Healthcare-associated Infection Surveillance Protocol for Urinary Tract Infection (UTI) Events for Long-term Care Facilities

Background

The urinary tract is one of the most common sites of healthcare-associated infections (HAI), accounting for up to 20% of infections reported by long-term care facilities (LTCFs).[1] Risk factors for developing bacteriuria and urinary tract infections (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 (specifically, the number during a specific time period) of asymptomatic bacteriuria in LTCF residents can range from 20-50%. Although the incidence of symptomatic UTI is lower, it still comprises a significant proportion of infections manifesting in LTCF residents and results in a large amount of antibiotic use.[5]

Though the prevalence of indwelling urinary catheter use in LTCFs is lower than the acute care setting, catheter-associated UTI (CA-UTI) can lead to complications such as cystitis, pyelonephritis, bacteremia, and septic shock. These complications can then lead to declined resident function and mobility, acute care hospitalizations, and increased mortality. Prevention of CASUTIs is discussed in the CDC/HICPAC document, *Guideline for Prevention of Catheter-associated Urinary Tract Infections.*[2]

Efforts to examine antibiotic use for UTI have demonstrated a discrepancy between the number of UTI events identified through the application of evidence-based surveillance criteria and the numbers of clinically identified and treated UTI.[3,4] Consistent tracking and reporting of symptomatic UTIs using surveillance criteria will help identify opportunities to examine, understand, and address differences between surveillance events and clinically identified events.

References:

1. Genao L, Buhr G. T. Urinary Tract Infections in Older Adults Residing in Long-Term Care Facilities. *Annals of Long-term Care*, vol. 20, no. 4, 2012, pp. 33-38.
2. 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
3. Juthani-Mehta M., et al. Diagnostic Accuracy of Criteria for Urinary Tract Infection in a Cohort of Nursing Home Residents. *Journal of the American Geriatrics Society*, vol. 55, 2007, pp. 1072-77.
4. Wang L., et al. Infection Rate and Colonization with Antibiotic-resistant Organisms in Skilled Nursing Facility Residents with Indwelling Devices. European *Journal of Clinical Microbiology & Infectious Diseases*, vol. 31, no. 8, 2012, pp. 1797-804.
5. Nace D. A., et al. Clinical Uncertainties in the Approach to Long Term Care Residents with Possible Urinary Tract Infection. *Journal of American Medical Directors Association*. vol. 15, no. 2014, 2014, pp. 133-39.

Settings

UTI Event reporting is currently available for Nursing Homes/Skilled Nursing Facilities (LTC:SKILLNURS); Intermediate Care Facilities for Individuals with Intellectual Disabilities (LTC:ICF/IID); Psychiatric Residential Treatment Facility (LTC:PSYCH); and Skilled Nursing Facility for State Veteran's Homes (LTC:SVHSNF).

Surveillance for UTIs must be performed facility wide inpatient (FacWideIN), which means all resident care locations in the reporting facility. Unit/location/pod specific UTI surveillance is not an option in the LTCF HAI UTI Event module.

Methods

Facilities may choose to monitor UTIs using healthcare-associated infection (HAI) surveillance. This surveillance method incorporates the use of laboratory data and clinical evaluation of the resident for signs and symptoms to monitor for both catheter and non-catheter-associated urinary tract infection events.

NHSN Data collection forms and form instructions are available for users to collect the required data prior to submitting the information to the NHSN application. Please note, one event form shall be used for each UTI event and these forms are to be used for data collection only and not to be sent to CDC NHSN.

Definitions

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

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

External urinary drainage devices: A urinary drainage device that is not inserted into the bladder through the urethra. Examples may include suprapubic, external drainage and intermittent straight catheter. UTIs in residents with external urinary drainage devices will be captured as SUTIs, not CA-SUTIs.

Urinary tract infections (UTI): are defined using Symptomatic UTI (SUTI) criteria for residents *without* an indwelling urinary device, Catheter-Associated Symptomatic UTI (CA-SUTI) criteria for residents *with* an indwelling urinary device, or Asymptomatic Bacteremic UTI (ABUTI) criteria for residents *with or without* an indwelling urinary device.

Symptomatic UTI (SUTI): 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. 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. (See Figure 1 and Table 2).

Catheter-associated SUTIs (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 (*urinary catheter is in place on the day of event or the day before the event*). (See Figure 2 and Table 3).

> *EXAMPLE*: Mr. T, is a resident in your facility. On March 1st, he developed an increase in incontinence and new suprapubic pain. Later that day, a Foley catheter was inserted. The following day, on March 2nd, a specimen collected from the Foley catheter was sent to the lab and subsequently tested positive for greater than 100,000 ($\geq 10^5$) CFU/ml of *E. coli*. Mr. T does meet criteria for a SUTI, but it is not considered as a CA-SUTI because the Foley catheter had not been in place >2 calendar days on the date of event (March 1st).

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 (see Table 1) regardless of whether a catheter is in place or not. (See Figure 3 and Table 4).

Table 1. Examples of "sameness" by organism speciation

Culture	Companion Culture	Report as…
S. epidermidis	Coagulase-negative *staphylococcus*	*S. epidermidis*
Klebsiella oxytoca	*Klebsiella* spp.	*K. oxytoca*
S. salivarius	*Streptococcus viridans*	*S. salivarius*

NHSN surveillance for UTIs must include:

1. Both catheter and non-catheter associated UTI events meeting NSHN criteria.
2. Only NHSN defined UTI events where the *date of event* is **more than 2 calendar days after admission** to the reporting LTCF (date of admission is equal to day 1) are considered facility onset events that must be submitted to NHSN.

- For example, a resident transferred to your LTFC develops acute dysuria on the day of transfer. A urine culture is collected on day three of admission and returns positive for *Proteus mirabilis.* This resident does not meet criteria for a HAI SUTI for the reporting LTCF since the date of event (specifically, when the **first** clinical evidence (signs/symptoms) of the UTI appeared or the date the specimen used to meet the infection criteria was collected, **whichever comes first**.) occurred within the first 2 calendar days of admission. Instead, the UTI event is considered as present on admission and the transferring facility should be contacted with the details of the UTI.

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**		

3. Surveillance for UTI after the resident is transferred or discharged from the reporting LTCF is not required. However, if discovered, a NHSN UTI event with an event date on the day of discharge or the next calendar day is attributable to the discharging LTCF and should be included in UTIs reported to NHSN for that LTCF. No indwelling urinary catheter days are reported for discharged or transferred residents.

- For example, a resident is discharged from your nursing home to an assisted living facility. Later that week, you receive a phone call from the assisted living facility informing you that the discharged resident developed a fever and burning during urination on the second calendar day after discharge from your facility (the day of discharge is calendar day 1). The resident was subsequently sent to the urgent care where she was treated for a UTI (with a positive urine culture for *E. coli*). Since the event date (date of onset) occurred within the first 2 calendar days after discharge from the nursing home, and NHSN criteria are met for SUTI, the event must be reported to NHSN by the discharging nursing home.

Requirements

- A ***NHSN Monthly Reporting Plan*** for the LTCF (CDC 57.141) must be completed for each calendar month in which a facility plans to enter data into the NHSN. A user will not be able to save entered event data in the NHSN application without a corresponding monthly reporting plan.
    - For UTI surveillance, add a check in the *UTI* box located under the HAI Module section. As a reminder, the location box will auto-populate to *Facility-wide Inpatient (FacWideIN),* which means surveillance must occur for all resident care locations in the facility.
- For each participating calendar month, facilities must report numerator (catheter-associated and non-catheter-associated UTI events) and denominator data for the entire facility, referred to as facility-wide inpatient (FacWideIN), for the entire calendar month. See Numerator and Denominator Section.
    - Submit complete UTI event data for each resident meeting HAI-UTI criteria. When entering a UTI event, the *Specific Event* Type will auto populate once the correct UTI event criteria

have been entered for a resident. If the *Specific Event* field remains blank after entering all criteria, review the NHSN criteria entered to verify that the resident met NHSN UTI criteria. A blank field means criteria for a NHSN UTI event have not been entered in the application. **Important:** Only NHSN defined UTI events shall be reported to NHSN. Non-UTI events (as indicated by a blank *Specific Event* field on the UTI event page) will not be included in NHSN analysis and should be removed/excluded/deleted from the application.

- Facilities are encouraged to perform UTI surveillance and reporting for at least 6 consecutive months to provide meaningful measures for analysis, but there is not a minimum reporting requirement.

Key Points

1. An indwelling urinary catheter should be in place for more than 2 calendar days on the date of event (where day of catheter insertion = Day 1) in order for the SUTI to be catheter-associated.
2. If a resident is transferred to the facility with an indwelling urinary catheter in place, and the facility replaces the catheter with a new one while the resident is in the care of the facility, then the date of insertion of the device will correspond with to the date the new catheter was placed in the reporting LTCF.
3. UTIs in residents managed with suprapubic, external urinary drainage devices (for example, male or female external urinary drainage devices), or in and out straight catheters will be captured as SUTIs, not CA-SUTIs.

Table 2. Criteria for Symptomatic Urinary Tract Infection (SUTI)

Criterion	*For residents **without** an indwelling catheter in place or removed >2 calendar days prior to the date of event, where day of catheter removal is equal to day 1:*
1	**Either** of the following (Signs & Symptoms): 1. Acute dysuria 2. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate **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
2	**Either** of the following: 1. Fever$^+$ [Single temperature ≥ 37.8°C (>100°F), or >37.2°C (> 99°F) on repeated occasions (more than once), or an increase of >1.1^{O}C (>2^{O}F) over baseline] 2. Leukocytosis [defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)] **AND** **One or more** of the following (New and/or marked increase): 1. Costovertebral angle pain or tenderness 2. Suprapubic tenderness 3. Visible (Gross) hematuria 4. Incontinence 5. Urinary urgency 6. Urinary 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
3	**Two or more** of the following (New and/or marked increase): 1. Costovertebral angle pain or tenderness 2. Incontinence 3. Urinary urgency 4. Urinary frequency 5. Suprapubic tenderness 6. Visible (gross) hematuria **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 **Footnote:** +Since fever is a non-specific symptom, it should be used to meet SUTI criteria even if the resident has another possible cause for the fever (for example, pneumonia).

Table 3. Criteria for Catheter-associated Symptomatic Urinary Tract Infection (CA-SUTI)

Criterion	For residents **with** an indwelling catheter in place, or removed within 2 calendar days prior to event onset, where day of catheter removal is equal to day 1:
	One or more of the following (Signs and Symptoms and Laboratory and Diagnostic Testing): 1. Fever[+][Single temperature ≥ 37.8°C (>100°F), or >37.2°C (> 99°F) on repeated occasions (more than once), or an increase of >1.1°C (>2°F) over baseline] 2. Rigors 3. New onset hypotension, with no alternate non-infectious cause 4. New onset confusion/functional decline with no alternate diagnosis **AND** Leukocytosis [defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)] 5. New or marked increase in suprapubic tenderness 6. New or marked increase in costovertebral angle pain or tenderness 7. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate 8. Purulent discharge from around the catheter insertion site 9. Acute Dysuria* **AND** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml. **Footnote:** [+] Since fever is a non-specific symptom, it should be used to meet CA-SUTI criteria even if the resident has another possible cause for the fever (for example, pneumonia). *Only when "REMOVE" has been selected for catheter status will the system populate CA-SUTI for a selection of acute dysuria and a positive urine culture.

Table 4. Criteria for Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)

Criterion	*Resident **with or without** an indwelling urinary catheter.*
	No qualifying fever or signs or symptoms (specifically, no urinary urgency, urinary 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** A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of ≥10^5 CFU/ml. **AND** A positive blood culture with at least 1 matching bacteria to the urine culture.

Key Reminders

1. "Mixed flora" is not available in the pathogen list within NHSN. Therefore, it cannot be reported as a pathogen to meet the NHSN UTI criteria. Additionally, "mixed flora" often represents contamination and likely represents presence of multiple organisms in culture (specifically, at least two organisms).

2. Yeast and other microorganisms, which are not bacteria, are not acceptable UTI pathogens, and therefore, cannot be used to meet NHSN UTI criteria without the presence of a qualifying bacterium.

   As an example, the following excluded organisms cannot be used to meet the NHSN UTI definition:

   - Any *Candida* species as well as a report of "yeast" that is not otherwise specified
   - mold
   - dimorphic fungi or
   - parasites

   An acceptable urine specimen may include these organisms as long as one bacterium of > 100,000 CFU/ml is also present. Additionally, these non-bacterial organisms identified from blood cannot be deemed secondary to a UTI since they are excluded as organisms in the UTI definition.

3. To remove the subjectivity about whether a fever is attributable to a UTI event, the presence of a fever, even if due to another cause (for example, pneumonia), must still be counted as a criterion when determining if the NHSN UTI definition is met.

Numerator and Denominator Data

NHSN provides users with data collection forms and accompanying form instructions (referred to as Table of Instructions) that can be used to collect the required UTI event data (numerator data), as well as the required monthly summary data (denominator data). The forms include all required data elements that must be submitted in the NHSN application. While manual data collection using the forms is optional, users shall be familiar with the required data elements that must be submitted in the NHSN application in order for the data to be considered as complete. Facilities may also choose to customize these forms to better accommodate individual surveillance programs, keeping in mind that only UTIs meeting NHSN UTI criteria shall be submitted to NHSN as UTI events.

The UTI form includes resident demographic information and information on whether a catheter (or another 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 NHSN defined UTI; whether the resident developed a secondary bloodstream infection; whether the resident was transferred to an acute care facility for any reason or died from any cause within 7 days of the UTI event; and the organisms isolated from cultures and their antimicrobial susceptibilities.

Numerator

The *Urinary Tract Infection (UTI) for LTCF* form (CDC 57.140) is used to collect required data for each NHSN defined UTI event identified during the surveillance month. A separate data collection form shall be used for each UTI event. NHSN also provides users with detailed form instructions in the *Table of Instructions for Completion of a Urinary Tract Infection for LTCF form.*

Reporting Instructions:
If no UTIs are identified during the month of surveillance, the "Report No Events" box must be checked on the appropriate denominator summary screen.

Denominator

Referred to by NHSN as *Monthly Summary Data.* Includes **monthly totals** for total resident-days, urinary catheter-days, new antibiotic starts for UTI indication, and number of urine cultures ordered.

The *Denominator for LTCF* form (CDC 57.142) is available for use to collect denominator data for the entire calendar month. If the form is used to document daily counts, only the sum of the counts (also referred to as monthly total) shall be submitted to the NHSN application. Detailed instructions for completing this form are available in the *Table of Instructions for Completion of the Long-term Care Facility Component-Denominators for LTCF.* This document also includes brief instructions for collection and entry of each data element on the form.

Definitions and Key Points for UTI Denominator Data

- *Catheter-days* are calculated using the daily count of residents in the facility with an indwelling urinary device each day of the month. When counting catheter days, it is important that counts are done at the same time each day.

  Key Points about *Catheter-Days*:
  1. None of the following urinary management devices are to be included when counting indwelling catheter-days: suprapubic catheters, straight in-and-out catheters, or external urinary drainage devices.
  2. If a resident is transferred to an acute care facility, no additional indwelling catheter-days are reported after the day of transfer.

- *Resident-days* are calculated using the daily census of residents in the facility each day of the month. The monthly total is submitted to NHSN. The daily total is added at the end of the calendar month and the total number is then submitted to NHSN as Resident Days.

- *New antibiotic starts for UTI indication* refers to a new prescription for an antibiotic ordered for a resident who is suspected of having or diagnosed with a UTI, either catheter-associated or non-catheter associated, regardless of whether that UTI meets the NHSN event definition.

Key Points about *New Antibiotic Starts for UTI Indication*:

1. There is no minimum number of doses or days of therapy that define a new antibiotic start—count all new orders. Meaning, a new antibiotic shall be counted even if the resident did not complete the entire dose.
2. Include only antibiotics that are started while the resident is receiving care by your facility. This includes antibiotics started after a resident returns from a brief outpatient visit (excludes admissions) where the antibiotic was ordered in the OP setting (for example, an outpatient clinic or emergency department).
3. Do not include antibiotic courses started by another healthcare facility prior to the resident's admission or readmission back to your facility, even if the antibiotic is continually administered upon readmission to your facility.
4. Data may be collected daily or summarized at the end of each month.

- *Number of urine cultures* ordered refers to new urine cultures ordered for a resident regardless of whether the resident has a UTI meeting the NHSN event definition. Include only urine culture orders that are placed while the resident is receiving care by your facility. This includes urine culture orders by clinical providers working in the facility or by outside physicians who see the resident during a brief outpatient visit (for example an outpatient clinic or emergency department) when the resident returns to the reporting LTCF on the calendar day of the visit or the next calendar day. Do not include urine cultures ordered during an admission in another facility or by another healthcare facility prior to the resident's admission or readmission back to your facility.

Key Points about *Number of Urine Cultures Ordered:*

1. Include only urine culture orders that are ordered while the resident is receiving care by your facility, either by clinical providers working in the facility or by outside physicians who see the resident during a brief outpatient visit (for example, an outpatient clinic or emergency department) when the resident returns to the reporting LTCF on the calendar day of the visit or the next calendar day.
2. Do not include urine cultures ordered during an admission in another facility.
3. Do not include urine cultures ordered by another healthcare facility prior to the resident's admission or readmission back to your facility.
4. Data collection forms may be used to collected data daily (for summary at the end of the month) or summarized at the end of each month.

HAI-UTI Data Analyses

All event (numerator) and monthly summary (denominator) data submitted to NHSN can be analyzed. After a user generates analysis datasets in the application, all data entered for the facility up until that time are made available within the analysis reports. These data can be visualized and analyzed in various ways. For example, line listing reports provide detailed line by line listing of events reported by catheter status and rate table reports provide summarized monthly data with calculated rates and denominator data. Users can also generate frequency tables, bar charts, and pie charts. Additionally, the LTCF Dashboard, located on the NHSN Home Page, allows users to quickly visualize data found in the rate tables and line listings in the form of interactive bar charts and line graphs. For additional information about the LTCF Dashboard, please review the CDC Guidance Document – Dashboard. Below are measures and calculations that are incorporated into the analytics output.

Calculated UTI Metrics

The following section describes the various metrics calculated for UTI Event surveillance that are generated as part of the reports within the analysis section of NHSN.

Calculated Metrics	Calculations	Comments
Total UTI incidence rate per 1,000 resident-days	$\frac{\text{Total Number of UTI Events}}{\text{Total resident days}} x\ 1{,}000$	Includes: SUTI, CA-SUTI, and ABUTI
• *Percent* that are SUTI	$\frac{\text{Number of SUTI Events}}{\text{Total number of UTI Events}}$ x 100	
• *Percent* that are CA-SUTI	$\frac{\text{Number of CA} - \text{SUTI Events}}{\text{Total number of UTI Events}} x\ 100$	
SUTI incidence rate per 1,000 non-catheter days	$\frac{\text{Number of SUTI Events}}{\text{Total non} - \text{catheter days}} x\ 1{,}000$	Only SUTIs that are NOT catheter-associated will be included in the SUTI incidence rate. Non-catheter days is equal to Resident Days *minus* Catheter Days
CA-SUTI incidence rate per 1,000 catheter-days	$\frac{\text{Number of CA} - \text{SUTI Events}}{\text{Total catheter} - \text{days}} x\ 1{,}000$	
Urinary Catheter Utilization Ratio	$\frac{\text{Total urinary catheter} - \text{days}}{\text{Total resident} - \text{days}}$	
Urine Culture Rate per 1,000 total resident days	$\frac{\text{Number of urine cultures order}}{\text{Total resident} - \text{days}} x\ 1{,}000$	

Calculated Metrics	Calculations	Comments
UTI treatment ratio	$\frac{\text{New antibiotic starts for UTI}}{\text{Total number of UTI events}}$	When the UTI treatment ratio is **<1**, there are **fewe**r reported antibiotic starts for UTI than symptomatic UTI events submitted. When the UTI treatment ratio **equals 1**, there are the same number of new antibiotics starts for UTI events submitted. When the UTI treatment ratio is **>1**, there are **more** reported antibiotic starts for UTI than UTI events submitted.

NHSN Group Analysis:

NHSN Group Users can perform the same analysis as facility level users in NHSN. A few helpful tools in NHSN for groups are listed in the resources below. These tools are guides on how to start and join a Group; how to create a template to request data from facilities; how to determine the level of access granted by the facility following the previous steps, and how to analyze the facilities data.

Group Analysis Resources:

NHSN Group Users Page: https://www.cdc.gov/nhsn/group-users/index.html

Group User's Guide to the Membership Rights Report: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/GroupAnalysisWebinar.pdf

Group User's Guide to the Line Listing- Participation Alerts: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/group-alerts.pdf

Figure 1: Criteria for Defining Non-Catheter Associated Symptomatic Urinary Tract Infection (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[+ a]
2. Leukocytosis[b]

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

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

[a] 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°F) over baseline

[b] Leukocytosis: defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)

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

Resident with an indwelling urinary catheter or removed within 2 days of event onset:

ONE or more of the following:

- ❑ Fever+ [a]
- ❑ Rigors
- ❑ New onset hypotension, with no alternate noninfectious cause
- ❑ New onset confusion/functional decline with no alternate diagnosis **AND** Leukocytosis[b]
- ❑ New or marked increase in 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
- ❑ Acute Dysuria*

↓

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

↓

CA-SUTI

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

[a] 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°F) over baseline

[b] Leukocytosis: defined by NHSN as > 10,000 cells/mm^3, or Left shift (> 6% or 1,500 bands/mm^3)

*Only when "REMOVE" has been selected for catheter status will the system populate CA-SUTI for a selection of acute dysuria and a positive urine culture.

Figure 3: Criteria for Defining Asymptomatic Bacteremic Urinary Tract Infection (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 ≥ 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