

# ***NATIONAL HEALTHCARE SAFETY NETWORK CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) - SURVEILLANCE***

Key Concepts  
Definitions



# REFERENCE ACKNOWLEDGMENT

## *2024 NHSN ANNUAL TRAINING*

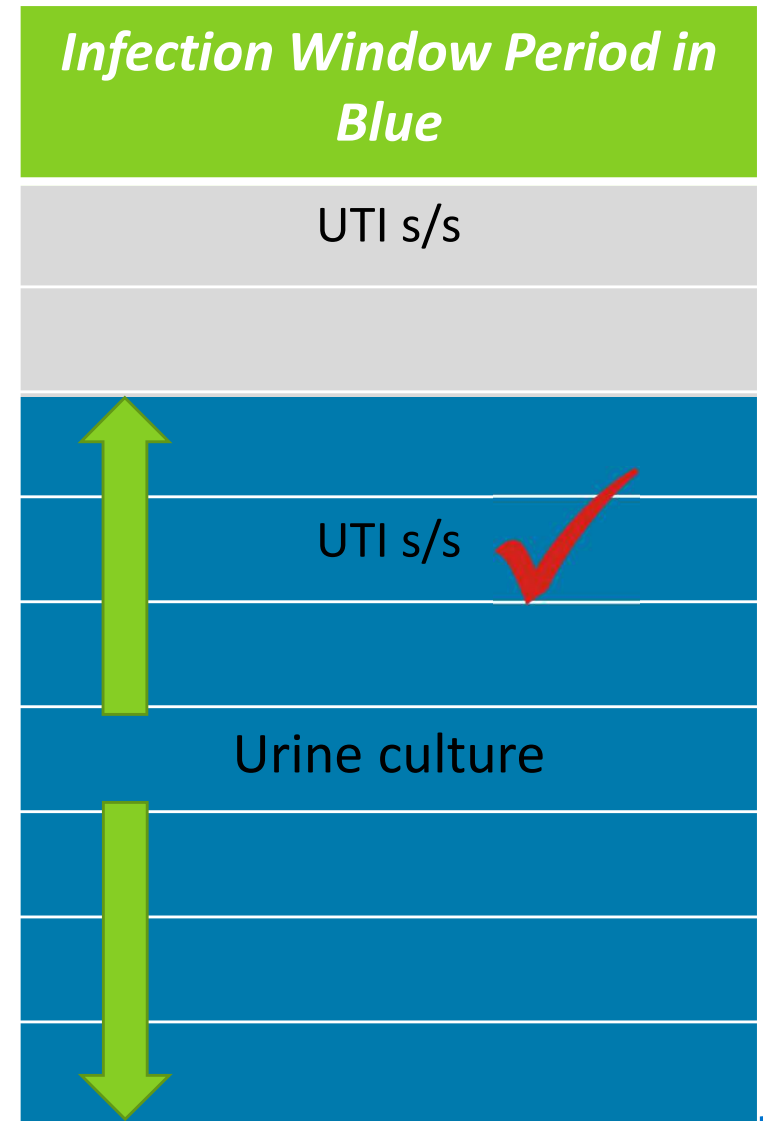
- ▶ CAUTION: Is it a CAUTI? Know your CAUTI criteria

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# KEY CONCEPT: INFECTION WINDOW PERIOD

- ▶ + Urine culture is always use to set the IWP
- ▶ Use only eligible UTI element within the IWP
  - ▶ Urine culture
  - ▶ UTI signs/symptoms (s/s) **OR** matching blood organism



# KEY CONCEPT: UTI DATE OF EVENT

- ▶ The UTI DOE is the date the first element used to meet a UTI criterion occurs for the first time within the 7-day IWP
- ▶ First element may be culture OR sign/symptom



DATE	SUTI Criterion	IUC day
3/25 Admit	CVA, IUC inserted	1
3/26	IUC in place	2
3/27	IUC in place	3
3/28 DOE	IUC discontinued urinary frequency	4
3/29	No fever	
3/30	Elevated wbc's	
3/31 ★	urine culture >100,000 CFU/ml <i>E.coli</i>	
4/1		
4/2		
4/3		

## KEY CONCEPT: UTI RIT

- ▶ 14-day timeframe where no ‘new’ UTI events are reported (SUTI or ABUTI). All UTI events identified set an RIT and SBAP-includes non-catheter-associated events and POA events
- ▶ The RIT for a UTI event is a ‘fixed’ 14 days. “New” urine cultures identified in the RIT with different eligible pathogens from original culture are added to the event

**NOTE:** The original date of event is maintained and **DO NOT** change device association during the RIT

## TWO SCENARIOS FOR 2<sup>ND</sup> BSI CAN BE APPLIED TO UTI

- ▶ **Scenario 1- Matching organism concept**: At least one organism identified in a positive **BLOOD** culture matches an organism identified from the **URINE** culture used to meet SUTI criteria **AND** the blood culture is collected in the SBAP (IWP + RIT)

OR

- ▶ **Scenario 2- ABUTI**: The + BC is used as an element in meeting the UTI criterion ABUTI (and collected during UTI IWP)

# KEY CONCEPT: INDWELLING URINARY CATHETER (IUC)

- ▶ A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a drainage bag (including leg bags).
- ▶ IUCs are also often called Foley catheters.
- ▶ IUCs used for intermittent or continuous irrigation are also included in CAUTI surveillance.

# UTI SITE SPECIFIC CONCEPTS

**Unless an IUC is also present, the following do NOT qualify as an IUC**

- ▶ Suprapubic catheter
- ▶ Nephrostomy tubes
- ▶ Urostomy
- ▶ Ileal conduit
- ▶ Perineal urethrostomy

▶ **NOTE:**

- ▶ Urine collected from **any** source, including the above sites, **CAN** be used to determine a UTI.



# URINE CULTURES

## ▶ Eligible Urine Culture

- ▶  $\geq 100\text{K CFU/ml}$  of at least one eligible organism.

AND

- ▶ No more than two organisms.

## ▶ Urine Source

- ▶ **Any** source, including urine collection devices, such as nephrostomy tubes.

# URINE CULTURES

- **Excluded Organisms:**

- Candida species or yeast not otherwise specified, mold, dimorphic fungi or parasites or mold, **including** *Candida auris*
  - Blood with these organisms cannot be secondary to UTIs
- Excluded organisms **can** be in an eligible urine culture, if there is **one** bacterium with  $\geq 100\text{K}$  CFU/ml in addition to the excluded organism.

**Example:**

- ▶ Eligible urine culture:  $> 100\text{K}$  CFU/ml of *Escherichia coli* and  $> \text{Candida albicans}$ .
- ▶ Ineligible urine culture:  $> 100\text{K}$  CFU/ml of *Escherichia coli*,  $> 100\text{K}$  CFU/ml of *Klebsiella pneumoniae*, and yeast.

# URINE CULTURES

## ▶ Mixed Flora

- ▶ Implies > two organisms and does **not** meet NHSN UTI criteria
  - ▶ Ineligible urine culture:  $\geq$  100K CFU/ml of *A.baumannii* and 10K CFU/ml of mixed flora

## ▶ Sensitivities

- ▶ A urine culture that has sensitive and resistant bacteria in the same culture, it is **not** considered two different organisms.
  - ▶ Example: > 100K MSSA and  $\geq$  100K MRSA are considered the same organism.

# URINE CULTURES

## ► Colony Count Ranges

- 75K to 100K does **NOT** meet NHSN UTI criteria.

## ► Morphology

- Differing morphology does **NOT** affect organism count

### ► Eligible Urine Culture

- E. coli #1 > 100,000 CFU/ml
- E. coli #2 > 10,000 CFU/ml
- Staph Aureus > 100,000 CFU/ml



# CATHETER DAY COUNT

- ▶ Day of insertion = Catheter Day 1.
  - ▶ If the catheter is present at the time of admission, then the date of admission (DOA) = Catheter Day 1.
- ▶ Each day an IUC is in place for **any** portion of the day counts as an IUC day.
  - ▶ When an IUC is removed and later replaced, the IUC day count continues uninterrupted **unless** the patient is without an IUC for at least 1 full calendar day (**NOT to be read as 24 hours**).
  - ▶ If there is a full calendar day interruption, the IUC day count will start anew with new IUC placement.

# URINARY TRACT INFECTION (UTI) DEFINITIONS

## ► There are two specific types of UTI:

- Symptomatic UTI (**SUTI**)
  - **SUTI 1a**- Catheter-associated Urinary Tract Infection (CAUTI) in any age patient
  - **SUTI 1b**- Non-Catheter-associated Urinary Tract Infection (Non-CAUTI) in any age patient
  - **SUTI 2** – CAUTI or Non-CAUTI in patients 1 years of age or less
- Asymptomatic Bacteremic UTI (**ABUTI**)

*Both types, if catheter-associated, must be reported as part of any CMS CAUTI reporting requirements.*

# UTI DEFINITIONS

## ► SUTI 1a: Catheter-associated Urinary Tract Infection (CAUTI)

### ► Patient must meet 1, 2, and 3 during the IWP

1.	Patient had an indwelling urinary catheter (IUC) that had been in place for more than 2 consecutive days in an inpatient locations on the day of event and either:
	<ul style="list-style-type: none"><li>▪ Present for any portion of the calendar day on the DOE <b>OR</b></li><li>▪ Removed the day before the DOE</li></ul>
2.	Patient has at least one of the following signs or symptoms:
	<ul style="list-style-type: none"><li>▪ Fever (<math>&gt;38^{\circ}\text{C}</math>)</li><li>▪ Suprapubic tenderness*</li><li>▪ Costovertebral angle pain or tenderness*</li><li>▪ Urinary urgency^</li><li>▪ Urinary frequency^</li><li>▪ Dysuria^</li></ul>
	<p><b>* No other recognized cause</b></p> <p><b>^ These symptoms cannot be used when catheter is in place</b></p>
3.	Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU/ml

# SYMPTOMS



- Fever is a ***non-specific symptom*** of infection and cannot be excluded from UTI determination because it is clinically deemed due to another recognized cause.
- Suprapubic tenderness whether elicited on palpation or as a subjective complaint of suprapubic pain is acceptable as part of the criteria if documented in the medical record during the IWP.
  - *Lower abdominal pain or bladder or pelvic discomfort are examples of symptoms that be used as suprapubic tenderness.*
  - *Generalized “abdominal pain” in the medical record is not to be interpreted as suprapubic tenderness as there are many causes of abdominal pain and is too general.*
- Left or right or bilateral lower back 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 as there can be many causes of low back pain.*



# UTI DEFINITIONS

- ▶ **SUTI 1b: Non-Catheter-associated Urinary Tract Infection (Non-CAUTI)**
- ▶ **Patient must meet 1, 2, and 3 during the IWP**

1.	One of the following is true:
	<ul style="list-style-type: none"><li>▪ Patient has/had an IUC, but it has/had not been in place for more than 2 consecutive days in an inpatient location on the <b>DOE OR</b></li><li>▪ Patient did not have an IUC in place on the DOE nor the day before the DOE</li></ul>
2.	Patient has at least one of the following signs and symptoms:
	<ul style="list-style-type: none"><li>▪ Fever (&gt;38° C)</li><li>▪ Suprapubic tenderness*</li><li>▪ Costovertebral angle pain or tenderness*</li><li>▪ Urinary urgency^</li><li>▪ Urinary frequency^</li><li>▪ Dysuria^</li></ul> <p><b>* No other recognized cause</b></p>
3.	Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU/ml

# KNOWLEDGE CHECK-IS THIS A CAUTI?

## True or False

The patient's complaint of urinary frequency on 3/28 is after the IUC was removed, so can be used to meet SUTI

Date	Details
3/25	Patient admitted to acute care hospital for CVA; IUC inserted
3/26	IUC in place
3/27	IUC in place
3/28	IUC discontinued early morning, at noon complained of urinary frequency
3/29	No fever
3/30	Elevated WBCs
3/31	Positive urine culture with $>10^5$ CFU/ml <i>E. coli</i>

# SUTI KNOWLEDGE CHECK

## IS THIS A CAUTI?

- ▶ 3/31 Positive urine culture sets the IWP: 3/28-4/3
- ▶ **The 3/28 urinary frequency is first element to occur within the IWP therefore it is the DOE**
- ▶ The IUC was in place > 2 days on the DOE = HAI  
SUTI 1a-CAUTI

Date	SUTI Criterion	IUC Day
3/25 Admit	CVA, IUC inserted	1
3/26	IUC in place	2
3/27	ICU in place	3
3/28	IUC discontinued; <b>urinary frequency</b>	④
3/29	No fever	
3/30	Elevated WBCs	
3/31	Urine culture > 10 <sup>5</sup> CFU/ml <i>E. coli</i>	

# UTI DEFINITIONS

- ▶ **SUTI 2: CAUTI or Non-CAUTI in patients 1 year of age or less**
- ▶ **Patient must meet 1, 2, and 3 during the IWP**

1.	Patient is < 1year of age (with or without an indwelling urinary catheter)
2.	Patient has at least one of the following signs or symptoms <ul style="list-style-type: none"><li>▪ Fever (&gt;38° C)</li><li>▪ Hypothermia (&lt;36.0°C)</li><li>▪ Apnea*</li><li>▪ Bradycardia*</li><li>▪ Lethargy*</li><li>▪ Vomiting*</li><li>▪ Suprapubic tenderness*</li></ul>
3.	Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU/ml

**\* No other recognized cause**

# ASYMPTOMATIC BACTEREMIC URINARY TRACT INFECTION (ABUTI) – all ages

Patient must meet 1,2, and 3 below:

- ① Patient with or without an indwelling urinary catheter has **no signs or symptoms of SUTI 1 or 2 according to age**
- ② Patient has a urine culture with no more than two species of organisms identified, **at least one of which is a bacterium of  $>10^5$  CFU/ml**
- ③ Patient has organism identified from blood specimen with at least one matching bacterium to the bacterium identified in the urine specimen **OR** meets LCBI criterion 2 (without fever) and matching common commensals(s) in the urine

# ASYMPTOMATIC BACTEREMIC URINARY TRACT INFECTION (ABUTI) KNOWLEDGE CHECK

Date	Details
2/20	Patient admitted to ICU with MI, IUC inserted
2/21-23	No UTI signs/symptoms
2/24	Elevated WBCs, no UTI s/s, positive blood with <i>S. aureus</i> and positive urine culture with $> 10^5$ CFU/ml <i>S. aureus</i>
2/25-2/27	No UTI s/s
2/28	IUC removed, Discharged to home

**Is this a reportable UTI?**

# COMMON MISCONCEPTIONS



## ▶ UTI as secondary infection - **Never**

- UTI is a primary site of infection and **cannot** be considered secondary to another site of infection.

## ▶ Positive urine culture on admission automatically = Present on Admission (POA) – **No**

- A Positive urine culture during the POA timeframe without UTI signs or symptoms nor matching blood organism in the IWP is not an event **and can therefore this not meet POA.**

## ▶ UTI signs or symptoms such as fever on admission automatically = POA- **No**

- The positive urine culture sets the IWP, therefore if the sign or symptom occurs before the IWP set by the urine culture it cannot be POA.

## ▶ RIT continues during readmission- **No**

- The RIT applies during a patient's single admission, including the day of discharge and the after, in keeping with the transfer rule.
- **An RIT does not carry over from the one admission the another even if the readmission is to the same facility.**

# RESOURCES:

## ▶ CAUTI Surveillance

<https://www.cdc.gov/nhsn/psc/uti/index.html>

- Patient Safety Component Manual
  - Chapter 2-Identifying HAI for NHSN Surveillance
  - Chapter 7-Urinary Tract Infection (UTI) Event
  - Chapter 16-NHSN Key Terms
- FAQs



# QUESTIONS

