HEALTHCARE ASSOCIATED INFECTION (HAI) MODULE

Urinary Tract Infections (UTI)

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Learning Objectives

- Describe the benefits of using NHSN for UTI surveillance and event reporting.
- Describe the NHSN methodology, protocols, and definitions used for UTI surveillance and reporting.
- Correctly apply the NHSN UTI definitions and protocols through case studies.
Why Monitor Urinary Tract Infections (UTIs) in Long-term Care Facilities (LTCFs)?

- UTIs are considered one of the most common infections in long-term care facilities, driving antibiotic use among residents.
- Focused monitoring of symptomatic UTIs, both catheter and non-catheter associated, helps identify trends in these infections and provides data to improve antibiotic use in the LTCF.
- Tracking these events will also inform infection prevention staff of the impact of targeted prevention efforts.
UTI Prevention Begins With Surveillance
Long-term Care Facility Component

Healthcare-associated Infections (HAI)
  - Urinary Tract Infections (UTI)

Laboratory-Identified (LabID) Event
  - Multi-drug Resistant Organisms (MDRO)
    - *Clostridium difficile* Infection (CDI)

Prevention Process Measures
  - Hand Hygiene
  - Gowns/Gloves
Benefits of Using NHSN for UTI Surveillance and Event Reporting

- Application will calculate UTI rates for reported UTI events, including:
  - Non-catheter associated UTI rates
  - Catheter-associated UTI rates

- Line lists and analysis options allow facility to identify which residents get UTIs
  - Events related to urinary catheters
  - Organisms that cause UTIs in among residents in facility

- Submitted summary data allows facilities to monitor:
  - Antibiotic use for the treatment of UTIs
  - Urinary catheter utilization

- Consistent data submission allows facilities to assess the impact of efforts to prevent UTI over time
Which LTCFs are Eligible to Report UTI Event Data to NHSN?

- Certified skilled nursing facilities/nursing homes (LTC:SKILLNURS)
- Intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS)
NHSN UTI Surveillance

- Incorporates the use of laboratory data and clinical evaluation of the resident for signs and symptoms to monitor for catheter and non-catheter-associated urinary tract infection events.
- UTI protocol adapted from the 2012 Revised McGeer Criteria
- This paper can be accessed on the CDC-LTCF Resource Page for Clinicians - http://www.cdc.gov/longtermcare/staff/index.html
<table>
<thead>
<tr>
<th><strong>McGeer</strong></th>
<th></th>
<th><strong>NHSN</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine culture with yeast alone can be used to meet criteria</td>
<td></td>
<td>Urine culture must be positive for at least one bacterium meeting colony count requirements</td>
</tr>
<tr>
<td>Fever from another cause should be ruled out before using fever to meet UTI criteria</td>
<td></td>
<td>Fever is considered a non-specific sign of infection and can be used as criterion for more than one infection cause</td>
</tr>
<tr>
<td>Hypotension from another infection source should be ruled out before using hypotension to meet UTI criteria</td>
<td></td>
<td>New onset of hypotension can be used as criterion for more than one infection cause</td>
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<tr>
<td></td>
<td></td>
<td><em>If resident has a non-infectious reason for the hypotension, such as a cardiac event or new medication known to cause low blood pressure, this criterion should not be used to meet NHSN UTI criteria.</em></td>
</tr>
</tbody>
</table>
Consistency is a Must!

- Surveillance criteria are designed to look at a population at risk.
- Identify residents meeting the criteria.
- Consistently apply the criteria.
- Ensures the comparability of the data.
UTI Surveillance Considerations

- Are the symptoms new or acutely worse?
  - No set-time period for reporting second UTI for same resident

- Does the resident have an indwelling urinary device in place?

- Evidence of infection
  - 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
- Different purposes
- May not agree
- Comments section useful to note important factors
- Submit cases and questions to nhsn@cdc.gov for review and feedback
UTI Monthly Participation Requirements

- A NHSN Monthly Reporting Plan must be completed for each calendar month in which a facility plans to enter data into the NHSN.

- 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

- Informs CDC-NHSN which module(s) and events a facility is following during a given month.
- The Plan also informs CDC which data can be used for aggregate data analyses.
- A facility must enter a Plan for every month in which surveillance and data submissions will occur.
  - A Plan must be in place before events can be entered into NHSN
**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
Which Residents Are Included in NHSN 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.
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*).
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 urine culture requirements.
- 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.
NHSN Provides Customizable UTI Event Forms with Instructions

https://www.cdc.gov/nhsn/ltc/uti/index.html
LTCF Website: https://www.cdc.gov/nhsn/ltc/index.html

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

Questions? We’d love to hear from you via e-mail: 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.
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
- Condom catheter
- Nephrostomy tube
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

- 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.
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 an acute change in his/her mental status (*new or worsening*)?
LEUKOCYTOSIS

- An elevation in the number of white blood cells (WBC) in the blood. 
  [>14,000 cells/mm³ or Left shift (>6% or 1,500 bands/mm³)]

- Identified through a complete blood count (CBC) and differential blood
Urinary Tract Infection Definitions

There are *two specific types* of UTI:

- Symptomatic UTI (SUTI)
- Asymptomatic Bacteremic UTI (ABUTI)

For BOTH Types- surveillance must occur for both catheter and non-catheter associated UTI events
Symptomatic UTI (SUTI)

Resident demonstrates signs and symptoms that localize the infection to the urinary tract. These events can occur in residents with or without indwelling urinary devices.
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.
SYMPTOMATIC URINARY TRACT INFECTION, NON-CATHETER ASSOCIATED
Symptomatic (SUTI)
Non-catheter-associated

Resident does not have an indwelling catheter in place or it was removed >2 calendar days prior to the date of event, where day of catheter removal is day 1

Resident has one or more localized signs and/or symptoms

Resident has a urine culture that meets the criteria

Non-catheter Associated
Symptomatic Urinary Tract Infection (SUTI)
Symptomatic UTI (SUTI) without Indwelling Catheter

Three Criteria Options (Positive Urine Culture Required)

Criteria 1 OR Criteria 2 OR Criteria 3

Either of the following:

- Acute dysuria
- Acute pain, swelling, or tenderness of the testes, epididymis or prostate

Either of the following:

- 1. Fever
- 2. Leukocytosis

AND

ONE or more of the following (new or marked increase):

- Costovertebral angle pain/tenderness
- Suprapubic pain/tenderness
- Visible/gross hematuria
- Incontinence
- Urinary urgency
- Urinary frequency

In absence of Fever or Leukocytosis:

TWO or more of the following (new or marked increase):

- Costovertebral angle pain/tenderness
- Suprapubic pain/tenderness
- Visible/gross hematuria
- Incontinence
- Urinary urgency
- Urinary frequency
Urine Culture Requirements for SUTI Without a Urinary Catheter

- If a urinary catheter is in place at time of specimen collection:
  - Specimen collected from indwelling catheter and positive urine culture with any number of microorganisms, at least one of which is a bacterium of at least 100,000 CFU/ml ($\geq 10^5$)

- If a urinary catheter is not in place at time of specimen collection
  - Voided clean catch 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 ($\geq 10^5$)
  - Straight catheter specimen and a positive urine culture with any number of microorganisms, at least one of which is a bacterium of at least 100 CFU/ml ($\geq 10^2$)
Example of SUTI Without an Indwelling Catheter

Mrs. T, is a resident of the nursing home. On March 1, she developed an 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. T does meet criteria for a non-catheter associated SUTI.

- Incontinence
- 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 CRITERIA
Catheter-Associated Symptomatic UTI (CA-SUTI)

- Resident has indwelling urinary catheter that was in place > 2 calendar days and present on the date of event or the day before
- Resident has one or more CA-SUTI signs and/or symptoms
- Resident has a urine culture that meets the criteria

Catheter Associated Symptomatic Urinary Tract Infection (CA-SUTI)
## CA-SUTI Signs and Symptoms (*one or more*)

<table>
<thead>
<tr>
<th>Fever</th>
<th>Single temperature $&gt;37.8^\circ$C ($&gt;100^\circ$F), OR $&gt;37.2^\circ$C ($&gt;99^\circ$F) on repeated occasions, OR an increase of $&gt;1.1^\circ$C ($&gt;2^\circ$F) over baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rigors</strong></td>
<td></td>
</tr>
<tr>
<td><strong>New onset hypotension</strong> (with no alternate non-infection cause)</td>
<td></td>
</tr>
<tr>
<td><strong>New onset confusion or functional decline</strong> (with no alternative diagnosis)</td>
<td></td>
</tr>
<tr>
<td><strong>AND</strong></td>
<td></td>
</tr>
<tr>
<td>Leukocytosis: $&gt;14,000$ cells/mm$^3$ or Left shift ($&gt;6%$ or $1,500$ bands/mm$^3$)</td>
<td></td>
</tr>
<tr>
<td>New or marked increase in suprapubic pain or costovertebral angle pain or tenderness</td>
<td></td>
</tr>
<tr>
<td><strong>Acute pain, swelling or tenderness</strong> of the testes, epididymis or prostate</td>
<td></td>
</tr>
<tr>
<td><strong>Purulent (pus) discharge</strong> from around the catheter</td>
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</tr>
</tbody>
</table>
Urine Culture Requirements for CA-SUTI

- If a **urinary catheter is** in place at time of specimen collection:
  - Specimen collected from indwelling catheter and positive urine culture with **any number** of microorganisms, at least one of which is a bacterium of **at least 100,000 CFU/ml (≥10^5)**

- If a **urinary catheter is not** in place at time of specimen collection, but was removed on the day of specimen collection or the day before (2 calendar)
  - **Voided clean catch 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 (≥10^5)**
  - **Straight catheter** specimen and a positive urine culture with **any number** of microorganisms, at least one of which is a bacterium of **at least 100 CFU/ml (≥10^2)**
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.
EXAMPLE of CA-SUTI

Mrs. T is a resident in your facility. An indwelling urinary catheter was inserted on March 1. On March 5, the nurse practitioner documented that Mrs. T 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*. Mrs. T 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).

- New onset suprapubic pain
- Indwelling urinary catheter in place > 2 calendar days
- Positive urine culture with at least one qualifying bacterium
ASYMPTOMATIC BACTEREMIC URINARY TRACT INFECTION (ABUTI) EVENT
Resident with or without an indwelling catheter:

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 as only sign would not exclude ABUTI if other positive culture criteria are met.*

**AND**

Any of the following:

1. Specimen collected from clean catch voided urine and a positive culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml
2. Specimen collected from in/out straight catheter and positive culture with any number of microorganisms, at least one of which is a bacterium of $\geq 10^2$ CFU/ml
3. Specimen collected from indwelling catheter and positive culture with any number of microorganism, 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
Bacteremia 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.
Submitting a UTI Event to the NHSN
ADD UTI Event
ADD UTI Event

Resident Type

*Event Date minus First Admission Date

Short-stay: Resident has been in facility for 100 days or less from date of first admission.

Long-stay: Resident has been in facility for more than 100 days from date of first admission.
ADD UTI Event
First and Current Admission

Date resident first entered the facility. This date remains the same unless the resident leaves the facility for more than 30 consecutive days.

The most recent date the resident entered the facility. If the resident enters the facility for the first time and has not left for more than 2 calendar days, then the date of current admission will be the same as the date of first admission. If the resident leaves the facility for more than 2 calendar days (the day the resident left the facility = day 1) and returns, the date of current admission must be updated to the date of return to the facility.
Example: First and Current Admission

- A resident in your facility since **February 1, 2018** is transferred from your facility to an acute care facility on **June 2, 2018** and returns on **June 10, 2016**, the *current admission* date would be **06/10/2018** since he was in away from the facility for greater than two calendar days. The date of *first admission* remains as **2/1/2018** since the resident did not leave the LTCF for greater than 30 days.

- One week later, the same resident goes to the emergency department for evaluation on **June 15, 2018** and returns on **June 16, 2018**. The date of *current admission* stays as **06/10/2018** since he was not away from the LTCF for greater than two calendar days.
ADD UTI Event

Type and 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.
ADD UTI Event

Resident Care Location

Select location of resident on the date of event. Note: These are locations set-up by the facility.
ADD UTI Event

Primary Service Type

Select the NHSN Primary Resident Service Type on the date of event
ADD UTI Event

Transfer from Acute Care Facility

Was the resident directly admitted to your facility from an acute care facility in past 4 weeks? If ‘YES’ is selected, additional data must be entered.

If Yes, date of last transfer from acute care to your facility: [15]

If Yes, did the resident have an indwelling urinary catheter at the time of transfer to your facility?
ADD UTI Event

Indwelling Urinary Catheter status at time of event onset

- **In place** - in place on the date of the event
- **Removed** within last 2 calendar days - removed within 2 calendar days prior to the date of event
- **Not in place** - not in place on the date of event
ADD UTI Event

*Indwelling Urinary Catheter status at time of event onset......*
ADD UTI Event

Specify UTI Criteria Used (Check all that apply)

<table>
<thead>
<tr>
<th>Signs &amp; Symptoms</th>
</tr>
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<tbody>
<tr>
<td>Fever: Single temperature &gt; 37.8°C (&gt; 100°F) or &gt; 37.2°C (&gt; 99°F) on repeated occasions, or an increase of &gt; 1.1°C (&gt; 2°F) over baseline</td>
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<td>Acute pain, swelling or tenderness of the testes, epididymis, or prostate</td>
</tr>
<tr>
<td>Acute dysuria</td>
</tr>
<tr>
<td>Purulent drainage at catheter insertion site</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laboratory &amp; Diagnostic Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimen collected from clean catch voided urine and positive culture with &gt; 10^5 CFU/ml of no more than 2 species of microorganisms</td>
</tr>
<tr>
<td>Specimen collected from in/out straight catheter and positive culture with &gt; 10^2 CFU/ml of any microorganisms</td>
</tr>
<tr>
<td>Specimen collected from indwelling catheter and positive culture with &gt; 10^5 CFU/ml of any microorganisms</td>
</tr>
<tr>
<td>Leukocytosis (14,000 cells/mm^3) or left shift (&gt;6% or 1,500 bands/mm^3)</td>
</tr>
<tr>
<td>Positive blood culture with 1 matching organism in urine</td>
</tr>
</tbody>
</table>

Specific event will auto-populate based on the above event criteria selected.

Note: selected criteria MUST meet NHSN UTI criteria

Specific Event **: CA-SUTI - Catheter-associated symptomatic UTI
ADD UTI Event

Additional Questions

- Yes, only if resident has at least one matching organism reported in urine and blood

- Secondary Bloodstream Infection

- Transfer to acute care facility within 7 days

- Died within 7 days of Date of Event: Optional. Yes if resident died from ANY cause within 7 days after the Date of Event

- Yes if the resident transferred to acute care facility for any reason in the 7 days after the Date of Event
ADD UTI Event

Select Pathogens Identified in Urine Culture

Pathogens identified *: Y - Yes If Yes, specify below ->

Enter up to 2 pathogens for UTI without secondary BSI. If secondary BSI is YES, user may enter up to 3 pathogens.

S = Susceptible
I = Intermediate
R = Resistant
NS = Non-susceptible
S-DD = Susceptible-dose dependent
N = Not tested
ADD UTI Event:

Optional: Custom Fields and Comments

Optional, but must be set-up before reporting event

Free text

TRANSFER FROM STAYAWAY ACUTE CARE FACILITY.
Monthly Summary Data
Monthly Summary Data Reporting

- **CDC 57.142: Denominators for LTCF**
  - One optional worksheet for the month to collect UTI denominator data (*may also be used to collect LabID event data*)
  - Allows daily counts that must be summed at the end of the month
  - Only the monthly totals will be entered into the NHSN application

Forms and Table of Instructions (TOIs) available under *Data Collection Forms* at:
https://www.cdc.gov/nhsn/ltc/cdiff-mrsa/index.html
Submitting Monthly Summary Data into NHSN

- At the end of the month, enter **monthly totals**
- Locate ‘Summary Data’ on left-hand navigation Bar, and then ‘Add’
- Enter the Facility ID, month, and year for which denominator data will be reported
Total Resident Days

For each day of the month, record the total number of residents in the facility and at the end of the month, add the daily counts and enter the total as **Total Resident Days**.

- Data may come from electronic medical record, if available
- Users may also calculate based on facility occupancy.
  - 100 bed facility at 100% occupancy for June: 100 residents x 30 days = 3,000 total resident days
  - 100 bed facility at 90% occupancy for June: 90 residents x 30 days = 2,700 total resident days
Urinary Catheter Days

- Allows facility to calculate UTI rates based on urinary catheter status.
- Facilities are able to calculate urinary catheter utilization ratio for each month.
- For each day of the month, count and record the number of residents in the facility who have an indwelling urinary catheter. The aggregate count for the calendar month should be entered as the total Urinary-Catheter Days.
  - Do not include straight in-and-out catheters, suprapubic catheters, or condom catheters in your count.
Report No UTI

- If UTI surveillance was included on the NHSN Monthly Reporting Plan (MRP), but the facility did not identify and report at least one UTI event during the month, as identified by a red **asterisk, a check mark must be placed in the box “Report No UTI”
- The box will be grayed out and without red asterisk if at least one UTI event was submitted for that organism during the calendar month.
- If a UTI event is entered after summary data submitted, the application will auto-update.
New Antibiotic Starts for UTI Indication

- Monthly sum of all new prescriptions/orders for antibiotics given to residents suspected or diagnosed with having a UTI.
- Count antibiotic starts even if the infection being treated did not meet NHSN criteria for a symptomatic UTI event.
- Capture all new antibiotic orders, regardless of number of doses or days of therapy.
- 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 resident continues to take the antibiotic while in the facility.
Number of Urine Cultures Ordered

- New urine cultures ordered for a resident regardless of whether the resident has a UTI meeting the NHSN event criteria.
- Do not include urine cultures ordered by another healthcare facility prior to the resident’s admission or readmission back to your facility.
- Data may be collected daily or summarized at the end of each month.
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).
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.
Review

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

✔ Infections should be attributed as an HAI for the LTCF if:
  ✔ (a) there is no evidence of an incubating infection at the time of admission to the facility *(on the basis of clinical documentation of appropriate signs and symptoms and not solely on screening microbiologic data)*; and
  ✔ (b) onset of clinical manifestation occurs >2 calendar days after admission.
The LTCF UTI protocol does not have a set time period during which only one UTI may be reported for the same resident.

To determine if a second UTI should be reported for the same resident, clinical information must be used to determine that the original infection had resolved before reporting a second UTI.

Information that may be useful include a new onset of signs and symptoms, as well as completion of antimicrobial therapy. Using this logic, if UTI signs/symptoms resolved prior to the onset of any new signs/symptoms and a new urine culture, a second UTI must be considered for NHSN surveillance.
DATA QUALITY- RESOLVE ALERTS
Alerts

- Automatic checks in the NHSN that remind users of incomplete or missing in-plan data.
- Monthly data that are not considered complete and will be excluded from analysis unless resolved.
- Before using the analysis function, make sure to clear all (relevant) alerts.
- Found on the Home Page, or by clicking on the ‘Alerts’ tab on the sidebar.
Common Alerts for UTI Event Reporting: **Incomplete Events**

- An incomplete UTI event submitted and saved
- To resolve alert:
  - Click on the Event #
  - Review/edit data with red asterisk(s)

Specific event should be auto-populated based on NHSN UTI criteria selected

Missing required urine culture
Common Alerts for UTI Event Reporting: *Missing Events*

- UTI event module selected in the monthly reporting plan, but no UTI events submitted for the month and the *Report No UTI* event box not selected in the Monthly Summary.

To resolve alert:
- ✓ Submit UTI event(s) for calendar month.
- ✓ If no UTI events to report for the month, Click Box to indicate *Report No Events*.
Common Alerts for UTI Event Reporting: Missing Summary Data

- Summary Data has not been completed for the calendar month

To resolve:
- Click Add Summary hyperlink
- Enter Summary Data under “Denominators for Long Term Care Locations”
- Remember to SAVE before exiting
Common Alerts for UTI Event Reporting: *Incomplete Summary Data*

- Summary Data page is missing required data for the calendar month.

To resolve alert:
- Click on Summary ID
- Complete missing data fields, as indicated by **red asterisk(s)**
- Remember to SAVE before exiting
KNOWLEDGE CHECK
Scenario 1: Understanding use of Changes in Mental Status for CA-SUTI. Which of the residents below fits NHSN CA-SUTI criteria? (Choose one.)

A. A resident who is usually able to follow instructions has been unable to focus or pay attention to instructions for the last couple of days and has a WBC count of more than 10,000 leukocytes.

B. A resident suddenly has fluctuating course, difficulty paying attention, and is not making sense during conversation, and has a WBC of greater than 14,000 leukocytes.

C. A resident who recently begins to urinate in the bed.
Scenario 2: Criteria for CA-SUTI.

Which of the following criteria would confirm a CA-SUTI? *(Select all that apply.)*

A. The resident’s oral temperature is 100.2 °F and the indwelling catheter specimen is positive for *E. coli* 100,000 CFU (10^5).

B. The resident has purulent discharge around the suprapubic catheter and the catheter specimen is positive for *E. coli* 100,000 CFU (10^5).

C. The resident has a fluctuating change in mental status, and a voided specimen positive for *E. coli* 100 CFU (10^2) four days after the indwelling catheter was removed.

✓ D. The resident has multiple oral temps of 99.2 °F, chills, sweating and the indwelling catheter specimen is positive for *E. coli* 100,000 CFU (10^5).
Scenario 3: Mr. U

1. Mr. U, a resident of a LTC facility has a urinary catheter in place for 3 days for acute urinary retention. On day 3, he spikes a fever of 101°F and has a cough with shortness of breath.

2. The physician orders a urine culture and it comes back positive with >100,000 CFU/ml of *Pseudomonas aeruginosa* and *Candida albicans*.
Scenario 3, *continued*: Mr. U

3. Upon further work, up Mr. U is determined not to have any other symptoms that meet the NHSN CA-SUTI criteria,
   - But, a chest X-ray does show infiltrates in the right upper lobe of the lung.
Scenario 3, continued: Does Mr. U Have a CA-SUTI?

A. YES, he meets criteria for a CA-SUTI

B. NO, he does not meet criteria for CA-SUTI because the fever has another alternative source (respiratory infection)

- Indwelling urinary catheter in place >2 calendar days
- Fever is considered a non-specific sign of infection, so it can be used to meet the criteria even if he may have another cause for the fever.
- Urine culture positive for at least one bacteria of $>10^5$ CFU/ml
Scenario 3, continued: Mr. U

Catheter Associated Symptomatic UTI (SUTI)

**Scenario 3, continued:** Mr. U

Catheter Associated Symptomatic UTI (SUTI)

ONE or more of the following:

- Fever
- Rigors
- New onset hypotension, with no alternate noninfectious cause
- New onset confusion/functional decline with no alternate diagnosis AND Leukocytosis
- 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. Specimen collected from clean catch voided urine and positive culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml
2. Specimen collected from in/out straight catheter and positive culture with any number of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml

If urinary catheter in place:
3. Specimen collected from indwelling catheter and positive culture with any number 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

Fever can be used to meet SUTI criteria even if the resident has another possible cause for the fever (e.g., pneumonia)

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

Leukocytosis: $>14,000$ cells/mm$^3$ or Left shift ($> 6\%$ or 1,500 bands/mm$^3$)
Scenario 3, continued
Applying the NHSN Definition: Mr. U

McGeer

NO, this would not meet McGeer criteria for a CA-SUTI
• The fever can be attributed to another cause—pneumonia

NHSN

YES, this does meet the NHSN criteria for a CA-SUTI
• Fever is considered a non-specific sign of infection, so it must be used to meet UTI criteria even if the resident has another source of infection
• Urine culture positive for at least one bacteria of $\geq 10^5$ CFU/ml
Scenario 4: Mr. G

- A voided urine culture is positive for mixed flora, *E. coli*, and *Candida glabrata* $10^5$ CFU/ml.

- During the medical record review, you read that four days earlier Mr. G complained of burning during urination. You did not see documentation of an indwelling urinary device, but he does receive intermittent catheterization for urinary retention.
Scenario 4, continued: Mr. G

Does Mr. G meet NHSN UTI criteria?

A. YES, he meets NHSN criteria for a SUTI
B. NO, he does not meet NHSN criteria for UTI
C. Yes, he meets NHSN criteria for CA-SUTI
D. Yes, he meets NHSN criteria for ABUTI

- No indwelling urinary device
- Acute dysuria
- Urine culture requirement are not met since culture was collected from a voided urine specimen and the urine culture grew more than 2 species of microorganisms (mixed flora = at least 2 species of organisms)
Scenario 4, **continued**: Mr. G

**Symptomatic UTI (SUTI)**

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**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

**SUTI - Criteria 2**

- Either of the following:
  1. Fever *a*
  2. Leukocytosis *b*

**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

**Either of the following**:

1. Specimen collected from clean catch voided urine and positive 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

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*SUTI*
Scenario 5: Mr. S

- Mr. S is an 90 year old resident in the facility. He has a history of multiple medical issues. On 3/3/18, blood, urine, and wound cultures were collected.
  - You review the following lab reports, reported on 3/5/18:
    - 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).
  - 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.
Scenario 5: *continued*: Mr. S

Does Mr. S have an SUTI?

A. Yes. Because he had a positive urine culture + positive blood culture with the same organism

B. Yes. Because he had a urine culture positive for >100,000 cfu/ml of *Streptococcus pyogenes*.

C. Yes. Because he had a positive urine culture positive for >100,000 cfu/ml of *Streptococcus pyogenes*.

D. Not sure

C. No. Because he does not have any localizing signs or symptoms of a UTI
Scenario 6, *continued*: Mr. S

Does Mr. S have another NHSN defined UTI?

A. Yes. He has an ABUTI because he had a positive urine culture and a positive blood culture with the same organism and no documented signs or symptoms

B. No. Because the staff probably forgot to document the signs and symptoms for a UTI
Asymptomatic Bacteremic Urinary Track Infection (ABUTI)

Resident with or without an indwelling catheter:

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 as only sign would not exclude ABUTI if other positive culture criteria are met.

AND

Any of the following:
1. Specimen collected from clean catch voided urine and a positive culture with no more than 2 species of microorganisms, at least one of which is a bacterium of \( \geq 10^5 \) CFU/ml
2. Specimen collected from in/out straight catheter and positive culture with any number of microorganisms, at least one of which is a bacterium of \( \geq 10^3 \) CFU/ml
3. Specimen collected from indwelling catheter and positive culture with any number of microorganisms, at least one of which is a bacterium of \( \geq 10^3 \) 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
Scenario 7: Ms. R

- **Day 1:** Ms. R had an indwelling urinary catheter inserted in for a bladder outlet obstruction
- **Day 2:** The indwelling urinary catheter remains in place
- **Day 3:** The resident’s indwelling urinary catheter remains in place. The resident had a single oral temp of 100.2°F. A urine culture was collected from the catheter
Scenario 7, *Continued*: Ms. R

- **Day 4**: The indwelling urinary catheter remains in place. No symptoms documented

- **Day 5**: The urine culture was positive for *Candida glabrata* $10^5$ CFU/ml

**Is this a CA-SUTI?**

A. Yes

B. No
Scenario 7, *continued*

**Applying the NHSN Definition: Ms. R**

**McGeer**

**YES,** criteria for CA-SUTI met

- Indwelling urinary catheter in place
- Symptoms meet the CA-SUTI criteria—an oral fever >100 °F
- No other explanation for the resident’s symptoms
- Positive urine culture with $10^5$ CFU/mL of *Candida glabrata*

**NHSN**

**NO,** NHSN criteria for CA-SUTI not met

- Indwelling urinary catheter specimen was not positive for at least one bacteria of $>10^5$ CFU/ml