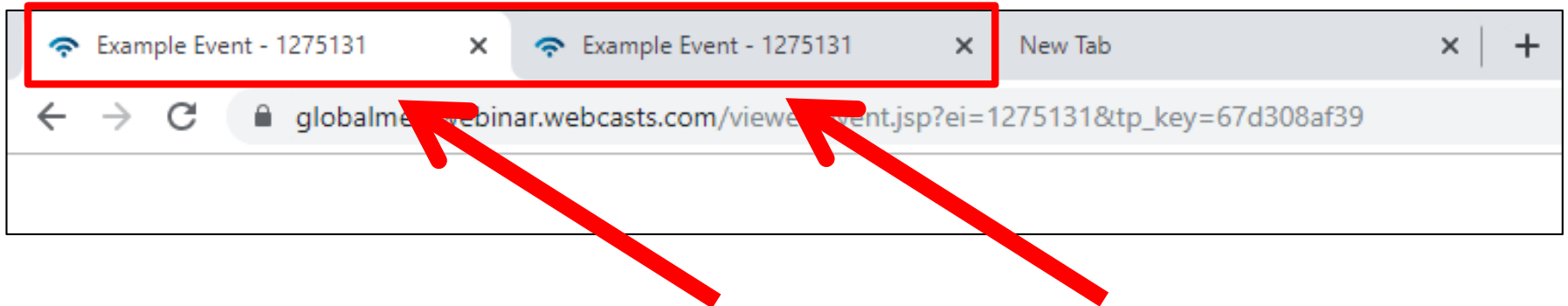
F5 Key
Top Row of Keyboard



Refresh

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- Hear a bad echo on the call?
- Echo is caused by multiple browsers/tabs open to a single event (multiple audio feeds).
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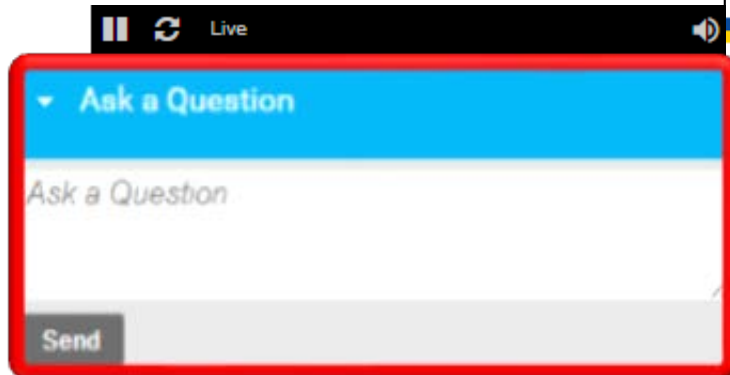
Example of Two Browsers/Tabs Open in Same Event

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Inpatient Value, Incentives, and Quality Reporting (VIQR) Outreach and Education Support Contractor



Today's Presentation



**National Healthcare Safety Network (NHSN)
Central Line-associated Blood Stream
Infection (CLABSI) and Catheter-associated
Urinary Tract Infection (CAUTI) Updates for
the PCHQR Program**

December 10, 2020

Speakers

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Lead, National Healthcare Safety Network (NHSN)
Methods and Analytics Team
Centers for Disease Control and Prevention (CDC)

Prachi Patel, MPH

Scientific Data Analyst, CDC

Moderator

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(VIQR) Outreach and Education Support Contractor

Webinar Chat Questions

Please submit any questions that are pertinent to the webinar topic via the Chat tool. As time permits, we will answer these questions at the end of the webinar. Pertinent questions not answered will be addressed in a questions-and-answers document, to be published at a later date.

Note: As a reminder, we do not use the raised-hand feature in the Chat tool during webinars.

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We will respond to questions as soon as possible.

Acronyms

ACH	acute care hospital	HAI	healthcare-associated infection
BSI	bloodstream infection	IPPS	Inpatient Prospective Payment System
CAUTI	catheter-associated urinary tract infection	LTCH	Long-Term Care Hospital
CCN	CMS Certification Number	NHSN	National Healthcare Safety Network
CDC	Centers for Disease Control and Prevention	PCH	PPS-Exempt Cancer Hospital
CLABSI	central line-associated bloodstream infection	PCHQR	PPS-Exempt Cancer Hospital Quality Reporting Program
CMS	Centers for Medicare & Medicaid	PPS	Prospective Payment System
CY	calendar year	SIR	Standardized Infection Ratio
FY	fiscal year		

Purpose

This presentation will provide updates regarding NHSN central line-associated blood stream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) in the PCHQR Program.

Objectives

Participants will be able to:

- Understand the purpose and approach for measure re-baselining.
- Understand factors used in Standardized Infection Ratio (SIR) calculations.
- Summarize the CDC risk-adjustment methods and re-baseline analysis of CLABSI and CAUTI data.
- Interpret the PCHQR Program CLABSI and CAUTI SIRs.
- Produce CLABSI and CAUTI SIRs within the NHSN application.

PCHQR Program Recap: CAUTI and CLABSI Measures

- Measures were adopted in the Fiscal Year (FY) 2013 Inpatient Prospective Payment System (IPPS)/ Long-Term Care Hospital Prospective Payment System (LTCH PPS) Final Rule (77 FR 53556–53559).
- Refined versions of CAUTI and CLABSI were finalized for inclusion in the PCHQR Program in the FY 2021 IPPS/LTCH PPS Final Rule (85 FR 58960–58963)
 - Data collection of refined measures to begin CY 2021, effective for FY 2023 Program Year.
 - Public reporting begins Fall 2022.

Maggie Dudeck, MPH
NHSN CAUTI and CLABSI Updates for the PCHQR Program

CDC Background on CAUTI and CLABSI Measures

CDC Re-baseline: A Brief History

- Re-baseline: CDC's term for the process of determining a new baseline year, as well as the assessment and employment of new risk models, for the calculation of NHSN SIRs
 - SIR: risk-adjusted measure that allows for scalability; requires a baseline from which progress can be measured
- CDC's most recent re-baseline concluded in 2016
 - Resulted in nearly 200 new healthcare-associated infection (HAI) models using 2015 data, for SIRs generated in 2015 and forward

NHSN Risk-Adjustment

- Risk-adjustment was performed at the national level, using data from all facilities reporting to NHSN.
- Not all data elements were found to be statistically significant.
- Significant factors differ with each HAI and/or setting.

Cancer Hospitals in NHSN

- Of >3,600 acute care hospitals (ACHs) in NHSN, 17 are enrolled as cancer hospitals.
 - Eleven (11) are considered PPS-Exempt Cancer Hospitals (PCHs).
- All inpatient units, reported by cancer hospitals, are oncology units.
- All cancer hospitals are included in the NHSN ACH risk models.

NHSN Risk Adjustment for Cancer Hospitals

- NHSN enrollment as a cancer hospital was assessed as a potential risk factor.
 - Was designation of cancer hospital a significant predictor of HAI outcome?
- CDC results produced a consistent finding: Designation as a cancer hospital was not a significant predictor of device-associated HAIs.
 - Same result emerged when limited to PCH subset.

NHSN Risk Adjustment for Cancer Hospitals (cont'd)

- CLABSI Model:
 - All cancer hospitals are included in the reference group.
 - PCH subset contributed 1.6% of all central line days in 2015.
- CAUTI Model:
 - All cancer hospitals included with general ACHs risk group.
- In both models, oncology locations were considered significant factors.

Prachi Patel, MPH
NHSN CAUTI and CLABSI Updates for the PCHQR Program

NHSN Risk Adjustment and Reports: A Detailed Look

SIR: Standardized Infection Ratio

SIR: A summary statistic that compares the number of 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

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

SIR: Standardized Infection Ratio

- 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

Basis for Using SIRs and Not Rates

- The SIR allows users to summarize data by more than a single stratum (e.g. location or procedure category), adjusting for differences in the incidence of infection among the strata.
- 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.

Calculating the Number Predicted

General Negative Binomial Regression Model:

$\text{logit}(\hat{p}) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i$, where:

α = Intercept

β_i = Parameter Estimate

X_i = Value of Risk Factor (Categorical variables= 1 if present, 0 if not present. Refer to "Variable Coding" column in Table 1 above.)

i = Number of Predictors




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

Factors Included in the Model: ACHs

Factor	CLABSI	CAUTI
CDC Location	✓	✓
Facility Type	✓	✓
Medical School Affiliation*	✓	✓
Facility Bed size*	✓	✓

* Variables taken from the Annual Survey

Method for Calculating Number Predicted for CLABSI

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

Method for Calculating Number Predicted for CLABSI

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

Example: CLABSI

Facility Profile:

- 115 beds
- Oncology Hospital
- Graduate Teaching Facility
 - Reporting for: Medical Oncology Critical Care
- With 220 central line days for September 2020

Example: CLABSI

$$\begin{aligned}
 &= \exp(-7.6325 + \\
 &0.3257*(1) + \\
 &0.5695*(0) + \\
 &1.4269*(0) + \\
 &0.6287*(0) + \\
 &0.3766*(0) + \\
 &0.2155*(0) + \\
 &0.1797*(0) + \\
 &0.3698*(0) + \\
 &0.6876*(0) + \\
 &0.1912*(0) + \\
 &0.2627*(0) + \\
 &0.1494*(1) + \\
 &0.1429*(0)^* + \\
 &0.2571*(0)^* + \\
 &0.1160*(1)) * \mathbf{220 \text{ Central line days}} \\
 &= \mathbf{\text{predicted CLABSI for September 2020}}
 \end{aligned}$$

<u>CDC Location Code: Adult Critical Care Units, Oncology Critical Care Units</u>	
<i>Medical Cardiac Critical Care</i>	
<i>Surgical Cardiothoracic Critical Care</i>	
<i>Medical Critical Care</i>	
<i>Medical/Surgical Critical Care</i>	
<i>Neurologic Critical Care</i>	
<i>Neurosurgical Critical Care</i>	
<i>Medical Oncology Critical Care</i>	0.3257
<i>Medical/Surgical Oncology Critical Care</i>	
<i>Pediatric Oncology Critical Care</i>	
<i>Surgical Oncology Critical Care</i>	
<i>Prenatal Critical Care</i>	
<i>Respiratory Critical Care</i>	
<i>Surgical Critical Care</i>	

Example: CLABSI

= 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)) * **220 Central line days**

0.192= predicted CLABSI for September 2020

Facility bed size*: ≥ 224 beds	0.2571
Facility bed size*: 94 - 223 beds	0.1160
Facility bed size*: ≤ 93 beds	REFERENT
Medical school affiliation*: Major	0.2627
Medical school affiliation*: Graduate	0.1494
Medical school affiliation*: Undergraduate/Non-teaching	REFERENT
Facility type: (based on NHSN enrollment)	0.1429
<ul style="list-style-type: none"> Children's Military Veterans' Affairs Women's Women's and Children's 	
Facility type: (based on NHSN enrollment)	REFERENT
<ul style="list-style-type: none"> General Acute Care Oncology Orthopedic Psychiatric Surgical 	

* Facility bed size and medical school affiliation are taken from the [Annual Hospital Survey](#).

Interpretation of the SIR

<u>orgID</u>	<u>summaryYQ</u>	<u>infCount</u>	<u>numPred</u>	<u>numcldays</u>	<u>SIR</u>	<u>SIR_pval</u>	<u>sir95ci</u>
10000	2020Q1	6	1.715	2038	3.498	0.0103	1.418, 7.276
10000	2020Q2	5	1.432	2077	3.492	0.0191	1.279, 7.740

- This facility reported six central line-associated bloodstream infection (BSI) (infCount) for CC or critical care units during the first quarter of 2020. This is the observed number of CLABSIs.
- The overall SIR for this facility during this time period is 3.498, indicating that this facility observed more infections than predicted. The number of CLABSIs predicted to occur for the first half of 2020 is 1.715 and 1.432 for the second half.
- A SIR will only be calculated if the number of predicted infections is ≥ 1 .

Interpretation of the SIR p-value

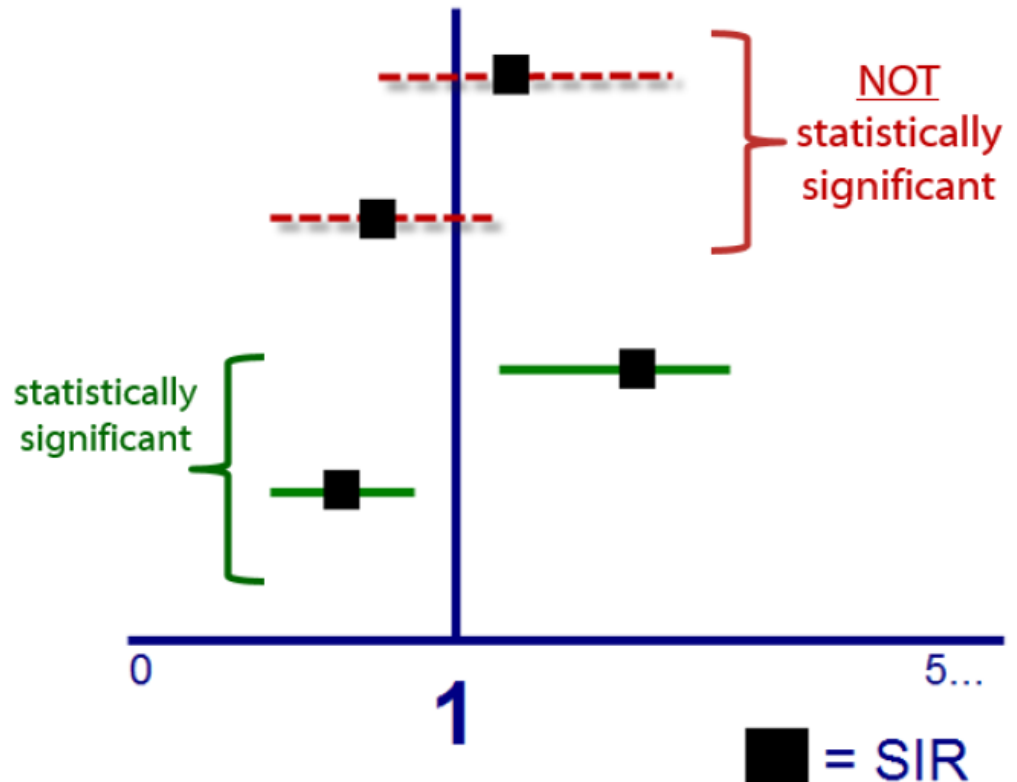
<u>orgID</u>	<u>summaryYQ</u>	<u>infCount</u>	<u>numPred</u>	<u>numcldays</u>	<u>SIR</u>	<u>SIR_pval</u>	<u>sir95ci</u>
10000	2020Q1	6	1.715	2038	3.498	0.0103	1.418, 7.276
10000	2020Q2	5	1.432	2077	3.492	0.0191	1.279, 7.740

- 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 CLABSIs is (statistically) significantly different (higher or lower) from the number predicted.
- In this example, the p-value for the 2020Q1 SIR is less than 0.05, and thus there is significant difference between the number of infections observed and the number of infections predicted.

Interpretation of SIR Confidence Interval

If the confidence interval includes the value of 1, then the SIR is not significant.

- For example, if the lower bound is ≤ 1 and the upper bound is ≥ 1 , then the SIR is not significant.



Reports in NHSN: Generating Datasets

Generate Data Sets (Patient Safety)

Reporting Data Sets

Include data for the following time period:

Beginning: 01/2017 | Ending: mm/yyyy | **Clear Time Period**

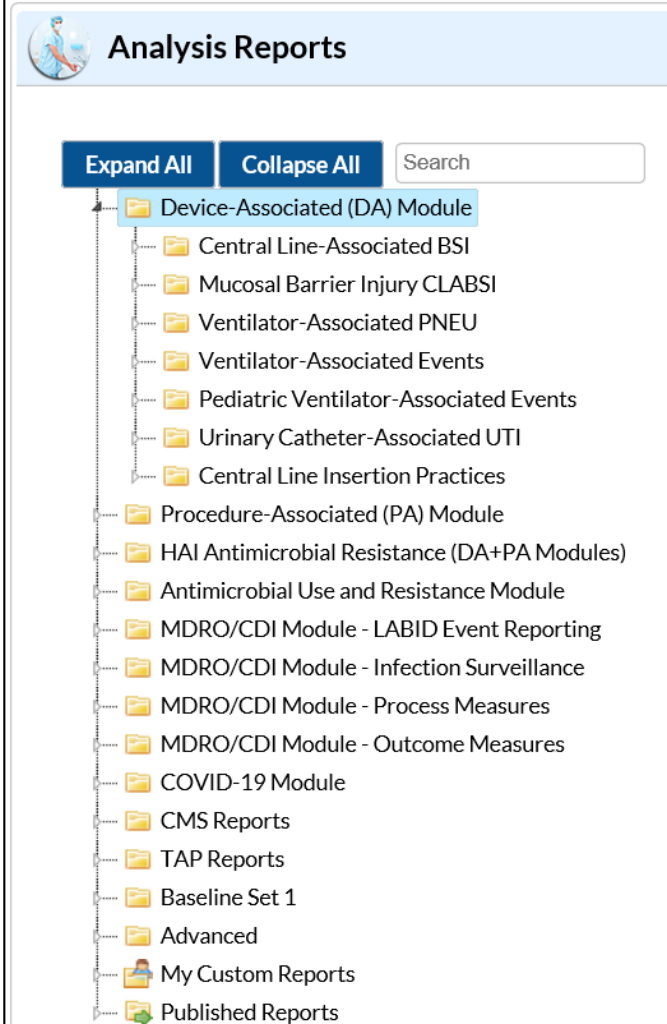
Generate Reporting Data Sets

Last Generated:
September 11, 2020 10:30 AM
to include data beginning 01/2017

- Remember: generate your datasets before running reports in NHSN.
- Only data included in the time period will be in the reports.

Reports in NHSN: Current SIR Reports

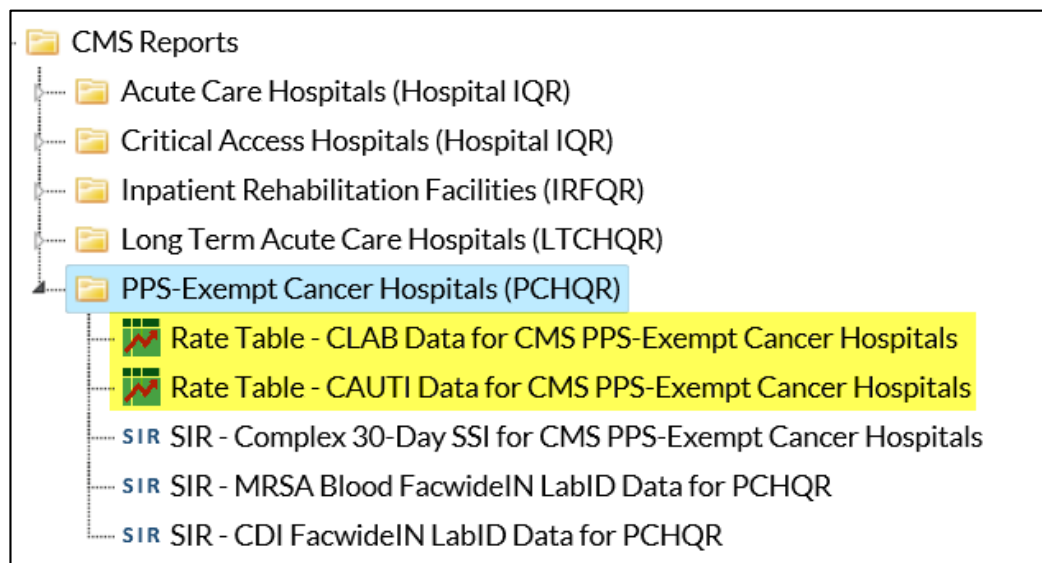
- Device-associated module reports currently have SIRs available.
- Reports will contain data for 2015 forward.



The screenshot displays the 'Analysis Reports' section of the NHSN interface. At the top, there is a search bar and two buttons: 'Expand All' and 'Collapse All'. Below these, a tree view lists various report modules. The 'Device-Associated (DA) Module' is highlighted in blue. Underneath it, several sub-modules are listed, including 'Central Line-Associated BSI', 'Mucosal Barrier Injury CLABSI', 'Ventilator-Associated PNEU', 'Ventilator-Associated Events', 'Pediatric Ventilator-Associated Events', 'Urinary Catheter-Associated UTI', and 'Central Line Insertion Practices'. Other modules listed include 'Procedure-Associated (PA) Module', 'HAI Antimicrobial Resistance (DA+PA Modules)', 'Antimicrobial Use and Resistance Module', 'MDRO/CDI Module - LABID Event Reporting', 'MDRO/CDI Module - Infection Surveillance', 'MDRO/CDI Module - Process Measures', 'MDRO/CDI Module - Outcome Measures', 'COVID-19 Module', 'CMS Reports', 'TAP Reports', 'Baseline Set 1', 'Advanced', 'My Custom Reports', and 'Published Reports'.

Reports in NHSN: New CLABSI and CAUTI CMS SIR Reports for PCHs

- New CLABSI and CAUTI SIR reports will be available in 2021.
- Reports will include data for Q1 2021 and forward.
- Data submitted to CMS will be aggregate CMS Certification Number (CCN) data.



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>

For help with any analysis outputs, email NHSN@cdc.gov

NHSN CAUTI and CLABSI Updates for the PCHQR Program

Question and Answer Session

NHSN CAUTI and CLABSI Updates for the PCHQR Program

Submitting Questions via the *QualityNet* Q&A Tool

Accessing the *QualityNet* Questions and Answers Tool

The screenshot shows the CMS.gov QualityNet website interface. At the top left is the CMS.gov logo and 'QualityNet'. A search bar contains 'Search QualityNet' and a magnifying glass icon. On the right, there are links for 'Quality Programs', 'Help', 'Log into Secure Portal', and 'Register'. The 'Help' link is highlighted with a red box. Below the navigation bar is a dropdown menu with a 'Close' button in the top right corner. The menu is organized into three columns:

- Getting Started**
 - Registration
 - Sign In Instructions
 - Security Statement & Policy
 - Password Rules
- Training & Guides**
 - QualityNet Training
 - QualityNet Secure Portal
 - Secure File Transfer
 - QualityNet Events Center
- Known Issues & Maintenance**
 - Known Issues
 - System Maintenance
- QualityNet Support**
 - QualityNet Support
- Question & Answer Tools**
 - Hospitals - Inpatient
 - Hospitals - Outpatient
 - PPS-Exempt Cancer Hospitals (highlighted with a red box)
 - Ambulatory Surgical Centers
 - ESRD Facilities
 - Inpatient Psychiatric Facilities

Ask a Question

The screenshot shows the CMS.gov Quality Question and Answer Tool interface. At the top left, the CMS.gov logo and 'QualityNet' are displayed. Navigation links include 'Quality Q&A Tool', 'Ask a Question', and 'Browse Program Articles' with a dropdown arrow. A 'How to Use this Tool' link is in the top right. The main header area is blue with the title 'Quality Question and Answer Tool' and the subtitle 'Your one-stop shop for CMS Quality Answers'. Below this is a search bar with the placeholder text 'Search for the answer to your question' and a search icon. On the right side, there is a vertical 'Site Feedback' button. The main content area features two buttons: 'Browse' with a document icon and the text 'View existing articles', and 'Ask a Question' with a question mark icon and the text 'Submit a Question to CMS'. The 'Ask a Question' button is highlighted with a red border. At the bottom, a footer note states: 'For the best experience, please use one of the following browsers: Chrome, Firefox, Safari, Microsoft Edge. Mobile devices are not currently supported.'

Submit a Question

QualityNet Question and Answer Site

Submit a Question to Our Support Team. * Indicates required field

WARNING: Individually identifiable health information in this system is subject to the Health Information Portability and Accountability Act of 1996 and the Privacy Act of 1974. Submission of questions to the QIO and Hospital Q&A System that contains Protected Health Information (PHI) is a violation of these Acts. **Questions containing PHI will be deleted from the system and not processed.** For detailed information regarding transmitting or receiving healthcare information or data read the [QualityNet System Security Policy, PDF](#)

Tell us about yourself

First Name *

Last Name *

Email Address *

Confirm Email Address *

Phone Number


What is your question?

Program *

Topic *

Subject *

Question (4000 Characters Max) *

I'm not a robot 

SUBMIT QUESTION

Continuing Education (CE) Approval

This program has been approved for [CE credit](#) for the following boards:

- **National credit**
 - Board of Registered Nursing (Provider #16578)
- **Florida-only credit**
 - Board of Clinical Social Work, Marriage & Family Therapy and Mental Health Counseling
 - Board of Registered Nursing
 - Board of Nursing Home Administrators
 - Board of Dietetics and Nutrition Practice Council
 - Board of Pharmacy

Note: To verify CE approval for any other state, license, or certification, please check with your licensing or certification board.

NHSN CAUTI and CLABSI Updates for the PCHQR Program

Closing Remarks

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