



## Urinary Tract Infection (UTI) Event for Long-term Care Facilities

**Background:** The urinary tract is one of the most common sites of healthcare-associated infections, accounting for 20-30% of infections reported by long-term care facilities (LTCFs). In the LTC resident, risk factors for developing bacteriuria and UTI include age-related changes to the genitourinary tract, comorbid conditions resulting in neurogenic bladder, and instrumentation required to manage bladder voiding. The point prevalence of asymptomatic bacteriuria in LTC residents can range from 25-50%. Although the incidence of symptomatic UTI is lower, it still comprises a significant proportion of infections manifesting in LTCFs and results in a large amount of antibiotic use.

Though prevalence of indwelling urinary catheter use in LTCFs is lower than in the acute care setting, catheter-associated UTI (CAUTI) can lead to such complications as cystitis, pyelonephritis, bacteremia, and septic shock. These complications associated with CAUTI can result in decline in resident function and mobility, acute care hospitalizations, and increased mortality. Prevention of CA-UTIs is discussed in the CDC/HICPAC document, *Guideline for Prevention of Catheter-associated Urinary Tract Infections*<sup>1</sup>.

1: Healthcare Infection Control Practices Advisory Committee (HICPAC) approved guidelines for the Prevention of catheter-associated urinary tract infections, 2009. Available at [www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf](http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIGuideline2009final.pdf)

**Settings:** UTI Event reporting is currently available for certified skilled nursing facilities/nursing homes (LTC:SKILLNURS), and intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS). Infection surveillance for UTIs should be performed facility-wide (FacWideIN).

NOTE: If a resident is transferred from an acute care facility and develops signs/symptoms of a UTI within the first 2 calendar days of admission (where date of admission = day 1) to the LTCF, it would be considered present at the time of transfer to the LTCF. An event present at the time of transfer should be reported back to the transferring facility and not reported to NHSN as a LTCF UTI event. Only UTI events presenting > 2 calendar days after admission (where date of admission = day 1) are considered facility onset events.

Example: NHSN Classification of reportable LTCF UTI Events				
Admission date				
June 4 <sup>th</sup>	June 5 <sup>th</sup>	June 6 <sup>th</sup>	June 7 <sup>th</sup>	June 8 <sup>th</sup>
day 1	day 2	day 3	day 4	day 5
<b>Not a LTCF reportable UTI event</b>		<b>LTCF reportable UTI event</b>		

**Requirements:** Facilities must indicate their surveillance for UTI in the *Monthly Reporting Plan for LTCF* (CDC 57.141). UTI surveillance must be reported for at least 6 consecutive months to provide meaningful measures.

**Definitions:**

Date of Event is defined as the date when the *first clinical evidence (signs/symptoms) of the UTI appeared* **or** the *date the specimen was collected* that was used to make or confirm the diagnosis, whichever comes first.

Urinary tract infections (UTI) are defined using a combination of clinical signs and symptoms and laboratory criteria (See Figure 1 and Table 1).

Symptomatic UTI (SUTI) events occur when the resident manifests signs and symptoms such as acute dysuria, new and/or marked increase in urinary frequency, suprapubic tenderness, etc. which localize the infection to the urinary tract. These events can occur in residents without urinary devices or managed with urinary devices other than indwelling urinary catheters, such as suprapubic catheters, straight in-and-out catheters and condom catheters. Events occurring in residents with indwelling urinary catheters (defined below) are a sub-set of SUTIs referred to as catheter-associated SUTI (CA-SUTI) events.

Catheter-associated SUTIs (CA-SUTI) events occur when a resident develops signs and symptoms localizing to the urinary tract while having an indwelling urinary catheter in place or removed within the 2 calendar days prior to the date of event (where day of catheter removal = day 1).

NOTE: An indwelling urinary catheter should be in place for a minimum of 2 calendar days before infection onset (where day of catheter insertion = day 1) in order for the SUTI to be catheter-associated.

Indwelling urinary 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. Indwelling urinary catheters do not include straight in-and-out catheters or suprapubic catheters.

NOTE: UTIs in residents managed with suprapubic, in and out, or condom (males only) catheters will be captured as SUTIs, not CA-SUTIs.

Asymptomatic Bacteremic UTI (ABUTI) events occur when the resident has NO signs or symptoms localizing to the urinary tract but has *urine and blood cultures positive* for at least one common organism (See Table 1) regardless of whether a catheter is in place or not.

<b>Table 1. Examples of “sameness” by organism speciation</b>		
<b>Culture</b>	<b>Companion Culture</b>	<b>Report as.</b>
S epidermidis	Coagulase-negative staphylococci	S epidermidis
Klebsiella oxytoca	Klebsiella spp.	K oxytoca
S salivarius	Strep viridans	S salivarius

**Numerator and Denominator Data:**

**Numerator Data:** The *Urinary Tract Infection (UTI) for LTCF* form (CDC 57.140) is used to collect and report each SUTI, CA-SUTI or ABUTI that is identified during the month selected for surveillance. The *Tables of Instructions* includes information on how to complete this form.

The UTI form includes resident demographic information and information on whether or not a catheter (or other urinary device) was present. Additional data include the specific clinical criteria evidence (signs and symptoms) and laboratory and diagnostic testing that were used for identifying the UTI; whether the resident developed a secondary bloodstream infection; whether the resident was transferred to an acute care facility for any reason within 7 days of the UTI event or died from any cause within 30 days of the UTI event; and the organisms isolated from cultures and their antimicrobial susceptibilities.

**Denominator data:** Catheter-days and resident-days are used for denominators. Catheter-days, defined as the number of residents with an indwelling urinary (Foley) catheter, are collected daily for all residents in the facility using the *Denominators for LTCF* form (CDC 57.142). Resident-days are calculated using the daily census of residents in the facility each day of the month. These daily counts are summed and only the total for the month is entered into NHSN, under Summary Data. None of the following urinary management devices should be included when counting indwelling catheter-days: suprapubic catheters, straight in-and-out catheters or condom catheters.

NOTE: If a resident is transferred to an acute care facility for a suspected UTI, no additional indwelling catheter-days are reported after the day of transfer.

## **Data Analyses:**

*Line lists of UTI events and UTI events by catheter status will be available as part of the UTI event within the NHSN LTCF component. Below are measures and calculations which will be incorporated into the analytics output that will be available for use in 2013.*

### **Calculated UTI Rates and Metrics**

*Data will be stratified by time (e.g., month, quarter) and aggregated across the entire facility.*

Total UTI incidence rate/1,000 resident-days = Number of UTI Events (i.e., SUTI+CA-SUTI+ABUTI) / Total resident-days x 1,000.

Percent that is SUTI = Number of SUTI Events / Total number of UTI Events x 100.

Percent that is CA-SUTI = Number of CA-SUTI Events / Total number of UTI Events x 100.

Percent that is ABUTI = Number of ABUTI Events / Total number of UTI Events x 100.

SUTI incidence rate/1,000 resident-days = Number of SUTI Events / (Total resident-days – catheter-days) x 1,000.

NOTE: Only SUTIs which are NOT catheter-associated will be included in the SUTI incidence rate.

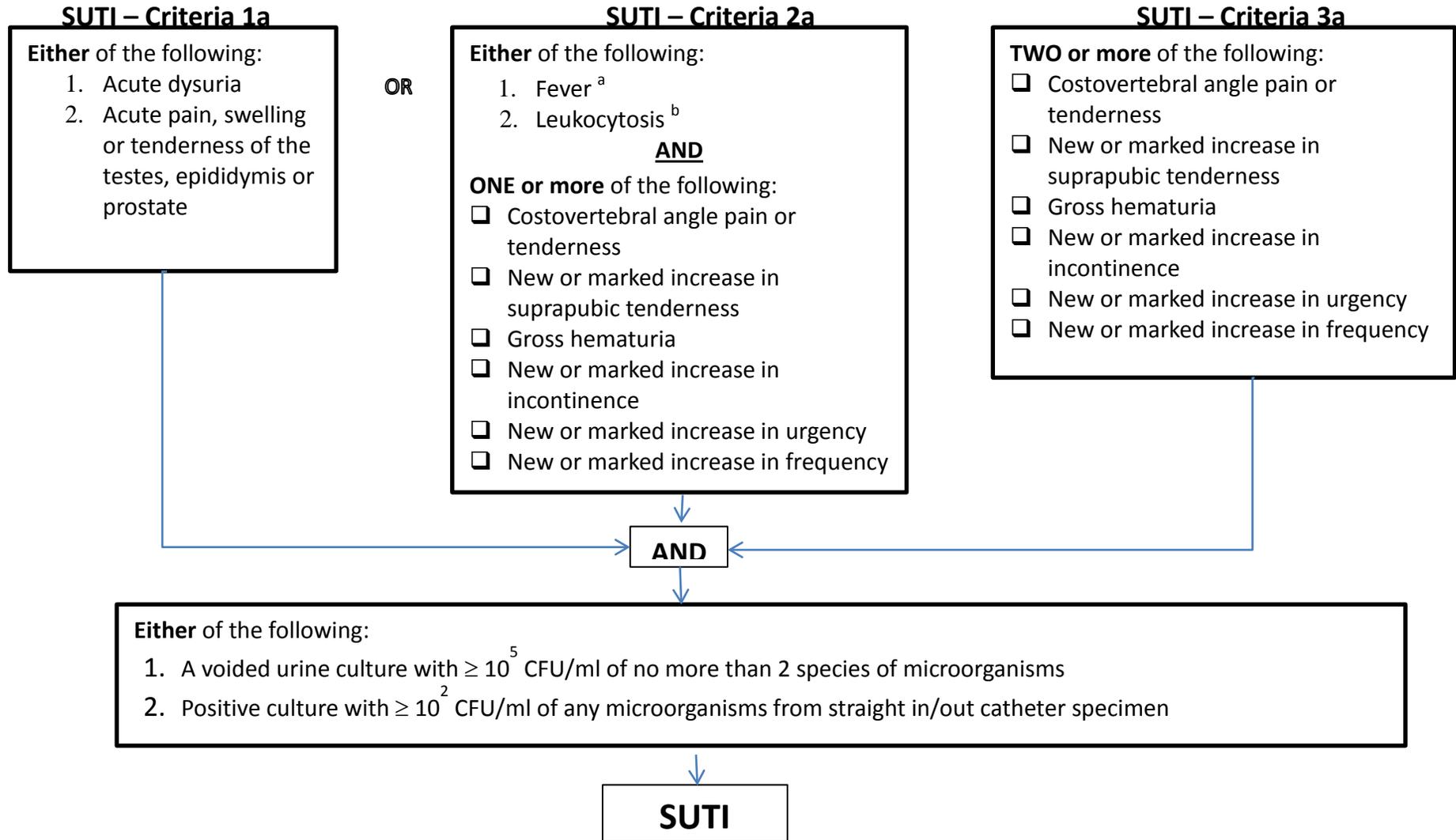
CA-SUTI incidence rate/1,000 catheter-days = Number of CA-SUTI events/ Catheter-days x 1,000

NOTE: Only symptomatic events which develop at the time an indwelling catheter is in place or recently removed (within last 2 calendar days) will contribute to the CA-SUTI rate.

Urinary Catheter Utilization Ratio = Total urinary catheters-days / Total resident-days.

**Figure 1: Criteria for Defining UTI Events in NHSN LTCF Component.**

**Resident *without* an indwelling catheter (Meets criteria 1a OR 2a OR 3a):**



<sup>a</sup> Fever: Single temperature ≥ 37.8°C (>100°F), or > 37.2°C (>99°F) on repeated occasions, or an increase of >1.1°C (>2°C) over baseline

<sup>b</sup> Leukocytosis: >14,000 cells/mm<sup>3</sup>, or Left shift (> 6% or 1,500 bands/mm<sup>3</sup>)

**Resident with an indwelling catheter:**

**CA-SUTI – Criteria**

**ONE or more** of the following with no alternate source:

- Fever <sup>a</sup>
- Rigors
- New onset hypotension, with no alternate site of infection.
- New onset confusion/functional decline **AND** Leukocytosis <sup>b</sup>
- New costovertebral angle pain or tenderness
- New or marked increase in suprapubic tenderness
- Acute pain, swelling or tenderness of the testes, epididymis or prostate
- Purulent discharge from around the catheter

**AND**

**Any** of the following:

If urinary catheter removed within last 2 calendar days:

1. A voided urine culture with  $\geq 10^5$  CFU/ml of no more than 2 species of microorganisms
2. Positive culture with  $\geq 10^2$  CFU/ml of any microorganisms from straight in/out catheter specimen

If urinary catheter in place:

3. Positive culture with  $\geq 10^5$  CFU/ml of any microorganisms from indwelling catheter specimen

**CA-SUTI**

<sup>a</sup> Fever: Single temperature  $\geq 37.8^\circ\text{C}$  ( $>100^\circ\text{F}$ ), or  $> 37.2^\circ\text{C}$  ( $>99^\circ\text{F}$ ) on repeated occasions, or an increase of  $>1.1^\circ\text{C}$  ( $>2^\circ\text{C}$ ) over baseline

<sup>b</sup> Leukocytosis:  $>14,000$  cells/ $\text{mm}^3$ , or Left shift ( $> 6\%$  or  $1,500$  bands/ $\text{mm}^3$ )

## Resident *with or without* an indwelling catheter:

### ABUTI –Criteria

Resident has no localizing urinary signs or symptoms (i.e., no urgency, frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). *If no catheter is in place, fever alone would not exclude ABUTI if other criteria are met.*

AND

Any of the following:

1. A voided urine culture with  $\geq 10^5$  CFU/ml of no more than 2 species of microorganisms
2. Positive culture with  $\geq 10^2$  CFU/ml of any microorganisms from in/out catheter specimen
3. Positive culture with  $\geq 10^5$  CFU/ml of any microorganisms from indwelling catheter specimen

AND

Positive blood culture with at least 1 matching organism in urine culture

ABUTI

**Table 1. Criteria for Defining UTI Events in NHSN LTCF Component.**

Criterion	<b>Symptomatic Urinary Tract Infection (SUTI)</b> <i>For residents <b>without</b> an indwelling catheter:</i>
1a	<p><b>Either</b> of the following (Signs &amp; Symptoms):</p> <ol style="list-style-type: none"> <li>1. Acute dysuria</li> <li>2. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate</li> </ol> <p><b><u>AND</u></b></p> <p><b>Either</b> of the following (Laboratory and Diagnostic Testing):</p> <ol style="list-style-type: none"> <li>1. A voided urine culture with <math>\geq 10^5</math> CFU/ml of no more than 2 species of microorganisms</li> <li>2. Positive culture with <math>\geq 10^2</math> CFU/ml of any microorganisms from in/out catheter specimen</li> </ol>
2a	<p><b>Either</b> of the following:</p> <ol style="list-style-type: none"> <li>1. Fever (Signs and Symptoms) [Single temperature <math>\geq 37.8^\circ\text{C}</math> (<math>&gt;100^\circ\text{F}</math>), or <math>&gt;37.2^\circ\text{C}</math> (<math>&gt;99^\circ\text{F}</math>) on repeated occasions, or an increase of <math>&gt;1.1^\circ\text{C}</math> (<math>&gt;2^\circ\text{F}</math>) over baseline]</li> <li>2. Leukocytosis (Laboratory and Diagnostic Testing) (<math>&gt;14,000</math> cells/mm<sup>3</sup>) or Left shift (<math>&gt;6\%</math> or 1,500 bands/mm<sup>3</sup>)</li> </ol> <p><b><u>AND</u></b></p> <p><b>One or more</b> of the following (New and/or marked increase):</p> <ol style="list-style-type: none"> <li>1. Costovertebral angle pain or tenderness,</li> <li>2. Suprapubic tenderness,</li> <li>3. Visible (Gross) hematuria,</li> <li>4. New or marked increase incontinence</li> <li>5. New or marked increase urgency</li> <li>6. New or marked increase frequency</li> </ol> <p><b><u>AND</u></b></p> <p><b>Either</b> of the following (Laboratory and Diagnostic Testing):</p> <ol style="list-style-type: none"> <li>1. A voided urine culture with <math>\geq 10^5</math> CFU/ml of no more than 2 species of microorganisms.</li> <li>2. Positive culture with <math>\geq 10^2</math> CFU/ml of any microorganisms from in/out catheter specimen.</li> </ol>

3a	<p><b>Two or more</b> of the following (New and/or marked increase):</p> <ol style="list-style-type: none"> <li>1. Costovertebral angle pain or tenderness,</li> <li>2. New or marked increase incontinence</li> <li>3. New or marked increase urgency</li> <li>4. New or marked increase frequency</li> <li>5. Suprapubic tenderness</li> <li>6. Visible (gross) hematuria</li> </ol> <p><b>AND</b></p> <p><b>Either</b> of the following (Laboratory and Diagnostic Testing):</p> <ol style="list-style-type: none"> <li>1. A voided urine culture with <math>\geq 10^5</math> CFU/ml of no more than 2 species of microorganisms</li> <li>2. Positive culture with <math>\geq 10^2</math> CFU/ml of any microorganisms from in/out catheter specimen</li> </ol>
<b>Criterion</b>	<p><b>Cather-associated Symptomatic Urinary Tract Infection (SUTI) – CA-SUTI</b>  <i>For residents <b>with</b> an indwelling catheter in place or removed within 2 calendar days prior to event onset</i></p>
	<p><b>One or more</b> of the following (Signs and Symptoms and Laboratory and Diagnostic Testing):</p> <ol style="list-style-type: none"> <li>1. Fever</li> <li>2. Rigors</li> <li>3. New onset hypotension, with no alternate site of infection.</li> <li>4. New onset confusion/functional decline with no alternate diagnosis <b>AND</b> leukocytosis</li> <li>5. New onset suprapubic pain or costovertebral angle pain or tenderness</li> <li>6. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate.</li> <li>7. Purulent discharge from around the catheter</li> </ol> <p><b>AND</b></p> <p><b>Any</b> of the following:</p> <p><i>If urinary catheter removed within last 2 calendar days:</i></p> <ol style="list-style-type: none"> <li>1. A voided urine culture with <math>\geq 10^5</math> CFU/ml of no more than 2 species of microorganisms</li> <li>2. Positive culture with <math>\geq 10^2</math> CFU/ml of any microorganisms from straight in/out catheter specimen</li> </ol> <p><i>If urinary catheter in place:</i></p> <ol style="list-style-type: none"> <li>3. Positive culture with <math>\geq 10^5</math> CFU/ml of any microorganisms from indwelling catheter specimen</li> </ol>

Criterion	Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)
1	<p data-bbox="310 136 1029 165"><i>Resident with or without an indwelling urinary catheter</i></p> <p data-bbox="310 174 1487 275"><b>No</b> signs or symptoms (i.e., no urgency, frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). <i>If no catheter is in place, fever alone would not exclude ABUTI if other criteria are met.</i></p> <p data-bbox="310 321 383 350"><b><u>AND</u></b></p> <p data-bbox="310 396 589 426"><b>One</b> of the following:</p> <ol data-bbox="326 434 1495 604" style="list-style-type: none"> <li data-bbox="326 434 1495 478">1. A voided urine culture with <math>\geq 10^5</math> CFU/ml of no more than 2 species of microorganisms</li> <li data-bbox="326 485 1390 562">2. Positive culture with <math>\geq 10^2</math> CFU/ml of any microorganisms from in/out catheter specimen</li> <li data-bbox="326 569 1455 604">3. Positive culture with <math>\geq 10^5</math> CFU/ml of any microorganisms from indwelling catheter.</li> </ol> <p data-bbox="310 648 383 678"><b><u>AND</u></b></p> <p data-bbox="310 720 1271 749">A positive blood culture with at least 1 matching organism in urine culture.</p>