

Catheter-Associated Urinary Tract Infection Surveillance

Last updated 2017

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
 - Physician diagnosis of infection is acceptable for some infections

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

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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

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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

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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

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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

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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

Urinary Tract Infections in LTC:

McGeer Criteria Surveillance Definitions

- Three types of symptomatic UTI in resident without catheter
 - Criteria 1- Dysuria or pain; **and** positive urine culture
 - Criteria 2- Fever or Leukocytosis; **and** one of listed symptoms; **and** positive urine culture
 - Criteria 3- Two or more of listed symptoms; **and** positive urine culture
- Refer to the NHSN LTC Facility Component, UTI, for more details

Stone ND, Ashraf MS, Calder J et. Al. CDC/SHEA Surveillance Definitions for Infection in Long-term Care Facilities: Revisiting the McGeer Criteria, 2012

NHSN Long Term Care Facility Component, Urinary Tract Infection, 2017

Urinary Tract Infections in LTC:

McGeer Criteria Surveillance Definitions - 2

- Symptomatic CAUTI in patient with a urinary catheter
 - Catheter in place or removed in last two days
 - Clinical and microbiological findings
- Asymptomatic UTI with bacteremia
 - Occurs with or without a device
 - Microorganisms in blood and urine cultures match
- Refer to the NHSN LTC Facility Component, UTI, for more details

Stone ND, Ashraf MS, Calder J et. Al. CDC/SHEA Surveillance Definitions for Infection in Long-term Care Facilities: Revisiting the McGeer Criteria, 2012

NHSN Long Term Care Facility Component, Urinary Tract Infection, 2017

Add 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: 100

Central Line Days: 50

Urinary Catheter Days: 120

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

Add CAUTI Event to NHSN

NHSN Home

Alerts

Dashboard

Reporting Plan

Patient

Event

Procedure

Summary Data

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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 Gen

Patient ID *:

Secondary ID:

Last Name:

Middle Name:

Gender *:

Ethnicity:

Race: ☐ American In
☐ Black or Afr
☐ 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 Sur

Location *: 2 WEST - M/S ICU

Date Admitted to Facility >:

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:

Event Details

Specific Event >: SUTI - Symptomatic UTI

Specify Criteria Used *

Class 1 - Symptomatic

Add

Find

Incomplete

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

NHSN CAUTI Analysis Reports

NHSN Home

- Alerts
- Dashboard
- Reporting Plan
- Patient
- Event
- Procedure
- Summary Data
- Import/Export
- Surveys
- Analysis**
- Users
- Facility
- Group
- Logout

Analysis Reports

Expand All Collapse All Search

- Device-Associated (DA) Module
 - Central Line-Associated BSI
 - Mucosal Barrier Injury CLABSI
 - Ventilator-Associated PNEU
 - Ventilator-Associated Events
 - Urinary Catheter-Associated UTI
 - Line Listing - All CAU Events
 - Frequency Table - All CAU Events
 - Bar Chart - All CAU Events
 - Pie Chart - All CAU Events
 - Rate Table - CAU Data for IC
 - Run Chart - CAU Data for IC
 - Rate Table - CAU Data for N
 - Run Chart - CAU Data for NICU
 - SIR SIR - Acute Care Hospital CAU Data**
 - Run Report
 - Modify Report
 - Export Data Set
 - Catheter Device Use
 - als CAU Data
 - als Catheter Device Use
 - CAU Data
 - SIR - Long Term Acute Care Catheter Device Use
 - SIR - Inpatient Rehab 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

NHSN CAUTI SIR Reports

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

Facility
SIR

loccdc	summaryYH	infCount	numPred	numucathdays	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	numucathdays	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

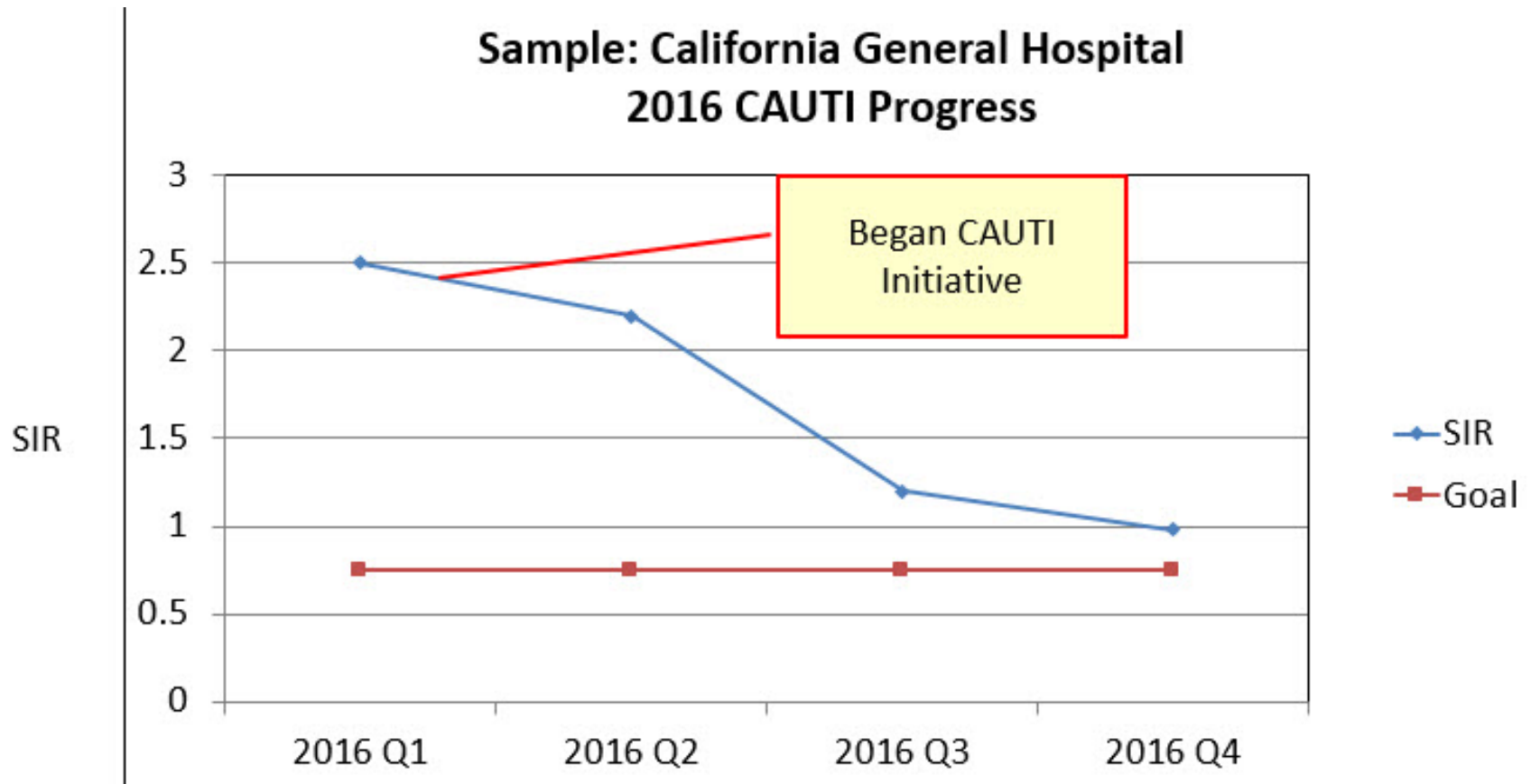
SUR by
Location

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



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?

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