

Catheter-Associated Urinary Tract Infection Surveillance

Last updated 2019

Basics of Infection Prevention
Healthcare-Associated Infections Program
Center for Health Care Quality
California Department of Public Health



Objectives

- Review CAUTI surveillance definitions
- Discuss importance of accurate data collection
- Demonstrate how to report CAUTI data in NHSN
- Discuss NHSN data analysis and feedback to staff

Clinical vs Surveillance Definitions

Clinical criteria used by physicians for patient care and management may differ from surveillance criteria

- Clinical
 - Patient centered
 - Used for therapeutic decisions
- Surveillance
 - Population based
 - Applied exactly the same way each time

CAUTI Surveillance Definitions

UTI may or may not be associated with use of a urinary catheter (CAUTI vs. UTI)

- For CAUTI:

Catheter must be in place
>2 days (Day 1= day of insertion)

And

Catheter still present
Or
Catheter removed
day of or day prior to
when UTI criteria met

NHSN Patient Safety Module: Chapter 7

CAUTI Surveillance Definitions- 2

- NHSN infection window period
 - Seven days during which all site-specific infection criteria must be met
- Criteria for CAUTI include specific clinical symptoms and positive urine culture, and sometimes positive blood culture
- Includes the day the **first** positive diagnostic test (urine culture or blood culture for CAUTI) was obtained, 3 calendar days before and 3 calendar days after

NHSN Patient Safety Module: Chapter 7

CAUTI Infection Window Period

Acute Care Hospitals

- For CAUTI, the first diagnostic test will be either a positive urine or blood culture

Infection Window Period:	3 days before first positive diagnostic test			FIRST POSITIVE DIAGNOSTIC TEST	3 days after first positive diagnostic test		
Example:	Mar 7	Mar 8	Mar 9	Mar 10	Mar 11	Mar 12	Mar 13

CAUTI Infection Criteria- Acute Care Hospitals

Diagnostic Test for Possible CAUTI

- Positive urine or blood culture

Localized Sign or Symptom Examples for Possible CAUTI

- Suprapubic tenderness
- Costovertebral angle pain
- Urgency
- Frequency
- Dysuria
- Fever

CAUTI Cannot Re-Occur in the Same Patient Within a 14-Day Period

No new CAUTI can be reported within a 14-day repeat infection timeframe (RIT)

- The date of the CAUTI event is considered day 1
- A new CAUTI is not reported until 14 days have elapsed
- If a new pathogen is identified in the urine within the 14-day period it should be added to the CAUTI already reported
- Refer to the NHSN CAUTI protocol for more details

NHSN Patient Safety Module: Chapter 7

CAUTI Location Attribution

- Attribute CAUTI to the inpatient location where the patient was assigned on the date of infection event
- If all elements of CAUTI are present on the date of transfer or discharge, or the next day, the CAUTI is attributed to the transferring/discharging location

NHSN Patient Safety Module: Chapter 7

Symptomatic CAUTI Surveillance Definition

Symptomatic CAUTI requires the patient to have both clinical and microbiologic findings within a 7-day window period

- **Refer to written definitions frequently when performing UTI surveillance**
- Urine culture must grow no more than two species of organisms, at least one of which is bacteria of $\geq 10^5$ CFU/ml

NHSN Patient Safety Module: Chapter 7

Asymptomatic CAUTI with Bacteremia Surveillance Definition

Asymptomatic UTI with Bacteremia (ABUTI) requires the following **three** criteria within a 7-day window period:

1. Urine culture with no more than two species of organisms, at least one of which is a bacteria of $>10^5$ CFU/ml
2. Positive blood culture with at least one matching bacteria to the urine or 2 positive blood cultures with common commensal bacteria and a matching common commensal in the urine
3. No clinical signs or symptoms of CAUTI

NHSN Patient Safety Module: Chapter 7

Report Monthly CAUTI Summary Data to NHSN

NHSN Home

Alerts

Dashboard

Reporting Plan ▶

Patient ▶

Event ▶

Procedure ▶

Summary Data ▶

Import/Export

Surveys ▶

Analysis ▶

Users ▶

Facility ▶

Group ▶

Logout

Denominators for Intensive Care Unit (ICU)/Other locations (not NICU or SCA)

Mandatory fields marked with *

Facility ID *: California General Hospital (ID 15633) ▼

Location Code *: .A7W.W1 - IUC-SURG/MED1

Month *: July ▼

Year *: 2017 ▼

Add

Find Report No Events

Total Patient Days:

Central Line Days:

Urinary Catheter Days:

Ventilator Days:

APRV Days:

Episodes of Mechanical Ventilation:

Mechanical Ventilation:

CLABSI:

CAUTI:

VAE:

PedVAP:

Custom Fields [Help](#)

- Enter monthly denominator data for each patient location
 - Patient days
 - Urinary catheter days

Report CAUTI Event to NHSN

- NHSN Home
- Alerts
- Dashboard
- Reporting Plan ▶
- Patient ▶
- Event ▶
 - Add
 - Find
 - Incomplete
- Procedure ▶
- Summary Data ▶
- Import/Export
- Surveys ▶
- Analysis ▶
- Users ▶
- Facility ▶
- Group ▶
- Logout



Add Event

Mandatory fields marked with *

Fields required for record completion marked with **

Fields required when in Plan marked with >

Facility ID *: California

Patient ID *:

Secondary ID:

Last Name:

Middle Name:

Gender *:

Ethnicity:

Race: American Indian or Alaska Native

Black or African American

White

Event Information

Event Type *: UTI - Urinary Tract Infection

Post-procedure: N - No

MDRO Infection Surveillance *: No, this infection's pathogen/location are not in-plan for Infection Surveillance

Location *: 2 WEST - M/S ICU

Date Admitted to Facility >: 3

Risk Factors

Urinary Catheter *: INPLACE - Urinary catheter in place > 2 days on the date of event

Location of Device Insertion: 2 WEST - M/S ICU

Date of Device Insertion: 3

Event Details

Specific Event >: SUTI - Symptomatic UTI

Specify Criteria Used *

- Add CAUTI Events as they occur
- Collect criteria meeting definition to enter into NHSN
- NHSN has a worksheet available for data collection

Hawaiian

NHSN CAUTI Analysis Reports

The screenshot shows the NHSN CAUTI Analysis Reports interface. On the left is a sidebar menu with the following items: NHSN Home, Alerts, Dashboard, Reporting Plan, Patient, Event, Procedure, Summary Data, Import/Export, Surveys, Analysis (highlighted), Users, Facility, Group, and Logout. The main content area is titled 'Analysis Reports' and features 'Expand All' and 'Collapse All' buttons, along with a search bar. Below these are several report categories, including 'Device-Associated (DA) Module', 'Central Line-Associated BS', 'Mucosal Barrier Injury CLA', 'Ventilator-Associated PNE', 'Ventilator-Associated Ever', and 'Urinary Catheter-Associate'. Under 'Urinary Catheter-Associate', there are sub-items like 'Line Listing - All CAU E', 'Frequency Table - All C', 'Bar Chart - All CAU Eve', 'Pie Chart - All CAU Eve', 'Rate Table - CAU Data t', 'Run Chart - CAU Data t', and 'Rate Table - CAU Data t'. A dropdown menu is open for 'SIR SIR - Acute Care Hospital CAU Data', showing three options: 'Run Report' (with a play button icon), 'Modify Report' (with a gear icon), and 'Export Data Set' (with a download icon). Other visible report titles include 'SIR SIR - Long Term Acute Care Catheter Device Use' and 'SIR SIR - Inpatient Data Facilities CAU Data'.

- Generate data set prior to creating a report
- Choose report according to need
 - SIR report- Your incidence compared to expected incidence
 - TAP report – Number of events that must be reduced to reach targeted goal - which locations are priority

Reports

summaryYH	infCount	numPred	numcathdays	SIR	SIR_pval	sir95ci
2017H1	5	9.689	9541	0.516	0.1155	0.189, 1.144

Facility SIR

loccdc	summaryYH	infCount	numPred	numcathdays	SIR	SIR_pval	sir95ci
IN:ACUTE:CC:CT	2017H1	0	0.980	959	.	.	
IN:ACUTE:CC:MS	2017H1	1	2.966	2904	0.337	0.2557	0.017, 1.663
IN:ACUTE:STEP	2017H1	1	0.918	802	.	.	
IN:ACUTE:WARD:M	2017H1	0	1.390	1372	0.000	0.2492	, 2.156
IN:ACUTE:WARD:MS	2017H1	0	1.392	1526	0.000	0.2485	, 2.152
IN:ACUTE:WARD:ONC_HONC	2017H1	1	0.525	402	.	.	
IN:ACUTE:WARD:S	2017H1	2	0.714	782	.	.	
IN:ACUTE:WARD:TEL	2017H1	0	0.804	794	.	.	

SIR by Location

loccdc	summaryYH	numcathdays	numPredDDays	SUR	SUR_pval	SUR95CI
IN:ACUTE:CC:CT	2017H1	959	1,060.626	0.904	0.0016	0.848, 0.963
IN:ACUTE:CC:MS	2017H1	2904	3,276.933	0.886	0.0000	0.854, 0.919
IN:ACUTE:STEP	2017H1	802	759.748	1.056	0.1318	0.984, 1.131
IN:ACUTE:WARD:M	2017H1	1372	1,766.447	0.777	0.0000	0.736, 0.819
IN:ACUTE:WARD:MS	2017H1	1526	1,662.447	0.918	0.0007	0.873, 0.965
IN:ACUTE:WARD:ONC_HONC	2017H1	402	404.483	0.994	0.9280	0.900, 1.095
IN:ACUTE:WARD:S	2017H1	782	1,173.094	0.667	0.0000	0.621, 0.715
IN:ACUTE:WARD:TEL	2017H1	794	1,300.469	0.611	0.0000	0.569, 0.654

SUR by Location



CAUTI TAP Report

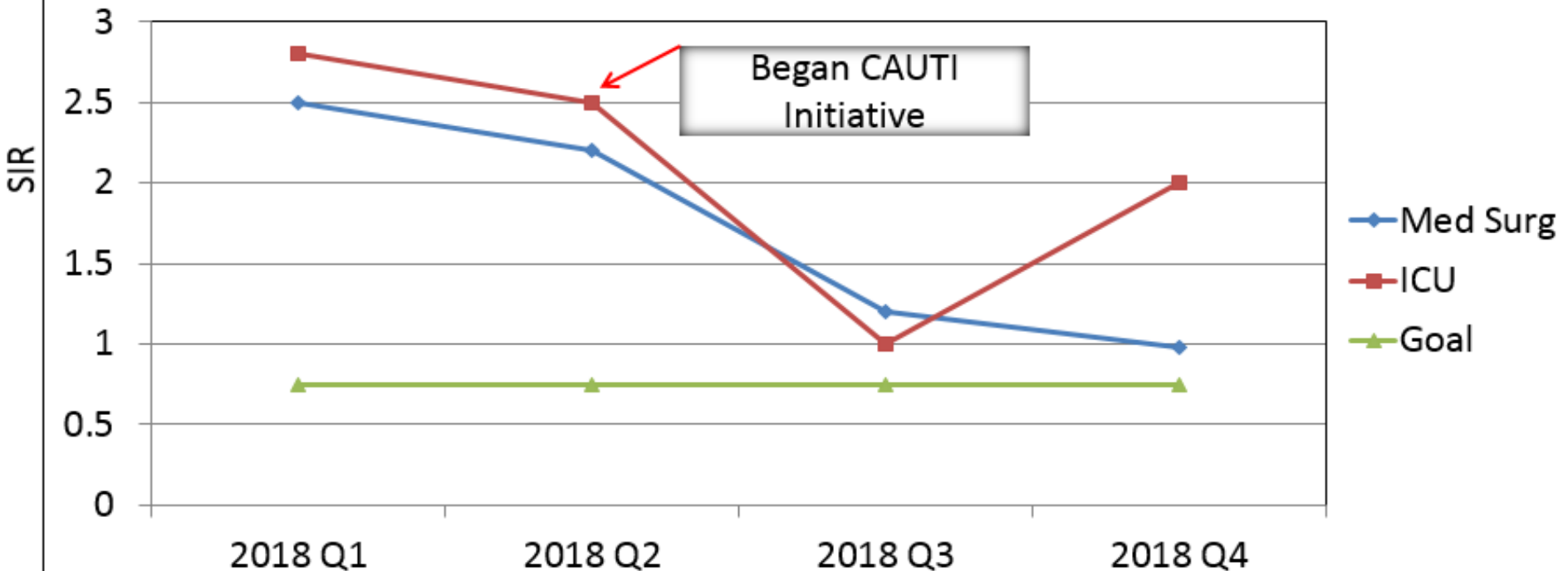
Facility CAD	LOCATION							
	Location Rank	Location	CDC Location	Events	Central Line Days	DUR %	CAD	SIR
1.96	1	6E ONC	IN:ACUTE:WARD:ONC_HONC	3	1883	62	2.00	1.50
	2	CCU	IN:ACUTE:CC:CT	2	1082	64	1.46	1.84
	3	5 MED	IN:ACUTE:WARD:M	2	3199	26	0.61	0.72
	4	ICU	IN:ACUTE:CC:MS	1	2207	42	-0.11	0.45
	5	ICCU	IN:ACUTE:STEP	0	700	24	-0.32	.
	6	CMU NEW	IN:ACUTE:WARD:TEL	0	1178	16	-0.51	0.00
	7	6S 6W	IN:ACUTE:WARD:S	0	1245	24	-0.54	0.00
	8	4 M/S	IN:ACUTE:WARD:MS	0	1434	15	-0.62	0.00

- Prioritize locations with highest cumulative attributable difference (CAD) – the number of infections we would have needed to prevent to reach goal

Track Progress Over Time

- Feedback results to your staff and leadership
- Changes in CAUTI incidence should be visible over time
- In the example, we can see ICU needed additional interventions

**Sample: California General Hospital
2018 CAUTI Progress**



CAUTI Surveillance Summary

- Consistent use of standard surveillance methods and CAUTI definitions are essential for accurate case finding
- Capturing complete and accurate data is necessary for precise CAUTI SIR calculation
- Perform surveillance and feedback CAUTI SIR with adherence monitoring results to all units and leadership

References and Resources

- Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA, and HICPAC. [Guideline for Prevention of Catheter-associated Urinary Tract Infections 2009](http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf) (<http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf>)
- IHI Program to Prevent CAUTI
<http://www.ihl.org/topics/CAUTI/Pages/default.aspx>
- APIC Preventing CAUTI: A patient-centered approach ,2012
[http://apic.org/Resource /TinyMceFileManager/epublications/CAUTI feature PS fall 12.pdf](http://apic.org/Resource/TinyMceFileManager/epublications/CAUTI_feature_PS_fall_12.pdf)
- IDSA Guidelines , *Clin Infect Dis* 50:625-63, 2010
- SHEA/IDSA Compendium, *ICHE*, 35:464-479, 2014
- National Quality Forum (NQF) Safe Practices for Better Healthcare,2010

Questions?

For more information,
please contact any
HAI Liaison IP Team member

Or email

HAIProgram@cdph.ca.gov