

# 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

# 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

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:** 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

# Report CAUTI Event to NHSN

| NHSN Home        |
|------------------|
| Alerts           |
| Dashboard        |
| Reporting Plan ▶ |
| Patient ▶        |
| Event ▶          |
| 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 >

Add

Find

Incomplete

Facility ID \*: California

Patient ID \*:

Secondary ID:

Last Name:

Middle Name:

Gender \*:

Ethnicity:

Race: ☐ Amer

☐ Black

☐ 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 >: 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 \*

Sign S. Symptoms

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

Hawaii

# 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 BS
  - Mucosal Barrier Injury CLA
  - Ventilator-Associated PNE
  - Ventilator-Associated Ever
  - Urinary Catheter-Associat
    - Line Listing - All CAU E
    - Frequency Table - All C
    - Bar Chart - All CAU Ev
    - Pie Chart - All CAU Eve
    - Rate Table - CAU Data
    - Run Chart - CAU Data
    - Rate Table - CAU Data
    - 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
    - tals 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

Facility  
SIR

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

SIR by  
Location

| 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          | .     | .        |              |

SUR 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 |

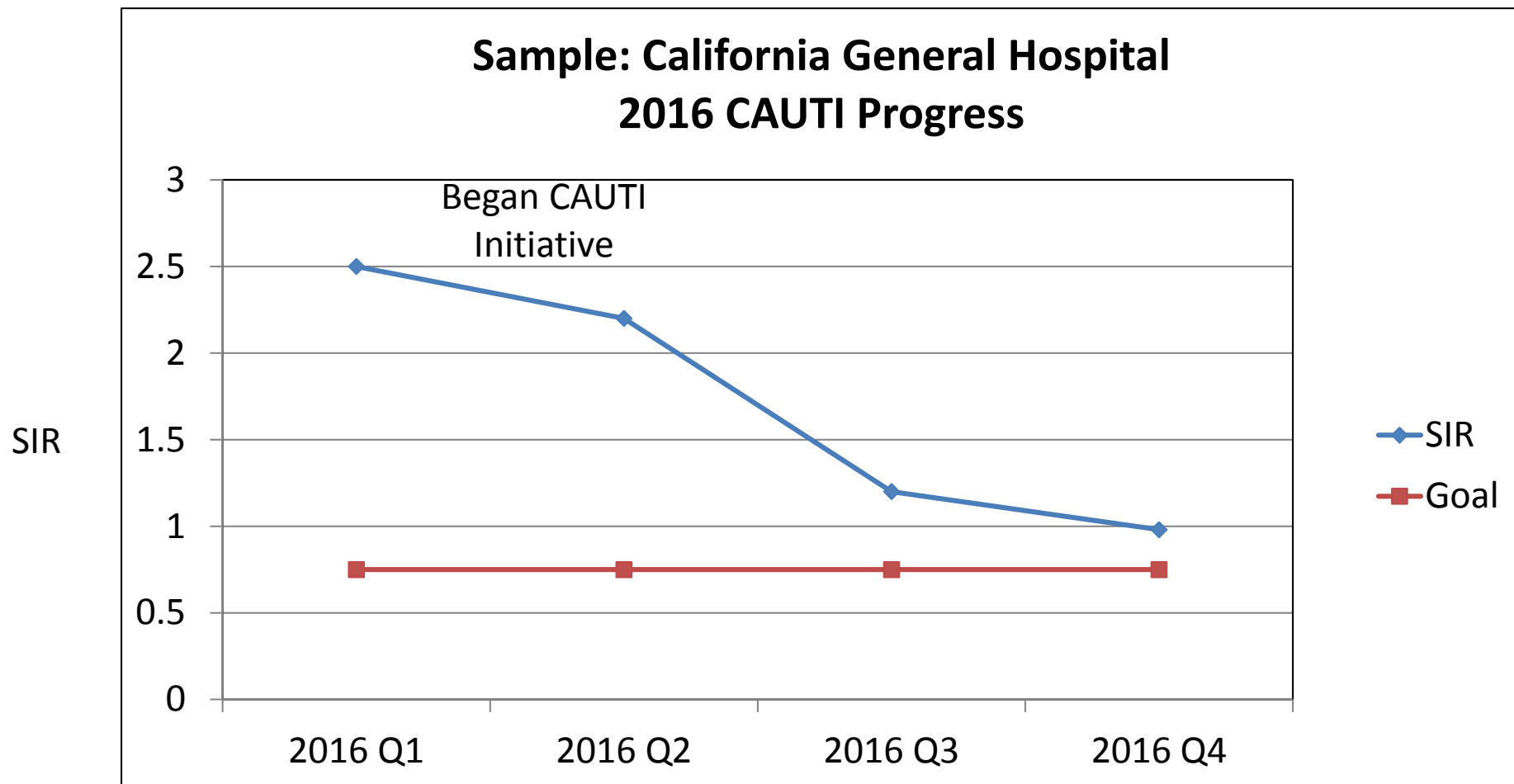
# CAUTI TAP Report

| Facility<br>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?

For more information,  
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