

# HEALTHCARE-ASSOCIATED INFECTION (HAI) MODULE

## Part One

### Urinary Tract Infections (UTI): UTI Overview

Date: October 2022

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# Learning Objectives

- Describe the NHSN Monthly Reporting Requirements
- Describe methodology, protocols, and definitions for UTI surveillance and reporting criteria as defined by NHSN

# UTI Surveillance Considerations

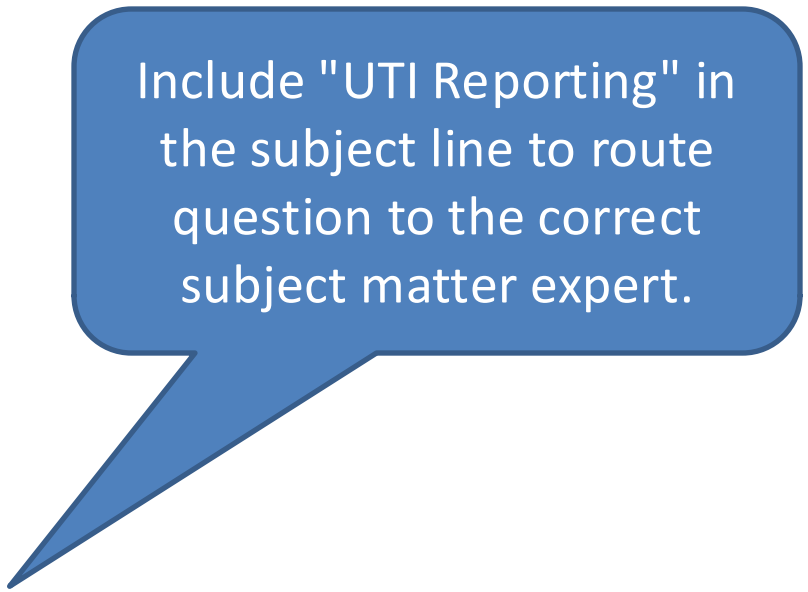
- Does the resident have an indwelling urinary device (catheter) in place?
- Are the symptoms new or acutely worse?
  - No set-time period for reporting second UTI for same resident
- Evidence of infection
  - Does a resident **without** an indwelling urinary device have localized signs/symptoms?
  - Does the resident have a positive urine culture?
  - Does the clinical presentation of resident meet NHSN criteria?

# What if There is Clinical Disagreement?

## Surveillance vs. clinical definitions

- Surveillance reporting can have different purposes
- Clinical definitions may not be congruent with surveillance definitions
- Comments section useful to note important factors

Submit cases and questions to [nhsn@cdc.gov](mailto:nhsn@cdc.gov) for review and feedback



Include "UTI Reporting" in the subject line to route question to the correct subject matter expert.

# UTI Monthly Participation Requirements

- A **NHSN Monthly Reporting Plan (MRP)** must be completed for each calendar month in which a facility plans to enter data into the NHSN
  - MRPs can be submitted for more than one month at a time
- Facilities must **submit** all UTI events that meet NHSN criteria (*referred to as numerator data*)
  - Includes both catheter-associated and non-catheter-associated UTI events
- **Summary Data-** For each participating month, the facility must submit UTI denominator data
- **Resolve** “Alerts,” if applicable

# Monthly Reporting Plan (MRP) for UTI Module

- MRP must be completed **before** event reporting in the application is allowed
- HAI Module: **UTI**
- **Facility-wide Inpatient (FacWideIN)** is default indicating UTI surveillance must be conducted for all resident care locations
- [57.141 LTCF Reporting Plan \(cdc.gov\)](http://57.141.LTCF.Reporting.Plan(cdc.gov))

NHSN Home

Add Monthly Reporting Plan

Alerts

Reporting Plan Add

Resident Find

Event

Summary Data

Surveys

Analysis

Users

Facility

Group

Logout

Facility ID\*: Angela LTCF Test Facility (ID 39455)

Month\*: February

Year\*: 2017

☐ No Long Term Care Facility Component Modules Followed this Month

**HAI Module**

Locations	UTI
Facility-wide Inpatient (FacWideIN)	<input checked="" type="checkbox"/>

Locations Specific Organism Type Lab ID Event All Specimens

Facility-wide Inpatient (FacWideIN)

Add Row Clear All Rows Copy from Previous Month

**Prevention Process Measure Module**

Locations	Hand Hygiene	Gown and Gloves Use
Facility-wide Inpatient (FacWideIN)	<input type="checkbox"/>	<input type="checkbox"/>

Copy from Previous Month

Save Back

# Which Residents Are Included in NHSN's UTI Event Surveillance and Reporting?

- UTI surveillance must occur for **all** resident care locations in the LTCF; this is called facility-wide inpatient or **FacWideIN**.
- Includes UTI in residents with or without an indwelling urinary device.
- Unit/location/pod specific UTI surveillance is not an option in the LTCF HAI UTI Event module.

# Which Residents Are Excluded from NHSN UTI Event Reporting?

- Residents receiving **inpatient** care in another healthcare facility.
- Residents not fully meeting NHSN UTI criteria, including the urine culture requirement.
- Residents with NHSN UTI signs or symptoms presenting on day one or two of current admission date.
  - 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 to the LTCF, it would be considered present at the time of transfer to the LTCF and not reported to NHSN as a LTCF UTI event.

# Reportable UTI Events

- Submit UTI events only for residents meeting the NHSN UTI event criteria.
- Only residents with NHSN UTI signs or symptoms presenting **> 2 calendar days after current admission** (*where date of admission is equal to day 1*).

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
Not a LTCF reportable UTI event		LTCF reportable UTI event		

# NHSN Provides Customizable UTI Event Forms with Instructions

[Long-term Care Facilities \(LTCF\) Component](#)  
[| NHSN | CDC](#)

## Urinary Tract Infection (UTI) for LTCF

\*Required for saving

*Facility ID:		Event #:	
*Resident ID:			
Medicare number (or comparable railroad insurance number):			
Resident Name: Last:		First:	Middle:
*Sex: F M		*Date of Birth: / /	
*Ethnicity (specify): <input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> Not Hispanic or Latino <input type="checkbox"/> Declined to respond <input type="checkbox"/> Unknown		*Race (specify): <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Middle Eastern or North African <input type="checkbox"/> Native Hawaiian/Other Pacific Islander <input type="checkbox"/> White <input type="checkbox"/> Declined to respond <input type="checkbox"/> Unknown	
*Date of First Admission to Facility: / /		*Date of Current Admission to Facility: / /	
*Event Type: UTI		*Date of Event: / /	
*Resident Care Location:			
*Primary Resident Service Type: (check one)			
<input type="checkbox"/> Long-term general nursing		<input type="checkbox"/> Long-term dementia <input type="checkbox"/> Long-term psychiatric	
<input type="checkbox"/> Skilled nursing/Short-term rehab (subacute)		<input type="checkbox"/> Ventilator <input type="checkbox"/> Bariatric <input type="checkbox"/> Hospice/Palliative	
*Has resident been transferred from an acute care facility to your facility in the past 4 weeks? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If Yes, date of last transfer from acute care to your facility: / /			
If Yes, did the resident have an indwelling urinary catheter at the time of transfer to your facility? <input type="checkbox"/> Yes <input type="checkbox"/> No			
*Indwelling Urinary Catheter status at time of event onset (check one):			
<input type="checkbox"/> In place <input type="checkbox"/> Removed within last 2 calendar days <input type="checkbox"/> Not in place			
If indwelling urinary catheter status in place or removed within last 2 calendar days:			
Indicate site where indwelling urinary catheter was inserted (check one): <input type="checkbox"/> Your facility <input type="checkbox"/> Acute care hospital <input type="checkbox"/> Other <input type="checkbox"/> Unknown			
Date of indwelling urinary catheter insertion: / /			
If indwelling urinary catheter not in place, was another urinary device type present at the time of event onset? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If Yes, other device type: <input type="checkbox"/> Suprapubic <input type="checkbox"/> External Drainage (male or female) <input type="checkbox"/> Intermittent straight catheter			
<b>Event Details</b>			
*Specify Criteria Used: (check all that apply)		Laboratory & Diagnostic Testing	
Signs & Symptoms			
<input type="checkbox"/> 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 $>1.1^{\circ}\text{C}$ ( $>2^{\circ}\text{F}$ ) over baseline		<input type="checkbox"/> Positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml	
<input type="checkbox"/> Rigors <input type="checkbox"/> New onset hypotension		<input type="checkbox"/> Leukocytosis ( $>10,000$ cells/mm <sup>3</sup> ), or Left shift ( $> 6\%$ or $1,500$ bands/mm <sup>3</sup> )	
<input type="checkbox"/> New onset confusion/functional decline		<input type="checkbox"/> Positive blood culture with at least 1 matching organism in urine culture	
<input type="checkbox"/> Acute pain, swelling, or tenderness of the testes, epididymis, or prostate			
<input type="checkbox"/> Acute dysuria <input type="checkbox"/> Purulent drainage at catheter insertion site			
New and/or marked increase in (check all that apply):			
<input type="checkbox"/> Urgency <input type="checkbox"/> Costovertebral angle pain or tenderness			
<input type="checkbox"/> Frequency <input type="checkbox"/> Suprapubic tenderness			
<input type="checkbox"/> Incontinence <input type="checkbox"/> Visible (gross) hematuria			
*Specific Event (Check one): Auto-populated in NHSN application			
<input type="checkbox"/> Symptomatic UTI (SUTI)		<input type="checkbox"/> Symptomatic CA-UTI (CA-SUTI) <input type="checkbox"/> Asymptomatic Bacteremic UTI (ABUTI)	
Secondary Bloodstream Infection: Yes No		Died within 7 days of date of event: Yes No	
*Transfer to acute care facility within 7 days: Yes No			

[57.140 UTI LTCF \(cdc.gov\)](https://www.cdc.gov/nhsn/data/57.140-UTI-LTCF/)

# LTCF Website: Urinary Tract Infections (UTI) | LTCF | NHSN | CDC

- Access to event modules
  - Training
  - Protocols
  - Forms and instructions
  - Supporting materials (e.g., locations, key terms, etc.)
  - Analysis resources
  - Frequently Asked Questions

The screenshot displays the NHSN website interface. On the left is a navigation menu with links like 'NHSN Home', 'NHSN Login', 'About NHSN', 'Enroll Facility Here', 'CMS Requirements', 'Change NHSN Facility Admin', 'Resources by Facility', 'Patient Safety Component', 'Long-term Care Facility Component' (expanded to show 'LTCF COVID-19 Module', 'State Veterans Homes COVID-19 Tool', 'HCP & Resident COVID-19 Vaccination', 'MDRO & CDI', 'UTI' (highlighted), 'Prevention Process Measures', and 'HCP & Resident Flu Vaccination'), and 'NHSN Home'. The main content area is titled 'Urinary Tract Infections (UTI)' and includes sections for 'Protocols' (with links to 'UTI Event Protocol for LTCF - January 2021' and 'Component Protocol Changes for LTCF - January 2021'), 'Supporting Chapters' (with links to 'LTCF - Key Terms and Acronyms' and 'CDC Location Labels and Location Descriptions - January 2021'), and 'Data Collection Forms & Instructions' (noting that all forms are print-only and listing 'UTI Event for LTCF - September 2021' with links to a customizable form and a table of instructions). A 'Top of Page' link is also present. On the right sidebar, there are links for 'LTCF Training', 'Educational Roadmap', 'FAQs' (including 'LTCF FAQs' and 'HIPAA Privacy Rule'), and 'Supporting Materials' (including 'NHSN Organism List' and 'Guidance Documents' like 'How to Add and Edit Facility CMS Certification Number (CCN) within NHSN' and 'Change NHSN Facility').

Questions? We'd love to hear from you via e-mail: [nhsn@cdc.gov](mailto:nhsn@cdc.gov) "LTCF" in Subject Line

# **URINARY TRACT INFECTION (UTI)**

## **KEY TERMS AND DEFINITIONS**

# Date of Event

The date when the first clinical evidence (signs/symptoms) of the UTI appeared or the date the urine culture specimen used to meet the infection criteria was collected, whichever comes first.

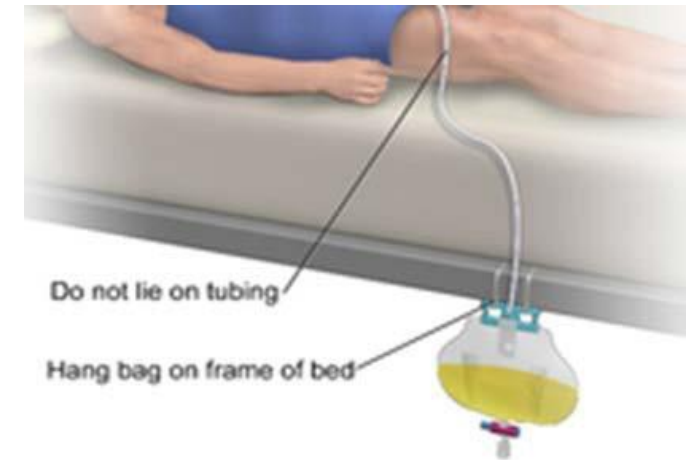
## Example: NHSN Classification of reportable LTCF UTI Events for New Admissions

Admission date June 4th	June 5th	June 6th	June 7th	June 8th
day 1	day 2	day 3	day 4	day 5
Not a LTCF reportable UTI event		LTCF reportable UTI event		

# **SYMPTOMATIC URINARY TRACT INFECTION, NON-CATHETER ASSOCIATED (SUTI)**

# 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 drainage bag/collection system (including leg bags); also called a Foley catheter.
- An Indwelling Urinary Catheter is **NOT**
  - In-and-out catheter (straight catheter)
  - Suprapubic catheter
  - External catheter
  - Nephrostomy tube



# Type of Urinary Tract Infections

**Non-Catheter-  
Associated  
Symptomatic UTI  
(SUTI)**

**Catheter-  
Associated  
Symptomatic  
UTI (CASUTI)**

**Asymptomatic  
Bacteremic UTI  
(ABUTI)**

# Symptomatic UTI (SUTI)

Events occurring in residents with indwelling urinary catheters are a subset of SUTIs referred to as Catheter-Associated SUTI (CA-SUTI) events.

- Events that 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 those managed with urinary devices other than *indwelling urinary catheters*, such as suprapubic catheters, female external urinary collection devices, straight in-and-out catheters, condom catheters, and other male external urinary collection devices

# Urine Culture Requirements: Apply to both SUTI and CA-SUTI

Positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of at least 100,000 CFU/ml.



At least one organism in the urine culture must be a bacterium. Yeast and other microorganisms, which are not bacteria, are **NOT** acceptable UTI pathogens.

# SUTI

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

## SUTI – Criteria 1

Either of the following:

1. Acute dysuria
2. Acute pain, swelling, or tenderness of the testes, epididymis or prostate

OR

## SUTI - Criteria 2

Either of the following:

1. Fever<sup>+</sup> <sup>a</sup>
2. Leukocytosis<sup>b</sup>

AND

ONE or more of the following:

- ☐ Costovertebral angle pain or tenderness
- ☐ New or marked increase in suprapubic tenderness
- ☐ Gross hematuria
- ☐ New or marked increase in incontinence
- ☐ New or marked increase in urgency
- ☐ New or marked increase in frequency

OR

## SUTI - Criteria 3

TWO or more of the following:

- ☐ Costovertebral angle pain or tenderness
- ☐ New or marked increase in suprapubic tenderness
- ☐ Gross hematuria
- ☐ New or marked increase in incontinence
- ☐ New or marked increase in urgency
- ☐ New or marked increase in frequency

AND

A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of  $\geq 10^5$  CFU/ml

NOTE: Yeast and other microorganisms, which are not bacteria, are not acceptable UTI pathogens

SUTI

<sup>+</sup> Fever must be used as a criterion for SUTI even if the resident has another possible cause for the fever (for example, pneumonia)

<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  $>1.1^\circ\text{C}$  ( $>2^\circ\text{F}$ ) over baseline

<sup>b</sup> Leukocytosis: defined by NHSN as  $> 10,000$  cells/mm<sup>3</sup>, or Left shift ( $> 6\%$  or 1,500 bands/mm<sup>3</sup>)

# FEVER

Single temperature  $>37.8^{\circ}\text{C}$  ( $>100^{\circ}\text{F}$ ), **OR**  $>37.2^{\circ}\text{C}$  ( $>99^{\circ}\text{F}$ ) on repeated occasions, **OR** an increase of  $>1.1^{\circ}\text{C}$  ( $>2^{\circ}\text{F}$ ) over baseline

- No specific route of measurement required.
- Use the temperature documented in the resident's medical record (*no conversion based on route of collection*).
- Non-specific sign that can be used to meet criteria even in the presence of another possible infection source.
- Baseline = average of the resident's previous documented temperatures, using the same method for fever assessment.

# LEUKOCYTOSIS

- An elevation in the number of white blood cells (WBC) in the blood. [greater than 10,000 cells/mm<sup>3</sup>, or Left shift (> 6% or 1,500 bands/mm<sup>3</sup>)] Identified through a complete blood count (CBC) and differential blood test.
- May see “Neutrophilia” or “Left Shift” documented in medical record.

# Example of SUTI

(Non-catheter-associated)

Mrs. Stevens, is a resident of the nursing home. On March 1, she developed new increase in incontinence and new suprapubic pain. The following day, on March 2, a voided urine specimen was sent to the lab and subsequently tested positive for greater than 100,000 ( $\geq 10^5$ ) CFU/ml of *E. coli*. Mrs. Stevens **does** meet criteria for a non-catheter associated SUTI.

## Criteria 3

- ✓ New Incontinence
- ✓ New onset of Suprapubic pain
- ✓ Voided urine culture with at least  $10^5$  CFU/ml of *no more than 2 species of microorganisms*

# **CATHETER-ASSOCIATED SYMPTOMATIC URINARY TRACT INFECTION (CA-SUTI) CRITERIA**

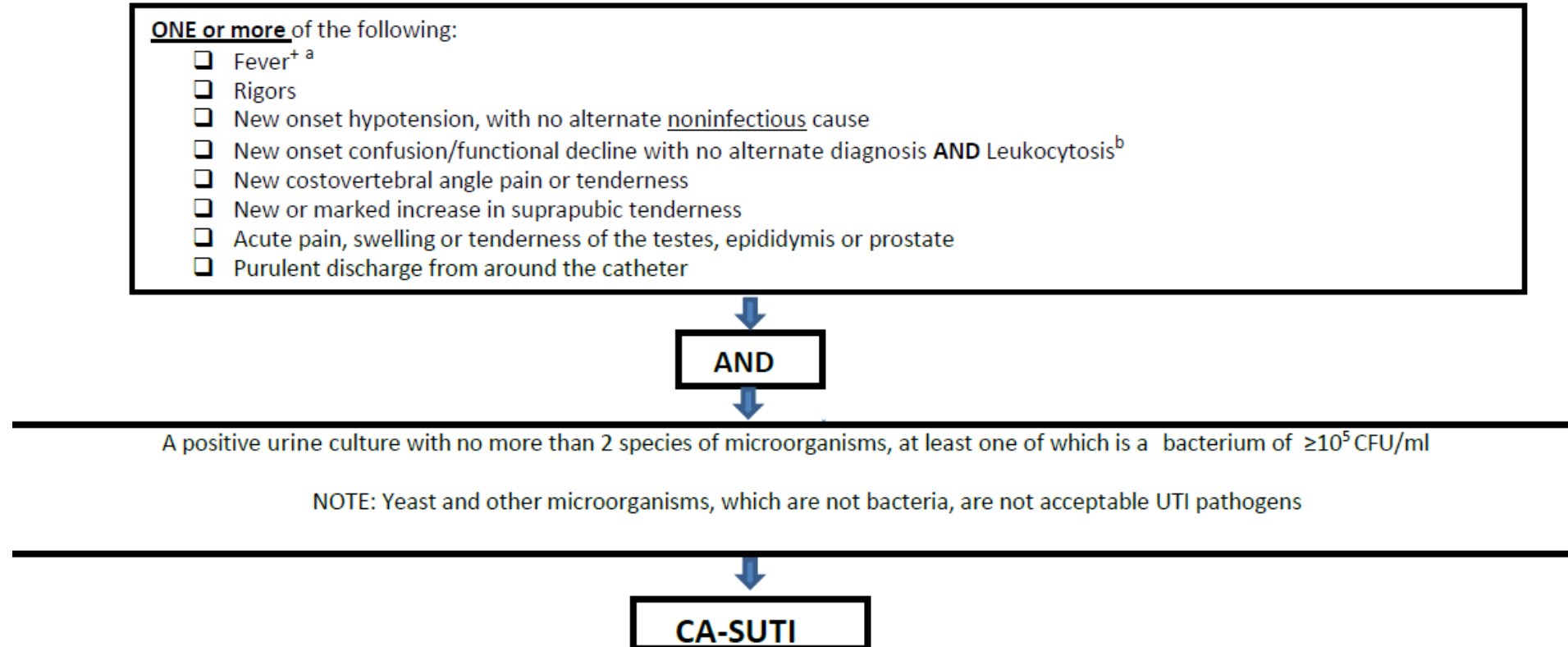
# Catheter-Associated Symptomatic UTI (CA-SUTI)

Events that occur when a resident develops signs and symptoms of a UTI while having an indwelling urinary catheter in place for more than 2 calendar days on the date of event (day of device placement is considered as Day 1) or removed within the 2 calendar days prior to the date of event, where day of catheter removal is considered as day 1

# CA-UTI

Figure 2: Criteria for Defining Catheter Associated Symptomatic Urinary Tract Infection (CA-SUTI)

## Resident with an indwelling urinary catheter:



<sup>+</sup> Fever must be used as a criterion to meet SUTI even if the resident has another possible cause for the fever (for example, pneumonia)

<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  $>1.1^{\circ}\text{C}$  ( $>2^{\circ}\text{F}$ ) over baseline

<sup>b</sup> Leukocytosis: defined by NHSN as  $> 10,000$  cells/mm<sup>3</sup>, or Left shift ( $> 6\%$  or 1,500 bands/mm<sup>3</sup>)

# Urine Culture Requirements, *continued*



At least one organism in the urine culture must be a bacterium. Yeast and other microorganisms, which are not bacteria, are NOT acceptable UTI pathogens.

Positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of at least 100,000 CFU/ml.

# HYPOTENSION

- Use vital sign parameters per facility policy and practices for clinical practice.
- Non-specific sign that can be used to meet criteria even in the presence of another possible infection source.
- Exclude if documented non-infectious cause, such as new medication known to cause hypotension or cardiac event.

# NEW ONSET OF CONFUSION

Has the resident had new onset of confusion or functional decline (*new or worsening*)?

**Note:** The application of Confusion Assessment Method (CAM) criteria are not required

# EXAMPLE of CA-SUTI

(Catheter-associated)

Mrs. Ross is a resident in your facility. An indwelling urinary catheter was inserted on March 1. On March 5, the nurse practitioner documented that Mrs. Ross complained of suprapubic pain. The following day, on March 6, a specimen collected from the Foley catheter was sent to the lab and subsequently tested positive for greater than 100,000 CFU/ml of *E. coli* and 100,000 CFU/ml of *Candida auris*. Mrs. Ross **DOES** meet NHSN criteria for a CA-SUTI on March 5 since the indwelling urinary device was present on the day of the event and she had at least one qualifying documented symptom (*suprapubic pain*).

- ✓ Indwelling urinary catheter in place > 2 calendar days
- ✓ New onset suprapubic pain
- ✓ Positive urine culture with at least one qualifying bacterium and no more than 2 species of organisms

# **ASYMPTOMATIC BACTEREMIC URINARY TRACT INFECTION (ABUTI) EVENT**

# Asymptomatic Bacteremic UTI (ABUTI):

Events that occur when the resident has **NO** signs or symptoms localizing to the urinary tract but has matching urine and blood cultures positive for at least one organism regardless of whether a catheter is in place or not.

# ABUTI

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

Resident has **no qualifying fever or localizing urinary signs or symptoms** (specifically, no urgency, frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). *If no catheter is in place, fever as only sign would not exclude ABUTI if other positive culture criteria are met.*

AND

A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of  $\geq 10^5$  CFU/ml

NOTE: Yeast and other microorganisms which are not bacteria, are not acceptable UTI pathogens

AND

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

ABUTI

# Bacteremic vs. Bacteriuria

- Asymptomatic bacteremic UTI (ABUTI)
  - **Included** in NHSN surveillance definitions
  - Considered as meaningful infections since a positive blood culture is present.
- Asymptomatic bacteriuria (ASB)
  - **NOT** included in NHSN surveillance definitions.
  - Not considered as meaningful infections, but common in LTCFs, especially among chronically catheterized residents.
  - Often mistreated with antimicrobials resulting in potential adverse drug reactions and development of antimicrobial resistance.



Not  
Included

# EXAMPLE of ABUTI

(Asymptomatic  
Bacteremic)

Mr. S is a 90-year-old resident in the facility. He has a history of multiple medical issues. Mr. S does have an indwelling catheter that has been in place for the past 10 days, but you do not find documentation indicating signs or symptoms of a urinary tract infection in the previous 7 days. On March 3, blood, urine, and wound cultures were collected. You review the following lab reports, reported March 5:

- Blood culture positive for >100,000 cfu/ml of *Streptococcus pyogenes*.
- Urine culture positive for >100,000 cfu/ml of *Streptococcus pyogenes*.
- Wound culture positive for *Pseudomonas aeruginosa* ( $>10^5$ ).

- ✓ Positive blood culture with 1 matching organism in urine culture
- ✓ Positive urine culture with at least one qualifying bacterium and no more than 2 species of organisms
- ✓ No documented signs or symptoms

# Review

- ✓ UTI surveillance includes residents **with or without** indwelling urinary devices.
- ✓ To be considered as catheter associated, the catheter must be in place for a **minimum of 2 calendar days** (day of insertion = day 1), and in-place at the time of the event or removed within the 2 calendar days prior to event onset (day of removal = Day 1).
- ✓ Submit UTI events only for residents meeting NHSN UTI criteria.

# Review

- ✓ “Mixed flora” is not considered an organism and cannot be submitted to NHSN as a pathogen.
- ✓ Yeast cannot be reported as an organism for a UTI. Urine culture with yeast can be included only if there is at least one qualifying bacterium.

**THANK YOU**  
**Questions?**  
**[nhsn@cdc.gov](mailto:nhsn@cdc.gov)**

Add “UTI Reporting” to the subject line in order to have your inquiry routed to the appropriate subject matter expert

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: [NHSN@cdc.gov](mailto:NHSN@cdc.gov)

Web: <http://www.cdc.gov/nhsn>

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.