Long-term Care Facility (LTCF) Component

Healthcare Associated Infection Surveillance Module:
UTI Event Reporting
Target Audience

- This training is designed for those who will collect, report, or analyze urinary tract infection data in NHSN, and may include:
  - NHSN Facility Administrator
  - LTCF Component Primary Contact
  - LTCF Administrator
  - Director of Nursing
  - Infection Prevention and Control Staff
  - Professional Nursing Staff
  - Trained Support Staff

Reminder: You should have viewed the Overview of the LTCF Component slides prior to beginning this training.
Objectives

- Describe the rationale for monitoring urinary tract infections (UTI) in NHSN
- Describe the methodology, protocols, and definitions used in monitoring UTI events
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
UTI Protocol Updates for 2016

- Presence of a fever, even if due to another cause, should still be counted as part of meeting a UTI definition. This change to the protocol is being made to remove subjectivity about whether a fever is attributable to a UTI event.
- Yeast and other microorganisms, which are not bacteria, will no longer be accepted as UTI pathogens.

What These Changes Mean for LTCFs Reporting UTIs into NHSN in calendar year 2016

- Fever can be used to meet SUTI and CA-SUTI criteria even if the resident has another possible cause for the fever (e.g., pneumonia).
- Only urine cultures meeting the colony count requirement for at least one bacteria will be used to meet NHSN UTI criteria.
The following documents and forms will be discussed in this training. You may wish to PRINT these to follow along.

1) UTI Event for LTCF Protocol
2) Table of Instructions for the UTI Form
3) UTI for LTCF Event Reporting Form
4) Denominators for LTCF Form
5) Monthly Reporting Plan for LTCF

http://www.cdc.gov/nhsn/LTC/uti/index.html
Background

Why monitor urinary tract infections in long-term care facilities?

- UTIs are the most frequently reported infections in nursing homes and drive antibiotic use among residents.
- Focused monitoring of symptomatic UTIs, both catheter and non-catheter associated, helps identify trends in these infections and provide data to improve antibiotic use in your LTCF.
- Tracking these events will also inform infection control staff of the impact of targeted prevention efforts.
Purpose of UTI Event Reporting

- To calculate rates of UTI events among all residents in a facility.
  - Non-catheter associated UTI rates will be calculated among all residents without a catheter in the facility.
  - Catheter-associated UTI rates will be calculated among only those residents with indwelling urinary catheters.

- To identify which residents get UTIs, events related to urinary catheters, and organisms that cause UTIs in a facility.

- To monitor antibiotic use for UTIs.

- To assess the impact of efforts to prevent UTI over time.
Settings for UTI Event Reporting

- Reporting is available for the following facility types:
  - Certified skilled nursing facilities/nursing homes (LTC:SKILLNURS)
  - Intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS)
Facilities must indicate UTI surveillance in the *Monthly Reporting Plan for LTCF.*

UTI surveillance must be reported for at least 6 consecutive months to provide meaningful measures.

UTI surveillance should be performed facility-wide.
Monthly Reporting Plan (MRP) for LTCF NHSN UTI Module

The MRP must be complete before event reporting in the application is allowed.

Add Facility-wide Inpatient (FacWideIN) UTI event reporting to HAI Module section of monthly reporting plan (MRP).
Symptomatic UTI (SUTI)

- Resident manifests signs and symptoms that localize the infection to the urinary tract.

- Can occur in residents **without** indwelling urinary devices or residents managed with the following non-indwelling urinary devices: suprapubic catheters, straight in-and-out catheters and condom catheters.
  - A resident cannot have an indwelling catheter in place or have been exposed to one that was removed within 2 calendar days prior to symptom onset (where date of removal = Day 1).

- Three criteria can be applied for identifying Symptomatic UTI (SUTI), which combine signs and symptoms with laboratory and culture data. (see next slide)
SUTI Event

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

**SUTI - Criteria 1a**

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

**SUTI - Criteria 2a**

Either of the following:
1. Fever\(^+\)
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

**SUTI - Criteria 3a**

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

**SUTI**

*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 bacteria of \( \geq 10^5 \) CFU/ml
2. Specimen collected from in/cut straight catheter and positive culture with any microorganism, at least one of which is bacteria of \( \geq 10^2 \) 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)

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

\(^b\)Leukocytosis: \( \geq 14,000 \) cells/mm\(^3\), or Left shift \( (> 6\% \) or \( > 1,500 \) bands/mm\(^3\)
CA-SUTI Definitions

- **Catheter-associated Symptomatic UTI (CA-SUTI)**
  - SUTI which occurs in a resident while having an indwelling urinary catheter in place or removed within the 2 calendar days prior to event onset (day of removal = Day 1).
    - An indwelling urinary catheter should be in place for a minimum of 2 calendar days (Day 1= day of insertion) in order for the SUTI to be catheter-associated.

- SUTIs in residents managed with suprapubic, straight in-and-out, or condom (males only) catheters are **not** considered CA-SUTIs.
CA-SUTI Definitions
Indwelling Catheter

A drainage tube that is inserted into the urinary bladder (includes neobladder) through the urethra, is left in place, and is connected to a collection system. This includes a collection system that is used for irrigation of any type or duration (e.g., intermittent, continuous). Also called a Foley catheter
Does *not* qualify as Indwelling Urethral Catheter

- Straight catheterization
- In and Out catheterization
- Condom catheter (Texas catheter)
- Suprapubic catheter
- Nephrostomy tubes
- Urostomy
- Ileal conduit
**Resident with an indwelling catheter:**

**CA-SUTI – Criteria**

**ONE or more** of the following:
- Fever$^a$
- Rigors
- New onset hypotension, with no alternate noninfectious cause
- New onset confusion/functional decline AND Leukocytosis$^b$
- 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 bacteria of $\geq 10^5$ CFU/ml
2. Specimen collected from in/out straight catheter and positive culture with any microorganism, at least one of which is bacteria of $\geq 10^5$ CFU/ml

*If urinary catheter in place:*
3. Specimen collected from indwelling catheter$^c$ and positive culture with any microorganism, at least one of which is bacteria of $\geq 10^5$ CFU/ml

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

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

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

$^c$Leukocytosis: $> 14,000$ cells/mm$^3$, or Left shift ($> 6\%$ or $1,500$ bands/mm$^3$)

$^c$Indwelling urinary catheters which have been in place for $> 14$ days should be changed prior to specimen collection, but failure to change catheter does not exclude a UTI for surveillance purposes
Asymptomatic Bacteremic UTI (ABUTI)

- Resident has NO signs and symptoms localizing to the urinary tract but has urine and blood cultures positive for the same bacteria.
  - The microorganism in the blood and urine cultures should have the same genus and species to be considered a match.
- Can occur in residents with or without an indwelling urinary catheter.
ABUTI Event

Resident with \textit{or without} an indwelling catheter:

**ABUTI Criteria**

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

\begin{itemize}
\item Any of the following:
\begin{itemize}
\item Specimen collected from clean catch voided urine and positive culture with no more than 2 species of microorganisms, at least one of which is bacteria of \( \geq 10^3 \) CFU/ml
\item Specimen collected from in/out straight catheter and positive culture with any microorganism, at least one of which is bacteria of \( \geq 10^2 \) CFU/ml
\item Specimen collected from indwelling catheter and positive culture with any microorganism, at least one of which is bacteria of \( \geq 10^5 \) CFU/ml
\end{itemize}
\end{itemize}

\textbf{NOTE:} Yeast and other microorganisms which are not bacteria, are not acceptable UTI pathogens

\begin{itemize}
\item \textbf{AND}
\end{itemize}

\begin{itemize}
\item Positive blood culture with at least 1 matching organism in urine culture
\end{itemize}

\textbf{ABUTI}
Required Forms

- **Urinary Tract Infection (UTI) for LTCF Form**
  - Numerator data
  - Collect and report each SUTI, CA-SUTI or ABUTI that is identified during the months selected for surveillance.

- **Denominators for LTCF Locations Form**
  - Denominator data
  - Resident-days
  - Catheter-days
  - New antibiotic starts for UTI indication
NHSN Numerator Form

- Urinary Tract Infection (UTI) for LTCF Form (CDC 57.140)
  - Numerator data (one form for each event being recorded)
    - Collect and report each event that meets the NHSN UTI Event definition
Completing the UTI Event Form: Instructions for key data fields

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

- **Example**: A resident had a Foley catheter in place and had documentation of new suprapubic pain on June 1\textsuperscript{st}. The resident had a urine specimen collected and sent for culture June 3\textsuperscript{rd}. The date of event would be June 1\textsuperscript{st} since this is the date of symptom onset and occurred before the date of culture collection.
Urinary catheter status

Defined as the status of a urinary catheter device on the Date of Event

One of three options is selected to describe urinary catheter status

- "In place": an indwelling urinary catheter was present on the date of the event
- "Removed within last 2 calendar days": an indwelling urinary catheter was recently taken out
- "Not in place": No indwelling urinary catheter was in place, or recently removed > 2 calendars ago

This field does not refer to how the specimen was collected
Collecting Resident Denominators

- **Resident days**
  - The monthly sum of the total number of residents present in the facility each day of that month

- **Catheter days**
  - The monthly sum of the number of residents with an indwelling catheter each day of that month
  - None of the following should be included when counting indwelling catheter days: suprapubic catheters, in/out straight catheters or condom catheters.

- Counts are collected daily for all residents in the facility
Collecting Resident Denominators

- **New antibiotic starts for UTI indication**
  - The monthly sum of all new prescriptions for antibiotics given to residents suspected or diagnosed with having a UTI (catheter-associated and not catheter associated).
  - Count antibiotic starts even if the infection being treated did not meet NHSN criteria for a symptomatic UTI event.

- Capture any new antibiotic order, regardless of number of doses or days of therapy given.

- Only include antibiotics ordered while the resident is receiving care in your facility.
  - Do not count antibiotics which were started by another healthcare facility prior to the resident’s admission or readmission to your facility.
# Denominators Form

## Denominators for LTCF

<table>
<thead>
<tr>
<th>Facility ID:</th>
<th>*Location Code:</th>
<th>*Month:</th>
<th>*Year:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>*Number of residents</th>
<th>*Number of residents with a urinary catheter</th>
<th>*New antibiotic starts for UTI indication</th>
<th>*Number of admissions</th>
<th>Number of admissions on C. diff treatment</th>
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<tbody>
<tr>
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Table of Instructions: [http://www.cdc.gov/nhsn/forms(instr/57.142-toi-denominators-ltcf.pdf](http://www.cdc.gov/nhsn/forms(instr/57.142-toi-denominators-ltcf.pdf)
The monthly **totals** must be entered into the NHSN application.

**Denominators for LTCF**

- Document the counts each day.
- Record the **totals** for the month.
Calculating the SUTI Rate

- SUTI incidence rate per 1,000 “non-catheter” resident days

\[
\text{SUTI Rate} = \frac{\# \text{ SUTIs identified}}{\text{Resident days} - \text{urinary catheter days}} \times 1000
\]

- Only SUTIs which are NOT catheter-associated are included
  - Remember: Events in residents with other urinary devices such as suprapubic catheters are counted as SUTI
Calculating the CA-SUTI Rate

- CA-SUTI incidence rate per 1,000 indwelling catheter days

\[
\text{CA-SUTI Rate} = \frac{\# \text{ CA-SUTIs identified}}{\text{Urinary catheter days}} \times 1000
\]

- Only **symptomatic** events which develop at the time an indwelling catheter is in place or has been removed in the last 2 calendar days will be included.
Urinary catheter utilization ratio

- Device utilization ratio measures the proportion of total resident-days in which indwelling urinary catheters were used.

- **NOTE**: Indwelling catheter use is necessary for CA-SUTI. Therefore reducing your facility catheter utilization rate, may lead to reduced CA-SUTI rates.
Antibiotic use for UTI Analysis

- **UTI treatment ratio**

  \[ \text{UTI treatment ratio} = \frac{\text{New antibiotic starts for UTI}}{\text{Total UTI count (SUTI+CASUTI+ABUTI)}} \]

  - UTI treatment ratio compares the number of clinically treated UTIs to the number of UTIs meeting NHSN surveillance definitions.

  **NOTE:** When the UTI treatment ratio is >1, there are more antibiotic starts for UTI than symptomatic UTI events submitted.
UTI Event Metrics

- **Total UTI Rate/1,000 resident-days** = Number of all UTI events per month (i.e., SUTI + CA-SUTI + ABUTI) / Total resident-days per month x 1,000

- **Percent that is SUTI** = Number of SUTI events / Total number of UTI events x 100

- **Percent that is CA-SUTI** = Number of CA-SUTI events / Total number of UTI events x 100

- **Percent that is ABUTI** = Number of ABUTI events / Total number of UTI events x 100

- **SUTI incidence rate/1,000 resident-days** = Number of SUTI events / (Total resident-days – urinary catheter-days) x 1,000

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

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

- **UTI treatment ratio**: New antibiotic starts for UTI / Total UTI Count
Custom Fields

- Additional data entry fields which users can name (labels) and capture text or numeric data
- Available on each event form
- User can customize or expand data collected and submitted at your facility using these optional fields
Let’s Review!

- You can perform monitoring of all urinary tract infections, both non-catheter associated and catheter-associated.

- 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).
Let’s Review!

- The **Symptomatic UTI** protocol criteria combine sign and symptoms with laboratory and culture data.

- The **Asymptomatic Bacteremic UTI**: resident has NO signs and symptoms localizing to the urinary tract, but has urine and blood cultures positive for the same bacteria.

- “**Mixed flora**” is not considered an organism and cannot be reported.
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.
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.

To get the most from your data:

- Minimum reporting is six months during a calendar year.
- Monitoring should be done facility-wide.
- Keeping a daily log of residents with indwelling urinary catheters will make it easier to calculate total urinary catheter days at the end of the month.
- Keeping a log of every new antibiotic start for suspected or diagnosed UTI will make it easier to report monthly antibiotic starts for UTI at the end of the month.
NHSN Resources

- NHSN Home Page
  - http://www.cdc.gov/nhsn/

- NHSN LTCF Component

- LTCF Component UTI Event Reporting