NHSN Catheter-Associated Urinary Tract Infection Surveillance in 2017

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Objectives

Key Concepts and Common Misconceptions

Apply UTI Protocol

Data Collection Form and Table of Instructions

Device Association

Case Studies
UTI Burden

- Fourth most common healthcare-associated infection
- Estimated 93,300 UTIs in acute care hospitals
- Account for more than 12% of infections reported by acute care hospitals\(^1\)
- Approximately 12%-16% of adult hospital inpatients will have an indwelling urinary catheter at some time during hospitalization\(^2-3\)

For each day an indwelling urinary catheter remains, a patient has a 3%-7% increased risk of acquiring a catheter-associated urinary tract infection (CAUTI).2-3

CAUTI Complications include discomfort to the patient, prolonged hospital stay, and increased cost and mortality4.

It has been estimated that each year, more than 13,000 deaths are associated with UTIs.5

4Scott Rd. The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention, 2009. Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention, February 2009.
Jerry’s Story

https://www.youtube.com/watch?v=wl_aZto-K8Q
Key Concepts
NHSN CAUTI Definitions
Definition Refresher

Infection Window Period (IWP)
- A 7-day-period during which all site-specific infection criterion must be met. It includes the date of the first positive diagnostic test, that is an element of the site-specific criterion, 3 calendar days before and 3 calendar days after

Date of Event (DOE)
- The date the first element used to meet the CDC NHSN site-specific infection criterion occurs for the first time within the seven-day infection window period

Repeat Infection Timeframe (RIT)
- The RIT is a 14-day timeframe during which no new infections of the same type are reported. The RIT applies to both POA and HAI determinations.
  - The date of event is Day 1 of the 14-day Repeat Infection Timeframe
  - If date of event for subsequent potential infection is within 14 days
    - Do not report new event
    - Additional pathogens identified are added to the original event

Secondary BSI Attribution Period (BSI 2ndary)
- The BSI 2ndary is the period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary UTI. This period includes the Infection Window Period combined with the Repeat Infection Timeframe (RIT). It is 14-17 days in length depending upon the date of event.
Indwelling Urinary Catheter

Key Concept

A drainage tube that is inserted into the urinary bladder (includes neobladder) **through the urethra**, is left in place, and is connected to a collection system. This includes a collection system that is used for irrigation of any type or duration (e.g., intermittent, continuous).

- Also called a Foley catheter
Does not qualify as Indwelling Urethral Catheter

- Straight catheterization
- In and Out catheterization
- Condom catheter (Texas catheter)

Unless an indwelling urethral catheter is also present, the following do not qualify:

- Suprapubic catheter
- Nephrostomy tubes
- Urostomy
- Ileal conduit
Urinary Tract Infection Definitions

There are two specific types of UTI:
• Symptomatic UTI (SUTI)
• Asymptomatic Bacteremic UTI (ABUTI)

Both types, if catheter-associated, must be reported as part of any CMS CAUTI reporting requirements!
UTI Overview

Any Age

SUTI 1

A: Catheter-associated

B: Non-catheter-associated

Infant ≤ 1 yr

SUTI 2

Catheter-associated

Non-catheter-associated

Any Age

ABUTI

Catheter-associated

Non-catheter-associated
SUTI 1a (Catheter-Associated) Criterion

Patient must meet 1, 2, and 3 of the following:

1. Patient had an indwelling urinary catheter that had been in place for > 2 days on the date of event (day of device placement = Day 1) AND was either:
   Still present for any portion of the calendar day on the date of event, OR
   Removed the day before the date of event
SUTI 1a Cont.

2. Patient has at least one of the following signs or symptoms:
   - fever (>38.0°C)
   - suprapubic tenderness*
   - costovertebral angle pain or tenderness*
   - urinary urgency^  
   - urinary frequency^  
   - dysuria^  

*With no other recognized cause

^These symptoms cannot be used when catheter is in place
3. Patient has a urine culture with no more than two species of organisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml.
Urine Culture Clarification

- *Candida* species or yeast not otherwise specified, mold, dimorphic fungi or parasites are excluded as organisms in the UTI definition therefore blood with these organisms cannot be secondary to UTI

- Urine culture with yeast can be included as long as there is at least one bacterium with $\geq 10^5$ CFU/ml and no more than 2 organisms (e.g., $> 10^5$ CFU/ml of *E. coli* and $> 10^5$ CFU/ml of *C. albicans*)

- Urine cultures with > 2 organisms are routinely regarded as contaminated cultures and not used for NHSN CAUTI surveillance. (e.g., $> 10^5$ CFU/ml *E. coli*, *S. aureus* and *C. albicans* = 3 organisms)

- Urine culture including “mixed flora” or equivalent such as “perineal flora”, “vaginal flora”, “normal flora” cannot be used (e.g., $> 10^5$ CFU/ml of *E. coli* and perineal flora)
Urine Culture Clarification Cont.

- Organisms of same genus but different species = 2 organisms. e.g., *Pseudomonas aeruginosa* and *Pseudomonas stutzeri*
- The same organism with different antimicrobial susceptibilities = 1 organism  e.g., MRSA and MSSA
- Set the IWP on the date of urine specimen collection not date of specimen result
- Do not add multiple urine cultures together e.g., Feb 1 urine positive for $10^5$ CFU/ml of *Klebsiella pneumoniae* and *Citrobacter freundii* AND Feb 2 urine positive for *Klebsiella oxytoca does not meet > 3 organisms*
Infection Window Period (IWP)

All elements of the UTI criterion must occur during the 7-day Infection Window Period.

<table>
<thead>
<tr>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4 Positive urine culture</td>
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<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>
Investigating a Positive Urine Culture as Possible CAUTI

1. Determine the date of the diagnostic test that is an element of the site-specific infection criterion.

2. Then from that determine the infection window period (IWP) (3 days before the diagnostic test, the day of the test and 3 days after for a total of 7 days).

3. Then determine if all of the elements of the criterion are met during the infection window period. If they are, there is an infection event. If they are not, there is no event.

4. Next determine the date of event (DOE), i.e., the date that the first element used to meet the infection criterion occurs for the first time within the infection window period.

5. Is the date of event in the POA time period? If yes, the infection is POA, if not, it is an HAI. (POA time period is defined as the day of admission to an inpatient location, the 2 days before admission, and the calendar day after admission)

6. Next (if appropriate) determine if the HAI is device-associated, i.e. CAUTI. If the date of event occurred on or after day 3 of device use, and the device was in place on that day or the day before, the HAI is device-associated.

7. Using the *Transfer Rule* if applicable, determine the location to which the HAI should be attributed. If the date of event is on the date of transfer/discharge, or the next day, the infection is attributed to the transferring/discharging location.
SUTI 1a Example

1/25  Patient admitted to Acute Care hospital for CVA
      Foley catheter (FC) inserted
1/26  FC in place
1/27  FC in place
1/28  FC discontinued early morning, @ noon
      complaints of urinary frequency
1/29  No fever, urinary frequency continues
1/30  Elevated wbc’s
1/31  Positive urine culture with $10^5$ CFU/ml *E coli*
SUTI 1a CAUTI Example

The patient’s complaint of urinary frequency, on 1/28 after FC was removed, can be used to meet the NHSN SUTI 1a.

A. True
B. False

Urinary frequency can be used to meet the SUTI 1a criteria because the symptom occurred while the Foley was not in place and during the IWP.
SUTI 1a Example

This patient has an NHSN CAUTI

A. True

B. False

- The 1/28 urinary frequency is first element to occur within the IWP therefore is the date of event.
- The Foley was in place > 2 days on the date of event = CAUTI.
SUTI 1b (Non-Catheter-Associated) Criterion

Patient must meet 1, 2, and 3 below:

1. One of the following is true:
   - Patient has/had an indwelling urinary catheter but it has/had not been in place >2 calendar days,
   OR
   - Patient did not have a urinary catheter in place on the date of event nor the day before the date of event
SUTI 1b (Non-Catheter-Associated)

2. Patient has at least **one** of the following signs or symptoms:
   - fever (>38°C) in a patient that is ≤ 65 years of age
   - suprapubic tenderness*
   - costovertebral angle pain or tenderness*
   - urinary frequency^  
   - urinary urgency^  
   - dysuria^  

   *With no other recognized cause  
   ^These symptoms cannot be used when catheter is in place

3. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacterium of ≥10^5 CFU/ml.** All elements of the SUTI criterion must occur during the Infection Window Period
2/11: Patient age 47 admitted with fever of 101.7° F, history of *P. aeruginosa* in wound on previous admission a month earlier.

2/13: Urine culture 50,000 CFU/ml of *P. aeruginosa*, and 100,000 CFU/ml *C. Albicans*, no fever.

2/15: Patient spikes fever of 101.3° F and urine culture is collected which results in > 100,000 CFU/ml of *P. Aeruginosa* and > 100,000 CFU/ml *C. Albicans*
SUTI 1b Example

The first Urine culture with 50,000 CFU/ml of *P. aeruginosa*, and 100,000 CFU/ml *C. Albicans* is used to set the IWP

A. True

B. False

This urine culture is not eligible because there is not at least one bacterium with >10^5 CFU/ml; yeast is an excluded organism.
**SUTI 1b Example**

This meets SUTI 1b: Non-Catheter-Associated Urinary Tract Infection (Non-CAUTI)

<table>
<thead>
<tr>
<th>DATE</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/11 Admit</td>
<td>Fever 101.7°F</td>
</tr>
<tr>
<td>2/12</td>
<td></td>
</tr>
<tr>
<td>2/13</td>
<td>Urine culture 50,000 CFU/ml of <em>P. aeruginosa</em>, + 100,000 CFU/ml <em>C. Albicans</em>, no fever</td>
</tr>
<tr>
<td>2/14</td>
<td></td>
</tr>
<tr>
<td>2/15</td>
<td>Fever 101.3°F</td>
</tr>
<tr>
<td></td>
<td>urine culture: &gt;10^5 CFU/ml of <em>P. Aeruginosa</em> and &gt;10^5 CFU/ml <em>C. Albicans</em></td>
</tr>
<tr>
<td>2/16</td>
<td></td>
</tr>
<tr>
<td>2/17</td>
<td></td>
</tr>
<tr>
<td>2/18</td>
<td></td>
</tr>
</tbody>
</table>

A. True

B. False
**SUTI 1b Example**

**Infection Window Period**
(first positive diagnostic test, 3 days before and 3 days after)

**Repeat Infection Timeframe**
(RIT)  
(date of event = day 1)

**Secondary Bloodstream Infection (BSI) Attribution Period**

**Date of Event**

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### Meets SUTI 1b: Non-Catheter-Associated UTI

<table>
<thead>
<tr>
<th>DATE</th>
<th>2\textsuperscript{ndary}BSI</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/11 Admit</td>
<td>Clean</td>
<td>Fever 101.7°F</td>
<td></td>
</tr>
<tr>
<td>2/12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/13</td>
<td></td>
<td>Urine culture 50,000 CFU/ml of <em>P. aeruginosa</em>, +100,000 CFU/ml <em>C. Albicans</em>, no fever</td>
<td></td>
</tr>
<tr>
<td>2/14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/15</td>
<td></td>
<td>Fever 101.3°F</td>
<td>urine culture: &gt;10⁵ CFU/ml of <em>P. Aeruginosa</em> and &gt;10⁵ CFU/ml <em>C. Albicans</em></td>
</tr>
<tr>
<td>2/16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUTI 1b Example Rationale

- The 2/15 urine culture sets the Infection Window Period (IWP) 2/12 – 2/18.

- The 2/15 fever is in the IWP and is an acceptable element to meet SUTI, date of event 2/15.

- There was no Foley in place on the date of event nor the day before.

- The 2/11 fever on admission cannot be used because it does not fall within the IWP of the 2/15 positive urine culture.

- The 2/13 urine culture is not eligible due to bacterium colony count < $10^5$ CFU/ml.
SUTI 2 (≤ 1 year-old) Criterion

Patient must meet 1, 2, and 3 below:

Patient is ≤1 year of age (with‡ or without an indwelling urinary catheter)

Patient has at least one of the following signs or symptoms:

- fever (>38.0°C)
- hypothermia (<36.0°C)
- apnea*
- bradycardia*
- lethargy*
- vomiting*
- suprapubic tenderness*

Patient has a urine culture with no more than two species of organisms, at least one of which is a bacterium of $≥10^5$ CFU/ml. All elements of the SUTI criterion must occur during the Infection Window Period (See Definition Chapter 2 Identifying HAIs in NHSN).

‡ If patient had an indwelling urinary catheter in place for >2 calendar days, and catheter was in place on the date of event or the previous day, the CAUTI criterion is met. If no such indwelling urinary catheter was in place, UTI (non-catheter associated) criterion is met.

* With no other recognized cause
SUTI 2 Example

12/23: 2 month-old admitted for diarrhea; Foley catheter inserted
12/27: Patient vomits X 2
12/28: Urine culture is positive for *E. coli* $\geq 10^5$ CFU/ml

This meets catheter associated SUTI 2 ($< 1$ year-old), **date of event 12/27**, pathogen *E. coli*
Asymptomatic Bacteremic UTI (ABUTI) Criterion

Patient must meet 1, 2, and 3 below:

1. Patient with* or without an indwelling urinary catheter has no signs or symptoms of SUTI 1 or 2 according to age (Note: Patients > 65 years of age with a non-catheter-associated ABUTI may have a fever and still meet the ABUTI criterion)

2. Patient has a urine culture with no more than two species of organisms, at least one of which is a bacterium of \( \geq 10^5 \text{ CFU/ml} \)

3. Patient has a positive blood culture with at least one matching bacterium to the urine culture, or meets LCBI criterion 2 (without fever) and matching common commensal(s) in the urine. All elements of the ABUTI criterion must occur during the Infection Window Period

* Patient had an indwelling urinary catheter in place for >2 calendar days, with day of device placement being Day 1, and catheter was in place on the date of event or the day before.
ABUTI

Note: Only events with catheters in place for >2 calendar days on the date of event are catheter-associated and are reportable IF the location is in your monthly reporting plan.
Asymptomatic Bacteremic UTI (ABUTI) Example

2/20 Patient admit for MI, Foley inserted
2/21-23 No UTI signs/symptoms (s/s)
2/24 Elevated wbc’s, No UTI s/s, Positive blood with *Staph aureus* and positive urine culture with $> 10^5$ CFU/ml *Staph aureus*,
2/25-27 No UTI s/s
2/28 Foley removed, Discharged to home
### ABUTI Example

- **2/24 urine culture sets the IWP: 2/21 – 2/27**
- No UTI symptoms in IWP however matching blood organism
- Meets ABUTI, date of event 2/24, Foley in place > 2 days on date of event therefore catheter-associated

<table>
<thead>
<tr>
<th>Date</th>
<th>BSI 2ndary</th>
<th>RT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 20</td>
<td>Admit</td>
<td></td>
<td>Foley inserted</td>
</tr>
<tr>
<td>Feb 21</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>Feb 22</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>Feb 23</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td><strong>Feb 24</strong></td>
<td>1</td>
<td></td>
<td>Blood culture: <em>Staph Aureus</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Urine culture $10^5$ CFU/ml <em>Staph Aureus</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Foley catheter removed</td>
</tr>
<tr>
<td>Feb 25</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>Feb 26</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>Feb 27</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>Feb 28</td>
<td></td>
<td></td>
<td>Foley removed, Discharged to home</td>
</tr>
</tbody>
</table>

DOE
UTI Repeat Infection Timeframe (RIT) Key Concept

- 14-day timeframe; **Date of event** = Day 1
- No new UTIs are reported (e.g., SUTI, ABUTI)
- Additional eligible pathogens from urine cultures are added to the event
- Do not change device association during the RIT
- Non-Catheter-Associated SUTI or ABUTI or SUTI/ABUTI POA sets a UTI RIT and Secondary BSI attribution period
Catheter-Associated UTI (CAUTI): A UTI where an indwelling urinary catheter was in place for >2 calendar days on the date of event, with day of device placement being Day 1, and an indwelling urinary catheter was in place on the date of event or the day before. If an indwelling urinary catheter was in place for >2 calendar days and then removed, the date of event for the UTI criteria must be the day of discontinuation or the next day.
## Device associated and UTI RIT Key Concept

Meets SUTI 1b: Non-Catheter-Associated, **POA** which sets an RIT and Secondary BSI attribution period

<table>
<thead>
<tr>
<th>Date</th>
<th>BSI 2ndary</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3</td>
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<tr>
<td>1/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/5</td>
<td></td>
<td>1</td>
<td><strong>DOE</strong> Patient age 48 with fever &gt;38°C</td>
</tr>
<tr>
<td>Admit</td>
<td></td>
<td>2</td>
<td>Positive urine culture <em>E. coli</em> &gt; 10⁵ CFU/ml</td>
</tr>
<tr>
<td>1/6</td>
<td></td>
<td>3</td>
<td>Foley Catheter (FC) inserted Day # 1</td>
</tr>
<tr>
<td>1/7</td>
<td></td>
<td>4</td>
<td>FC Day # 2</td>
</tr>
<tr>
<td>1/8</td>
<td></td>
<td>5</td>
<td>FC Day # 3</td>
</tr>
<tr>
<td>1/9</td>
<td></td>
<td>6</td>
<td><strong>DOE</strong> FC Day # 4 Fever &gt; 38°C</td>
</tr>
<tr>
<td>1/10</td>
<td></td>
<td></td>
<td>FC Day # 5 Urine culture &gt;10⁵ CFU/ml SA</td>
</tr>
<tr>
<td>1/11</td>
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<td>7</td>
<td></td>
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<tr>
<td>1/12</td>
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<td>1/18</td>
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<td>14</td>
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</tbody>
</table>
Device-associated and UTI RIT Key Concept

This changes to a SUTI 1a: CAUTI

A. True

B. False
<table>
<thead>
<tr>
<th>Date</th>
<th>BSI 2ndary</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3</td>
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<tr>
<td>1/4</td>
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<tr>
<td>1/5 Admit</td>
<td>1 DOE POA</td>
<td></td>
<td>Patient age 48 with fever &gt;38°C</td>
</tr>
<tr>
<td>1/6</td>
<td></td>
<td>2</td>
<td>Positive urine culture <em>E. coli</em> &gt; 10⁵ CFU/ml</td>
</tr>
<tr>
<td>1/7</td>
<td></td>
<td>3</td>
<td>Foley Catheter (FC) inserted Day # 1</td>
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<td>1/8</td>
<td></td>
<td>4</td>
<td>FC Day # 2</td>
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<tr>
<td>1/9</td>
<td></td>
<td>5</td>
<td>FC Day # 3</td>
</tr>
<tr>
<td>1/10</td>
<td>6 DOE</td>
<td></td>
<td>FC Day # 4 Fever &gt; 38°C</td>
</tr>
<tr>
<td>1/11</td>
<td></td>
<td>7</td>
<td>FC Day # 5 Urine culture &gt;10⁵ CFU/ml SA</td>
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<td>1/12</td>
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<td>1/13</td>
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<td>1/16</td>
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<td>1/17</td>
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<td>13</td>
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<tr>
<td>1/18</td>
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<td>14</td>
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</tr>
</tbody>
</table>

1/10 date of event occurs within the RIT of the POA event; therefore considered an extension of the POA event; this does not become catheter-associated during the RIT.
Discontinuation and Reinsertion

If a Foley catheter is discontinued, and a **full calendar day** passes before a Foley is reinserted, then the day count for determining catheter-associated UTI begins anew. Otherwise, the day count continues from the previous catheter.

<table>
<thead>
<tr>
<th></th>
<th>March 31 (Hospital day 3)</th>
<th>April 1</th>
<th>April 2</th>
<th>April 3</th>
<th>April 4</th>
<th>April 5</th>
<th>April 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example A</strong></td>
<td>Foley Day 3</td>
<td>Foley Day 4</td>
<td>Foley removed (Foley Day 5)</td>
<td>Foley replaced (Foley Day 6)</td>
<td>Foley Day 7</td>
<td>Foley Day 8</td>
<td>Foley Day 9</td>
</tr>
<tr>
<td><strong>Example B</strong></td>
<td>Foley Day 3</td>
<td>Foley Day 4</td>
<td>Foley removed (Foley Day 5)</td>
<td><strong>No Foley</strong></td>
<td>Foley replaced (Foley Day 1)</td>
<td>Foley Day 2</td>
<td>Foley Day 3</td>
</tr>
</tbody>
</table>
Foley Reinsertion Example

3/1: Patient age 59 admit to ICU, Foley inserted
3/4: Foley removed
3/5: No Foley; asymptomatic
3/6: Foley reinserted; Fever 100.5°F
3/7: Fever 100.5°F; Urine (+) 100,000 CFU/ml *E. faecium*
3/10: Discharge to home with Foley
This patient has a CAUTI

A. True

B. False

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1</td>
<td>Foley Catheter (FC) inserted</td>
</tr>
<tr>
<td>3/4</td>
<td>Foley catheter removed</td>
</tr>
<tr>
<td>3/5</td>
<td>No Foley, asymptomatic</td>
</tr>
<tr>
<td>3/6</td>
<td>Fever 102°F, FC reinserted</td>
</tr>
<tr>
<td>3/7</td>
<td>Urine culture: E. faecium 10^5 CFU/ml</td>
</tr>
<tr>
<td></td>
<td>Discharge to home with Foley 3/10</td>
</tr>
</tbody>
</table>
**Foley Reinsertion Example**

**Infection Window Period**
(first positive diagnostic test, 3 days before and 3 days after)

**Repeat Infection Timeframe (RIT)**
(date of event = day 1)

**Secondary Bloodstream Infection (BSI) Attribution Period**

<table>
<thead>
<tr>
<th>DATE</th>
<th>2(^{nd})ary BSI</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1</td>
<td></td>
<td></td>
<td>Foley Catheter (FC) inserted</td>
</tr>
<tr>
<td>3/2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td></td>
<td></td>
<td>Foley catheter removed</td>
</tr>
<tr>
<td>3/5</td>
<td></td>
<td></td>
<td>One full calendar day with no Foley, asymptomatic</td>
</tr>
<tr>
<td>3/6</td>
<td>1</td>
<td>DOE</td>
<td>Fever 102°F, FC reinserted, FC Day #1</td>
</tr>
<tr>
<td>3/7</td>
<td>2</td>
<td></td>
<td>Urine culture: <em>E. faecium</em> 10⁵ CFU/ml</td>
</tr>
<tr>
<td>3/8</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/9</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/10</td>
<td>5</td>
<td></td>
<td>Discharge to home with Foley</td>
</tr>
</tbody>
</table>

Meets SUTI 1b: Non-Catheter-Associated UTI
Foley Reinsertion Rationale

- The 3/7 positive urine culture sets the IWP: 3/4- 3/10.
- The 3/6 Fever > 38\(^0\) C is the first element to occur within the IWP therefore is the date of event.
- The Foley was removed on 3/4 and reinserted on 3/6; a full calendar day passed without a Foley therefore the count begins anew.
- The 3/6 date of event is Foley day #1 therefore this meets SUTI 1b: Non-Catheter-Associated which is HAI.
Data Collection Form and Table of Instructions for UTI Surveillance
Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

Resources for NHSN Users Already Enrolled

- Training
- Protocols
- Frequently Asked Questions
  - Data Collection Forms
  - CMS Supporting Materials
  - Supporting Material
  - Analysis Resources

Resources to Help Prevent Infections
- Resources for Patients and Healthcare Providers
- HHS Action Plan to Prevent Healthcare-associated Infections
- Guideline for Hand Hygiene in Healthcare Settings
Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

Resources for NHSN Users Already Enrolled

Data Collection Forms

- 57.114: Urinary Tract infection UTI form from January 2017 (PDF - 110 KB)
- Table of instructions for UTI form 57.114 (PDF - 201 KB)
- 57.115: Denominators for Neonatal Intensive Care Unit (NICU) from January 2017
  - Customizable form (DOCX - 43 KB)
  - Table of instructions for NICU form 57.115 (PDF - 74 KB)
- Table of instructions for Denominators for NICU form 57.115 (PDF - 105 KB)
- 57.117: Denominators for Special Care Area NICU from January 2017
  - Customizable form (DOCX - 34 KB)
  - Table of instructions for Denominators for SCA NICU form 57.117 (PDF - 43 KB)
- Table of instructions for Denominators for SCA form 57.112 (PDF - 193 KB)
- 57.118: Denominators for Intensive Care Unit (ICU) or Other locations (not NICU or SCA) form January 2017
  - Customizable form (DOCX - 29 KB)
  - Table of instructions for Denominators for ICU form 57.118 (PDF - 146 KB)
- Table of instructions for Patient Safety Component - Annual Hospital Survey form January 2017
  - Customizable form (DOCX - 123 KB)
  - Table of instructions for Monthly Reporting Plan form 57.106 (PDF - 62 KB)
- 57.115: HA Custom Event form January 2017 (PDF - 121 KB)
- Customizable form (DOCX - 51 KB)

**Note to be used for CASS, CAUTI, SSI, VAP, or Lab/D events.**
To be used in conjunction with COC/NHSN Surveillance Definitions for Specific Types of Infections. January 2017 (PDF - 472 KB) NHSN Patient Safety Manual.
# Data Collection Form (Chart Review)

## Urinary Tract Infection (UTI)

### Urinary Catheter Status:

- **In place** - Urinary catheter in place = 2 days on the date of event
- **Removed** - Urinary catheter removed = 2 days but removed before the date of event
- **Neither** - Not catheter associated = neither in place nor removed before the date of event

### Risk Factors

#### Patient Information:

- **Patient ID:**
- **Social Security #:**
- **Secondary ID:**
- **Medicare #:**
- **Gender:**
- **Date of Birth:**
- **Race:**
- **Event Type UTI:**
- **Date of Event:**
- **Post-procedure UTI:**
- **Date of Procedure:**

### MDRO Infection Surveillance:

- Yes, this infection's pathogen & location are in-plan for Infection Surveillance in the MDRO/CDI Module
- No, this infection's pathogen & location are not in-plan for Infection Surveillance in the MDRO/CDI Module

### Date Admitted to Facility:

#### Location:

### Specific Event:

- **Symptomatic UTI (SUTI)**
- **Asymptomatic Bacteremic UTI (ABUTI)**
- **Urinary System Infection (USI)**

### Signs & Symptoms

- **Fever**
- **Urgency**
- **Frequency**
- **Dysuria**
- **Pain or tenderness**
- **Abscess**
- **Acute pain, swelling, or tenderness of testes, epididymis, or prostate**
- **Suprapubic tenderness**
- **Loathery**
- **Costovertebral angle pain or tenderness**
- **Pyuria**
- **Stranguria**
- **Imaging test evidence of infection**

### Laboratory & Diagnostic Testing

- **< 1 year old**
- **1 positive culture with no more than 2 species of organisms, at least one of which is a bacterium of ≥ 10^6 CFU/ml**

### Result Codes

- **S** = Susceptible
- **I** = Intermediate
- **R** = Resistant
- **NS** = Non-susceptible
- **S, D** = Susceptible-dose dependent
- **N** = Not tested

### Gentamicin results:

- **S** = Susceptible/Synergistic
- **R** = Resistant/Not Synergistic

### Clinical breakpoints have not been set by FDA or CLSI. Sensitive and Resistant designations should be based upon epidemiological cutoffs of sensitive MIC ≤ 2 and Resistant MIC ≥ 4

### Drug Codes

- **AMK** - amikacin
- **AVP** - ampicillin
- **CEFU** - cefuroxime
- **GENT** - gentamicin
- **GENTH** - gentamicin - high level
- **IM** - imipenem
- **PA** - piperacillin
- **AP** - ampicillin/sulbactam
- **CIPRO** - ciprofloxacin
- **FOX** - fluoroquinolones
- **POD** - piperacillin tobramycin
- **REF** - rifampin
- **TOD** - tobramycin
- **VE** - vancomycin
- **VIST** - imipenem/cilastatin
- **OX** - oxacillin
- **PB** - piperacillin/tazobactam
Data Collection Form

Risk Factors

*Urinary Catheter status:

1. □ In place – Urinary catheter in place > 2 days on the date of event
2. □ Removed – Urinary catheter in place > 2 days but removed the day before the date of event
3. □ Neither – Not catheter associated – Neither in place nor removed

Location of Device Insertion: ____________________________

If NICU, birth weight (gms):

Date of Device Insertion: ____ / ____ / _______
### Table of Instruction

**Form 57.114**  
(pages 2-3)

<table>
<thead>
<tr>
<th>Risk factor: Urinary catheter status on the date of event</th>
<th>Required. Check one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. “In place” if urinary catheter that had been in place for &gt;2 days was present for any portion of the calendar day on the date of event</td>
</tr>
<tr>
<td></td>
<td>2. “Removed” if a urinary catheter that had been in place for &gt;2 calendar days was removed the day before the date of event</td>
</tr>
<tr>
<td></td>
<td>3. Neither” if:</td>
</tr>
<tr>
<td></td>
<td>• Patient has/had an indwelling urinary catheter but it has/had not been in place &gt;2 calendar days on the date of event</td>
</tr>
<tr>
<td></td>
<td>• OR</td>
</tr>
<tr>
<td></td>
<td>• Patient did not have a urinary catheter in place on the day of event or the day before the date of event</td>
</tr>
</tbody>
</table>

**NOTES:**

- Date of insertion = Day 1.
- Urinary System Infection (USI) cannot be catheter associated, therefore, USI will only present as specific event type if urinary catheter status was marked “Neither”.

<table>
<thead>
<tr>
<th>Location of device insertion</th>
<th>Optional. Enter the patient location where the indwelling urethral catheter was inserted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of device insertion</td>
<td>Optional. Enter the date the indwelling urethral catheter was inserted.</td>
</tr>
</tbody>
</table>
# Instructions for Completion of Urinary Tract Infection (UTI) Form (CDC 57.114)

<table>
<thead>
<tr>
<th>Data Field</th>
<th>Instructions for Data Collection/Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility ID</td>
<td>The NHSN-assigned facility ID will be auto-entered by the computer.</td>
</tr>
<tr>
<td>Event #</td>
<td>Event ID number will be auto-entered by the computer.</td>
</tr>
<tr>
<td>Patient ID</td>
<td>Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.</td>
</tr>
<tr>
<td>Social Security #</td>
<td>Optional. Enter the 9-digit numeric patient Social Security Number.</td>
</tr>
<tr>
<td>Secondary ID</td>
<td>Optional. Enter the alphanumeric ID number assigned by the facility.</td>
</tr>
<tr>
<td>Medicare #</td>
<td>Conditionally required. Enter the patient’s Medicare number for all events reported as part of a CMS Quality Reporting Program.</td>
</tr>
<tr>
<td>Patient name</td>
<td>Optional. Enter the last, first, and middle name of the patient.</td>
</tr>
<tr>
<td>Gender</td>
<td>Required. Check Female, Male, or Other to indicate the gender of the patient.</td>
</tr>
<tr>
<td>Date of birth</td>
<td>Required. Record the date of the patient birth using this format: MM/DD/YYYY.</td>
</tr>
</tbody>
</table>

**Custom Fields**

Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MM/DD/YYYY), numeric, or alphanumeric.

**NOTE:** Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.

**Comments**

Optional. Enter any information on the event.
Entering CAUTI Events into NHSN (Numerator/Summary Data)
Risk Factors

**CAUTI**

**Required Field:** Three options:

- **INPLACE** - Urinary catheter in place >2 days on the date of event
- **REMOVE** - Urinary catheter in place >2 calendar days but was removed the day before the date of event
- **NEITHER** - If no urinary catheter was in place on the day of or the day before the date of event OR not in place >2 calendar days on the date of event

**Optional:** Patient location where indwelling urinary catheter inserted.
- Location outside facility

**Optional:** Date indwelling urinary catheter inserted.
Collecting Summary Denominator Data
Manual Collection

For all locations, count **at the same time each day**
- Number of patients on the unit
- Number of patients with an indwelling urinary catheter

<table>
<thead>
<tr>
<th>Date</th>
<th>*Number of Patients</th>
<th>**Number of patients with 1 or more central lines</th>
<th>**Number of patients with a urinary catheter</th>
<th>Total Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
<td></td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
Collecting Summary Denominator Data

Optional alternatives:

- **Electronically collected**
  - Following validation of the electronic method against the manual method
  - 3 months concurrent data collection with both methods
  - Difference between methods must be within +/- 5% of each other

- **Weekly Sampling**
  - Reduce staff time-estimate indwelling urinary catheter days (IUC)
  - ICU and ward locations with average of ≥75 IUC days per month
  - Saturday or Sunday - least accurate estimates of denominator data, therefore, these days should not be selected
Common Misconceptions
Common Misconceptions

1. UTI as secondary infection
2. Positive culture on admission automatically = Present on Admission (POA)
3. UTI signs or symptoms such as fever on admission automatically = POA
4. RIT continues during readmission
Misconception #1: UTI as secondary Infection

UTI is a primary site of infection and cannot be considered secondary to another site of infection.

When a patient meets CAUTI and the same organism is identified in a burn wound culture these are considered 2 sites of infection.

When a patient meets PNEU event, a CAUTI cannot be classified as a secondary infection even though the same organism is identified.

A patient can have 2 sites of infection.
Misconception #2: Positive culture on admission automatically = Present on Admission (POA)
Misconception #2
Positive urine culture on admit = POA

- 1/9 Positive urine culture sets the IWP: 1/6–1/12
- 1/10 fever occurs in the IWP, therefore is used to meet SUTI, date of event 1/9. The Foley was in place > 2 days on the date of event therefore meets CAUTI
- 1/2 Positive urine culture during the POA timeframe without UTI signs or symptoms nor matching blood organism in the IWP is not an event; therefore this does not meet POA
- The 1/9 CAUTI does not relate back to the positive urine culture on admission
Misconception #3

- UTI signs or symptoms on admission automatically = POA

- UTI s/s must be accompanied by a positive urine culture and must occur within the infection window period

- Date of event must occur within the POA time period
### Misconception #3 UTI
#### Sign/Symptom: Example

#### Misconception #3 Rationale
- The 3/11 urine culture sets the IWP
- The 3/10 fever > 38°C can be used because it occurs in the IWP
- This meets CAUTI, **date of event** 3/10
- All elements must occur in the IWP
- Cannot use the 3/1 fever > 38°C because it does not occur in the IWP

<table>
<thead>
<tr>
<th>DATE</th>
<th>SUTI Criterion</th>
<th>Hospital Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1</td>
<td>Admit with Foley catheter in place Fever &gt; 38°C</td>
<td>1</td>
</tr>
<tr>
<td>3/2</td>
<td>Fever &gt; 38°C</td>
<td>2</td>
</tr>
<tr>
<td>3/3</td>
<td>Fever &gt; 38°C</td>
<td>3</td>
</tr>
<tr>
<td>3/4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3/5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>3/6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>3/7</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>3/8</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>3/9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>3/10</td>
<td>Fever &gt; 38°C</td>
<td>10</td>
</tr>
<tr>
<td>3/11</td>
<td>positive urine culture &gt; 100,000 CFU/ml <em>E. coli</em></td>
<td>11</td>
</tr>
<tr>
<td>3/12</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>3/13</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>3/14</td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

*UTI criteria not met POA; requires positive urine culture*
Misconception #4 RIT continues during readmission

- The RIT applies during a patient’s single admission, including the day of discharge and the day after, in keeping with the Transfer Rule.
Location of Attribution

Key Concept

The location where the patient was assigned on the **date of the UTI event** (the date that the first element used to meet the UTI infection criterion occurred for the first time in the infection window period).
Exception to Location of Attribution

Transfer Rule: If the **date of event** for the UTI is the day of transfer/discharge or the next day, the UTI is attributed to the transferring/discharging location or facility.

Receiving facilities should share information about such HAIs with the transferring location or facility to enable reporting.
11/23 Patient is discharged from inpatient care facility with indwelling urinary catheter

11/24 Readmitted to same inpatient care facility with a positive urine culture *Klebsiella pneumoniae* > 100,000 CFU/ml, Foley remains intact

11/25 Fever at 38.7°C

11/26 Second positive urine culture also for *Klebsiella pneumoniae* > 100,000 CFU/ml
Does the RIT continue with the readmission?

A. True

B. False

✓
Does this meet the Transfer Rule?

A. True

B. False
<table>
<thead>
<tr>
<th>Hospital Day/Date</th>
<th>First Diagnostic Test</th>
<th>Infection Window Period</th>
<th>Date of Event</th>
<th>Repeat Infection Timeframe</th>
<th>Secondary BSI Attribution Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/22/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/23/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. - 11/24/2016</td>
<td>✓</td>
<td>✓ Positive urine culture 100,000 CFU/ml K. pneumoniae</td>
<td>- POA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. - 11/25/2016</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. - 11/26/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. - 11/28/2016</td>
<td></td>
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</tr>
<tr>
<td>7. - 11/30/2016</td>
<td></td>
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</tr>
<tr>
<td>8. - 12/1/2016</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9. - 12/2/2016</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>10. - 12/3/2016</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11. - 12/4/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. - 12/5/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. - 12/6/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. - 12/7/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CAUTI date of event is the day after transfer - attributed to previous admission**
Case Studies
Submit UTI case review questions to nhsn@cdc.gov

Sample of Complete NHSN Case review request:

- Date of Admission
- Date(s) of Foley insertion/removal if applicable
- Is patient >65 years of age?
- Date(s) and results of urine cultures including colony count
- Date(s) and types of UTI sign/symptoms
- Date(s) and results of any positive blood cultures
- Include your determination
- Do not include confidential Personal Identifiable Information
Case 1

3/2  Patient age 57 admitted, Foley inserted
3/3  Temperature 100.9°F
3/4  Temperature 100.2°F
3/5  Urine culture collected and positive for 100,000 CFU/ml coagulase negative *Staphylococcus*
Case 1  Patient < 65 years of age
The day 2 fever can be used as an element in this age patient

✓ A. True
B. False

<table>
<thead>
<tr>
<th>DATE&lt;</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2 Admit</td>
<td>Foley Catheter (FC) inserted</td>
</tr>
<tr>
<td>3/3</td>
<td>Fever 100.9°F</td>
</tr>
<tr>
<td>3/4</td>
<td>Fever 100.2°F</td>
</tr>
<tr>
<td>3/5</td>
<td>urine culture: CNS  $10^5$ CFU/ml</td>
</tr>
<tr>
<td>3/6</td>
<td>-</td>
</tr>
<tr>
<td>3/7</td>
<td>-</td>
</tr>
<tr>
<td>3/8</td>
<td>-</td>
</tr>
<tr>
<td>3/9</td>
<td>-</td>
</tr>
</tbody>
</table>
Case 1 Rationale

- The 3/5 positive urine culture sets the 7-day Infection Window Period (IWP): 3/2-3/8.
- The 3/3 fever is eligible in this age patient and is the first element to occur within the IWP. Therefore 3/3 is the date of event which is POA.
- The Foley was not in place > 2 days on the date of event therefore this meets SUTI 1b: Non-Catheter-Associated UTI, which sets the UTI RIT and 2ndary BSI attribution period.
Case 2

3/2  Patient age 67 admitted, Foley inserted
3/3  Temperature 100.9°F
3/4  Temperature 100.2°F
3/5  Urine culture collected and positive for 100,000 CFU/ml coagulase negative *Staphylococcus*
Case 2

The day 2 fever can be used as an element in this patient

A. True

B. False
Case 2  Patient > 65 years of age

<table>
<thead>
<tr>
<th>DATE</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2 Admit</td>
<td>Foley Catheter (FC) inserted</td>
</tr>
<tr>
<td>3/3</td>
<td>Fever 100.9°F</td>
</tr>
<tr>
<td>3/4</td>
<td>Fever 100.2°F</td>
</tr>
<tr>
<td>3/5</td>
<td>Urine culture: CNS 10⁵ CFU/ml</td>
</tr>
<tr>
<td>3/6</td>
<td></td>
</tr>
<tr>
<td>3/7</td>
<td></td>
</tr>
<tr>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>3/9</td>
<td></td>
</tr>
</tbody>
</table>

What is the correct determination in this case?

A. This patient has SUTI 1b: Non-CAUTI
B. This patient has SUTI 1a: CAUTI
C. This patient has Non - Catheter-Associated ABUTI
D. This patient does not meet UTI event

✓
Case 2 Rationale

- The 3/5 positive urine culture sets the 7-day Infection Window Period (IWP): 3/2 – 3/8.
- The 3/3 fever cannot be used as an element in this age patient because the Foley was not in place > 2 days on the date of event.
- The 3/4 temperature is not eligible (not > 38.0°C).
- There are no other UTI elements (UTI s/s nor matching blood organism) within the IWP therefore this does not meet UTI event. No UTI RIT is set.

<table>
<thead>
<tr>
<th>DATE</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2 Admit</td>
<td>Foley Catheter (FC) inserted</td>
</tr>
<tr>
<td>3/3</td>
<td>Fever 100.9°F</td>
</tr>
<tr>
<td>3/4</td>
<td>Fever 100.2°F</td>
</tr>
<tr>
<td>3/5</td>
<td>urine culture: CNS $10^5$ CFU/ml</td>
</tr>
<tr>
<td>3/6</td>
<td></td>
</tr>
<tr>
<td>3/7</td>
<td></td>
</tr>
<tr>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>3/9</td>
<td></td>
</tr>
</tbody>
</table>
Case 3

1/6  Admitted and Foley inserted, temperature 100.3 °F
1/7  Temperature 100.7 °F
1/8  Temperature 100.8 °F
1/9  Foley discontinued, Tmax 100 °F
1/10 Tmax 99.6 °F
1/11 Urine culture >100,000 CFU/mL *Proteus mirabilis* & 50,000 CFU/mL *E. coli*, Tmax 99.6 °F
1/12 Tmax 99.6 °F
1/13 Discharged to rehab
Case 3  This patient does not meet CAUTI criteria

A. True

B. False

<table>
<thead>
<tr>
<th>Date</th>
<th>Foley</th>
<th>Tmax</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6 Admit</td>
<td>Yes</td>
<td>100.3</td>
<td>Foley catheter in place.</td>
</tr>
<tr>
<td>1/7</td>
<td>Yes</td>
<td>100.7</td>
<td></td>
</tr>
<tr>
<td>1/8</td>
<td>Yes</td>
<td>100.8</td>
<td></td>
</tr>
<tr>
<td>1/9</td>
<td>Foley dc'd</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1/10</td>
<td>No</td>
<td>99.6</td>
<td></td>
</tr>
<tr>
<td>1/11</td>
<td>No</td>
<td>99.9</td>
<td>Urine culture &gt;100,000 CFU/mL Proteus mirabilis &amp; 50,000 CFU/mL E. coli</td>
</tr>
<tr>
<td>1/12</td>
<td>No</td>
<td>99.6</td>
<td></td>
</tr>
<tr>
<td>1/13</td>
<td>No</td>
<td>98.7</td>
<td>Patient discharged to rehab.</td>
</tr>
</tbody>
</table>
### Case 3 Determination and Rationale

**Meets SUTI 1a: Catheter-Associated UTI, date of event 1/8**

- Even though the positive urine culture occurred 2 days after Foley catheter was removed, the 1/8 fever was the first element in the 7-day Infection Window Period therefore is the date of event.
- On the date of event, the Foley catheter was in place > 2 days.
- This meets SUTI 1a: Catheter-Associated UTI, date of event 1/8 pathogen *Proteus mirabilis*.

<table>
<thead>
<tr>
<th>Date</th>
<th>Foley</th>
<th>Tmax</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6</td>
<td>Yes</td>
<td>100.3</td>
<td>Foley catheter inserted</td>
</tr>
<tr>
<td>1/7</td>
<td>Yes</td>
<td>100.7</td>
<td></td>
</tr>
<tr>
<td>1/8</td>
<td>Yes</td>
<td><strong>100.8</strong></td>
<td></td>
</tr>
<tr>
<td>1/9</td>
<td>Foley dc'd</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1/10</td>
<td>No</td>
<td>99.6</td>
<td></td>
</tr>
<tr>
<td>1/11</td>
<td>No</td>
<td>99.4</td>
<td>Urine culture &gt;100,000 CFU/mL <em>Proteus mirabilis</em> &amp; 50,000 CFU/mL <em>E. coli</em></td>
</tr>
<tr>
<td>1/12</td>
<td>No</td>
<td>99.6</td>
<td></td>
</tr>
<tr>
<td>1/13</td>
<td>No</td>
<td>98.7</td>
<td>Patient discharged to rehab.</td>
</tr>
</tbody>
</table>
Case 4

3/1: Admitted with chronic Foley; fever of 40.1°C
Positive urine culture >100,000 CFU/ml Klebsiella pneumoniae

3/2: Fever of 41.1°C

3/14: Fever of 39.9°C

3/15: Positive urine culture of > 100,000 CFU/ml Enterococcus
Case 4

3/14 Date of event occurs within the RIT. This is a continuation of the POA event.
Case 4 Rationale

- The 3/1 positive urine culture sets the IWP: 2/27 – 3/4
- This is not a leap year! Because the urine culture was on date of admission, the IWP includes 2 days before admission, date of urine culture and 3 days after
- The 3/1 fever* is used as element to meet SUTI 1a: CAUTI, date of event 3/1 which is POA
- The 14-day RIT is 3/1 - 3/14
  * Fever can be used in any age patient due to chronic foley in > 2 days
Case 4 Rationale cont.

- The 3/15 positive urine culture falls outside the RIT and therefore sets an IWP: 3/12 - 3/18.
- The 3/14 fever is the first element to occur within the IWP. Therefore this is the **date of event**.
- The 3/14 **date of event** occurs within the POA RIT therefore this is considered a continuation of the POA event. No new UTI RIT is set.
Case 5

Prolonged hospital stay for colon mass; several weeks into the stay:

1/30   Foley catheter placed

2/11   Positive wound culture: *Staphylococcus* spp. and *Enterococcus faecalis*

2/14   Urine culture $>10^5$ CFU/ml *Staphylococcus epidermidis* (SE) Blood culture *SE* in 2 of 2 culture bottles drawn on separate occasions

2/15   Hypotension

2/11-17 No fever $>38^0\text{C}$, no UTI signs/symptoms
### Case 5

<table>
<thead>
<tr>
<th>DATE Admit</th>
<th>BSI 2ndary</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/11</td>
<td>no UTI signs/symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/12</td>
<td>no UTI signs/symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/13</td>
<td>no UTI signs/symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/14</td>
<td>1</td>
<td></td>
<td>Positive urine culture &gt;10⁶ CFU/ml. Staphylococcus epidermidis (SE). Positive blood culture SE x 2 drawn on separate occasions. no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/15</td>
<td>2</td>
<td></td>
<td>Hypotension. no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/16</td>
<td>3</td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/17</td>
<td>4</td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/18</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

What is the correct determination in this case?

A. This patient meets SUTI 1a: CAUTI
B. This patient meets Catheter-Associated ABUTI
C. This patient does not meet UTI event
D. This patient meets primary LCBI 2: BSI

**✓** B. This patient meets Catheter-Associated ABUTI
Case 5 Determination

- In order to meet ABUTI criterion using matching blood common commensals, the patient must meet LCBI 2 with either chills or hypotension (without fever).

- If the patient had a fever, it would have been SUTI 1a, not ABUTI.
Case 5 Rationale

- 2/14 positive urine culture sets the IWP: 2/11 – 2/17
- No UTI s/s within IWP
- Consider if matching common commensals in IWP meet LCBI 2
- 2/15 hypotension within IWP meets LCBI 2
- Date of event 2/14
- This meets catheter-associated ABUTI and the matching common commensals would be secondary

<table>
<thead>
<tr>
<th>Date</th>
<th>BSI 2ndary</th>
<th>RIT</th>
<th>Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/9</td>
<td></td>
<td></td>
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<tr>
<td>2/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/11</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/12</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/13</td>
<td></td>
<td></td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/14</td>
<td>Positive urine culture &gt;10⁵ CFU/ml <em>Staphylococcus epidermidis</em> (SE)</td>
<td>1</td>
<td><em>Positive blood culture SE X 2 drawn on separate occasions</em></td>
</tr>
<tr>
<td>2/15</td>
<td></td>
<td></td>
<td>Hypotension no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/16</td>
<td></td>
<td>3</td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/17</td>
<td></td>
<td>4</td>
<td>no UTI signs/symptoms</td>
</tr>
<tr>
<td>2/18</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
Summary

- Reviewed the **key concepts and common misconceptions** in the NHSN UTI protocol
  - IUC inserted through the urethra and left in place
  - Do not change device association during the UTI RIT
  - RIT does not cross admissions
  - Positive urine culture OR UTI s/s on admission does not automatically meet POA
  - UTI is a primary site of infection; cannot be secondary to another site of infection

- Identified how to count urinary catheter days to determine infection association
  - Catheter count begins anew if a full calendar occurs between removal/reinsertion
Summary

- Reviewed the data collection form and Table of Instructions for UTI surveillance
  - Form has been updated to reflect 2017 UTI definitions

- Made correct UTI determinations through case studies
  - Transfer rule, IWP and UTI RIT
  - Dysuria, urinary urgency, frequency are not elements in the presence of a IUC
  - Reviewed Fever, age and device association
  - CAUTI determination when IUC is removed/reinserted
Great Job!!!
For More Information.....

Please see the following for additional training:

UTI protocol available at
http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf
Available Training

- NHSN Enrollment & Facility Set-up
- Overview of the Patient Safety Component, Device-associated module
- Data Entry, Surveillance, Analysis, Import, and Customization
- Introduction to the Device-associated Module (Training Course with quiz)
- Catheter-associated Urinary Tract Infection (CAUTI) (Training Course with quiz)

http://www.cdc.gov/nhsn/training/
American Journal of Infection Control
NHSN Case-Study Series

- Additional educational tool
  - Perfect for reliability testing of ICP teams, APIC chapters
- Target: quarterly publication
- Address common surveillance scenarios
  - CLABSI, CAUTI, VAE, SSI, MDRO/CDI
- Test your knowledge
- Quiz and answers via web link
- Pursuing other access opportunities
Questions?
The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.