




NHSN Catheter-Associated Urinary Tract Infection Surveillance in 2019

Bonnie Norrick MT(ASCP), EdM, CIC, CPHQ
Infection Prevention Consultant

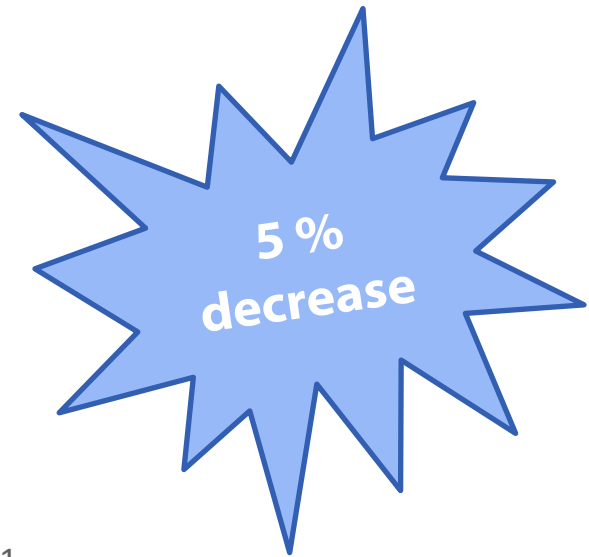
2019 NHSN Training
March 25, 2019

Objectives

- 2019 UTI Protocol Updates
 - Fever, Age and Device Association
 - Data Collection Form & Table of Instructions
 - Summary Data Device Day Count
 - Key Concepts and Pitfalls in Definition Application
 - Apply UTI Protocol through Case Studies
- 

UTI Burden

- 2014 - 169,961 CAUTI¹
 - 5.7 CAUTI/1000 discharges
- 2017 - 160,833 CAUTI¹
 - 5.4 CAUTI/1000 discharges
- 5% Decrease of CAUTI from 2014 – 2017 ¹
- Average cost of a HAI CAUTI: \$13,793 ¹
- UTI Ranks #4 HAI in the US²



Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

Resources for NHSN Users Already Enrolled

Training	+
Protocols	+
Frequently Asked Questions	+
Data Collection Forms	+
CMS Supporting Materials	+
Supporting Material	+
Worksheet Generator (electronic) and Worksheets (manual)	+
Analysis Resources	+

New Users - Start Enrollment Here



Step 1: Enroll into NHSN

Step 2: Set up NHSN

Step 3: Report

NHSN Chapter 7 UTI Surveillance Updates 2019

2019 UTI Protocol Update

- ">2 calendar days" replaced with "more than 2 consecutive days in an inpatient location"
- *SUTI 1a: Catheter-associated Urinary Tract Infection (CAUTI) in any age patient clarified:*

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

- fever ($>38.0^{\circ}\text{C}$): Reminder: To use fever in a patient > 65 years of age, the IUC needs to be in place **for more than 2 consecutive days in an inpatient location** on date of event and is either still in place OR was removed the day before the DOE. (Remainder of definition is unchanged)

2019 UTI Protocol Update, continued

- *Comments in UTI and ABUTI Criteria:*

The following excluded organisms cannot be used to meet the UTI definition:

Any Candida species as well as a report of "yeast" that is not otherwise specified

- "Catheter," "Foley," "Foley catheter" and "urinary catheter" replaced with "indwelling urinary catheter" or "IUC" throughout the protocol.

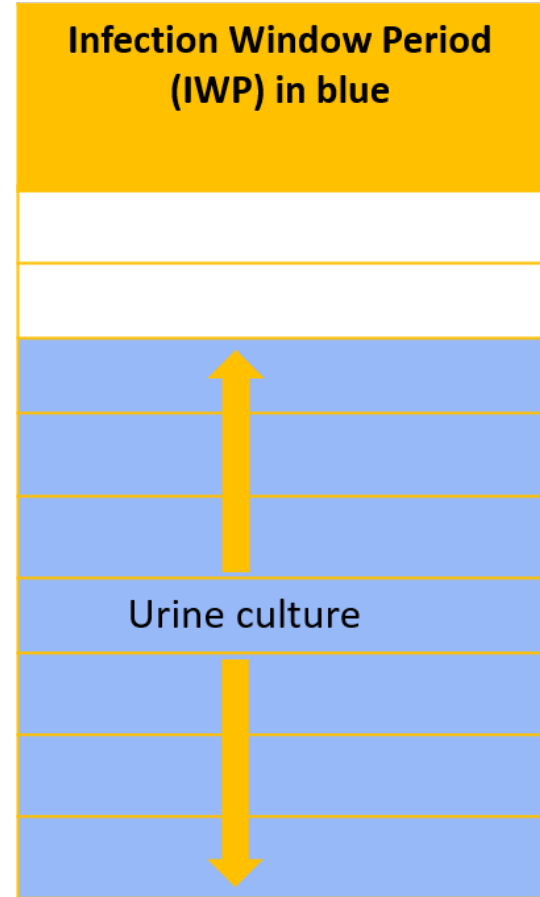
NHSN Chapter 2 Rules and Definitions applied to UTI

Let's review

- 7-day Infection Window Period (IWP)
- Date of Event (DOE)
- UTI Repeat Infection Timeframe (RIT)

Infection Window Period

The first positive urine that is used to meet the definition always sets the IWP

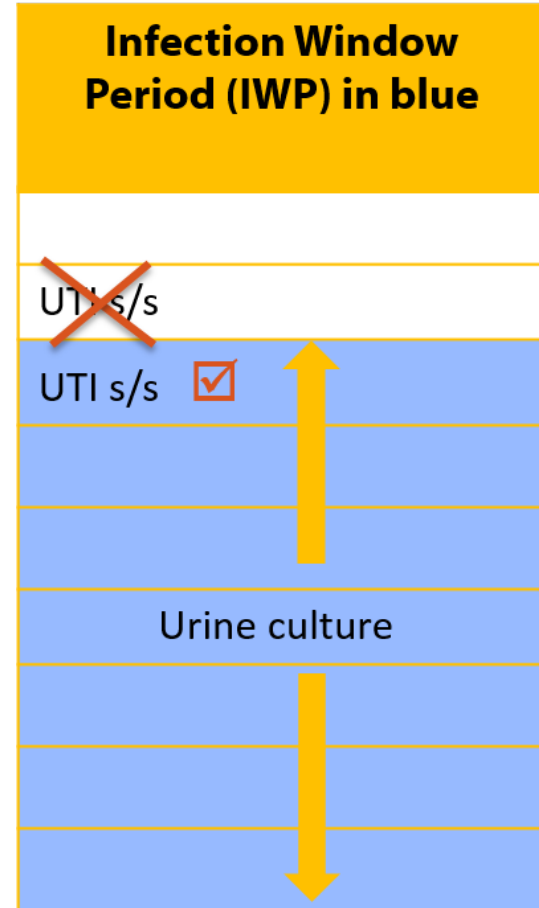


Infection Window Period

Use only eligible UTI elements within the IWP

UTI Elements:

- Urine culture
- UTI signs/symptoms (s/s) **OR** matching blood organism



UTI Date of Event (DOE)

- ❑ The DOE is the date the first element used to meet an NHSN site-specific infection criterion occurring for the first time within the seven-day infection window period
- ❑ First element may be culture **OR** sign/symptom

UTI Repeat Infection Timeframe (RIT)

- 14-day timeframe; **Date of event** = Day 1
- No new UTIs are reported (specifically, SUTI, ABUTI)
- Additional eligible pathogens from urine cultures are added to the event
- Do not change device association during the RIT
- Any UTI criterion sets an RIT and SBAP including POA events and non-catheter-associated events

Key Concepts
NHSN Chapter 7

Indwelling Urinary Catheter (IUC)

Key Concept

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

Neobladder

- Qualifies for CAUTI surveillance if an IUC inserted through urethra
- Made from one's own small intestine
- Colonized with intestinal organisms
- NHSN definitions accounts for contamination of urine specimens
 - Culture is considered contaminated when more than 2 organisms are identified.

Not an Indwelling Urinary Catheter



Straight
catheterization



Condom catheter
(Texas catheter)



In and Out
catheterization

Unless an indwelling urethral catheter is also present, the follow do not qualify

- Suprapubic catheter
- Nephrostomy tubes
- Urostomy
- Ileal conduit
- Perineal urethostomy

Urine from any of these sites should be used in the determination of a UTI

Urine Culture Clarification

Excluded organisms

- *Candida* species or yeast not otherwise specified, mold, dimorphic fungi or parasites are excluded as organisms in the UTI definition therefore blood with these organisms cannot be secondary to UTI

Excluded organisms may be present in urine

- Urine culture with yeast can be used as long as there is at least one bacterium with $\geq 10^5$ CFU/ml and no more than 2 organisms (for example, $> 10^5$ CFU/ml of *E. coli* and $> 10^5$ CFU/ml of *C. albicans*)

Urine Culture Clarification

Unusable culture results

- Urine cultures with > 2 organisms are regarded as contaminated cultures and not used for NHSN UTI surveillance (for example, > 10^5 CFU/ml *E. coli*, *S. aureus* and *C. albicans* = 3 organisms)
- Urine culture including “mixed flora*” or equivalent such as “perineal flora”, “vaginal flora”, “normal flora” cannot be used (for example, > 10^5 CFU/ml of *E. coli* and perineal flora)

*The bacteria and other microorganisms that normally inhabit a bodily organ or part

Urine Culture Clarification

- Urine culture 75,000 – 100,000 CFU/ml is not eligible
- Organisms of same genus but different species = 2 organisms (for example, *Pseudomonas aeruginosa* and *Pseudomonas fluorescens*)
- The same organism with different antimicrobial susceptibilities = 1 organism (for example, MRSA and MSSA)
- IWP is set on the urine specimen collection date not specimen result date
- Do not add multiple urine cultures together (for example, March 1 urine positive for 2 organisms and March 2 urine positive for 1 organism would not be combined to make this an excluded culture due to > 2 organisms)
- Use urine collected from any body location (for example, nephrostomy, suprapubic catheter)

NHSN Chapter 7

UTI Protocol/Criterion

Urinary Tract Infection Definitions

There are **two specific types** of UTI:

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

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

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

(Any Age) Patient must meet **1, 2, and 3** below:

1. Patient had an indwelling urinary catheter (IUC) that had been in place for more than 2 consecutive days in an inpatient location on the **date of event** AND was either:

- Present for any portion of the calendar day on the **date of event**
- OR
- Removed the day before the **date of event**

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

- Fever (>38.0°C): To use fever in a patient > 65 years of age, the IUC needs to be in place for more than 2 consecutive days in an inpatient location on **date of event**
- Suprapubic tenderness*
- Costovertebral angle pain or tenderness*
- Urinary urgency ^
- Urinary frequency^
- Dysuria ^

***No other recognized cause**

^These symptoms cannot be used when catheter is in place

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

All elements of the UTI criterion must occur during the IWP

Knowledge Check

Date	Details
3/25	Patient admitted to Acute Care hospital for trauma; IUC inserted
3/26	IUC in place
3/27	IUC in place
3/28	IUC discontinued early morning, @ noon complaint of urinary frequency
3/29	No fever
3/30	Elevated wbc's
3/31	Positive urine culture with 10^5 CFU/ml <i>E coli</i>

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

True or **False**

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


True

False

SUTI 1a Example

Patient has an 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 is the **date of event**.
- The IUC was in place > 2 days on the date of event = CAUTI, HAI.

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		

Risk Factor Alert

Event Information

Event Type *: UTI - Urinary Tract Infection
Post-procedure:
Date of Event *: 03/28/2018 14

MDRO Infection Surveillance *: No, this infection's pathogen/location are not in-plan for Infection Surveillance in the MDRO/CDI Module
Location *: 6C - 6C - ORTHO
Date Admitted to Facility >: 03/25/2018 14

Risk Factors

Urinary Catheter *: INPLACE - Urinary catheter in place > 2 days on the date of event
Location of Device Insertion: 6C - 6C - ORTHO
Date of Device Insertion: 03/25/2018 14

Event Details

Specific Event >: SUTI - Symptomatic UTI

Specify Criteria Used *

Signs & Symptoms	<=1 year old	Laboratory & Diagnostic Testing
<u>Any patient</u>		
<input type="checkbox"/> Fever	<input type="checkbox"/> Fever	<input checked="" type="checkbox"/> Positive culture with $\geq 10^5$ CFU/ml with no more than 2 species of bacteria
<input type="checkbox"/> Urgency	<input type="checkbox"/> Hypothermia	<input type="checkbox"/> Organism(s) identified
<input checked="" type="checkbox"/> Frequency	<input type="checkbox"/> Apnea	<input type="checkbox"/> Organism(s) identified from blood specimen
<input type="checkbox"/> Dysuria	<input type="checkbox"/> Bradycardia	<input type="checkbox"/> Imaging test evidence of infection
<input type="checkbox"/> Suprapubic tenderness	<input type="checkbox"/> Lethargy	
<input type="checkbox"/> Costovertebral angle pain or tenderness	<input type="checkbox"/> Vomiting	
<input type="checkbox"/> Abscess		
<input type="checkbox"/> Pain or tenderness		
<input type="checkbox"/> Purulent drainage from affected area		

Alert

Urgency, Frequency or Dysuria has been selected. These should only be selected if the urinary catheter was not in place at time of the symptom.

OK

SUTI 1b: Non-Catheter-associated Urinary Tract Infection (Non-CAUTI) (Any Age) Patient must meet **1, 2, and 3** below:

1. One of the following is true:

- Patient has/had an indwelling urinary catheter but it has/had not been in place for more than 2 consecutive days in an inpatient location on the **date of event**
- 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**
- Suprapubic tenderness*
- Costovertebral angle pain or tenderness*
- Urinary urgency ^
- Urinary frequency^
- Dysuria ^

***No other recognized cause**

^These symptoms cannot be used when catheter is in place

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

All elements of the UTI criterion must occur during the IWP

Knowledge check

Date	Details
6/11	Patient age 47 admitted with fever of 101.7° F, history of <i>P. aeruginosa</i> in wound on previous admission a month earlier.
6/13	Urine culture collected via quick cath 50,000 CFU/ml of <i>P. aeruginosa</i> , and 100,000 CFU/ml <i>C. albicans</i> , no fever.
6/15	Patient spikes fever of 101.3° F and urine culture is collected via quick cath which results in > 100,000 CFU/ml of <i>P. aeruginosa</i> and > 100,000 CFU/ml <i>C. albicans</i>

Which Urine Culture will be used to set the IWP?

6/13 or 6/15

Which Urine Culture will be used to set the IWP?

6/13

6/15

Meets SUTI 1b: Non-Catheter-Associated UTI and sets an RIT and SBAP

SUTI 1b Example

- 6/13 culture cannot be used, no bacterium $\geq 100,000$ CFU/ML.
- 6/15 urine culture sets the IWP: 6/12 – 6/18.
- The 6/15 fever is in the IWP and is an acceptable element to meet SUTI, **DOE** 6/15.
- There was no IUC in place on the **DOE** nor the day before.
- Meets SUTI 1b: Non-Catheter-Associated UTI and sets an **RIT** and **SBAP**.

DATE	SBAP	RIT	Infection Window Period
6/11 Admit			Fever 101.7° F
6/12			
6/13			Urine culture 50,000 CFU/ml of <i>P. aeruginosa</i> , + 100,000 CFU/ml <i>C. Albicans</i> , no fever
6/14			
6/15 DOE			Fever 101.3° F urine culture: $>10^5$ CFU/ml of <i>P. aeruginosa</i> and $>10^5$ CFU/ml <i>C. albicans</i>
6/16			
6/17			
6/18			

SUTI 2: CAUTI or Non-CAUTI in patients 1 year of age or less

Patient must meet **1, 2, and 3** below:

1. Patient is ≤ 1 year of age (with or without an indwelling urinary catheter)

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

- Fever ($>38^{\circ}\text{C}$)
- **Hypothermia ($<36.0^{\circ}\text{C}$)**
- **Apnea***
- **Bradycardia***
- **Lethargy***
- **Vomiting***
- Suprapubic tenderness*

***No other recognized cause**

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

All elements of the UTI criterion must occur during the IWP

SUTI 2 Example

Date	Details
12/23	2 month-old admitted for diarrhea; IUC inserted
12/27	Patient vomits x 2
12/28	Urine culture is positive for <i>E. coli</i> 10 ⁵ CFU/ml

This meets catheter-associated SUTI 2, **date of event** 1/27, pathogen *E. coli*

Asymptomatic Bacteremic Urinary Tract Infection (ABUTI) (Any Age) 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 (**Note:** Patients > 65 years of age with a non-catheter-associated ABUTI may have a fever and still meet the ABUTI criterion)
2. 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**
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 commensal(s) in the urine.

All elements of the ABUTI criterion must occur during the IWP

ABUTI



Note: Catheter-associated ABUTI is reportable IF CAUTI is selected in the monthly reporting plan for this location.

Asymptomatic Bacteremic UTI (ABUTI) Example

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

ABUTI Example

- 2/24 urine culture sets the IWP: 2/21 – 2/27.
- No UTI s/s however matching blood organism within IWP.
- Meets ABUTI, DOE 2/24.
- IUC in place > 2 days on DOE therefore catheter-associated. The matching blood organism is secondary.

Date	SBAP	RIT	Infection Window Period
Feb 20 Admit			IUC inserted
Feb 21			no UTI signs/symptoms
Feb 22			no UTI signs/symptoms
Feb 23			no UTI signs/symptoms
Feb 24 		1 	Blood culture: <i>S. aureus</i> , Urine culture 10 ⁵ CFU/ml <i>S. aureus</i> no UTI signs/symptoms IUC removed
Feb 25		2	no UTI signs/symptoms
Feb 26		3	no UTI signs/symptoms
Feb 27		4	no UTI signs/symptoms
Feb 28		5	IUC removed, Discharged to home

Catheter-associated ABUTI is reportable if the location is in the facility reporting plan

Data Collection Form and Table of Instructions for UTI Surveillance



NHSN

NHSN Login

About NHSN +

Enroll Here +

Materials for Enrolled Facilities -

Ambulatory Surgery Centers +

Acute Care Hospitals/Facilities -

Surveillance for Antimicrobial Use and Antimicrobial Resistance Options

Surveillance for BSI (CLABSI)

Surveillance for UTI (CAUTI)

Surveillance for C. difficile, MRSA, and other Drug-resistant Infections

Surveillance for CLIP

Surveillance for SSI Events

Surveillance for VAE

Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

Resources for NHSN Users Already Enrolled

Training +

Protocols +

Frequently Asked Questions +

Data Collection Forms +

CMS Supporting Materials +

Supporting Material +

Worksheet Generator (electronic) and Worksheets (manual) +

Analysis Resources +

Resources to Help Prevent Infections

- [Resources for Patients and Healthcare Providers](#)
- [HHS Action Plan to Prevent Healthcare-associated Infections](#)

New Users - Start Enrollment Here



Step 1: Enroll into NHSN

Step 2: Set up NHSN

Step 3: Report

[Click here to enroll](#)



UTI reporting form and the Table of Instructions (TOI)


Resources for NHSN Users Already Enrolled

- Training +
- Protocols +
- Frequently Asked Questions +
- Data Collection Forms** -

All Data Collection Forms are Print-only

- [57.114 Urinary Tract infection \(UTI\) form January 2019](#) [PDF - 108 KB] ←
 - [Customizable form](#) [DOCX - 40 KB]
- [Table of Instructions for UTI form 57.114](#) [PDF - 197 KB] ←
- [57.116 Denominators for Neonatal Intensive Care Unit \(NICU\) form January 2019](#) [PDF - 72 KB]
 - [Customizable form](#) [DOCX - 33 KB]
 - [Table of Instructions for Denominators for NICU form 57.116](#) [PDF - 131 KB]

Enrollment Here



Step 1: Enroll into NHSN

Step 2: Set up NHSN

Step 3: Report

[Click here to enroll](#)

Materials for Enrolled Facilities

- Ambulatory Surgery Centers +
- Acute Care Hospitals/Facilities** -
 - Surveillance for Antimicrobial Use and Antimicrobial Resistance Options
 - Surveillance for BSI (CLABSI)
 - Surveillance for UTI (CAUTI)**
 - Surveillance for C. difficile, MRSA, and other D_{SS}-resistant Infections
 - Surveillance for CLIP

Data Collection Form (57.114)

Surveillance for Antimicrobial Use and Antimicrobial Resistance Options


Surveillance for BSI (CLABSI)

Data Collection Forms

All Data Collection Forms are Print-only

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 - [Customizable form](#) [DOC]
 - [Table of Instructions for U](#)

Form Approved
OMB No. 0920-0666
Exp. Date: 11/30/2021
www.cdc.gov/nhsn



Urinary Tract infection (UTI)

Page 1 of 4 *required for saving **required for completion

Facility ID:	Event #:
*Patient ID:	Social Security #:
Secondary ID:	Medicare #:
Patient Name, Last:	First: Middle:
*Gender: F M Other	*Date of Birth:
Ethnicity (Specify):	Race (Specify):
*Event Type: UTI	*Date of Event:
Post-procedure UTI: Yes No	Date of Procedure:
NHSN Procedure Code:	ICD-10-PCS or CPT Procedure Code:
*MDRO Infection Surveillance:	
<input type="checkbox"/> Yes, this infection's pathogen & location are in-plan for Infection Surveillance in the MDRO/CDI Module <input type="checkbox"/> No, this infection's pathogen & location are not in-plan for Infection Surveillance in the MDRO/CDI Module	
*Date Admitted to Facility:	*Location:
Risk Factors	
*Urinary Catheter status:	
<input type="checkbox"/> In place – Urinary catheter in place > 2 days on the date of event or present for any portion of the calendar day <input type="checkbox"/> Removed – Urinary catheter in place > 2 days and removed the day before the date of event <input type="checkbox"/> Neither – Not catheter associated – Neither in place nor removed	
Location of Device Insertion: _____ Date of Device Insertion: ___/___/___	
If NICU, birth weight (qms): _____	

Data Collection Form (57.114)



Form Approved
OMB No. 0920-0686
Exp. Date: 11/30/2021
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Urinary Tract infection (UTI)

Page 3 of 4

Pathogen #	Gram-negative Organisms (continued)
_____	<i>Pseudomonas aeruginosa</i>
Pathogen #	Fungal Organisms
_____	<i>Candida</i> (specify species available)
Pathogen #	Other Organisms
_____	Organism 1 (specify) _____
	Drug 1 Drug 2 Drug 3 Drug 4 Drug 5 Drug 6 Drug 7 Drug 8 Drug 9 S I R N S I R N S I R N S I R N S I R N S I R N S I R N S I R N
_____	Organism 1 (specify) _____
	Drug 1 Drug 2 Drug 3 Drug 4 Drug 5 Drug 6 Drug 7 Drug 8 Drug 9 S I R N S I R N S I R N S I R N S I R N S I R N S I R N S I R N
_____	Organism 1 (specify) _____
	Drug 1 Drug 2 Drug 3 Drug 4 Drug 5 Drug 6 Drug 7 Drug 8 Drug 9 S I R N S I R N S I R N S I R N S I R N S I R N S I R N S I R N

Result Codes

S = Susceptible I = Intermediate R = Resistant NS = Non-susceptible S-DD = Susceptible-dose dependent

N = Not tested

§ GENTHL results: S = Susceptible/Synergistic and R = Resistant/Not Synergistic

† Clinical breakpoints have not been set by FDA or CLSI, Sensitive and Resistant designations should be based upon epidemiological cutoffs of Sensitive MIC ≤ 2 and Resistant MIC ≥ 4

Result Codes

S = Susceptible I = Intermediate R = Resistant NS = Non-susceptible S-DD = Susceptible-dose dependent
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Example Sensitivity Report

Pathogen 1: 21 drugs required

* <u>AMK</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>AMP</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFOX</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>CTET</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CIPRO</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>LEVO</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>MOXI</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	
* <u>COL</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> N	<u>PB</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> N	* <u>DORI</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>MERO</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>DOXY</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>MINO</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>TETRA</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	
* <u>AMPSUL</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>AMXCLV</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFOT</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>CEFTRX</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>AZI</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N	* <u>CEFAZ</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFEP</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I/S-DD <input type="radio"/> N	
* <u>CEFTAZ</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFUR</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N	* <u>ERTA</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N	* <u>GENT</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>IMI</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N	* <u>PIPTAZ</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>TIG</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N	<u>NITRO</u> <input type="button" value="v"/> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N
* <u>TMZ</u> <input type="radio"/> S <input checked="" type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>TOBRA</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> I <input type="radio"/> N						

<https://www.cdc.gov/nhsn/pdfs/gen-support/USP-Alert-current.pdf>

Table of Instruction Form (57.114)

Surveillance for
Antimicrobial Use and
Antimicrobial Resistance
Options

Surveillance for BSI
(CLABSI)

Data Collection Forms

All Data Collection Forms are Print-only

- [57.114 Urinary Tract infection \(UTI\) form](#)
[PDF – 108 KB]
 - [Customizable form](#) [DOCX – 40 KB]
 - [Table of Instructions for UTI form](#)



UTI

Instructions for Completion of Urinary Tract Infection (UTI) Form (CDC 57.114)

Data Field	Instructions for Data Collection/Entry
Facility ID	The NHSN-assigned facility ID will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity	Optional. Specify if the patient is either Hispanic or Latino, or Not Hispanic or Not Latino.
Race	Optional. Specify one or more of the choices below to identify the patient's race: American Indian/Alaska Native Asian Black or African American Native Hawaiian/Other Pacific Islander White
Event type	Required. UTI.

Risk Factors: CAUTI

Required Field: Urinary Catheter

Risk Factors

Urinary Catheter *: REMOVE - Urinary catheter in place > 2 days but removed the day before the date of event ▼

Location of Device Insertion:

Date of Device Insertion: 24

Optional: Patient location where indwelling urinary catheter inserted.

Optional: Date indwelling urinary catheter inserted.

Three options:

INPLACE- Urinary catheter in place for more than 2 consecutive days on the date of event

REMOVE – Urinary catheter in place for more than 2 consecutive days but was removed the day before the date of event

NEITHER – If no urinary catheter was in place on the day of or the day before the date of event OR not in place >2 calendar days on the date of event


Denominator and Summary Data

Collecting Summary Denominator Data

Manual Collection

For all locations, count **at the same time each day**

- Number of patients on the inpatient unit
- Number of patients with an indwelling urinary catheter

 Form Approved
OMB No. 0920-0666
Exp. Date: 11/30/2021
www.cdc.gov/nhsn

Denominators for Intensive Care Unit (ICU)/Other Locations (not NICU or SCA)

Page 1 of 1

*required for saving
Facility ID: 10000 *Location Code: ICU *Month: February *Year: 2019

Date	*Number of Patients	**Number of patients with 1 or more central lines	**Number of patients with a urinary catheter	**Number of total patients on a ventilator	Number of patients on APRV	Number of Episodes of Mechanical Ventilation
1	9	5	3	2	0	
2						
3						

Denominator data



Denominators for Intensive Care Unit (ICU)/Other locations (not NICU or SCA)

Mandatory fields marked with *

Facility ID *: Decennial Medical Center (ID 15331) ▼

Location Code *: 6C - 6C - ORTHO ▼

Month *: January ▼

Year *: 2019 ▼

Denominator Data		
		Report No Events
Total Patient Days *	<input type="text" value="75"/>	
Central Line Days *	<input type="text" value="25"/>	CLABSI: <input checked="" type="checkbox"/>
Urinary Catheter Days *	<input type="text" value="42"/>	CAUTI: <input type="checkbox"/>
Ventilator Days:	<input type="text" value="32"/>	VAE: <input type="checkbox"/> PedVAE: <input type="checkbox"/> PedVAP: <input type="checkbox"/>
APRV Days:	<input type="text" value="0"/>	
Episodes of Mechanical Ventilation:	<input type="text"/>	

When there are no events for the month, check the box

Sample Values For Estimating Denominator Data		
		Check Box(es) if Sampling Used
Sample Patient Days:	<input type="text"/>	
Sample Central Line Days:	<input type="text"/>	<input type="checkbox"/>
Sample Urinary Catheter Days:	<input type="text"/>	<input type="checkbox"/>

Sampling data
sum for month

Collecting Summary Denominator Data

Optional alternatives:

- Electronically collected
 - Validate the electronic method against the manual method
 - Collect 3 months concurrent data using both methods
 - Calculate the data need to be within 5% (+/-) of the manually-collected
- Weekly Sampling
 - Reduce staff time-estimate indwelling urinary catheter days (IUC)
 - ICU and ward locations with average of ≥ 75 IUC days per month
 - Saturday or Sunday - least accurate estimates of denominator data, therefore, these days should not be selected

Common Pitfalls

Common Misapplications Pitfalls

1. UTI as secondary infection
2. Positive culture on admission automatically = Present on Admission (POA)
3. UTI signs or symptoms such as fever on admission automatically = POA

#1:



UTI as secondary infection-Never

NOTE: UTI is a primary site of infection and cannot be considered secondary to another site of infection

When a patient meets CAUTI and the same organism is identified in a burn wound culture these are considered 2 sites of infection

When a patient meets PNEU event, a CAUTI cannot be classified as a secondary infection even though the same organism is identified

A patient can have 2 sites of infection

#2

Positive urine culture on admit = POA-NO

- 1/2 Positive urine culture during the POA timeframe without UTI signs or symptoms nor matching blood organism in the IWP is not an event; **therefore this does not meet POA.**
- 1/9 Positive urine culture sets the IWP: 1/6– 1/12.
- 1/10 fever occurs in the IWP, and is used to meet SUTI, **DOE 1/9.**
- The IUC was in place > 2 days on the DOE therefore meets SUTI 1a: CAUTI which is HAI.

DATE	SUTI Criterion
12/30 12/31	No UTI s/s No UTI s/s
1/1 Admit	No UTI s/s IUC inserted
1/2	Positive urine culture <i>Ecoli</i> >100,000 CFU/ml;
1/3	No UTI s/s
1/4	No UTI s/s
1/5	No UTI s/s
1/6	
1/7	
1/8	HAI
1/9	Positive urine culture <i>Ecoli</i> >100,000 CFU/ml IUC catheter in place
1/10	Fever >38.0°C
1/11	
1/12	
1/13	
1/14	
1/15	

No UTI Event

CAUTI date of event 1/9

IWP

#3

UTI signs or symptoms on admission = POA-NO

- The 3/11 urine culture sets the IWP: 3/8 – 3/14
- The 3/10 fever > 38° C can be used because it occurs in the IWP
- This meets CAUTI, **DOE** 3/10
- Cannot use the 3/1 fever > 38° C because it does not occur in the IWP

DATE	SUTI CRITERION	HOSPITAL DAY
3/1	Admit with IUC in place Fever > 38° C	1
3/2	Fever > 38° C	2
3/3	Fever > 38° C	3
3/4	Fever > 38° C	4
3/5	Fever > 38° C	5
3/6	Fever > 38° C	6
3/7		7
3/8		8
3/9		9
3/10	Fever > 38° C	10
3/11	Positive urine culture > 100,000 CFU/ml E.coli	11
3/12		12
3/13		13
3/14		14

Admit

UTI criteria not met; POA requires positive urine culture

CAUTI date of event 3/10

HAI

IWP

Sending Questions to NHSN

Submit UTI case review questions to nhsn@cdc.gov

Sample of Complete NHSN Case review request:

- Date of Admission
- Date(s) of IUC insertion/removal if applicable
- Is patient >65 years of age?
- Date(s) and results of urine cultures including colony count
- Date(s) and types of UTI sign/symptoms
- Date(s) and results of any positive blood cultures
- Include your determination
- **Do not include confidential Personal Identifiable Information**



Home NHSN

NHSN Login

About NHSN +

Enroll Here +

Materials for Enrolled Facilities -

Ambulatory Surgery Centers +

Acute Care Hospitals/Facilities -

Surveillance for Antimicrobial Use and Antimicrobial Resistance Options

Surveillance for BSI (CLABSI)

Surveillance for UTI (CAUTI)

Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

Resources for NHSN Users Already Enrolled

Training +

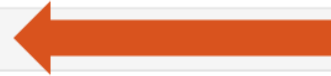
Protocols +

Frequently Asked Questions +

Data Collection Forms +

CMS Supporting Materials +

Supporting Material +



New Users - Start Enrollment Here



Step 1: Enroll into NHSN

Step 2: Set up NHSN

Enroll Here +

Materials for Enrolled Facilities -

Ambulatory Surgery Centers +

Acute Care Hospitals/Facilities -

Surveillance for Antimicrobial Use
and Antimicrobial Resistance
Options

Surveillance for BSI (CLABSI)

Surveillance for UTI (CAUTI)

Surveillance for C. difficile, MRSA,
and other Drug-resistant Infections

Surveillance for CLIP

Surveillance for SSI Events

Surveillance for VAE

Surveillance for PedVAE

Surveillance for PNEU (pedVAP)

Surveillance for Healthcare

Resources for NHSN Users Already Enrolled

Training +

Protocols +

[Frequently Asked Questions](#) -

2018 FAQs:

- [FAQs: Urinary Tract Infection \(Catheter-Associated Urinary Tract Infection \[CAUTI\] and Non-Catheter-Associated Urinary Tract Infection \[UTI\]\) and Other Urinary System Infection \[USI\]\) Events](#)
- [FAQs: Analysis](#)
- [FAQs: Annual Surveys](#)
- [FAQs: Locations](#)
- [FAQs: Miscellaneous](#)
- [FAQs: CDA](#)

Data Collection Forms +

CMS Supporting Materials +

Supporting Material +



Case Studies

Steps in Investigating a Positive Urine Culture as Possible CAUTI

1.	Determine the date of the urine culture collection.
2.	From the date of the urine culture determine the 7-day IWP: 3 days before the urine culture, the day of the urine culture and 3 days after for a total of 7 days.
3.	Determine if all of the elements of the UTI are met during the IWP. If yes, there is an infection event. If no, there is no event.
4.	Next determine the DOE : the date that the <u>first element</u> occurs for the first time within the IWP.
5.	Is the DOE in the POA time period? If yes, the infection is POA, if no, it is an HAI. (POA time period is defined as the day of admission to an inpatient location, the 2 days before admission, and the calendar day after admission)
6.	Next (if appropriate) determine if the HAI is device-associated, i.e. CAUTI. If the DOE occurred on or after calendar day 3 of device use in an inpatient location, and the device was in place on that day or the day before, the HAI is device-associated.



SAVE

Case 1 Patient \leq 65 years of age

Less than
or equal to

Date	Details
2/2	Patient age 57 seen in ED, IUC inserted
2/3	Admitted to ICU Temperature 100.9°F
2/4	Temperature 100.8°F
2/5	Urine culture collected and positive for 100,000 CFU/ml coagulase negative <i>Staphylococcus</i>

Case 1 Patient \leq 65 years of age

The 2/3 fever can be used as an element in this age patient

- ✓ A. True
- B. False

DATE	Infection Window Period
2/2 ED	IUC inserted
2/3 ADMIT	Fever 100.9 ⁰ F IUC day #1
2/4	Fever 100.8 ⁰ F IUC day #2
2/5	urine culture: CNS 10 ⁵ CFU/ml IUC day #3
2/6	
2/7	
2/8	
2/9	

What is the correct determination of this case?

What is the correct determination in this case?

This patient does not meet UTI event

This patient has SUTI 1a: CAUTI

This patient has Non-Catheter-Associated ABUTI

This patient has SUTI 1b: Non-CAUTI

Rationale: Case 1 Patient \leq 65 years of age

Meets SUTI 1b: Non-Catheter-Associated UTI

- The **2/5 positive urine culture** sets the **IWP: 2/2- 2/8**.
- The **2/3 fever** is eligible in this age patient and is the **first element** to occur within the IWP therefore is the **DOE**; and is **POA**.
- The IUC was **not** in place > 2 days in the **inpatient location** on the **DOE** therefore meets **SUTI 1b: Non-Catheter-Associated UTI**, and a UTI RIT and SBAP is set

DATE	SBAP	RIT	Infection Window Period
2/2 ED			IUC inserted
2/3 ADMIT DOE POA		1	Fever 100.9 ⁰ F IUC day #1
2/4		2	Fever 100.8 ⁰ F IUC day #2
2/5		3	urine culture: CNS 10 ⁵ CFU/ml IUC day #3
2/6		4	
2/7		5	
2/8		6	
2/9		7	

Case 2 Patient > 65 years of age Same Scenario

greater than

Date	Details
2/2	Patient age 75 seen in ED, IUC inserted
2/3	Admitted to ICU Temperature 100.9°F
2/4	Temperature 100.8°F
2/5	Urine culture collected and positive for 100,000 CFU/ml coagulase negative <i>Staphylococcus</i> , Temperature 100.2F
2/28	IUC removed, Discharged to home

Case 2 Patient > 65 years of age

The 2/3 fever can be used as an element in this age patient


A. True

 B. False

DATE	Infection Window Period
2/2 ED	Indwelling urinary catheter (IUC) inserted
2/3 ADMIT	Fever 100.9 F IUC day #1
2/4	Fever 100.8 F IUC day #2
2/5	Urine culture: CNS >100K CFU/ml 100.2 F
2/6	
2/7	
2/8	

Case 2 Patient > 65 years of age

The 2/4 fever can be used as an element in this age patient

- A. True
-  B. False

DATE	Infection Window Period
2/2 ED	Indwelling urinary catheter (IUC) inserted
2/3 ADMIT	Fever 100.9 F IUC day #1
2/4	Fever 100.8 F IUC day #2
2/5	Urine culture: CNS >100K CFU/ml 100.2 F
2/6	
2/7	
2/8	

Case 2 Patient > 65 years of age




What is the correct determination in this case

- A. This patient has SUTI 1b: Non-CAUTI
- B. This patient has SUTI 1a: CAUTI
- C. This patient has Non-Catheter-Associated ABUTI
- ✓ D. This patient does not meet UTI event

DATE	Infection Window Period
2/2 ED	Indwelling urinary catheter (IUC) inserted
2/3 ADMIT	Fever 100.9 F IUC day #1
2/4	Fever 100.8 F IUC day #2
2/5	Urine culture: CNS > 100K CFU/ml 100.2 F
2/6	
2/7	
2/8	

Rationale Case 2 Patient > 65 years of age

- The 2/5 positive urine culture sets IWP: 2/2 – 2/8.
- The **2/3 and 2/4 fevers cannot be used** as an element in this age patient because the **IUC was not in place in the inpatient location** > 2 days on the **DOE**.
- There are no UTI elements within the IWP so there is **no event**. No RIT is set.
- **SUTI 1b cannot be met in a patient > 65 years of age with fever alone.**
- Consider other UTI s/s.

DATE	Infection Window Period
2/2 ED	IUC inserted
2/3 ADMIT	 Fever 100.9° F IUC day #1
2/4	 Fever 100.8° F IUC day #2
2/5	 urine culture: CNS 10 ⁵ CFU/ml IUC day #3 100.2F
2/6	
2/7	
2/8	
2/9	

Case 3

Knowledge check

Date	Details:
1/10	Patient admitted to med/surg for influenza. C/O headache, body aches and nausea.
1/12	Urine culture was positive for >100k CFU/ml <i>E. faecium</i> and 20K CFU/ml <i>Pseudomonas aeruginosa</i> (PA), and a blood culture collected the same day grew PA.

The blood culture can be used to meet the definition of ABUTI.

True or False

The blood culture is secondary to ABUTI

True

False

Rationale Case 3

- To use blood as an element in ABUTI, the blood organism must match the urine organism with $\geq 100,000$ CFU/ml and occur within the IWP.
- The *PA* organism in the urine is 20,000 CFU/ml, therefore the *PA* blood cannot be used as an element for ABUTI.
- There are no UTI s/s nor matching blood within the IWP of the urine culture with *E. faecium* therefore there is no UTI event and no RIT nor SBAP is set. Investigate the positive blood sample as primary BSI or used as an element to meet another site specific infection.

Case 4

Date	Details: Prolonged hospital stay for colon mass; several weeks into the stay:
1/30	Indwelling Urinary Catheter placed
2/11	Positive wound culture: <i>Staphylococcus</i> spp. and <i>Enterococcus faecalis</i>
2/14	Urine culture $>10^5$ CFU/ml <i>Staphylococcus epidermidis</i> (SE) Blood culture SE in 2 of 2 culture bottles drawn on separate occasions
2/15	Hypotension
2/11-2/17	No fever $>38^{\circ}\text{C}$, no UTI signs/symptoms

Case 4 Knowledge check

What is the correct determination in this case?

- A. This patient meets SUTI 1a: CAUTI
- B. This patient meets Catheter-Associated ABUTI
- C. This patient does not meet UTI event because it is secondary to wound infection
- D. This patient meets primary LCBI 2: BSI

Date	SBAP	RIT	Infection Window Period
Admit Jan 28			
Jan 30			IUC inserted
Feb 11			no UTI signs/symptoms Wound culture with PA
Feb 12			no UTI signs/symptoms
Feb 13			no UTI signs/symptoms
Feb 14		1	Urine culture $>10^5$ CFU/ml <i>Staphylococcus epidermidis</i> (SE) Blood culture SE in 2 of 2 culture bottles drawn on separate occasions no UTI signs/symptoms
Feb 15		2	no UTI signs/symptoms, hypotension
Feb 16		3	no UTI signs/symptoms
Feb 17		4	no UTI signs/symptoms
Feb 18		5	Foley removed, Discharged to home

What is the correct determination in this case?

This patient meets SUTI 1a: CAUTI

This patient meets Catheter-Associated
ABUTI

This patient does not meet UTI event
because it is secondary to wound infection

This patient meets primary LCBI 2: BSI

Rationale Case 4

- 2/14 positive urine culture sets the IWP: 2/11 – 2/17
- No UTI s/s within IWP
- Matching common commensals and hypotension within IWP meets LCBI 2, DOE 2/14
- IUC in place > 2 days on DOE
- This meets catheter-associated ABUTI and the matching blood culture is secondary
- Reportable if location is in reporting plan

Date	SBAP	RIT	Infection Window Period
Admit Jan 28			
Jan 30			IUC inserted
Feb 11			no UTI signs/symptoms Wound culture with PA
Feb 12			no UTI signs/symptoms
Feb 13			no UTI signs/symptoms
Feb 14		1	Urine culture >10 ⁵ CFU/ml <i>Staphylococcus epidermidis</i> (SE) Blood culture SE in 2 of 2 culture bottles drawn on separate occasions no UTI signs/symptoms
Feb 15		2	no UTI signs/symptoms, hypotension
Feb 16		3	no UTI signs/symptoms
Feb 17		4	no UTI signs/symptoms
Feb 18		5	IUC removed, Discharged to home

Case 5

Knowledge check

Date	Details:
1/6	Admit to 3 South, IUC placed, temp 100.3°F
1/7	Temperature 100.7°F
1/8	Temperature 100.8°F
1/9	IUC discontinued , Tmax 100°F
1/10	Tmax 99.6°F
1/11	Urine culture >100,000 CFU/mL <i>Proteus mirabilis</i> & 50,000 CFU/mL <i>E. coli</i> , Tmax 99.6°F
1/12	Tmax 99.6°F
1/13	Discharged to rehab

The event is categorized

A. SUTI 1a

B. SUTI 1b

C. No event

This event is categorized as

SUTI
1a

SUTI
1b

No
event

Rationale Case 5

Meets SUTI 1a: Catheter-Associated UTI, date of event 1/8

- Even though the positive urine culture occurred 2 days after Foley catheter was removed, the 1/8 fever was the first element in the 7-day IWP therefore is the **date of event**.
- On the date of event, the IUC was in place > 2 days.
- This meets SUTI 1a: Catheter-Associated UTI, date of event 1/8 pathogen *Proteus mirabilis*.

Date	IUC	Tmax	Notes
1/6 Admit	Yes	100.3	Indwelling urinary catheter inserted
1/7	Yes	100.7	
1/8	Yes	100.8	DOE
1/9	IUC dc'd	100	
1/10	No	99.6	
1/11	No	99.4	Urine culture >100,000 CFU/mL <i>Proteus mirabilis</i> & 50,000 CFU/mL <i>E. coli</i>
1/12	No	99.6	
1/13	No	98.7	Patient discharged to rehab.

Summary

- Reviewed the 2019 UTI Protocol, key concepts and common pitfalls
- Remember
 - Positive urine culture OR UTI s/s on admission does not automatically meet POA
 - UTI is a primary site of infection; cannot be secondary to another site of infection
 - Do not change device association during the UTI RIT
- Identified how to count urinary catheter days to determine infection association
 - Catheter count begins on day of insertion and if IUC in place in place prior to admission, begins with admission date to the first inpatient location

Summary

- Discussed updates to protocol, key terms and definitions
- Reviewed the data collection form and table of instructions for UTI surveillance
- Made correct UTI determinations through case studies
 - Reviewed fever, age and device association
 - Reviewed Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)

Homework

- Review the ACH CAUTI Surveillance webpage for resources
 - Review each protocol webpage
- Visit Microbiology Laboratory
 - Make friends with the microbiologist

Questions: email user support
nhsn@cdc.gov

NHSN Website:
<http://www.cdc.gov/nhsn/>

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov



The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

