CDC/NHSN Cather-associated Urinary Tract Infection Case Definitions

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*all information is directly from the NHSN site @ www.cdc.gov/nhsn
Target Audience

This training session is designed for those who will collect and analyze Catheter-Associated UTIs using NHSN (acute care) or the FDOH excel spreadsheet (SNF).

This may include the following:

– NHSN Facility Administrator
– Infection Control Professional
– Epidemiologist
– Microbiologist
Objectives

Describe the CDC NHSN CAUTI event protocols and definitions with the goal of standardizing surveillance for the FDOH CAUTI Collaborative.
National Healthcare Safety Network

- Patient Safety
- Healthcare Personnel Safety
- Biovigilance
- Research and Development
Patient Safety Component

- Device-associated Module
  - Central line-associated bloodstream infection
  - Catheter-associated urinary tract infection
  - Ventilator-associated pneumonia
  - Dialysis incident
Catheter-associated Urinary Tract Infections

- UTIs are the most common healthcare-associated infection with 80% attributed to an indwelling catheter. ¹

- 12%-16% of hospital inpatients will have a urinary catheter at some time during their hospital stay. ²

- 13,000 deaths per year are attributable to UTI (mortality rate 2.3%). ³

- Each CAUTI is estimated to cost $758 with >560,000 occurring per year. ($758 x 560,000 = approx. $425 million) ⁴

- An estimated 17%-69% of CAUTI may be preventable which translates to 380,000 infections and 9,000 deaths prevented per year. ⁵
CDC NHSN Definitions

- CAUTI
- Indwelling Catheter
- Symptomatic Urinary Tract Infection (SUTI)
- Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)

- NOTE: Asymptomatic Bacteremia (ASB) is no longer a CDC/NHSN infection type
**Definition: CAUTI**

- UTI that occurs in a patient who had an indwelling urinary catheter in place within the 48-hour period **before the onset of UTI**.

  - Specifically the date when the first clinical evidence appeared or the date the specimen used to meet the criterion was collected, whichever came first.

  - NOTE: There is **no minimum period of time** that the catheter must be in place in order for the UTI to be considered catheter-associated.
Patient has a Foley catheter in place on an inpatient unit. It is discontinued, and 4 days later patient meets the criteria for a UTI.

– This is not reported as a CAUTI because the time since Foley discontinuation exceeds 48 hours.
Transfer Rule

If the UTI develops in the patient within 48 hours of discharge from a unit/facility, the infection is attributed to the discharging location not the current one.

– date when the first clinical evidence appeared or the date the specimen used to meet the criterion was collected, whichever came first.
Transfer Rule Examples

- Patient with a Foley catheter in place in the SICU is transferred to the surgical ward. Thirty six (36) hours later, the patient meets the criteria for UTI. This is reported as a CAUTI for the SICU.

- Patient is transferred to the medical ward from the MSICU after having the Foley catheter removed. Within 24 hours, patient meets criteria for a UTI. This is reported as a CAUTI for the MSICU.
Definition: **Indwelling Catheter**

A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system.

- Also called a Foley Catheter
- Does not include straight in and out catheters or urinary catheters that are not placed in the urethra (suprapubic catheter)
UTI Specific Infection Types

- **Symptomatic UTI (SUTI)**
  - Criterion 1
    - a (catheter in place 48 hours prior to onset)
    - b (no catheter in place 48 hours prior to onset)
  - Criterion 2
    - a (catheter in place 48 hours prior to onset)
    - B (no catheter in place 48 hours prior to onset)
  - Criterion 3 (with or without catheter in place 48 hours prior to specimen collection)
  - Criterion 4 (with or without catheter in place 48 hours prior to specimen collection)

- **Asymptomatic Bacteremic UTI (ABUTI)**
Catheter-associated UTI (CAUTI) specific events must, by definition, involve an indwelling catheter. Therefore only the following specific event types can be CAUTI:

- SUTI Criteria:
  - 1a
  - 2a
  - 3
  - 4
- ABUTI
Catheter Associated SUTI

Patients of any age:
- Criterion 1a (≥ 10^5 CFU/ml)*
- Criterion 2a (≥ 10^3 and < 10^5 CFU/ml)*

Patients ≤ 1 year of age (only where a catheter is involved):
- Criterion 3 (≥ 10^5 CFU/ml)*
- Criterion 4 (≥ 10^3 and < 10^5 CFU/ml)*

- Urine culture must have no more than 2 microorganism species.
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Symptomatic Urinary Tract Infection (SUTI)</th>
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<tbody>
<tr>
<td>1a</td>
<td>Patient <strong>had an indwelling urinary catheter</strong> in place <strong>at the time of specimen collection</strong> and at least 1 of the following signs or symptoms with no other recognized cause: fever (&gt;38°C), suprapubic tenderness, or costovertebral angle pain or tenderness and a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.</td>
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</table>

**OR**

|          | Patient **had indwelling urinary catheter** **removed within the 48 hours prior to specimen collection** and at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness and a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms. |

**Note differing acceptable symptoms**
Symptomatic UTI (SUTI) – Any Patient (cont’d.)

2a

Patient had an indwelling urinary catheter in place at the time of specimen collection and at least 1 of the following signs or symptoms with no other recognized cause:
- fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness
- a positive urinalysis demonstrated by at least 1 of the following findings:
  - a positive dipstick for leukocyte esterase and/or nitrite
  - pyuria (urine specimen with ≥10 white blood cells [WBC]/mm³ or ≥3 WBC/high power field of unspun urine)
  - microorganisms seen on Gram stain of unspun urine
- a positive urine culture of ≥10⁵ and <10⁶ CFU/ml with no more than 2 species of microorganisms.

OR

Patient had indwelling urinary catheter removed within the 48 hours prior to specimen collection and at least 1 of the following signs or symptoms with no other recognized cause:
- fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness
- a positive urinalysis demonstrated by at least 1 of the following findings:
  - a positive dipstick for leukocyte esterase and/or nitrite
  - pyuria (urine specimen with ≥10 white blood cells [WBC]/mm³ or ≥3 WBC/high power field of unspun urine)
  - microorganisms seen on Gram stain of unspun urine
- a positive urine culture of ≥10⁵ and <10⁶ CFU/ml with no more than 2 species of microorganisms.
### Symptomatic UTI (SUTI)

**Patient ≤1 year of age**

| 3 | Patient ≤1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting  
  and  
  a positive urine culture of \( \geq 10^5 \text{ CFU/ml} \) with no more than 2 species of microorganisms. |
|---|---|

| 4 | Patient ≤1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting  
  and  
  a positive urinalysis demonstrated by at least one of the following findings:  
  a. positive dipstick for leukocyte esterase and/or nitrite  
  b. pyuria (urine specimen with \( \geq 10 \text{ WBC/mm}^3 \) or \( \geq 3 \text{ WBC/high power field of unspun urine} \))  
  c. microorganisms seen on Gram’s stain of unspun urine  
  and  
  a positive urine culture of between \( \geq 10^3 \) and \( <10^5 \text{ CFU/ml} \) with no more than two species of microorganisms. |
**Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)**

<table>
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</table>
| Patient with or without an indwelling urinary catheter has no signs or symptoms (i.e., no fever (>38°C) for patients ≤65 years of age*; and for any age patient no urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, OR for a patient ≤1 year of age, no fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting)  
| and  
| a positive urine culture of ≥10^5 CFU/ml with no more than 2 species of uropathogen microorganisms**  
| and  
| a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture.  

*Fever is not diagnostic for UTI in the elderly (>65 years of age) and therefore fever in this age group does not disqualify from meeting the criteria of an ABUTI.*

**Uropathogen microorganisms are:* Gram-negative bacilli, Staphylococcus spp., yeasts, beta-hemolytic Streptococcus spp., Enterococcus spp., G. vaginalis, Aerococcus urinae, and Corynebacterium (urease positive).***

**Urine and Blood cultures must have matching uropathogen(s)**

Comments: Urinary catheter tips should not be cultured and should not be acceptable for the diagnosis of a UTI.
Example

Post op day 3: 66yo patient in the ICU with Foley catheter s/p exploratory laparotomy; patient noted to be febrile (38.9 C) and complained of diffuse abdominal pain.

WBC increased to 19,000. He had cloudy, foul-smelling urine and urinalysis showed 2+ protein, +nitrate, and 2+ LE, WBC = TNTC, and 3+ bacteria. Culture was 10,000 CFU/ml E. coli. The abdominal pain was secondary to surgery.

Is this a CAUTI?? Yes – SUTI 2a
Example

- 84 y/o patient is hospitalized with GI bleed
- Day 3: patient has catheter in place with no signs or symptoms of infection.
- Day 9: patient becomes unresponsive, is intubated and CBC shows WBC of 15,000. Afebrile. Patient is pan cultured, blood culture and urine both grow *Strep. pyogenes* - urine ≥ $10^5$ CFU/ml

Is this a CAUTI? Yes - ABUTI
Questions or Comments?

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