

# **NHSN Catheter-associated Urinary Tract Infection Surveillance in 2014**

**Katherine Allen-Bridson**

Nurse Consultant

NHSN Training 2014

March 14, 2014

# Objectives

- Define CAUTI and key terms utilized in CAUTI surveillance
- Describe how to collect urinary catheter and patient day data
- Identify data collection forms
- Apply NHSN CAUTI definitions to patient case studies

# Agenda

- CAUTI epidemiology
- NHSN CAUTI definition and 2014 changes
- Denominator collection
- Resources for CAUTI surveillance
- Case studies
- Future CAUTI definitions- what's being done

# Since CAUTI Reporting is Not New to Most

## □ We Will Not be Covering in Depth:

- Center's for Medicare and Medicaid Services (CMS) Inpatient Quality Reporting Program (IQRP) reporting requirements, timelines, etc. See CMS Supporting materials at:  
<http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html>
- Contact list for QIOs:  
<http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1144767874793>
- Step by step CAUTI event data entry
- CAUTI data analysis



# CAUTI? Who Cares?

- Urinary tract infection is tied with pneumonia as the second most common type of healthcare-associated infection, second only to SSIs<sup>1</sup>
- Majority of UTIs associated with indwelling catheters
- Secondary BSI in 5.7 % of ICU and 7.4% non-ICU CAUTIs<sup>2</sup> in 2013
- Each year, more than 13,000 deaths are associated with UTIs <sup>3</sup>
- One-third of asymptomatic bacteriuria treated with antimicrobials although in conflict with published guidelines<sup>4</sup>.
- May be a proxy for quality of care

<sup>1</sup>Magill SS, Hellinger W, et al. Prevalence of healthcare-associated infections in acute care facilities. *Infect Control Hosp Epidemiol.* 2012;33(3):283-91.

<sup>2</sup>Unpublished NHSN data

<sup>3</sup>Klevens RM, Edward JR, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports* 2007;122:160-166

<sup>4</sup>Cope M, Cavellos ME, et. al. Inappropriate treatment of catheter-associated asymptomatic bacteriuria in a tertiary care hospital. *Clin Infect Dis.* 2009; 48(9):1182-8.

**CAUTI Prevention and Control Efforts are  
Only as Good as the Data - - Make it Golden!**



# Things to Consider for CAUTI Surveillance



- All CAUTIs require a positive urine culture. Start there. Routinely generated report?
- Know your laboratory's urine culture reporting policies:
  - What are the ranges of CFU reported?
  - Are yeasts reported quantitatively?
  - Are positive urine cultures reported for the unit on which they were collected or where the patient is housed at the time of report? Consider the Transfer Rule.
- Account for positive cultures from the ED which may represent recently discharged patients

# Chart Review Process

- Organize: What am I going to look at first and where is it in the record?
  1. Urine culture positive (lab data base)
  2. Indwelling urinary catheter in place within criteria time period?  
(Nursing documentation? Graphic sheet?)

# Sample Work Sheet to Help With Chart Review



OMB No. 0920-0666  
Exp. Date: 01-31-2015  
www.cdc.gov/nhsn

## Urinary Tract infection (UTI)

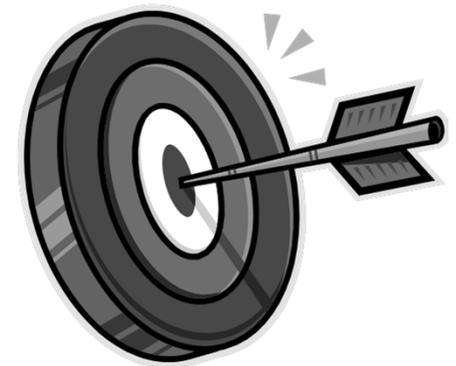
Page 1 of 4

*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-9-CM 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:
<b>Risk Factors</b>	
*Urinary Catheter status at time of specimen collection or onset of signs or symptoms: <input type="checkbox"/> In place <input type="checkbox"/> Removed within 2 days prior <input type="checkbox"/> Not in place nor within 2 days prior	
Location of Device Insertion: _____ Date of Device Insertion: ___/___/___ If NICU, birth weight (gms): _____	
<b>Event Details</b>	
*Specific Event: <input type="checkbox"/> Symptomatic UTI (SUTI) <input type="checkbox"/> Asymptomatic Bacteremic UTI (ABUTI) <input type="checkbox"/> Other UTI (OUTI)	
*Specify Criteria Used: (check all that apply)	
<b>Signs &amp; Symptoms</b>	
<u>Any Patient</u>	<u>≤ 1 year old</u>
<input type="checkbox"/> Fever	<input type="checkbox"/> Fever
<input type="checkbox"/> Urgency	<input type="checkbox"/> Hypothermia
<input type="checkbox"/> Frequency	<input type="checkbox"/> Apnea
<input type="checkbox"/> Dysuria	<input type="checkbox"/> Bradycardia
<input type="checkbox"/> Suprapubic tenderness	<input type="checkbox"/> Dysuria
<input type="checkbox"/> Costovertebral angle pain or tenderness	<input type="checkbox"/> Lethargy
<input type="checkbox"/> Abscess	<input type="checkbox"/> Vomiting
<input type="checkbox"/> Pain or tenderness	
<input type="checkbox"/> Purulent drainage or material	
<input type="checkbox"/> Other evidence of infection found on direct exam, during invasive procedure, or by diagnostic tests <sup>2</sup>	
<b>Laboratory &amp; Diagnostic Testing</b>	
<input type="checkbox"/> 1 positive culture with ≥ 10 <sup>5</sup> CFU/ml with no more than 2 species of microorganisms	
<input type="checkbox"/> Positive dipstick for leukocyte esterase or nitrite	
<input type="checkbox"/> Pyuria	
<input type="checkbox"/> Microorganisms seen on Gram stain of unspun urine	
<input type="checkbox"/> 1 positive culture with ≥ 10 <sup>3</sup> CFU/ml and < 10 <sup>5</sup> CFU/ml with no more than 2 species of microorganisms	
<input type="checkbox"/> Positive culture	
<input type="checkbox"/> Positive blood culture	
<input type="checkbox"/> Imaging test evidence of infection	
*Secondary Bloodstream Infection: Yes No	
**Died: Yes No	UTI Contributed to Death: Yes No
Discharge Date:	*Pathogens Identified: Yes No *If Yes, specify on pages 2-4.
<small>Assurance of Confidentiality: The voluntarily provided information obtained in the surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(g) of the Public Health Service Act (42 USC 242b, 242c, and 242m(d)). Public reporting burden of this collection of information is estimated to average 32 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Reports Clearance Officer, 1600 Clifton Rd., MS-D74, Atlanta, GA 30333, ATTN: PRA (0920-0666). LJLU 5/114 (r-1010) Rev. 7, v.1.3</small>	

Your facility may create its own data collection form and collect additional data so long as the required NHSN data are captured.

# Consistency is a Must!

- Standardized chart review helps with learning and time efficiency
- Maintain focus on criteria. Do not deviate from the process you have established
- Surveillance criteria is designed to look at a population at risk
- Consistently identify patients meeting the criteria and exclude those who don't



# Surveillance definitions vs. Clinical Diagnosis

	<b>Surveillance</b>	<b>Clinical</b>
Focus	Population based	Patient based
Information Used	Limited to identified elements of definition	All available information which will help identify health problem
Clinical Judgment	Minimally used	Essential
Purposes	<ul style="list-style-type: none"><li>• Identify trends</li><li>• Establish baselines</li><li>• Reporting purposes</li></ul>	<ul style="list-style-type: none"><li>• Diagnose</li><li>• Inform treatment decisions</li></ul>

# What If There is Clinical Disagreement?

- Remind/clarify surveillance vs. clinical definitions
- **ALWAYS** report based on NSHN surveillance definitions
  - Comments section useful to note important factors
- Can submit questions to [nhsn@cdc.gov](mailto:nhsn@cdc.gov)





## Funny E-mail Break

- **NHSN User:** I am looking at a patient that presented to our hospital on 2/15/13. A Foley was inserted in the ER on the admission. During her stay, she was afebrile. She was discharged free. When she was discharged, a temp of 102 was recorded on midnight 3/01/13. The nurse manager feels that this is possibly a mis-documentation and would like some guidance. Do we still call this a CAUTI?

# CAUTI Criteria and Application



*a.k.a. The Nuts and Bolts of CAUTI  
Surveillance*

# Non-catheter-associated UTI

- Will not be discussed today
- Have their own criteria designated as SUTI 1b or 2b (available in the CAUTI chapter and chapter 17).
- ABUTIs can also be non-catheter-associated.
- For determining if an LCBI is secondary to a non-catheter-associated UTI one must apply the non-catheter-associated UTI criteria.

# 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.**



# The Logic Behind SUTI Definitions

Symptoms of true UTI will vary depending on whether or not a device (i.e. Foley) is in place.

Frequency, Urgency, and Dysuria cannot be used to identify UTI in catheterized patients for NHSN

Infants will exhibit infection differently from patients of other ages.

For infants the following additional symptoms may indicate UTI:

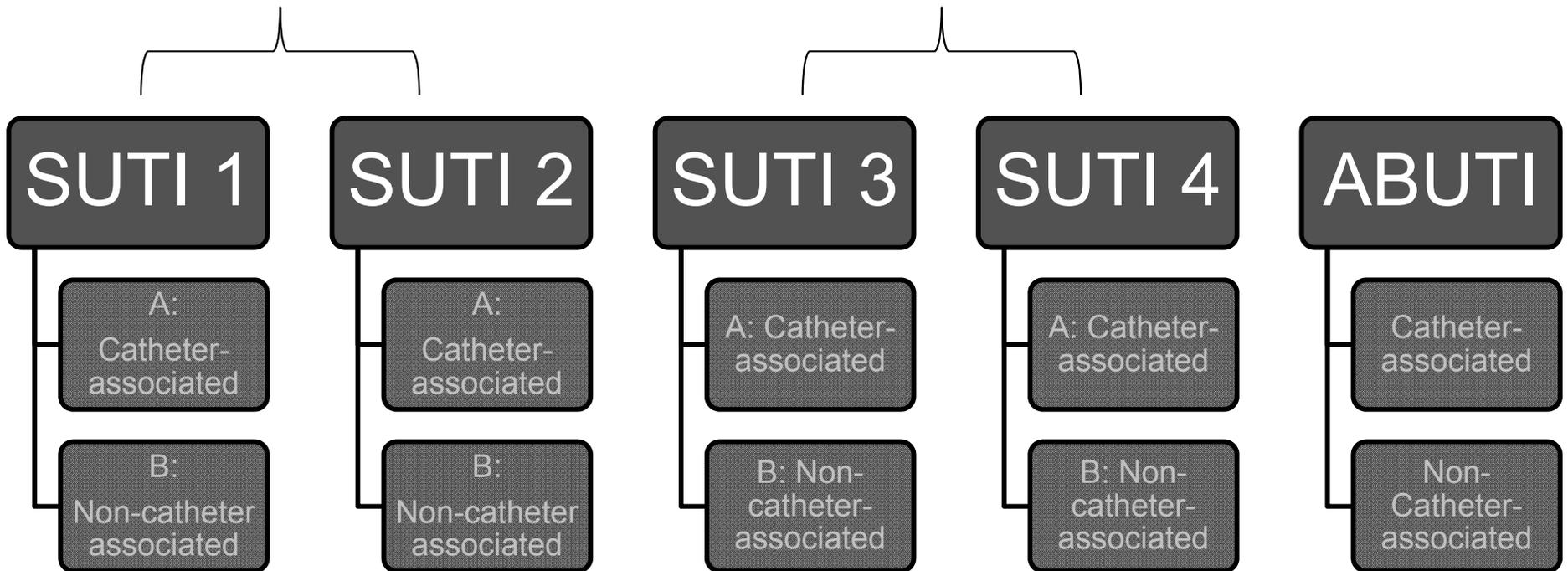
- Apnea
- Bradycardia
- Lethargy
- Vomiting
- Hypothermia  $<36.0^{\circ}$  C

# UTI Overview

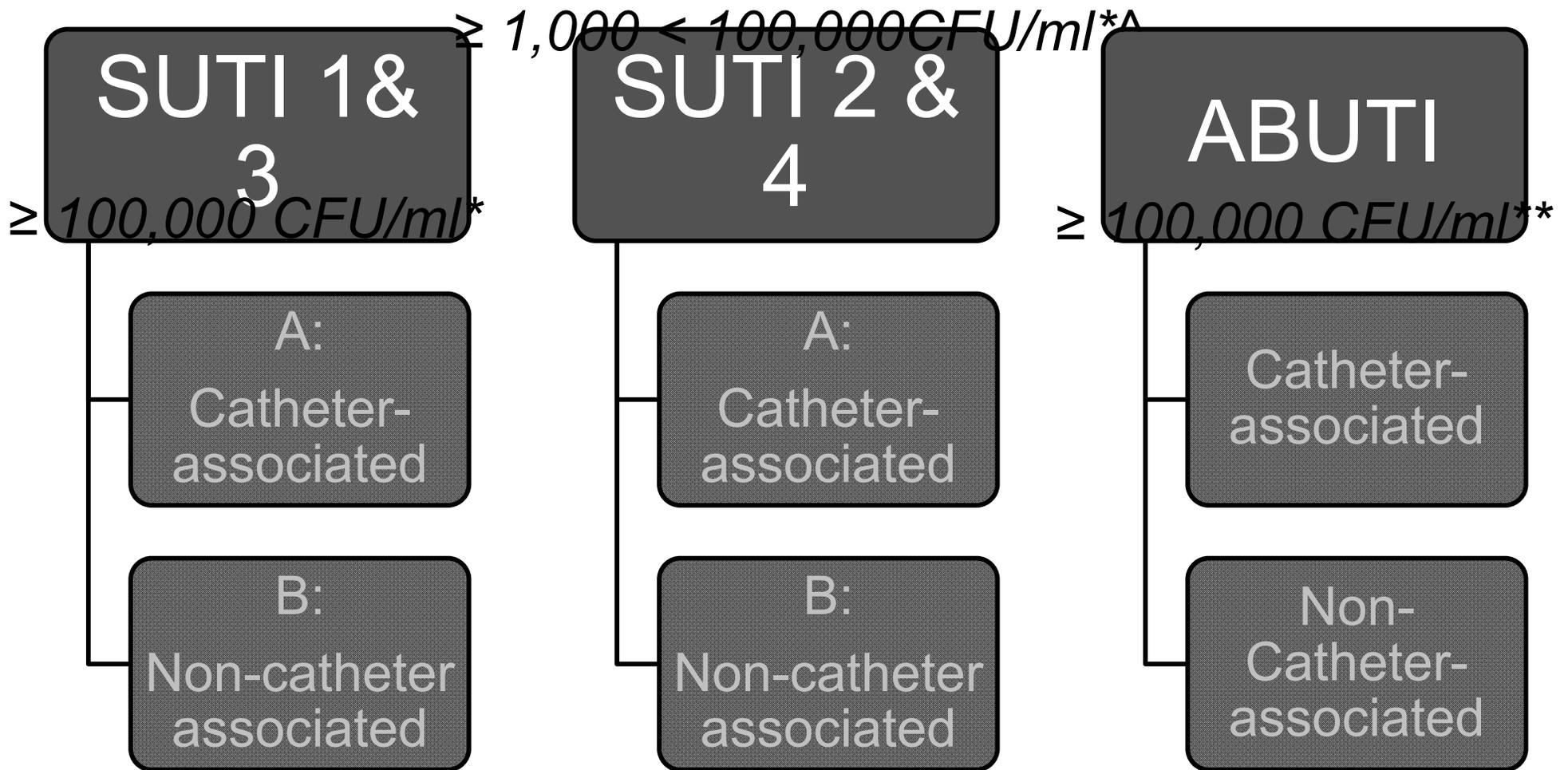
*Any Age*

*Infant*

*Any Age*



# UTI Colony Counts



- \*  $\leq 2$  organisms
- \*\*  $\leq 2$  uropathogens
- <sup>^</sup> requires a supportive positive U/A

# UTI Symptoms

- Was the catheter in place on the date of the event?
  - Yes: Suprapubic tenderness, Costovertebral angle pain/tenderness, or Fever  $>38.0^{\circ}\text{C}$  (or Hypothermia  $<36.0^{\circ}\text{C}$ , Apnea, Bradycardia, Lethargy, or Vomiting for  $\leq 1$  year of age)
  - No: **Dysuria, Frequency, Urgency**, or Suprapubic tenderness, Costovertebral angle pain/tenderness, or Fever  $>38.0^{\circ}\text{C}$  (or Hypothermia  $<36.0^{\circ}\text{C}$ , Apnea, Bradycardia, Lethargy, or Vomiting for  $\leq 1$  year of age)

# No more than 2 species of microorganisms

- Urine cultures with  $> 2$  organisms are routinely regarded as contaminated cultures and not used for NHSN CAUTI surveillance.
- Urine cultures reported as mixed flora represent at least 2 species of organisms. Any additional organism recovered from the same culture excludes the specimen.  
**Example: *P. aeruginosa* and Mixed flora**
- Organisms of same genus but different species = 2 organisms. **Example: *Pseudomonas aeruginosa* and *Pseudomonas stutzeri***
- The same organism with different antimicrobial susceptibilities = 1 organism. **Example: MRSA and MSSA**

# Criteria Rationale

## SUTI 1a

### Catheter removed

UTIs with event date on the day of device discontinuation or the following calendar day are considered device-associated UTIs if the device had been in place already for >2 calendar days.

For this criterion urgency, frequency and dysuria are symptoms.

Day 1	Day 2	Day 3	Day 4	CAUTI?
Foley placed	Foley in place	Foley in place for part of day only then removed	Date of event	Yes
Foley placed	Foley in place for part of day only then removed	No Foley	Date of event	No

# SUTI 1a



**1a**

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  
*and*

at least 1 of the following signs or symptoms: fever ( $>38^{\circ}\text{C}$ ); suprapubic tenderness\*; costovertebral angle pain or tenderness\*

*and*

a positive urine culture of  $\geq 10^5$  colony-forming units (CFU)/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.

-----OR-----

Patient had an indwelling urinary catheter in place for  $>2$  calendar days and had it removed the day of or the day before the date of event

*and*

at least 1 of the following signs or symptoms: fever ( $>38^{\circ}\text{C}$ ); urgency\*; frequency\*; dysuria\*; suprapubic tenderness\*; costovertebral angle pain or tenderness\*

*and*

a positive urine culture of  $\geq 10^5$  colony-forming units (CFU)/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.

\*With no other recognized cause

# SUTI 2a

2a

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.

*and*

at least 1 of the following signs or symptoms: fever (>38°C); suprapubic tenderness\*; costovertebral angle pain or tenderness\*

*and*

at least 1 of the following findings:

- positive dipstick for leukocyte esterase and/or nitrite
- pyuria (urine specimen with  $\geq 10$  white blood cells [WBC]/mm<sup>3</sup> of unspun urine or >5 WBC/high power field of spun urine)
- microorganisms seen on Gram's stain of unspun urine

*and*

a positive urine culture of  $\geq 10^3$  and  $< 10^5$  CFU/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a time frame that does not exceed a gap of 1 calendar day between two adjacent elements.

OR

Patient with an indwelling urinary catheter in place for > 2 calendar days and had it removed the day of or the day before the date of event

*and*

at least 1 of the following signs or symptoms: fever (>38°C); urgency\*; frequency\*; dysuria\*; suprapubic tenderness\*; costovertebral angle pain or tenderness\*

*and*

at least 1 of the following findings:

- positive dipstick for leukocyte esterase and/or nitrite
- pyuria (urine specimen with  $\geq 10$  WBC/mm<sup>3</sup> of unspun urine or >5 WBC/high power field of spun urine)
- microorganisms seen on Gram's stain of unspun urine

*and*

a positive urine culture of  $\geq 10^3$  and  $< 10^5$  CFU/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a time frame that does not exceed a gap of 1 calendar day between two adjacent elements.

\*With no other recognized cause

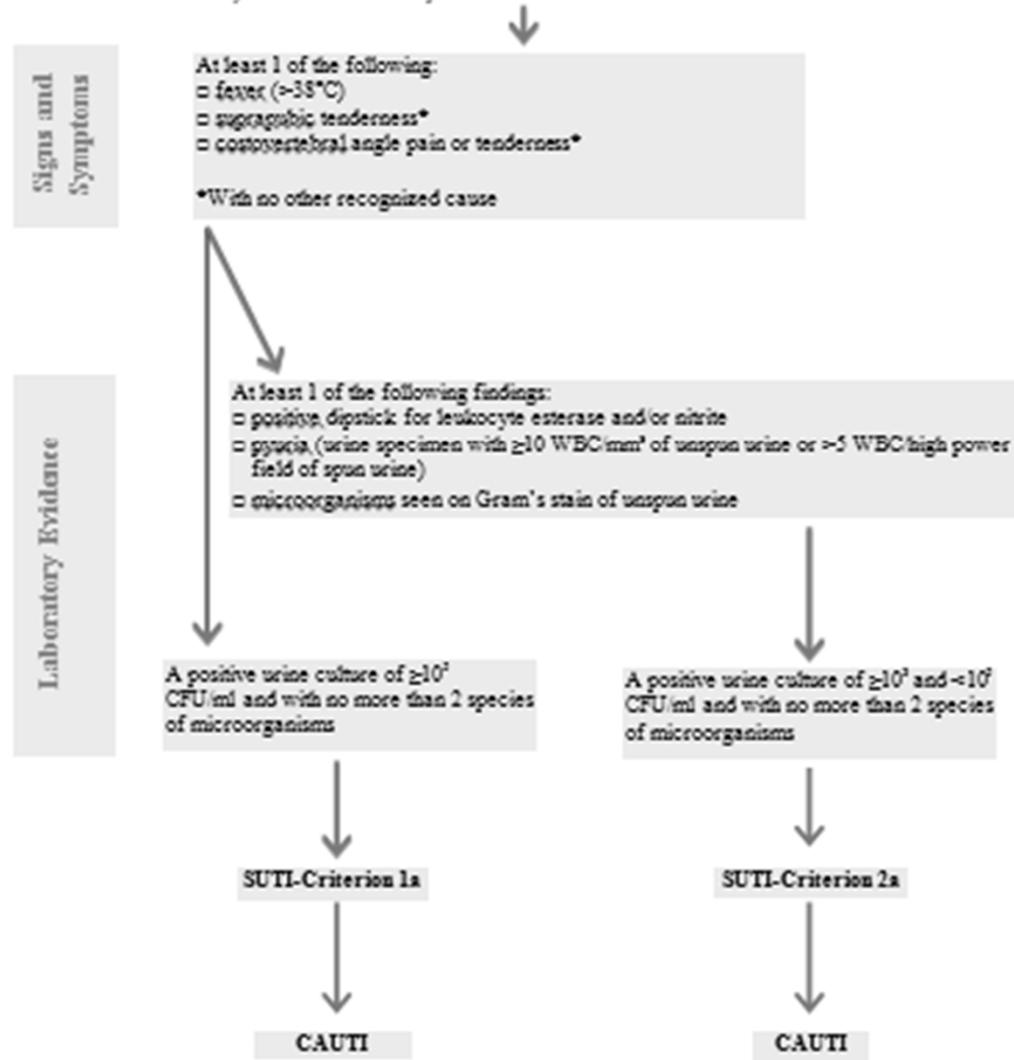


U/A +  
Culture

# Flow Diagram SUTI 1a & 2a

**Figure 1: Identification and Categorization of SUTI with Indwelling Catheter (see comments section page 7-7 thru 7-8 for important details)**

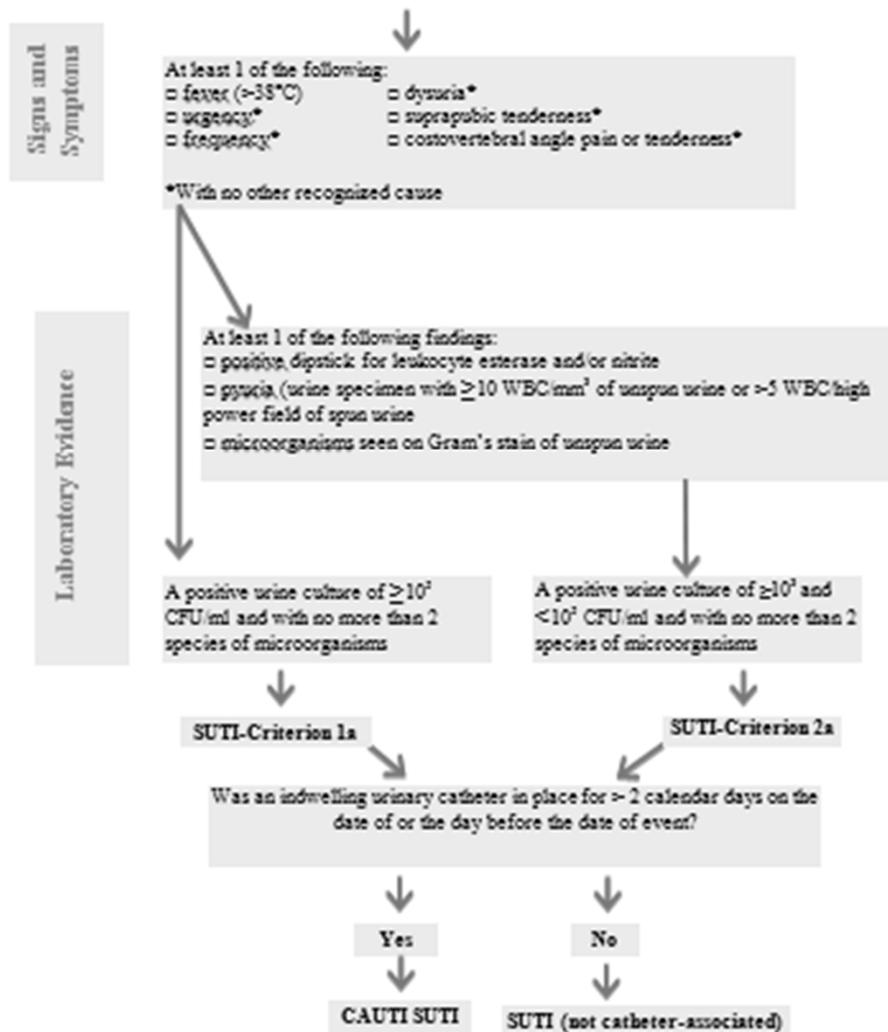
Patient had an indwelling urinary catheter in place for >2 calendar days, with day of device placement being Day 1, and catheter was in place on the date of event. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.



# Flow Diagram SUTI 1a & 2a

Figure 2: Identification and Categorization of SUTI When Indwelling Catheter has been removed (see comments section page 7-7 thru 7-8 for important details)

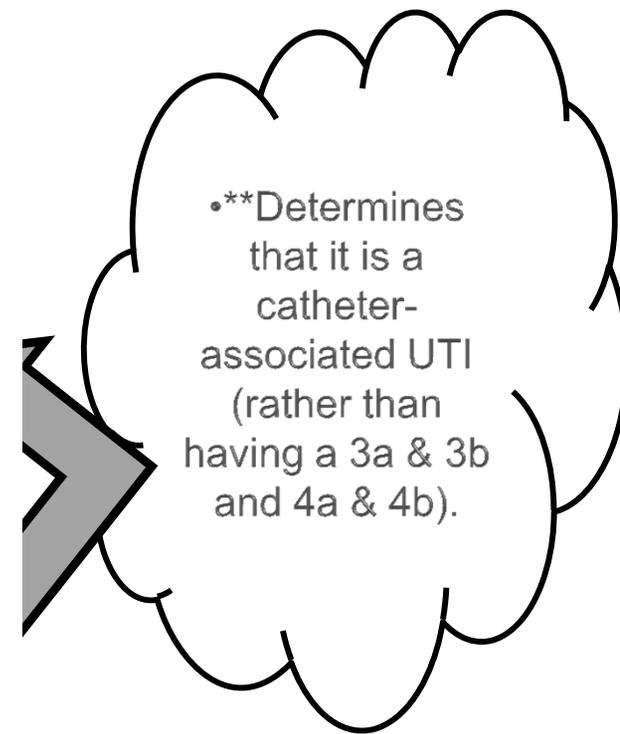
Patient had an indwelling urinary catheter removed the day of or the day before the date of event. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.



*Similar flowcharts for SUTI 3, 4 and ABUTI*

# Symptomatic UTI Criteria 3 & 4 ( $\leq 1$ year old)

3	<p>Patient <math>\leq 1</math> year of age with** or without an indwelling urinary catheter has at least 1 of the following signs or symptoms: fever (<math>&gt;38^{\circ}\text{C}</math> core); hypothermia (<math>&lt;36^{\circ}\text{C}</math> core); apnea*; bradycardia*; dysuria*; lethargy*; vomiting* <i>and</i> a positive urine culture of <math>\geq 10^5</math> CFU/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.</p> <p>*With no other recognized cause ** Patient had an indwelling urinary catheter in place for <math>&gt;2</math> calendar days, with day of device placement being Day 1 and catheter was in place on the date of event.</p>
4	<p>Patient <math>\leq 1</math> year of age with** or without an indwelling urinary catheter has at least 1 of the following signs or symptoms: fever (<math>&gt;38^{\circ}\text{C}</math> core); hypothermia (<math>&lt;36^{\circ}\text{C}</math> core); apnea*; bradycardia*; dysuria*; lethargy*; vomiting* <i>and</i> at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with <math>\geq 10</math> WBC/mm<sup>3</sup> of unspun urine or <math>&gt;5</math> WBC/high power field of spun urine c. microorganisms seen on Gram's stain of unspun urine <i>and</i> a positive urine culture of between <math>\geq 10^3</math> and <math>&lt;10^5</math> CFU/ml and with no more than two species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.</p> <p>*With no other recognized cause ** Patient had an indwelling urinary catheter in place for <math>&gt;2</math> calendar days, with day of device placement being Day 1 and catheter was in place on the date of event.</p>



# Asymptomatic Bacteremic UTI (ABUTI)

Criterion	Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)
	<p>Patient with* or without an indwelling urinary catheter has <u>no</u> signs or symptoms (i.e., for any age patient, <u>no</u> fever (<math>&gt;38^{\circ}\text{C}</math>); urgency; frequency; dysuria; suprapubic tenderness; costovertebral angle pain or tenderness <u>OR</u> for a patient <math>\leq 1</math> year of age; <u>no</u> fever (<math>&gt;38^{\circ}\text{C}</math> core); hypothermia (<math>&lt;36^{\circ}\text{C}</math> core); apnea; bradycardia; dysuria; lethargy; or vomiting)</p> <p><i>and</i></p> <p>a positive urine culture of <math>\geq 10^5</math> CFU/ml and with no more than 2 species of uropathogen microorganisms** (see Comments section below)</p> <p><i>and</i></p> <p>a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture, or at least 2 matching blood cultures drawn on separate occasions if the matching pathogen is a common skin commensal. Elements of the criterion must occur within a time frame that does not exceed a gap of 1 calendar day between two adjacent elements.</p> <p>*Patient had an indwelling urinary catheter in place for <math>&gt;2</math> calendar days, with day of device placement being Day 1, and catheter was in place on the date of event.</p> <p>**Uropathogen microorganisms are: Gram-negative bacilli, <i>Staphylococcus spp.</i>, yeasts, beta-hemolytic <i>Streptococcus spp.</i>, <i>Enterococcus spp.</i>, <i>G. vaginalis</i>, <i>Aerococcus urinae</i>, and <i>Corynebacterium</i> (urease positive)<sup>†</sup>.</p> <p><sup>†</sup>Report <i>Corynebacterium</i> (urease positive) as either <i>Corynebacterium species unspecified</i> (COS) or as <i>C. urealyticum</i> (CORUR) if so specified.</p> <p>(See complete list of uropathogen microorganisms at <a href="http://www.cdc.gov/nhsn/XLS/master-organism-Com-Commensals-Lists.xlsx#uropathogens">http://www.cdc.gov/nhsn/XLS/master-organism-Com-Commensals-Lists.xlsx#uropathogens</a>)</p>

\*\*\*Determines that it is a catheter-associated UTI.



Note: All ABUTIs will have a secondary bloodstream infection

# ABUTI



- **Note: Only events with catheters in place for  $> 2$  calendar days prior to date of event are catheter-associated.**

# Recurring UTIs



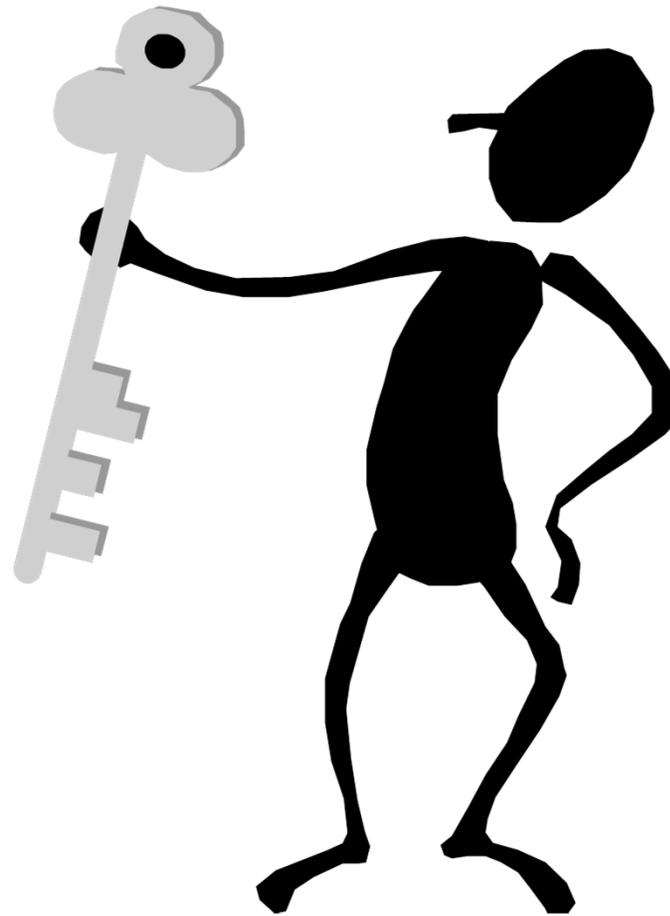
*(With the exception of VAE and LabID Event reporting for which there is a 14-day window [see individual protocols for VAE and LabID Events]) ...Following an infection, which is either POA or an HAI, clinical information must be utilized to determine that the original infection had resolved before reporting a second infection at the same site. If the original infection had not resolved before subsequent positive cultures are collected from the same site, add the pathogens recovered from the subsequent cultures to those reported for the first infection, if it was an HAI. Depending on the infection type, information which may be useful to consider in determining if the infection has resolved includes signs and symptoms, results from diagnostic testing, as well as completion of antimicrobial therapy.*



## Funny E-mail Break

- **NHSN User:** Good Afternoon. I have a patient who met all the criteria for a CAUTI on 01/21/14 when she spiked a fever. However, she was declared brain dead on 01/18/14 and **was only being kept around so her organs could be harvested.** Would she be considered a CAUTI?

# Key Terms



All CAUTI's Must be HAI



# Key Term:

## Present on Admission (POA)

Present on Admission (POA): NOTE: This should not be applied to SSI, VAE, or LabID Events. If all of the elements used to meet a CDC/NHSN site-specific infection criterion are present during the two calendar days before the day of admission, the first day of admission (day 1) and/or the day after admission (day 2) and are documented in the medical record, the infection is considered POA. Infections that are POA should not be reported as HAIs. Acceptable documentation does not include patient-reported signs and/or symptoms (e.g., patient reporting having a fever prior to arrival to the hospital). Instead, symptoms must be documented in the chart by a healthcare professional during the POA time frame (e.g., nursing home documents fever prior to arrival to the hospital). Physician diagnosis can be accepted as evidence of an infection that is POA only when physician diagnosis is an element of the specific infection definition.

**Illustration of present on admission (POA) time frame**

2 calendar days before admission	1 calendar day before admission	Day 1 (Day of facility admission)	Day 2 (Day after facility admission)
October 27	October 28	October 29	October 30



**Meet:  
The Unlucky Family**

About to become healthcare consumers on a grand scale

# Grandpa Unlucky

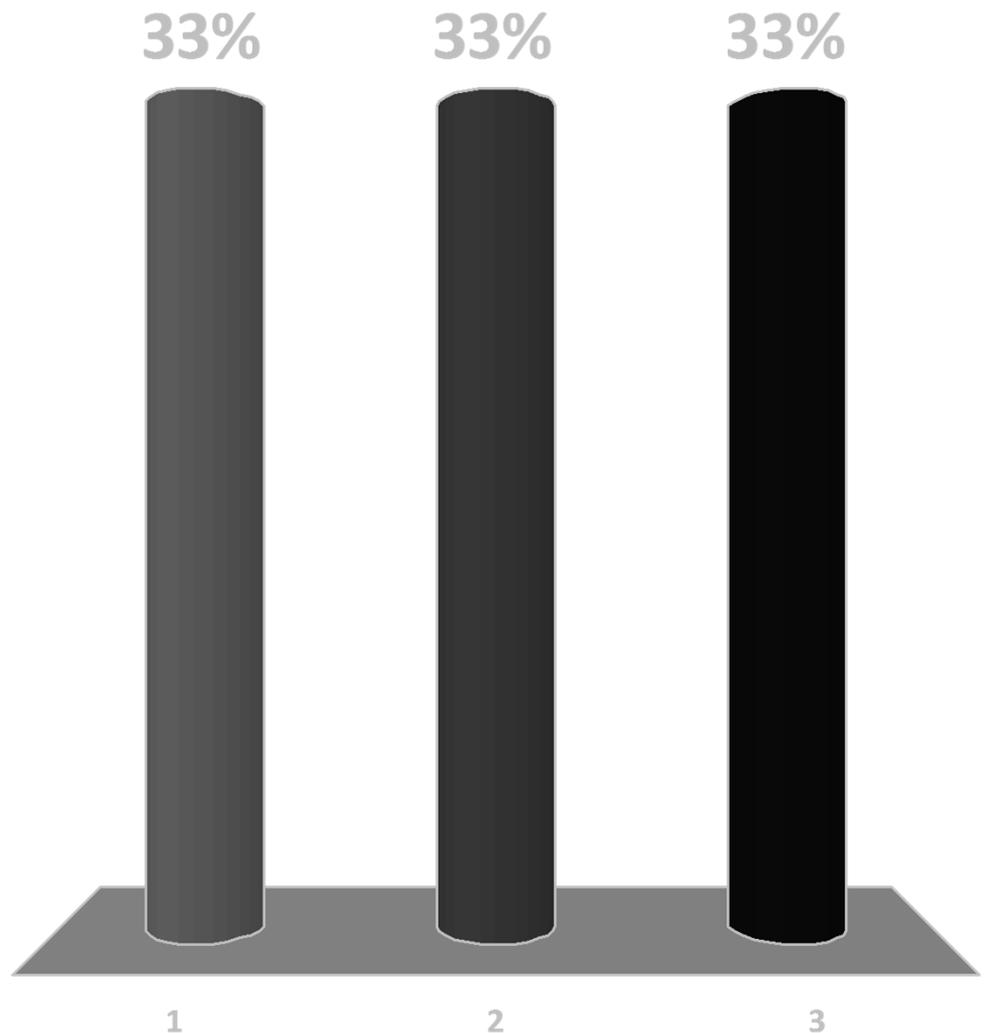


- Grandpa unlucky has been in inpatient rehabilitation following multiple fractures sustained in a multicar pileup when Atlanta sustained the SNOWMAGEDDON of 2014, (i.e., ½ inch of snow).
- He is now transferred to your hospital with a Foley catheter which has been in place for 2 weeks, and report by healthcare worker of fever the day before transfer, and a change in mental status. He is afebrile on admission. Urine cultures collected on admission are positive for > 100,000 CFU/ml of *E. coli*.



# Which of the following is most accurate?

1. Grandpa does not have a UTI?
2. Grandpa has a UTI attributed to the new hospital.
3. Grandpa has a UTI attributable to the rehab facility and POA to the hospital.



# Grandpa Unlucky



- Grandpa unlucky has been in inpatient rehabilitation following multiple fractures sustained in a multicar pileup when Atlanta sustained the SNOWMAGEDDON 2014, (1/2 inch of snow).

*Reported by  
(i.e., a HC  
professional*

- He is now admitted to your hospital with report of fever the day before transfer, and a change in mental status. He is afebrile on admission. Urine cultures collected on admission are positive for > 100,000 CFU/ml of *E. coli*.

# Key Term

*Healthcare-associated infection (HAI) (Not to be used in the SSI, VAE, or LabID Event protocols)*

*A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) that was not present on admission to the acute care facility. **An***

***infection is considered an HAI if all elements of a CDC/NHSN site-specific infection criterion were not present during the POA time period but were all present on or after the 3rd calendar day of admission to the facility (the day of hospital admission is calendar day 1). All elements used to meet the CDC/NHSN site-specific infection criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between any two adjacent elements. The definition of a gap day is a calendar day during which no infection criterion elements are present.***

# HAI-Continued

*If all elements of a CDC/NHSN site-specific infection criterion are present on the day of transfer or the next day from one inpatient location to another in the same facility or a new facility, the infection is attributed to the transferring location or facility. Likewise, if all elements of a CDC/NHSN site-specific infection criterion are present on the day of discharge or the next day, the infection is attributed to the discharging location.*



**WARNING: THE  
NEXT SLIDE IS  
VERY  
IMPORTANT!!!**

## POA vs. HAI Example

### **This is NOT POA, it is HAI**

Day 1 - admitted; asymptomatic; 10,000 CFU *E. coli* in urine; no documentation of symptoms in the 2 days prior to admission

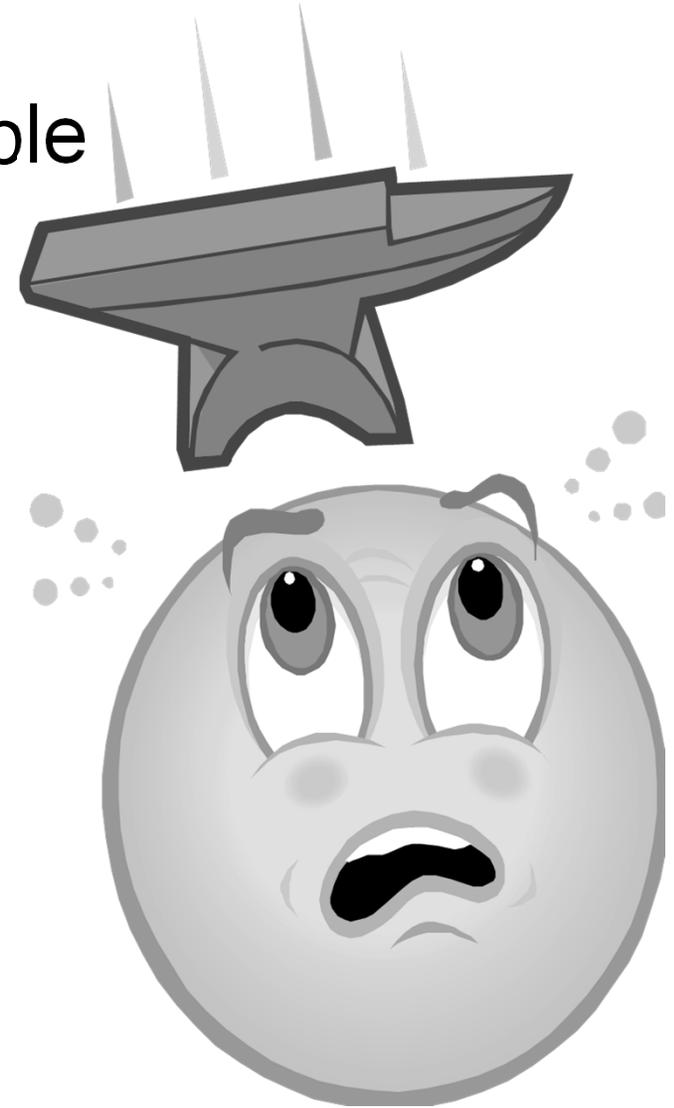
Day 2 - Asymptomatic

Day 3 - 38.2

Day 4 - 100,000 CFU *E. coli* in urine; meets symptomatic UTI criteria

- Rationale: Patient did not meet criteria for a symptomatic UTI in POA time period, but does meet on day 4.

## POA vs HAI Example



**This is NEITHER POA nor an HAI**

Day 1 - Admit: asymptomatic

Day 2 – 38.4 C

Day 3 - Asymptomatic

Day 4 – 100,000 CFU *E. coli* in urine

Day 5 - Asymptomatic

Day 6 - Asymptomatic

Rationale: All elements of infection not present in POA time period ≠ POA. All elements are not present on or after day 3. Fever was present on Day 2; this cannot be used for HAI. A symptom would need to be present on day 3 – 6 to be an HAI.

# Gap Day

*A calendar day during which no infection criterion elements are present.*



All elements used to meet the infection criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between any two adjacent elements.

## Gap Day Example

### **This is a CAUTI**

04/01 – Admit to ICU; Foley placed

04/07 – Temp 38.6° C

04/08 – Asymptomatic (gap day)

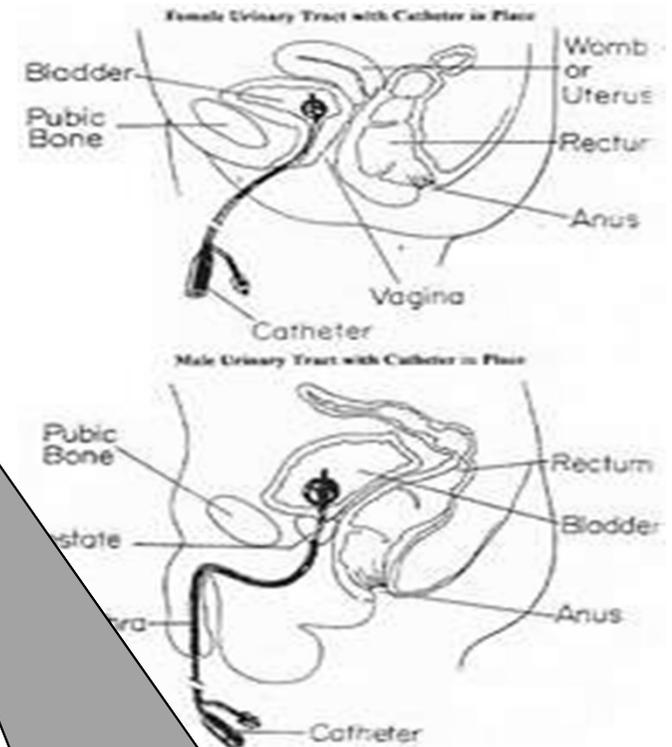
04/09 – (+) Urine culture 100,000 CFU *E. coli*

- Rationale: There is just a one-day-gap between the temp on the 7<sup>th</sup> and the (+) urine culture on the 9<sup>th</sup>. (If 4/9 was asymptomatic and culture “+” on 4/10 ≠ CAUTI)

# Key Term: Indwelling Catheter

A drainage tube that is inserted into the urinary bladder 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 include (among others):
  - Straight in and out catheters
  - Suprapubic catheters
  - Nephrostomy tubes



**NOTE:** If a patient has a Foley and a suprapubic catheter or nephrostomy tube they meet the criteria for having a Foley.



# Key Term: CAUTI Device-associated Infection



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 an indwelling urinary catheter was in place for  $> 2$  calendar days and then removed, the date of event for the UTI criteria must be the day of discontinuation or the next day.

# Discontinuation and Reinsertion

If a Foley catheter is discontinued, and a full calendar day passes before a Foley is reinserted, then the day count for determining catheter-associated UTI begins anew. Otherwise the day count continues from the previous catheter.

	March 31 (Hospital day 3)	April 1	April 2	April 3	April 4	April 5	April 6
Example A	Foley Day 3	Foley Day 4	Foley removed (Foley Day 5)	Foley replaced (Foley Day 6)	Foley Day 7	Foley Day 8	Foley Day 9
Example B	Foley Day 3	Foley Day 4	Foley removed (Foley Day 5)	No Foley	Foley replaced (Foley Day 1)	Foley Day 2	Foley Day 3

# Key Term: Date of Event

Date of event: For a UTI the date of event is the date when the last element used to meet the UTI infection criterion occurred. Synonyms: infection date, date of infection.



08/01	08/05	08/06	Date of Event
Admit to ICU Foley inserted	ICU Foley in place Temp – 38.8°C	Urine specimen sent <i>E. coli</i> $\geq 10^5$ CFU	08/06

# Device Associated Example #1

## **This is a CAUTI**

Day 1 – Admit to 5W; Foley inserted; asymptomatic

Day 2 – Foley remains in place; Fever 38.2° C

Day 3 – 38.6 ° C

Day 4 – 100,000 CFU *E. coli* in urine – meets criteria for a symptomatic UTI; and Foley has been in place >2 calendar days

Rationale: Did not meet criteria in first 2 days. Date of event is Day 4 for SUTI and Foley has been in place >2 calendar days

## Device Associated Example #2

**This is a not CAUTI**

Day 1 – Admit to ICU

Day 4 – Foley inserted

Day 5 – Temp of 100.6° F; urine culture collected and positive for 100,000 CFU/ml *E. coli* in urine; meets criteria for a symptomatic UTI on this date.

Rationale: This is not a CAUTI because the Foley had not been in place >2 calendar days on the date of event. (Note: This does meet criteria for a non-catheter associated UTI.)

## Device Associated Example #3

**This is a not CAUTI**

Day 1 – Admit to ICU

Day 4 – Foley inserted

Day 8 – Foley removed; asymptomatic

Day 9 – No Foley in place; Fever 100.5 ° F

Day 10 – Fever 100.5° F; (+) 100,000 *Candida albicans* in urine

Rationale: This is not a CAUTI because the date of event was not on the day of removal or the next day. (Note: This meets criteria for a UTI but not a CAUTI.)

## Device Associated Example #4

### **This is a CAUTI**

Day 1 – Admit to ICU

Day 4 – Foley inserted

Day 8 – Foley removed

Day 9 – Foley inserted

Day 10 – Temp of 100.6° F; 100,000 CFU *E. coli* in urine; meets criteria for a symptomatic UTI here.

Rationale: This patient has had a Foley in place for some part of each calendar day > 2 days. There was not a full calendar day without a Foley in place.

# Location of Attribution



The location where the patient was assigned on the date of the UTI event, which is further defined as the date when the last element used to meet the UTI infection criterion occurred.

# Exception to Location of Attribution



**Transfer Rule:** If the date of event for the UTI is the day of transfer or the next day, the UTI is attributed to the transferring location or facility. Likewise, if the date of event is the day of discharge or the next day, the infection is attributed to the discharging location.

# Transfer Rule – Examples

Key Terms	Day 1 Day of admit	Day2	Day 3	Day 4	Day 5	Day 6	Day 7	
Transfer Rule	ICU	ICU	ICU →5W	5W Date of event for an HAI	5W			HAI is attributable to the ICU
Transfer Rule	ICU	ICU	ICU →5W	5W	5W Date of event for an HAI			HAI is attributable to the 5W
Transfer Rule	5W	5W	5W	5W →Discharged Home	Admit to ED with S. aureus in blood (LCBI 1 criteria met)			Attributable to 5W
Multi-transfer Rule	ICU	ICU	ICU →5W→ CCU	CCU Date of event for an HAI	CCU			HAI is attributable to the ICU

*\* Page 16-16 of January 2014 NHSN manual*



## Funny E-mail Break

- **NHSN@cdc.gov**: It appears a user from your organization with username XXXXX is in the process of updating their SDN digital certificate. The CDC is in the process of reviewing their status and will notify the user via email when the process is complete. At that time, the user will be able to login.
- **User Email**: “I have already installed it on two computers a couple of weeks ago. You better make sure it works right because it is a HASSLE to get this done and I did it all myself and it worked fine. Please do not screw it up...”

# Entering CAUTI Events into NHSN (Numerator)



# Risk Factors

## CAUTION

Required Field: Three options:  
INPLACE- If catheter was in place >2 calendar days on the date of event  
REMOVE – If Foley catheter was in place >2 calendar days but was removed day of or 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

### Risk Factors HELP

Urinary Catheter\*:

Location of Device Insertion:

Date of Device Insertion:



Optional: Date indwelling urinary catheter inserted.

indwelling urinary catheter inserted.

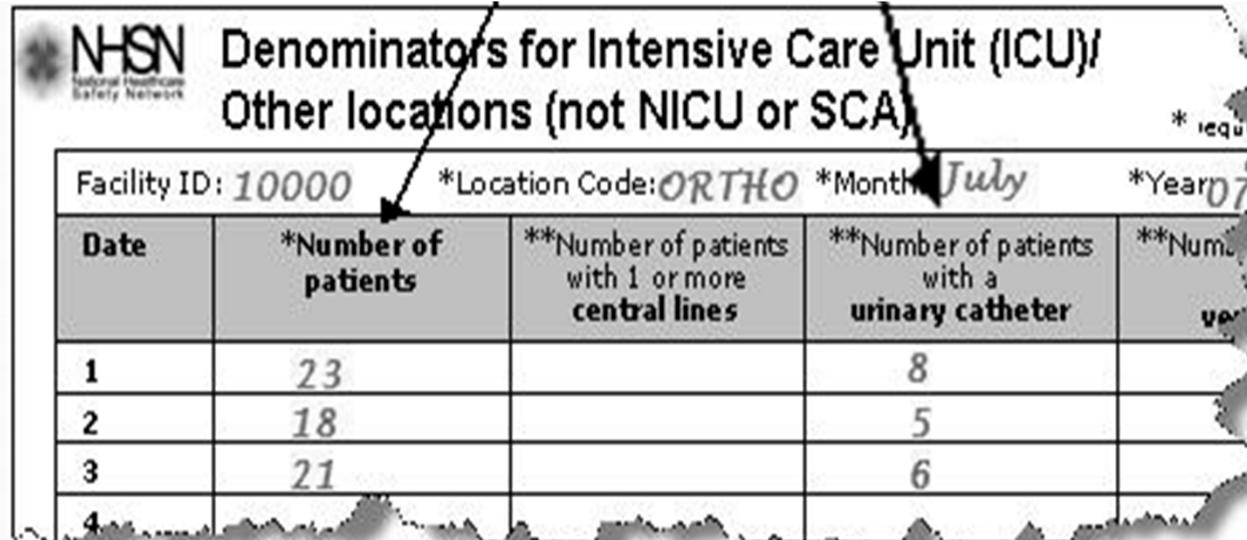
# Collecting Summary Denominator Data



Reminder

For all locations, count at the same time each day

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



**NHSN** National Healthcare Safety Network  
**Denominators for Intensive Care Unit (ICU)/  
Other locations (not NICU or SCA)** \* required

Facility ID: *10000* \*Location Code: *ORTHO* \*Month: *July* \*Year: *07*

Date	*Number of patients	**Number of patients with 1 or more central lines	**Number of patients with a urinary catheter	**Number of patients with a ventilator
1	<i>23</i>		<i>8</i>	
2	<i>18</i>		<i>5</i>	
3	<i>21</i>		<i>6</i>	
4				

# Collecting NICU Summary Data


 Department of Health and Human Services  
 Centers for Disease Control and Prevention

NHSN - National Healthcare Safety Network

Logged into Decennial Medical Center (ID 15331) as KATHY.  
 Facility Decennial Medical Center (ID 15331) is following the PS component.

## Neonatal Intensive Care

HELP

Mandatory fields marked with \*

Facility ID\*: 15331 (Decennial Medical Center)  
 Location Code\*:   
 Month\*:   
 Year\*:

Birth Wt.	Patient Days	CL Days	No CLABSI	Vent Days	No VAP	UrC Days
<=750	<input type="checkbox"/>					
751-1000	<input type="checkbox"/>					
1001-1500	<input type="checkbox"/>					
1501-2500	<input type="checkbox"/>					
>2500	<input type="checkbox"/>					

Custom Fields

Counting and recording indwelling urinary catheters in NICU is available for off plan use only

# Collecting ICU/Other locations Summary Data

NHSN Home

Logged into Decennial Medical Center (ID 15331) as JAVIER.  
Facility Decennial Medical Center (ID 15331) is following the PS component.

Alerts

Reporting Plan

Patient

Event

Procedure

Summary Data

- ▣ Add
- ▣ Find
- ▣ Incomplete
- ▣ Delete AUR Data

Import/Export

Analysis

Surveys

Users

Facility

Group

Log Out

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

HELP

Mandatory fields marked with \*

Facility ID\*: 15331 (Decennial Medical Center)

Location Code\*: MICU - MEDICAL ICU

Month\*: April

Year\*: 2013

Sum  
for  
Month

Total Patient Days\*: 55555

Central Line Days\*: 555

Urinary Catheter Days: 555

Ventilator Days: 55

APRV Days: 5

Report No Events

CLABSI:

CAUTI:

VAE:

PedVAP:

CAUTI summary  
data collection for  
SCAs is no different

Check box if **No**  
CAUTI events to  
report

# Alert Screen

## Report No Events

 **NHSN Home**

Logged into Decennial Medical Center (ID 15331) as JANET.  
 Facility Decennial Medical Center (ID 15331) is following the PS component.

- Alerts
- Reporting Plan
- Patient
- Event
- Procedure
- Summary Data
- Import/Export
- Analysis
- Surveys
- Users
- Facility
- Group
- Log Out

### Incomplete/Missing List

Incomplete Events	Missing Events	Incomplete Summary Data	Missing Summary Data	Incomplete Procedures	Missing Procedures	Missing Procedure-associated Events	
-------------------	----------------	-------------------------	----------------------	-----------------------	--------------------	-------------------------------------	--

In-plan denominators reported for these locations with no associated events

[Print this report](#)  
[Display All](#)

First | Previous | Next | Last

Displaying 1 - 5 of 5

<u>Location</u>	<u>CDC Location</u>	<u>Month/Year</u>	<u>Alert Type</u>	<u>Event Type/Pathogen</u>	<u>Summary Data Form Type</u>	<u>Report No Events</u>
ICU/CCU	IN:ACUTE:CC:C	04/2013	Summary but no events	CLABSI	<a href="#">DA-ICU/Other</a>	<input type="checkbox"/>
ICU/CCU	IN:ACUTE:CC:C	04/2013	Summary but no events	CAUTI	<a href="#">DA-ICU/Other</a>	<input type="checkbox"/>
MICU	IN:ACUTE:CC:M	04/2013	Summary but no events	CLABSI	<a href="#">DA-ICU/Other</a>	<input type="checkbox"/>
SICU	IN:ACUTE:CC:S	04/2013	Summary but no events	VAE	<a href="#">DA-ICU/Other</a>	<input type="checkbox"/>

# Electronic Collection of Summary Data

Electronic capture of summary data is acceptable:

- Following validation of the electronic method against the manual method
  - 3 months concurrent data collection with both methods
  - Difference between methods must be within +/- 5% of each other



# Reporting Numerator and Denominator Data

- CMS reportable data **MUST** be included in monthly reporting plans.
- Report each CAUTI detected or indicate that no CAUTI occurred for reporting locations. **(Found on Denominator screen).**
- Oncology hospitals should report separately for all locations/units.
- Report total device days and total patient days for reporting locations, including months in which no CAUTIs were identified and/or no patient days or urinary catheter days occurred.

 NHSN Home

Reporting Plan  
Patient  
Event  
Procedure  
Summary Data  
  Add  
  Find  
  Incomplete  
Import/Export  
Analysis  
Surveys  
Users  
Facility  
Group  
Log Out

Logged into DHQP Memorial Hospital (ID 10000) as ANGELA.  
Facility DHQP Memorial Hospital (ID 10000) is following the PS component.

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

 HELP

Mandatory fields marked with \*

Facility ID\*: 10000 (DHQP Memorial Hospital)

Location Code\*: 1234 - INPATIENT BEDS

Month\*: October

Year\*: 2011

**Report No Events**

Total Patient Days:

Central Line Days:

Urinary Catheter Days:

Ventilator Days:

CLABSI:

CAUTI:

VAP:

# Resources for NHSN

## National Healthcare Safety Network (NHSN)

### NHSN

[About NHSN](#)

[Enroll Here](#)

[Materials for Enrolled Facilities](#)

[Acute Care Hospitals/Facilities](#)

[Surveillance for Antimicrobial Use and Antimicrobial Resistance](#)

#### ► **Surveillance for CAUTI**

[Surveillance for \*C. difficile\* and MRSA Infections](#)

[Surveillance for CLABSI](#)

[Validation Guidance and Toolkit; Validation for 2012 CLABSI in ICUs](#)

[NHSN](#) > [Materials for Enrolled Facilities](#) > [Acute Care Hospitals/Facilities](#)



## Surveillance for Urinary Tract Infections

### Resources for NHSN Users Already Enrolled

#### Training

[HAI Definition and CAUTI Training October 2012](#)

[NHSN CAUTI Surveillance](#) [PDF - 1.5 MB] [October 2012](#)

[Introduction to Device-associated Module Training](#)

#### Webinars with Case Studies

[CAUTI Case Studies Training October 2012](#)

[CAUIT Case Studies with answer sheets](#) [PDF - 1.25 MB] [October 2012](#)

#### Protocols

### On this Page

- [Training](#)
- [Protocols](#)
- [Data Collection Forms](#)
- [CMS Supporting Materials](#)
- [Supporting Materials](#)
- [Analysis Resources](#)
- [FAQs](#)

### New Users - Start Here



Step 1: Enroll into NHSN

Top

# Resources for Surveillance

- NHSN Forms
  - 57.106: Monthly Reporting Plan
  - 57.114: Urinary Tract Infection
  - 57.118 Denominators for Intensive Care Unit (ICU)/Other locations (not NICU or SCA)

# Available Resources and Training

- Resource
  - CDC/HICPAC *Guideline for Prevention of Catheter-associated Urinary Tract Infections*<sup>1</sup>
- Training
  - Device-Associated Module
  - Pre-recorded Webinars
  - Lectoras

<http://www.cdc.gov/nhsn/training/>

<sup>1</sup>Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA. Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol.* 2010;31(4):319-26.

# Available Training

- NHSN Enrollment & Facility Set-up
- Overview of the Patient Safety Component, Device-associated module
- Data Entry, Surveillance, Analysis, Import, and Customization
- Introduction to the Device-associated Module (Training Course with quiz)
- Catheter-associated Urinary Tract Infection (CAUTI) (Training Course with quiz)
- <http://www.cdc.gov/nhsn/training/>

*<http://www.cdc.gov/nhsn/training>*



## Funny E-mail Break

- **NHSN@cdc.gov:** We will be restarting the NHSN application in a few minutes. Please plan accordingly.
- **User response:** I haven't started baking yet. I don't know if I'll get to it.

# Case Studies



Have You Heard?

[http://www.youtube.com/watch?feature=player\\_embedded&v=rUjE664C-Z4](http://www.youtube.com/watch?feature=player_embedded&v=rUjE664C-Z4)

# Case Studies

- Purpose
  - Training on use of definitions based on the January 2014 NHSN Patient Safety Manual
  - Learn to accurately apply definitions
  - Surveillance ≠ Clinical
  - Optimize consistency in the application of the definitions
  - Improved data quality

# Investigating a Positive Urine Culture as Possible CAUTI

Ask yourself questions in this order\*:

1. Is it POA? If POA, (and no discharge in last 2 days) stop .
2. Is it an HAI? If not HAI, stop.
3. Is this a CAUTI?
4. Attributable to what location/facility?

*\* You may choose to determine earlier if the patient had a central line or was in a location for which you are performing CLABSI surveillance.*

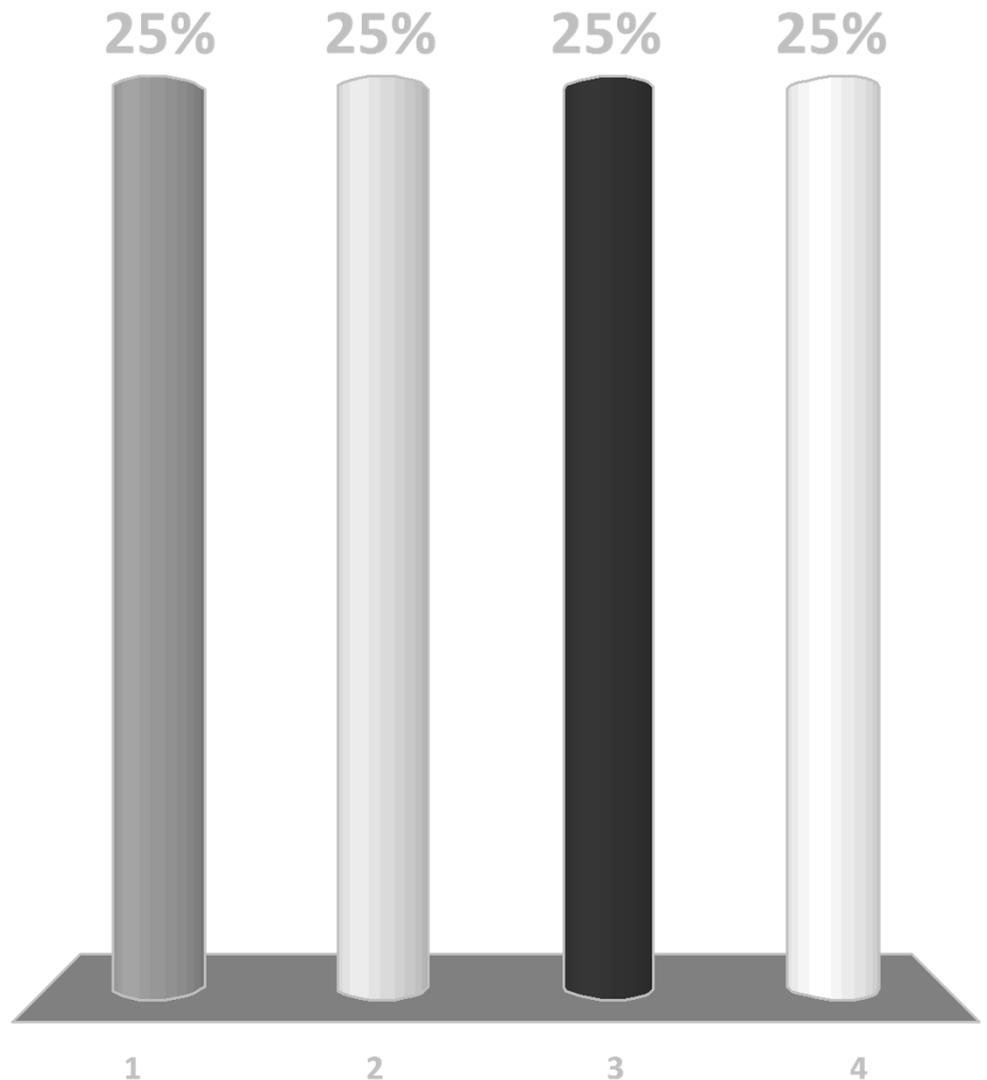
# Case 1



- Day 1: Mama Unlucky is admitted unconscious after she fell when three deer ran out in front of her while skiing. She has a broken femur. Foley and peripheral IV are inserted.
- Day 3: Foley is removed; She is awake and making good recovery progress.
- Day 4: Up with assistance; complains of pain on voiding; U/A collected and has slight leukocyte esterase, negative nitrites, 15 WBC on spun urine.
- Day 5: Urine culture collected. =  $10^4$  CFU/ml *E coli*.

# Does this patient have a CAUTI? If, so what type?

1. Yes. SUTI  
Criterion 1a.
2. Yes, SUTI  
Criterion 2a.
3. Yes, ABUTI.
- ✓ 4. No CAUTI.



# Case 1 - Rationale

-----OR-----

Patient had an indwelling urinary catheter in place for >2 calendar days and had it removed the day of or the day before the date of event

*and*

at least 1 of the following signs or symptoms: fever (>38°C); urgency\*; frequency\*; dysuria\*; suprapubic tenderness\*; costovertebral angle pain or tenderness\*

*and*

a positive urine culture of  $\geq 10^5$  colony-forming units (CFU)/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.

\*With no other recognized cause

*Criteria were not met in POA time period. Patient does meet criteria for a UTI with dysuria and positive urine culture and U/A but the date of event was LATER than the day after removal. This is a healthcare-associated UTI for NHSN, but **not** CAUTI.*

# Case 2

- 03/02/13 - 66 y.o. to OR for exploratory lap; Foley inserted in OR. Transferred to ICU post-op.
- 03/03/13 – Patient is stable, Foley in place.
- 03/05/13- Foley remains in place. Patient febrile (38.9°C) and complaining of pain in right lower back. WBC increased to 19,000. He has cloudy, foul-smelling urine and urinalysis shows 2+ protein, + nitrite, 2+ leukocyte esterase, WBC – 15/mm<sup>3</sup> of unspun urine and 3+ bacteria. Culture was positive for > 10,000 CFU/ml *E. coli*.

# Is this a CAUTI? If so, what type?

1. No UTI
2. No. This UTI is not catheter-associated.
3. Yes, catheter-associated SUTI criterion 2a.
4. Yes, catheter-associated ABUTI.

# Case 2 - Rationale

Criterion	Urinary Tract Infection (UTI)
2a	<p>Patient had an indwelling urinary catheter in place for <u>&gt;2 calendar days</u>, with day of device placement being Day 1, and catheter was <u>in place on the date</u> of event.</p> <p><i>and</i></p> <p>at least 1 of the following signs or symptoms: fever (<math>&gt;38^{\circ}\text{C}</math>); suprapubic tenderness*; <u>costovertebral angle</u> pain or tenderness*</p> <p><i>and</i></p> <p>at least 1 of the following findings:</p> <ol style="list-style-type: none"> <li>positive dipstick for leukocyte esterase and/or nitrite</li> <li>pyuria (urine specimen with <math>\geq 10</math> white blood cells [WBC]/<math>\text{mm}^3</math> of unspun urine or <math>&gt;5</math> WBC/high power field of spun urine)</li> <li>microorganisms seen on Gram's stain of unspun urine</li> </ol> <p><i>and</i></p> <p>a positive urine culture of <math>\geq 10^3</math> and <math>&lt; 10^5</math> CFU/ml and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.</p> <p>-----OR-----</p>

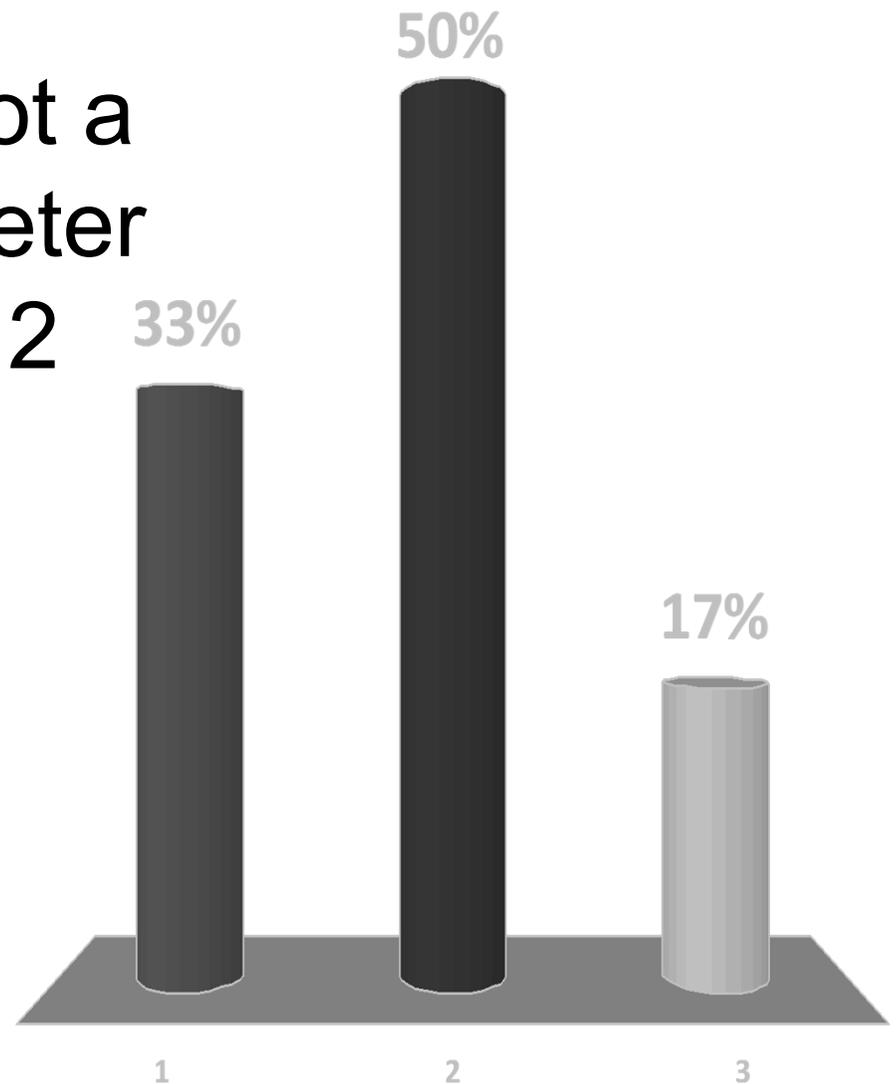
*UTI criteria were NOT met in POA time period. This UTI is catheter-associated because the date of event is 3/5 which was Foley day 4. Right or left lower back is the CVA area and there was no other cause for the CVA pain.*

# Case 3

- Day 1: 58-year-old patient is admitted to the ED with GI bleed. Foley inserted.
- Day 2: Patient spikes temp of 38.6°C. Indwelling catheter remains in place. Urine specimen is sent.
- Day 3: Culture results 100,000 CFU/ml *Pseudomonas aeruginosa*. Afebrile and asymptomatic. Antibiotics started.
- Day 4 and 5: Patient asymptomatic and afebrile.

# Is this an HAI? If so, what type?

1. Yes, healthcare-associated UTI but not a CAUTI because catheter had not been in for > 2 calendar days
- ✓ 2. No, it is a UTI that is POA
3. Yes, CAUTI, SUTI criterion 1a



# Case 3 Rationale

- Patient meets SUTI 1a criterion on Day 2 of hospitalization. This is within the POA time period.



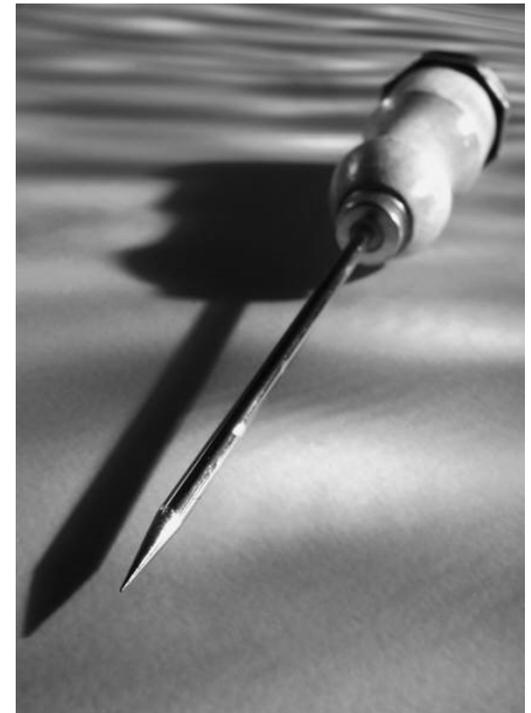
## POA vs HAI

- Determine if the POA criteria are met. If not, then set aside all elements that are **ONLY** present during the POA time period, to determine if HAI. They cannot be used as part of an HAI infection.
- IF not POA, any elements present during the POA time period **and still present** on or after hospital calendar day 3, can be used to meet criteria for HAI.



## Funny E-mail Break

- On the subject of SSI reporting:
- **User email:** “Could you help with the definition and some examples of “Stab wound infection”? Does stab mean laparoscopic or like a street fight and an ice pick is used?”



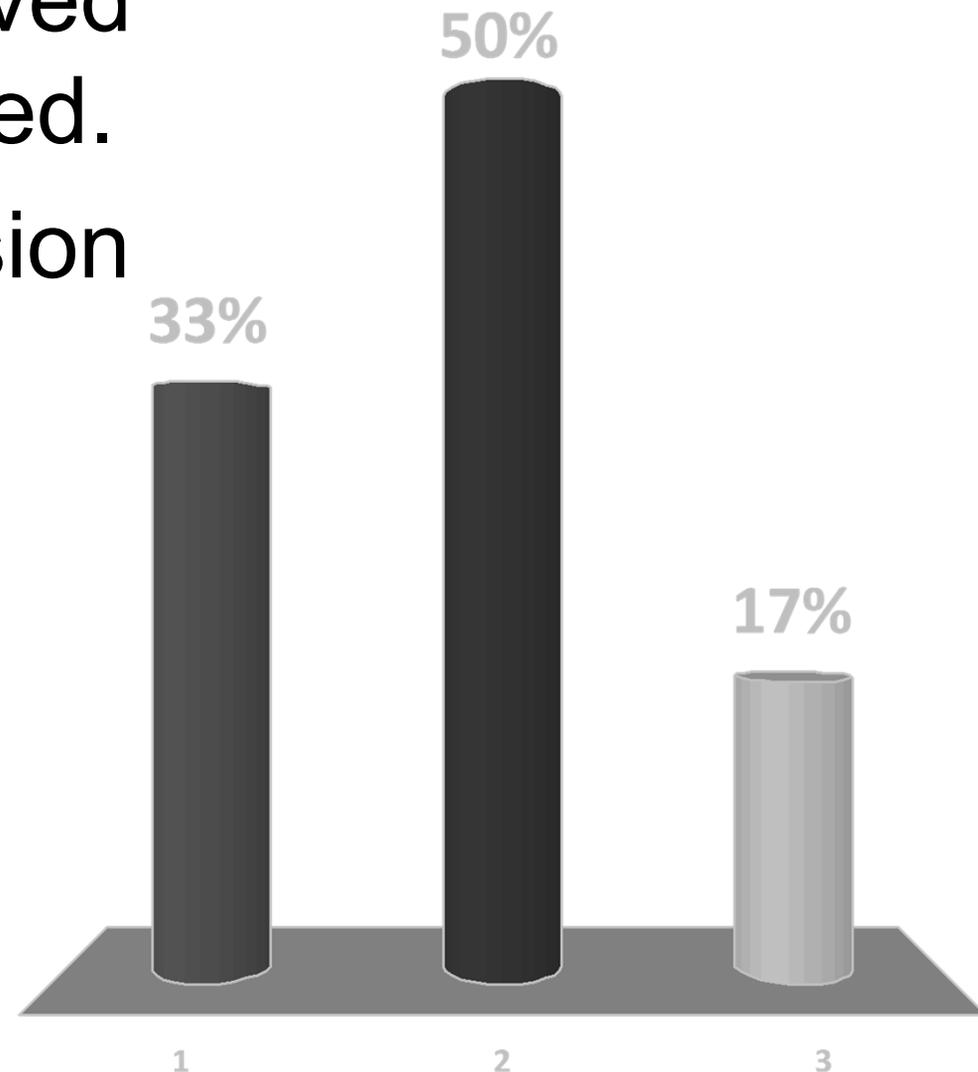
# Case 3-Continued

- Day 16. Foley remains in place. Patient completed treatment for UTI on hospital day 11. Hospitalization has been complicated by development of DVT. Has been afebrile till today, though temp has been edging up the last 2 days, and is now, 38.1°C. Cough productive of yellow phlegm. Rhonchi present.
- Day 17: Urine cloudy. Fever 37.9°C cough continues. Urine and sputum cultures collected.
- Day 18: Urine and sputum both positive for *S. aureus* with > 100,000 CFU/ml in urine.

# Does this patient have a CAUTI?



1. Yes. First UTI resolved and treatment finished.
2. No, this is an extension of the first UTI.
3. No. The UTI is secondary to a respiratory infection.



# Case 3-Rationale

- Because the patient had completed treatment for the first UTI and symptoms had resolved, only to be followed by new symptom onset, and criterion met, this is a new CAUTI.
- NOTE: Unlike CLABSI, CAUTIs may NOT be excluded as secondary to another infection.
- **Fever cannot be attributed to another source of infection.**

*See March 2012 Newsletter; also note the lack of “\*” following fever in criteria.*



## Funny E-mail Break

- **NHSN User:** I have my CLIP ICU data for May. Is it possible to fax or mail you the data? I am a one person department and with H1N1 going on, it would be much easier for me as opposed to fitting it into a format.

# Case 4

04/05/13: 76-year-old woman is admitted from LTAC at 8 a.m for surgical debridement of sacral decubitus. Medical history notable for severe rheumatoid arthritis, CHF and atrial fibrillation. Routine admission U/A performed, positive for leukocyte esterase, and 3 WBC by HPF of spun urine. Patient afebrile, denies urinary urgency, frequency or pain. No suprapubic or CVA pain. Foley catheter present on admission, and peripheral IV is inserted in OR. Admit postoperatively to telemetry unit.

04/06/13: Wound care specialist documents wound clean. Temperature 37.4°C. Foley draining cloudy urine.

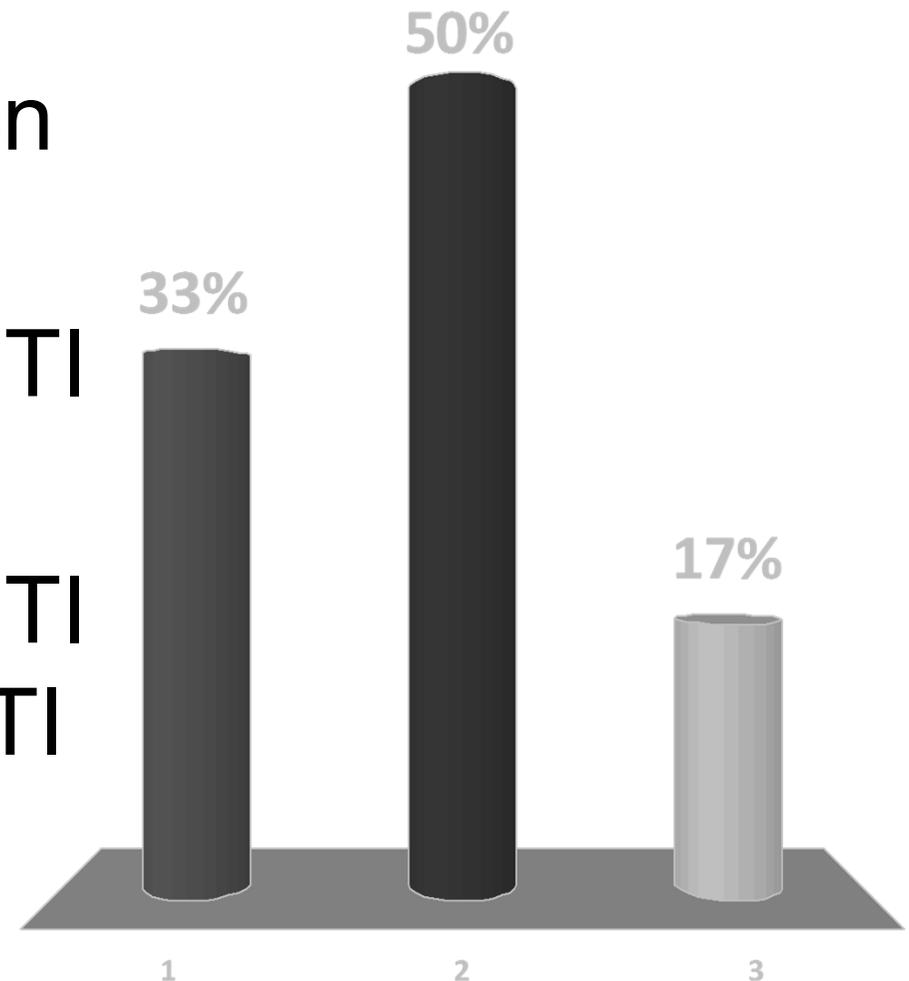
04/07/13: **Transfer to surgical unit.** Temp of 37.9°C. Foley removed. Encouraged to push p.o. fluids. Urine specimen sent to lab for culture and sensitivity.

# Case 4

- 04/08/13: Patient complains of dysuria and pain with palpation to suprapubic area. Bactrim started.
- 04/09/13: Urine specimen sent on 04/07 results are positive for *E. coli* 100,000 CFU/ml. Patient afebrile. Preparing for discharge back to LTAC.

# Does this patient have a UTI and is it a CAUTI?

1. No, UTI was present on admission
2. Yes, Patient has a SUTI 1a. and it is a CAUTI
3. Yes, Patient has a SUTI 1b. but it is not a CAUTI



# Case 4 - Rationale

1a	<p>-----OR-----</p> <p>Patient had an indwelling urinary catheter in place for &gt;2 calendar days and had it removed the day of or the day before the date of event</p> <p><i>and</i></p> <p>at least 1 of the following signs or symptoms: fever (&gt;38°C); urgency*; frequency*; <u>dysuria*</u>; <u>suprapubic tenderness*</u>; costovertebral angle pain or tenderness*</p> <p><i>and</i></p> <p>a positive urine <u>culture of <math>\geq 10^5</math> colony-forming units (CFU)/ml</u> and with no more than 2 species of microorganisms. Elements of the criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between two adjacent elements.</p> <p>*With no other recognized cause</p>
----	--

*Since criteria of UTI were not met in POA time period, and event date was 4/8, the day after the Foley (which was in place > 2 days) was removed, this is a CAUTI. (Note: U/As may be positive for many non-infectious reasons including the presence of a Foley catheter.)*

# Case 4

To which location would the CAUTI be attributed?

- ✓ 1. Telemetry unit
- 2. Surgical unit

*Rationale: The date of event is 4/8 which is the day after transfer from the telemetry unit.*

# Case 5

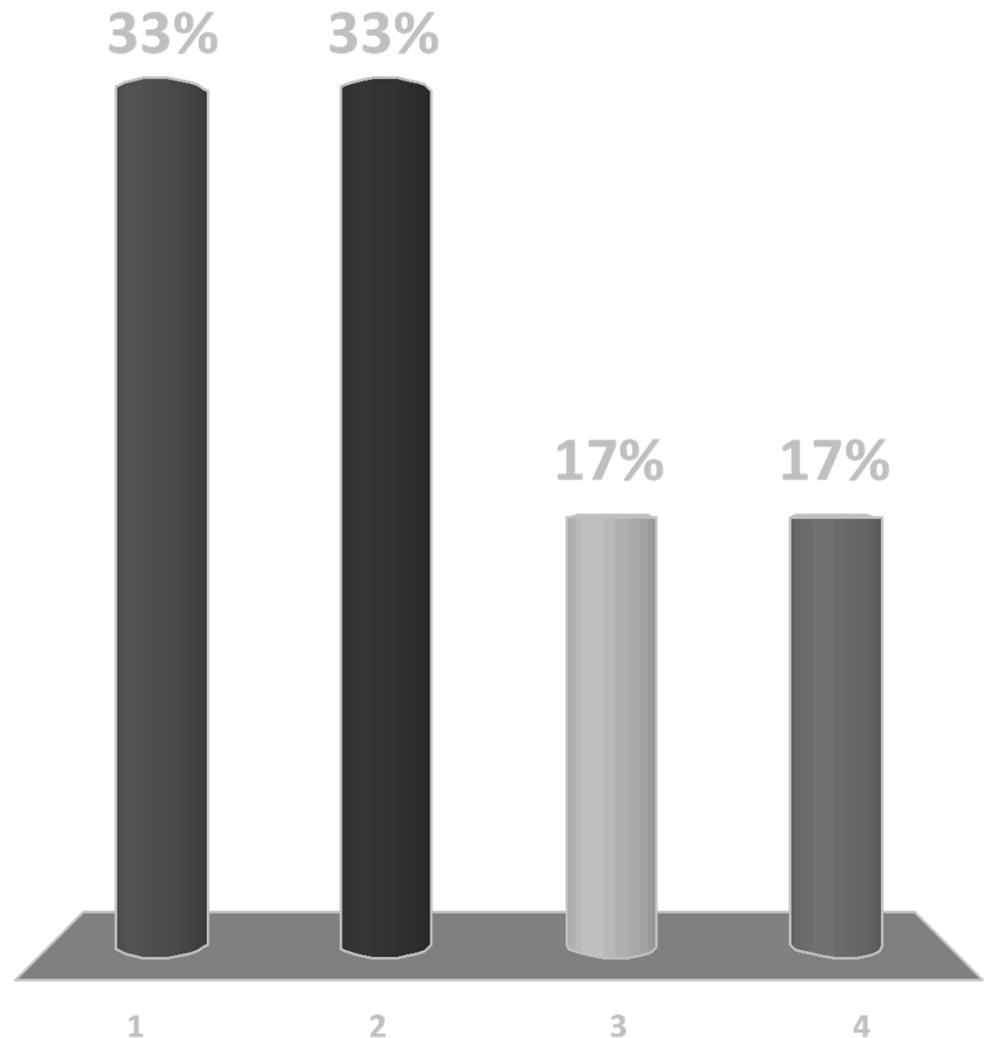
- May 15: 48-year-old male involved in motorcycle accident. Closed head injury, multiple fractures. Taken to OR for ORIFs and evacuation of subdural hematoma. Foley catheter and left subclavian catheter placed in ED. Patient remains on ventilator placed in OR. Lungs clear bilaterally.
- May 21: T<sub>max</sub> 99.8°F, Lungs clear bilaterally. Foley remains in place draining, clear yellow urine. Patient remains ventilated, sputum production slightly increased.

# Case 5

- May 22: T<sub>max</sub> 100.4°F; vent settings stable. No change to sputum production.
- May 23: T<sub>max</sub> 100.4°F; WBC 14,000. Lungs sounds clear; CXR clear. Patient on vent; Foley and central line remain in place. Pan cultures sent. Empiric antibiotic treatment begun.
- May 24: Urine culture: >100,000 CFU/ml of *P. aeruginosa*. Blood culture: *P. aeruginosa*. Physical assessment normal. No patient response to suprapubic or costovertebral angle palpation.

# Does this patient have a UTI? If so, what type?

1. No UTI.
- ✓ 2. Yes, ABUTI.
3. Yes, SUTI 2a.
4. Yes, SUTI 1a.



# Case 5 - Rationale

*Yes. Patient without UTI criteria symptoms in the presence of blood culture matching urine culture = ABUTI. Note that fever must be GREATER than 100.4° F to meet the fever requirements for NHSN definitions.*

# Case 5

Is the catheter-associated-ABUTI reportable if CAUTI reporting is in-plan for the patient's location?

1. No. ABUTIs are not required to be reported even if they are CAUTIs.
- ✓ 2. Yes. Catheter-associated-ABUTIs must be reported for in-plan CAUTI surveillance.



## Funny E-mail Break

- **NHSN User:** “The cardiothoracic surgeon also noted that the patient’s prognosis was quite poor unless dramatically improved.”

# Case 6

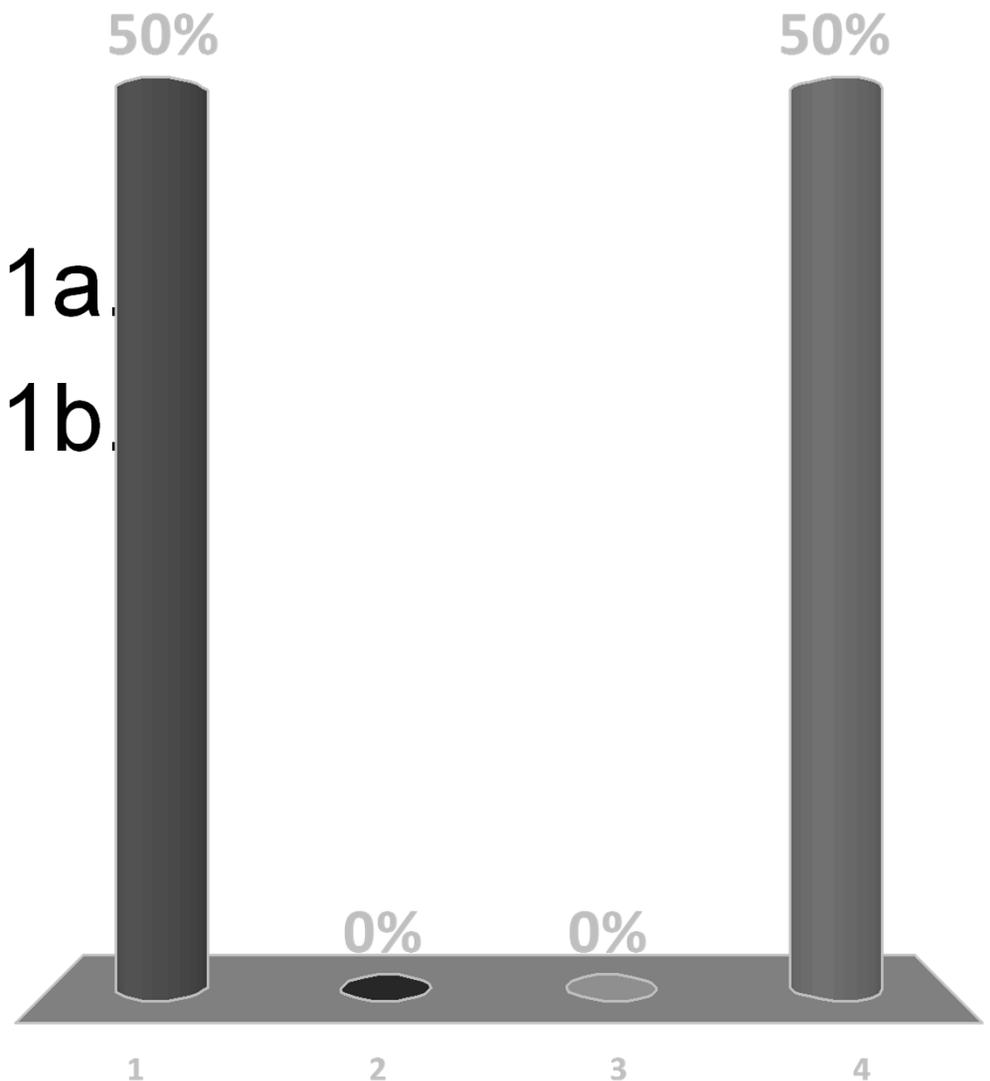
- 08/25: 73-y.o. patient in neurosurgical ICU. admitted following cerebrovascular accident. Ventilated, subclavian catheter and Foley catheter inserted on admit. Patient reacts only to painful stimuli.
- 9/2: WBCs slightly elevated, at  $12,000/\text{mm}^3$ , temp maximum  $37.4^\circ\text{C}$ , urine cloudy. Lungs clear to auscultation. Still ventilated, and catheterized.

# Case 6

- 9/3: WBC 15,800/mm<sup>3</sup>, Temperature maximum: 37.6°C. Breath sounds slightly coarse, minimal clear sputum. Urine unchanged. U/A performed. Blood, endotracheal and urine specimens collected. No suprapubic or CVA pain noted.
- 9/4: Urinalysis positive for leukocyte esterase, nitrites and WBC too numerous to count. Blood and endotracheal cultures no growth. Urine + 100,000 CFU/ml *E. faecium*.

# Does this patient have a UTI? If so, what type?

1. Yes, ABUTI.
2. Yes, SUTI Criterion 1a.
3. Yes, SUTI Criterion 1b.
- ✓ 4. No UTI.



# Case 6

## Rationale

*Because there are no urinary symptoms, nor fever > 38°C, nor blood culture matching the urine culture, surveillance criteria for a UTI are not met.*

.

# Case 6 - Rationale

Surveillance definitions work better in some patient populations than others.

Patients should be thoroughly assessed for UTI symptoms, including suprapubic and costovertebral pain.  
Dialogue/education with clinicians may be warranted.

Clinical diagnosis may differ from surveillance determination.

Definitions must still be applied consistently.



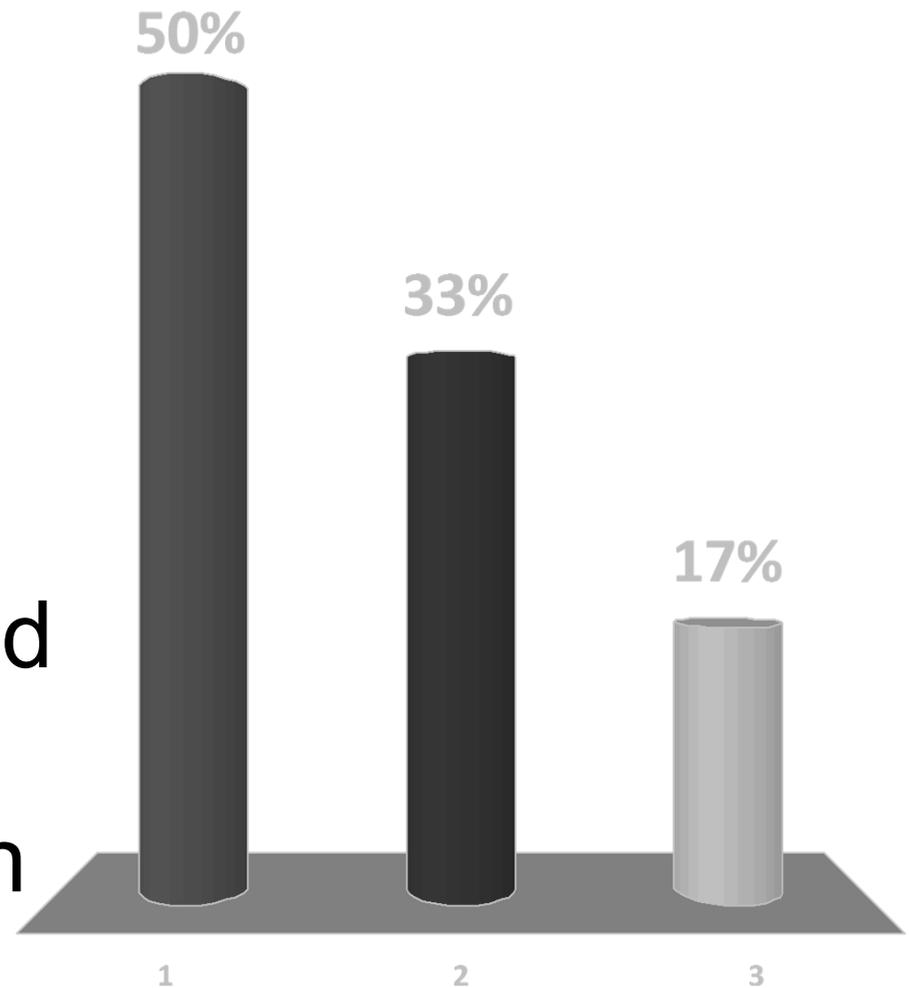
# Grandpa Unlucky



- March 1: Grandpa Unlucky has now been in your medical ward for 4 days. A Foley catheter, which was placed on day 1, is removed today. He is found to be severely anemic and is transfused with 2 units of blood.
- March 2: Grandpa has been having trouble voiding and has not felt that he has been emptying his bladder. He is catheterized post-void and 600 ml of residual urine collected. The Foley catheter is left in place.
- March 3: Grandpa complains of tenderness upon suprapubic palpation. Urine is sent for culture and is reported positive for  $> 100,000$  CFU/ml of *E. faecium*.

# Does Grandpa Unlucky have a CAUTI?

1. Yes, CAUTI – SUTI  
criterion 1a.
2. Yes, CAUTI- SUTI  
criterion 2a.
3. No. Grandpa's UTI is  
not catheter-associated  
because the new  
catheter has only been  
in place 1 day.



# Grandpa Unlucky Rationale

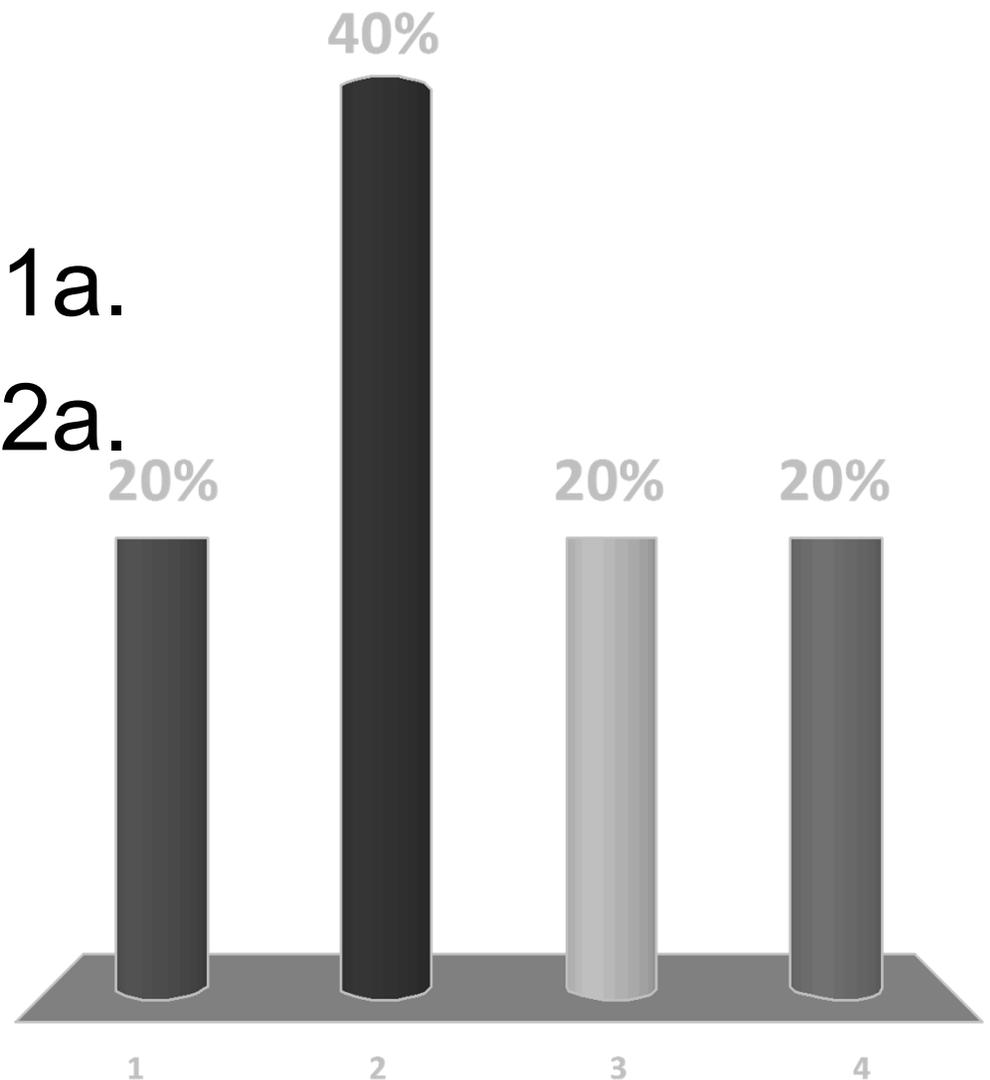
- The patient did not have a POA UTI.
- The Foley was in place for 4 days on March 1<sup>st</sup>, when it was removed.
- It was replaced on March 2<sup>nd</sup> (now Foley day 5 since there was not a full calendar day without Foley).
- Patient meets SUTI criterion 1a with suprapubic tenderness and positive urine culture > 100,000 CFU/ml on Foley day 6 (March 3<sup>rd</sup>).

# Case 8

- April 15: 59-year-old female, admitted with uterine cancer. Foley inserted on admit
- April 16: Total abdominal hysterectomy performed
- April 18: Patient progressing well until fever spike of 101.3°F. Blood specimen sent; results no growth
- April 19: Patient asymptomatic
- April 20: Patient asymptomatic
- April 21: Urine specimen sent; result  $10^5$  CFU *E. Coli*
- April 22: Patient asymptomatic
- April 23: Patient asymptomatic; Foley removed

# Does this patient have a UTI? If so, what type?

1. Yes, ABUTI.
2. Yes, SUTI Criterion 1a.
3. Yes, SUTI Criterion 2a.
- ✓ 4. No UTI.



# Case 8 - Rationale

*There is more than one gap day between the date of the fever and the date of the urine culture. The 2 days following the (+) urine culture the patient was also asymptomatic and without matching blood culture collection.*

*04/15 – Admit; Foley inserted*

*04/18 – Fever*

*04/19 – Asymptomatic*

*04/20 – Asymptomatic*

*04/21 – (+) Urine culture*

*04/22 – Asymptomatic*

*04/23 – Asymptomatic*

# Great Job!!!



# NHSN CAUTI Definitional Update

- Work began in 2012
  - Definition last updated in 2009
  - User concerns:
    - Clinical correlation
      - Lack of sensitivity in specific populations
      - Lack of specificity
        - » Fever due to more than 1 cause
        - » Specific organisms as pathogens
          - Candida
          - *S. aureus*

# NHSN CAUTI Definitional Update

- Teleconferences with subject matter experts- IPs, Epidemiologists, state HD, microbiologists
- Evidence review
- Includes laboratory survey collaboration with APIC
- Findings from EpiAid with facility with high SIR
- Collaboration with CUSP CAUTI

# NHSN CAUTI Definitional Update

- 2 step process
  - Short-term: 2015 updates
    - Address issues to even playing field, bring clinical and surveillance determinations closer (to the extent possible)
    - Changes will still be limited to feasibly collected and easily applied definitions
  - Long-term: Electronically collectable
- More to come at APIC 2014

# Also Worth Considering in Your Facility

- Culturing practices
  - Reflex urine cultures?- send U/A along with culture and only perform culture if U/A is positive
  - Change long-dwelling catheters before collecting urine?- exclude colonization
  - Indications for urine cultures?
  - In addition to prevention efforts, strengthening diagnostic practices improve CAUTI rates, increase patient safety, and increase staff moral





## Funny E-mail Break

*(I think they hit reply instead of forward)*

- **NHSN@cdc.gov:** Dear NHSN Safety Component Users: In January 2010, NHSN will be changing the specimen source codes list that is used for LabID Event reporting. This change is being...”
- **User response:** “Sue, What is this all about? I’m sick of NHSN already and we haven’t even started.”

# Questions?





**Questions: email user support  
nhsn@cdc.gov**

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