

# **NATIONAL HEALTHCARE SAFETY NETWORK**

General Principles

Definitions

Key Terms

***Catheter-associated Urinary Tract Infection  
(CAUTI)***



# INTRODUCTION



- ▶ UTIs are the fourth most common type of HAI
- ▶ Virtually all HAI UTIs are caused by instrumentation of the urinary tract
- ▶ Approximately 12-16% of adult hospital inpatients will have an indwelling urinary catheter at some time during hospitalization
- ▶ Risk of CAUTI increases by 3-7% with each day the catheter is in place

# DEFINITIONS

- ▶ Urinary Tract Infections (UTI) are defined using Symptomatic Urinary Tract Infection (SUTI) criteria, Asymptomatic Bacteremic UTI (ABUTI) and Urinary System Infection (USI)
- ▶ Indwelling Catheter: A drainage tube inserted into urinary bladder via the urethra, is left in place and connected to a drainage system. This includes a collection system that is used for irrigation of any type or duration (intermittent, continuous)
  - ▶ Called Foley catheters
  - ▶ Condom or straight in-and-out catheters not included
  - ▶ Nephrostomy tubes, ileoconduits or suprapubic catheter not included



# DEFINITIONS



- ▶ Catheter-associated UTI (CAUTI): A UTI where an indwelling urinary catheter was in place for > 2 calendar days on the date of event with day of device placement being day 1\*

AND

An indwelling urinary catheter was in place on the date of event or the day before

***\*If the IUC was in place prior to inpatient admission, the catheter day count that determines device-association begins with the admission date to the first inpatient location.***

# NOTES

- ▶ SUTI 1b and USI cannot be catheter-associated
- ▶ SUTI 1b cannot be met in a patient >65 years of age with fever > 38°C as the only element within the Infection Window Period
- ▶ Indwelling urinary catheters that are removed and reinserted:
  - ▶ After removal if patient is without an IUC for at least 1 full calendar day (not 24 hours) then the IUC day count will start anew
  - ▶ If instead, a new IUC is inserted before a full calendar day has passed the device day count will continue uninterrupted

# ASSOCIATING CATHETER USE TO UTI

Eligible for  
UTI



	March 31 (hospital day 3)	April 1	April 2	April 3	April 4	April 5	April 6
Patient A	IUC Day 3	IUC Day 4	IUC Removed (IUC day 5)	IUC replaced (Foley day 6)	IUC Day 7	IUC remove Day 8	No IUC
Patient B	IUC Day 3	IUC Day 4	IUC Removed (IUC day 5)	No IUC	IUC replaced (IUC Day 1)	IUC Day 2	IUC Day 3



Eligible  
for UTI

# Symptomatic Urinary Tract Infection

## SUTI 1a (CAUTI)

Patient must meet 1,2, and 3 below:

1. Patient had an indwelling urinary catheter that had been in place for > 2 consecutive days (day of device placement = Day 1) on the **date of event** **AND** was either: † Still present on the date of event† , OR Removed the day before the date of event‡
2. Patient has at least 1 of the following signs or symptoms: fever (>38 °C); suprapubic tenderness\*, or costovertebral angle pain or tenderness\*  
urinary urgency^ • urinary frequency^ • dysuria^
3. Patient has a urine culture with no more than two species of organisms, at least one of which is a bacteria of  $\geq 10^5$  colony-forming units (CFU)/ml

# NOTES



- ▶ To use fever in a patient > 65 years of age IUC needs to be in place for more than 2 consecutive days and either still in place OR remove day before the DOE
- ▶ † When entering into NHSN choose “INPLACE”
- ▶ ‡ When entering into NHSN choose “REMOVE”
- ▶ ^ These symptoms cannot be used when catheter is in place. An IUC could cause patient complaints of “frequency” “urgency” or “dysuria”
- ▶ Fever non-specific cause and cannot be excluded because deemed due to another recognized cause



**SYMPTOMATIC URINARY TRACT INFECTION (SUTI)**  
**CRITERIA 1B (NON-CAUTI)**  
*MUST MEET 1, 2, AND 3*

1. One of the following is true:

- Patient has/had an indwelling urinary catheter but it has/had not been in place > 2 calendar days

OR

- Patient did not have a urinary catheter in place on the date of event nor the day before the date of event.

2. Patient has at least one of the following signs or symptoms:

- fever (>38°C) in a patient that is ≤65 years of age, urgency<sup>^</sup>, frequency<sup>^</sup>, dysuria<sup>^</sup>, suprapubic tenderness\*, or costovertebral angle pain or tenderness\*

3. Patient has a urine culture with no more than two species of organisms, at least one of which is a bacteria of  $\geq 10^5$  CFU/ml.

*\*No other recognized cause*

## SYMPTOMATIC URINARY TRACT INFECTION SUTI 2 MUST MEET 1, 2, AND 3

- ▶ Patient  $\leq 1$  year of age with\*\* or without an indwelling urinary catheter has at least 1 of the following signs or symptoms: fever ( $>38^{\circ}\text{C}$  core), hypothermia ( $<36^{\circ}\text{C}$  core), apnea\*, bradycardia\*, lethargy\*, vomiting\* or suprapubic tenderness\*

*and*

- ▶ Patient has a urine culture with no more than two species of organisms, at least one of which is a bacteria of  $\geq 10^5$  CFU/ml

*\*No other recognized cause*

*\*\*Patient had an indwelling urinary catheter in place for  $> 2$  calendar days, with day of device placement being Day 1 and catheter was in place on the date of event or the previous day*

# ASYMPTOMATIC BACTEREMIC URINARY TRACT INFECTION (ABUTI)

- ▶ Patient with\* or without an indwelling urinary catheter:
  - ▶ Has NO signs or symptoms of SUTI 1 or 2 according to age (NOTE: Patients > 65 years of age with a non-catheter-associated ABUTI may have a fever and still meet the ABUTI criterion)
- ▶ Patient has a urine culture with no more than two species of organisms, at least one of which is a bacteria of  $\geq 10^5$  CFU/ml
- ▶ Patient has a positive blood culture with at least one matching bacteria to the urine culture, or meets LCBI criterion 2 (without fever) and matching common commensal(s) in the urine

*\*Patient had an indwelling urinary catheter in place for >2 calendar days, with day of device placement being Day 1, and catheter was in place on the date of event or the day before*

# URINARY SYSTEM INFECTION (USI)

(FORMERLY OUTI) (KIDNEY, URETER, BLADDER, URETHRA OR TISSUE SURROUNDING THE RETROPERITONEAL OR PERINEPHRIC SPACE)

▶ Must meet one of the following:

- ▶ Patient has microorganisms isolated from culture of fluid (excluding urine) or tissue from affected site
- ▶ Patient has an abscess or other evidence of infection on gross anatomical exam, during invasive procedure, or on histopathologic exam
- ▶ Patient has at least one of the following signs or symptoms: fever (>38.0 C); localized pain or tenderness

AND at least one of the following:

- ▶ purulent drainage from affected site
- organisms cultured from blood and imaging test evidence of infection (CT scan, ultrasound, MRI)

# URINARY SYSTEM INFECTION (USI)

(FORMERLY OUTI) (KIDNEY, URETER, BLADDER, URETHRA OR TISSUE SURROUNDING THE RETROPERITONEAL OR PERINEPHRIC SPACE)

- ▶ Must meet one of the following:
  - ▶ Patient < 1 year of age has at least one of the following signs or symptoms:
    - Fever (>38.0 C);
    - Hypothermia (<36.0 C)
    - Apnea\*
    - Bradycardia\*
    - Lethargy\*
    - Vomiting\*
- AND at least one of the following:
- purulent drainage from affected site
  - organisms cultured from blood and imaging test evidence of infection (CT scan, ultrasound, MRI)

# COMMENTS



- ▶ “Mixed flora” not in pathogen list within NHSN. “Mixed flora” also represents at least two species of organisms.
- ▶ Following organisms can not be used to meet UTI definition:
  - ▶ Any *Candida* species as well as report of “yeast”
  - ▶ Mold
  - ▶ Dimorphic fungi or
  - ▶ Parasites

*An acceptable urine specimen may include these organisms as long as one bacterium of  $\geq 10^5$  CFU/ml is present*

*Non-bacterial organisms identified from blood cannot be deemed secondary to a UTI*

# COMMENTS



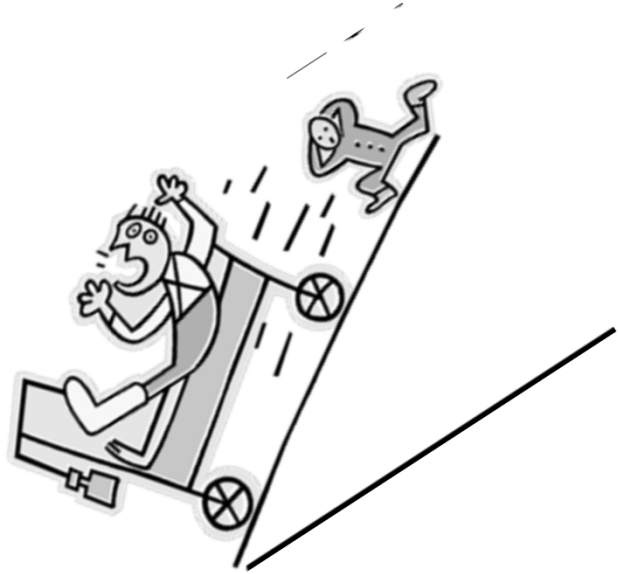
- ▶ Suprapubic tenderness (palpation or pain-symptom) documentation in medical record is acceptable
- ▶ Lower abdominal pain or bladder or pelvic discomfort are examples of symptoms that be used as suprapubic tenderness
- ▶ Generalized “abdominal pain” in the MR is not to be interpreted as suprapubic tenderness
- ▶ Left or right lower back or flank pain are examples of symptoms that can be used as costovertebral angle pain or tenderness
- ▶ Generalized “low back pain” is not to be interpreted as costovertebral angle pain or tenderness

# UTI REPEAT INFECTION TIMEFRAME

- ▶ 14- day timeframe
- ▶ No new UTIs are reported.
- ▶ Date of event = Day 1
- ▶ Additional pathogens from urine cultures are added to the event.
- ▶ Device placement does not change the original category of infection







## ► Multiple Transfers:

- In instances where a patient has been transferred to more than one location on the date of a UTI, or the day before, attribute the UTI to the **first** location in which the patient was housed the **day before** the UTI's date of event.

## Multiple Transfers

Locations	3/1	3/2	3/3
that patient was transferred to	Unit A	Unit A Unit B Unit C	Unit C Unit D <u>This is also the date of event for a CAUTI.</u> CAUTI is attributed to Unit A since Unit A was the first location in which the patient was housed the day before the date of event.

# COMMON MISCONCEPTIONS

- ▶ UTI as secondary infection



- ▶ Positive culture on admission automatically = Present on Admission (POA)



- ▶ UTI signs or symptoms such as fever on admission automatically = POA



- ▶ RIT continues during readmission



# **Case Studies & Discussion**



**It's QUESTION TIME !!**