

*AHRQ Safety Program for Long-term Care: HAIs/CAUTI*

## **Infection Prevention: Surveillance Essentials in Preventing Health Care-Associated Infections**

**How to Monitor, Document and Communicate CAUTI Surveillance Data**

*Onboarding #4 for LTC Facility Team Leads and Core Team*

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## **Objectives**

After completing this program, attendees will be able to:

- review the surveillance measures that are collected to monitor urine cultures ordered, catheter utilization and CAUTI;
- use surveillance tools and checklists to gather and submit data;
- share reports with front-line staff, clinicians, residents and families; and
- engage staff to recognize and document signs and symptoms of CAUTIs.

## Why is CAUTI Surveillance Important?

- To define trends in catheter use and complications
  - To assess appropriate indications for catheter placement
- To help identify opportunities to improve catheter use
- To assess the impact of new prevention strategies to improve the safety of these devices
  - Has our CAUTI rate declined after starting use of catheter insertion and maintenance checklists?
  - Are we decreasing antibiotic use by recognizing asymptomatic bacteriuria in residents with a catheter?

3



## Targeted Surveillance

An IP has noticed an increase in the number of residents treated for CAUTI in their facility in the last few months and wants to develop a targeted surveillance program.

### Which of the following should they monitor?

- a) Total urinary catheter-days per month
- b) Number of new catheter insertions per month
- c) Indications for urinary catheters among residents with CAUTI
- d) All of the above

4

# Surveillance Measures

- Outcome measures (*events to prevent*):
  - Tracking CAUTIs in your facility
- Process measures (*ways to prevent them*):
  - Tracking the way catheters are used
    - Catheter utilization ratio
    - Documentation of catheter indication
  - Tracking the technique for placing catheters safely
    - Insertion adherence
  - Tracking the technique for handling catheters safely
    - Maintenance adherence
  - Tracking the number of urine cultures ordered

# Data Measures

## Resident Days

- Every day a resident (with or without a catheter) is in your facility = one resident day.
- Collect at the same time, each day of the month.

## Number of Urine Cultures

This includes urine cultures collected for every resident (i.e. with or without catheters) each month.



## Number of CAUTIs

- CAUTI is counted on the **first day** that the cluster of signs and symptoms, lab reports and the presence of a catheter for more than 2 consecutive days are found together
- CAUTI is an event which may continue for days or even weeks, but it is counted **only once, not each consecutive day**
- Note that a resident may have multiple CAUTI events in one month

## Catheter Days

- Every day a resident has an indwelling urinary catheter = one catheter day.
- Catheter needs to stay in place (i.e. not an in and out catheterization)
- Catheter is through the urethra (i.e. not suprapubic or urostomies)
- Collect at the same time, each day of the month



Example: A facility has 7 residents with indwelling urinary catheters for the month of June. During the midnight census the following data are collected:

Resident	Days with Catheter
1	30
2	30
3	30
4	10
5	12
6	7
7	4

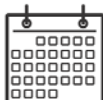
$(30 \times 3) + 10 + 12 + 7 + 4 = 123$  catheter days

## Collecting Resident Denominators

### Catheter Days

Every day a resident has an indwelling urinary catheter = one catheter day.

- Catheter needs to stay in place (i.e. not an in and out catheterization)
- Catheter is through the urethra (i.e. not suprapubic or urostomies)
- Collect at the same time, each day of the month



### Resident Days

- Every day a resident (with or without a catheter) is in your facility = one resident day.
- Collect at the same time, each day of the month.

### CAUTI Rate (Incidence)

- Monthly sum of the number of residents with an **indwelling** urinary catheter each day of that month
  - **Do not include** suprapubic catheters, in/out straight catheters or condom catheters
- Catheter-day counts should be collected each day for all residents in the facility

### Population CAUTI Rate

- Monthly sum of the total number of residents present in the facility each day of that month

7

## Calculating CAUTI Rates

### CAUTI incidence rate per 1,000 catheter-days

$$\text{CAUTI rate} = \frac{\text{\# CAUTIs identified}}{\text{urinary catheter days}} \times 1,000$$

### Population CAUTI rate per 10,000 resident-days

$$\text{CAUTI rate} = \frac{\text{\# CAUTIs identified}}{\text{resident days}} \times 10,000$$

8

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Chat

## Why do we measure both the CAUTI incidence rate and CAUTI population rate?

9

Urinary Catheter Use

**Urinary catheter utilization ratio (calculated monthly)**

$$\text{urinary catheter utilization ratio} = \frac{\text{urinary catheter days}}{\text{resident days}}$$

Measures the proportion of total resident-days when indwelling urinary catheters were used

10

## Data Collection Tool

Enter first day of the month: 11/1/2051 (e.g. 10/1/2015)

Date	CAUTIs (# of new events)	Resident Days (# of residents)	Resident Catheter Days (# of residents w/catheters)	Urine Cultures
Wednesday, November 01, 2051	1	64	4	1
Thursday, November 02, 2051	0	64	4	0
Friday, November 03, 2051	0	64	4	2
Saturday, November 04, 2051	0	65	4	0
Sunday, November 05, 2051	0	65	4	0
Monday, November 06, 2051				
Tuesday, November 07, 2051				
Wednesday, November 08, 2051				
Thursday, November 09, 2051				
Friday, November 10, 2051				
Saturday, November 11, 2051				
Sunday, November 12, 2051				
Monday, November 13, 2051				
Tuesday, November 14, 2051				
Wednesday, November 15, 2051				

11

## Data Collection Tool

### November

Data Definitions		Monthly Total (to enter in CDS)
<b>CAUTIs:</b>	CAUTIs are counted on the first date that the cluster of signs and symptoms, lab reports and the presence of a catheter for more than 2 days are found together. CAUTI is an event which may continue for days or even weeks, but it is counted only once, not each day.	<b>1</b>
<b>Resident Days:</b>	Every day a resident is in your facility = one resident day. This includes all residents, whether or not they have a catheter. This should be collected at the same time each day.	<b>322</b>
<b>Resident Catheter Days:</b>	Every day a resident has an indwelling urinary catheter (stays in place, meaning not an in and out catheterization) that is through the urethra (meaning not suprapubic or urostomies) is equal to one catheter day. This should be collected at the same time each day.	<b>20</b>
<b>Urine Cultures:</b>	Number of urine cultures ordered, for all resident (i.e. with or without catheters).	<b>3</b>

12

## Collecting Surveillance Data

- Performed by individuals who understand the surveillance definitions and process measures
  - Use the training materials to teach front-line staff when to suspect and how to document early signs or symptoms of CAUTI
- Document the following using data collection tools to fit surveillance objective (process vs. outcome)
  - The number of urine cultures ordered for all residents
  - Signs and symptoms when CAUTI is suspected
  - Urinary catheter utilization and indication
  - Catheter insertion and maintenance

## CAUTI Surveillance Worksheet

**LTC CAUTI Surveillance Worksheet**

Date: \_\_\_\_\_ MR #: \_\_\_\_\_  
 Resident Name: \_\_\_\_\_ Room/unit #: \_\_\_\_\_

One or more of the following with no alternate source:	Yes	No	Notes
Fever (single temperature $\geq 100^{\circ}\text{F}$ or $> 99^{\circ}\text{F}$ on repeated occasions, or $\geq 2^{\circ}\text{F}$ over baseline)	<input type="checkbox"/>	<input type="checkbox"/>	
Rigors (shaking chills)	<input type="checkbox"/>	<input type="checkbox"/>	
New onset hypotension with no alternate site of infection	<input type="checkbox"/>	<input type="checkbox"/>	
New onset confusion/functional decline AND Leukocytosis ( $> 14,000$ cells/mm <sup>3</sup> or Left Shift with $\geq 10\%$ or $\geq 1,000$ bandforms)	<input type="checkbox"/>	<input type="checkbox"/>	
New costovertebral angle pain or tenderness	<input type="checkbox"/>	<input type="checkbox"/>	
New or marked increase in suprapubic pain or tenderness	<input type="checkbox"/>	<input type="checkbox"/>	
Acute pain, swelling or tenderness of the testes, epididymis, or prostate	<input type="checkbox"/>	<input type="checkbox"/>	
Purulent discharge (pus) from around the catheter	<input type="checkbox"/>	<input type="checkbox"/>	
↓ AND			
<b>Any of the following:</b>			
<small>If urinary catheter removed in last 2 calendar days:</small>			
A voided urine culture positive for $\geq 10^3$ colony forming units (CFU/ml) of no more than 2 species of microorganisms	<input type="checkbox"/>	<input type="checkbox"/>	
Positive culture with $\geq 10^2$ colony forming units (CFU/ml) of any number of microorganisms from straight insert catheter specimen	<input type="checkbox"/>	<input type="checkbox"/>	
<small>If urinary catheter in place:</small>			
Positive culture with $\geq 10^3$ colony forming units (CFU/ml) of any number of microorganisms from indwelling catheter specimen	<input type="checkbox"/>	<input type="checkbox"/>	
↓			
<b>Signifies CAUTI</b>			

[CAUTI Surveillance Worksheet](#)

## Learn From Defects

### CAUTI Case Review Form

Resident Label:

CAUTI Case Review  
Date: \_\_\_\_\_

Reviewers: \_\_\_\_\_ Catheter last inserted on: \_\_\_\_\_ Location of Device Insertion: \_\_\_\_\_  
 Date of first sign or symptom of potential infection: \_\_\_\_\_ Temp: \_\_\_\_\_  
 Date of positive urine culture: \_\_\_\_\_ Organism(s): \_\_\_\_\_  
 Date of positive blood culture, if applicable: \_\_\_\_\_ Antibiotic(s): \_\_\_\_\_  
 Number of days of therapy: \_\_\_\_\_ Catheter removed on: \_\_\_\_\_ or replaced on N/A \_\_\_\_\_

**Instructions:**

1. Hold defect as soon as possible after the CAUTI occurs.
2. Involve Unit leadership, QA, IP, bedside caregivers, CAUTI resources and the resident if appropriate.
3. Forward completed review to Infection Prevention.

Questions	Lessons learned
Was the catheter inserted for a CDC indicated reason? <input type="checkbox"/> Urinary retention/obstruction/CBI <input type="checkbox"/> Placement or ordered by a urologist <input type="checkbox"/> Comfort Measures Only <input type="checkbox"/> To assist in healing of open personal wounds in a patient with urinary incontinence <input type="checkbox"/> Neurogenic bladder	<i>If the catheter was not inserted for a CDC indicated reason, what was the rationale for placing the catheter:</i>
Was the catheter inserted by a specifically trained provider? <input type="checkbox"/> Placed by a physician <input type="checkbox"/> Placed by a nurse (LPN, RN) who has completed a catheter insertion competency?	Yes or No?

### Learn From Defects Tool

Learn From Defects Tool

Use this to identify the types of systems that contributed to the defect (an event or situation that you do not want to have happen again) and to follow up to ensure safety improvements are achieved.

1. **What happened? (brief description)**
2. **Why did it happen? (what factors contributed?)**  

- Factors What prevented it from being worse?	- Factors What happened to cause the defect?
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3. **What were we doing to manage it?**
4. **What can we do to reduce the risk of it happening again?**  

Action Plan	Responsible Person	Targeted Date
5. **How will we know risk is reduced?**  
*Were the above action plans effectively carried out? Did the interventions reduce the likelihood of recurrence of the defect? Has it happened again?*

With whom will we share our learning? (communication plan)

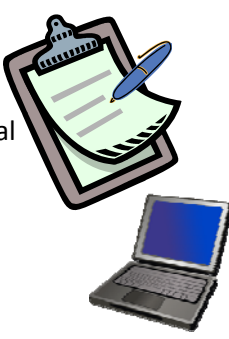
Who	When	How	Follow up

15

## System of Documentation

### Importance of documentation

- What
  - ✓ Indications for catheter insertion
  - ✓ Date and time of insertion
  - ✓ Name of individual who inserted
  - ✓ Date and time of catheter change/removal
  - ✓ Routine catheter maintenance
  - ✓ Signs and symptoms of infection
  - ✓ Diagnostic test results
- Where (e.g., resident's medical record)
- When (e.g., how often)



16



## Collecting CAUTI Surveillance Data

### *Let's Chat!*

**What are some challenges you anticipate with collecting CAUTI surveillance data in your facility?**

**What are some *solutions* to help improve your processes?**

17

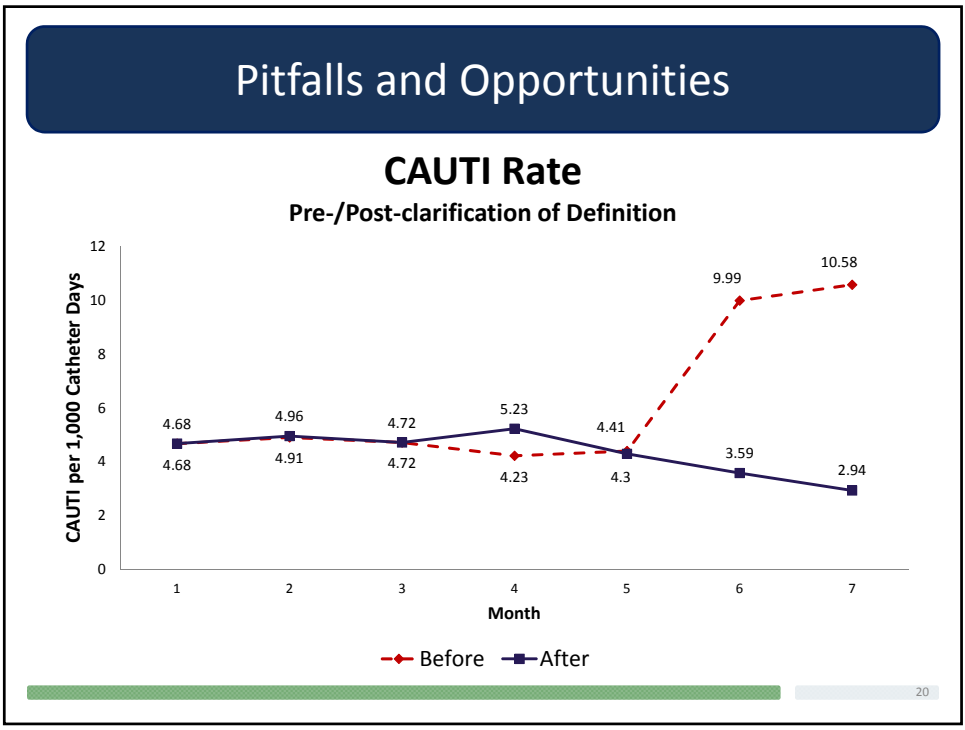
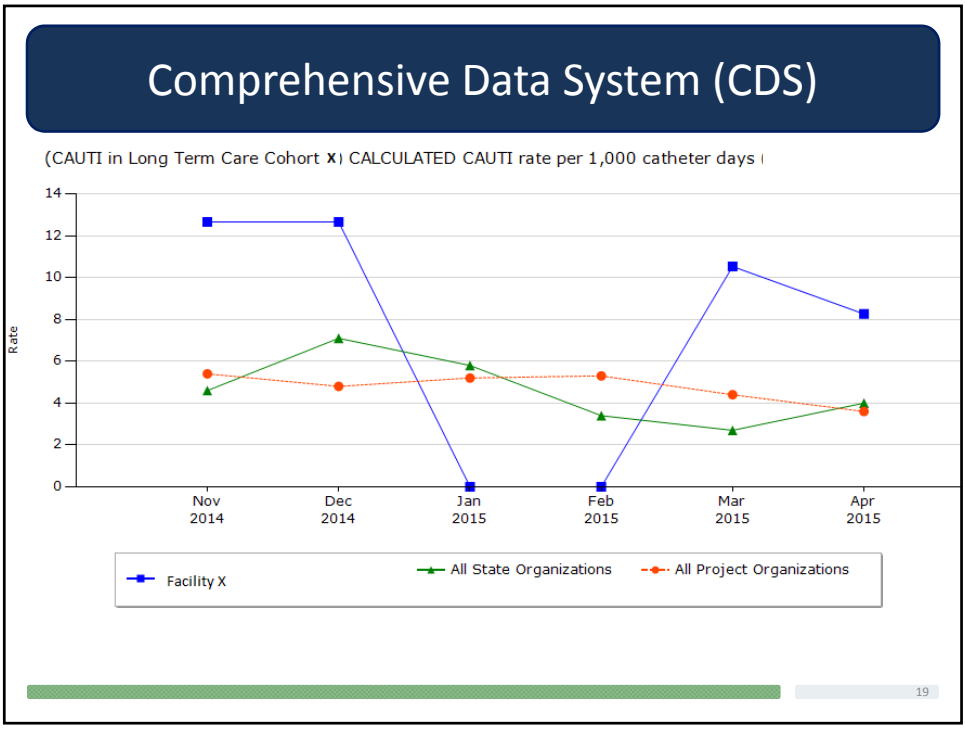
## Reporting and Using Surveillance Data

**The goal of conducting HAI and process surveillance is to impact staff behavior to improve outcomes**

- Change won't happen unless you share your data with staff/providers and leadership
- Have a strategy for providing monthly or quarterly CAUTI surveillance results for your facility staff/providers and leadership
  - Present it in a way that all staff can easily understand
  - Highlight the processes of care that will improve outcomes
  - Share data in a timely manner to increase awareness and highlight teaching opportunities for staff/providers
  - Use the [LTC-HAIs/CAUTI Team Communication Guide](#) to document progress and facilitate discussion of improvement efforts

Lee TB, et al. AJIC 2007; 35: 427-40

18



**Communicating Data with Staff**

***Let's Chat!***

**What are some ways you have been successful in your facility at communicating CAUTI rates or process measures with:**

- Front-line staff?
- Clinicians?
- Administration?
- Residents and families?

21

**KNOWLEDGE & SKILLS TRANSFER**

22

## Materials and Training Aids

### CAUTI Criteria - NHSN Definitions Pocket Cards

#### Catheter-associated Urinary Tract Infection (CAUTI)

Criteria for defining CAUTI in long-term care residents:

**One or more of the following, with no alternate source:**

- Fever\*
- Rigors (shaking chills)
- New onset hypotension
- New onset confusion/functional decline AND increased leukocytosis\*
- New costovertebral angle pain or tenderness
- New or increased suprapubic pain or tenderness
- Acute pain, tenderness, or swelling of the testes, epididymis, or prostate
- Pus around the catheter insertion site

**AND**

**Any of the following:**

*If catheter removed within past 2 calendar days:*

- Clean catch (voided) urine culture with 100,000 or more colonies ( $\geq 10^5$  CFU/ml) of no more than 2 species of microorganisms
- In/Out catheter urine culture with 100 or more colonies ( $\geq 10^2$  CFU/ml) of any number of microorganisms

*If indwelling urinary catheter in place:*

- Positive urine culture with 100,000 colonies or more ( $\geq 10^5$  CFU/ml) of any number of microorganisms

REV. 2015 Jul

#### \*Constitutional Criteria for Long-term Care Residents

**Fever**

Must have one of the following:

- Single oral temperature  $>100^{\circ}\text{F}$  ( $37.8^{\circ}\text{C}$ )
- Repeated oral temperature  $>99^{\circ}\text{F}$  ( $37.2^{\circ}\text{C}$ ) OR rectal temperature  $>99.5^{\circ}\text{F}$  ( $37.5^{\circ}\text{C}$ )
- Repeated rectal temperatures  $>99.5^{\circ}\text{F}$
- Single temperature  $>2^{\circ}\text{F}$  ( $1.1^{\circ}\text{C}$ ) over baseline for oral or rectal

**Leukocytosis**

Must have one of the following:

- $>14,000$  white blood cells (leukocytes)/ $\text{mm}^3$
- Increase in immature white blood cells (Left Shift) with  $>6\%$  bands or  $> 1,500$  bands/ $\text{mm}^3$

**Acute Change in Mental Status (within last 7 days)**

All components must be present:

- Confusion (with no alternate diagnosis and leukocytosis)
- Fluctuating Behavior (comes and goes, or changes in severity)
- Inattention (difficulty focusing and cannot maintain attention)
- Disorganized thinking (thinking is incoherent or hard to follow)

**OR**

Altered level of consciousness (change is different from baseline, may be sleepy, lethargic, difficult to arouse)

**Acute Functional Decline**

- New 3 point increase in total activities of daily living (ADL) score from baseline (range: 0-28)

Each ADL scored from 0 (independent) to 4 (totally dependent), including: bed mobility, transfer, locomotion within facility, dressing, toilet use, personal hygiene and eating

23

## Your Role in Training Staff in CAUTI Surveillance

The video and learning activity for front-line staff focuses on recognizing and communicating CAUTI

**Key messages**

- Presence of an indwelling urinary catheter allows bacteria to enter the urinary tract in many ways
- Urinary diagnostic tests cannot differentiate symptomatic CAUTI from asymptomatic bacteriuria
- Assess residents for signs/symptoms of CAUTI and document/communicate findings to appropriately manage residents with IUC

Review video and accompanying case scenario before facilitating conversation with front-line staff and providers

Share information with staff and teammates

Use CAUTI definition tools to build, encourage and support staff to correctly identify CAUTI signs and symptoms

Recognize staff who accurately observe, report, document and monitor signs and symptoms

24

## Educate All Staff on CAUTI Surveillance

AHRQ Safety Program for Long-Term Care: HAIs/CAUTI

Infection Prevention:  
Recognizing and Communicating CAUTI

Onboarding #4 for All Long-term Care Staff

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AHRQ Safety Program for Long-Term Care: HAIs/CAUTI  
Discussion Guide

Onboarding 4  
Recognizing and Communicating CAUTI

Case Scenario 1: Mrs. Smith

Directions:

1. Divide into small groups of 2-3 people.
2. Each group should work through each part of the case scenario, pausing for discussion before moving to the next section.

Part 1

You are assigned to take care of Mrs. Smith, an 85-year-old transferred from the hospital 3 days ago following a fall and broken hip. She had an indwelling urinary catheter in place at the time of transfer. The evening shift notes mention that she didn't eat or drink much at dinner. On your morning shift, you notice that the urine from the catheter is cloudy and foul-smelling. Mrs. Smith is awake and states that her pain medication makes her dizzy and she doesn't have much of an appetite for breakfast. The charge nurse suggests sending a urine specimen (UN) because her decreased appetite and change in the character of her urine might be early signs of a CAUTI. Discuss within your group.

1. Do you agree or disagree with the charge nurse and why?

- Use slide set with facilitator's notes
- Share recorded session with all staff who interact with residents
- Use case scenario to assess knowledge gained and encourage team discussion
- Provide copies of tools to guide CAUTI identification
- Provide evaluation form and certificate of completion

25

## Stay Updated with Useful Resources

1. [AHRQ Safety Program for Long-Term Care: HAIs/CAUTI Project Website](#)  
Login information  
**Username:** Itcsafety  
**Password:** Itcsafety
2. [TeamSTEPS<sup>®</sup> for Long-Term Care](#)
3. [LTC Program Data Collection Tool](#)
4. [Long-Term Care: Indwelling Urinary Catheter Insertion Checklist](#) and [Instructions for Use](#)
5. [Long-Term Care: Indwelling Urinary Maintenance Checklist](#) and [Instructions for Use](#)
6. [NHSN Criteria—CAUTI Definition Pocket Cards](#)
7. [CAUTI Surveillance Worksheet](#)
8. [Team Communication Guide](#)

26