

*AHRQ Safety Program for Long-term Care: HAIs/CAUTI*

## The Culture of Culturing: The Importance of Knowing When to Order Urine Cultures

National Content Webinar Series

October 15, 2015

### Today's Presenters



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## Objectives

Upon completion of this training, participants will be able to:

- Explain why more urine cultures can lead to increases in CAUTI diagnoses and resident harms
- Determine when (or not) to order urine cultures
- Describe project tools available to help improve urine culture practices
- Utilize evidence-based communication strategies to improve urine culture practices
- Utilize training materials to educate facility staff, residents, and family about urine culturing.

3



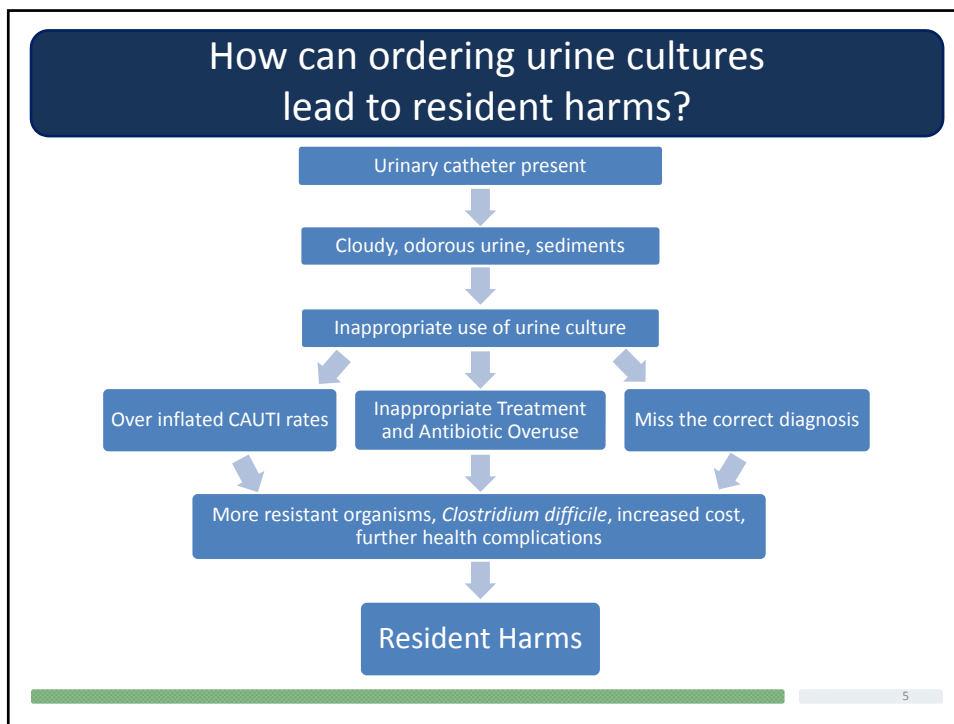
## Case Scenario

Mrs. Bell is an 86-year-old resident of your facility. She is being transferred back from a week long stay in the hospital. She has an indwelling urinary catheter, but you are unsure why the catheter has been placed. Yesterday her urine was clear and yellow, but today her urine is cloudy and smells bad.

What should be done next?

- a. Urinalysis
- b. Urine culture
- c. Urinalysis and antibiotics
- d. Culture and antibiotics
- e. Nothing

4



### Knowledge/Skills Questionnaire Reveals...

Knowing when to order urine cultures is a challenge at many facilities.

Knowledge/Skills Questionnaire Baseline Results (Cohorts 1-4):

- Q1: What equipment is used when collecting a urine specimen for culture?
- Q2: Which of the following signs and symptoms means that you should send a urine culture?
- Q3: All residents with urinary catheters should have a screening urine culture sent on admission to your facility?

**Knowledge Question Percent Correct**

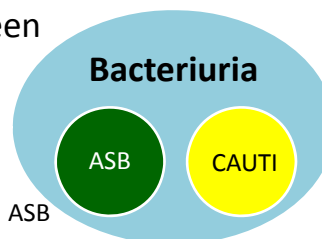
Question	Percent Correct
Q1	82%
Q2	58%
Q3	56%

Knowledge Survey Questions Related to Urine Culture Practices

6

## Bacteriuria is not the same as CAUTI

- What is Bacteriuria?
  - Bacteriuria means the resident has a positive urine culture
- What is the main difference between bacteriuria and CAUTI?
  - Bacteriuria can be symptomatic or asymptomatic.
    - Asymptomatic bacteriuria is abbreviated ASB
  - CAUTI requires presence of symptoms consistent with UTI



[http://www.idsociety.org/Organ\\_System/#Genitourinary](http://www.idsociety.org/Organ_System/#Genitourinary)

7

## Common Bacteriuria Signs that are Inappropriate Triggers for Urine Cultures

**Chronically-catheterized patients have bacteriuria 99% of the time.**

- Bacteriuria signs
  - Urine color
  - Urine smell
  - Urine sediment
  - Cloudy urine
  - Pyuria (white blood cells or WBC in the urine)
  - Positive dipstick
- And remember bacteriuria is not the same as CAUTI

Nicolle L.E., Bradley S., Colgan, R., et al. Infectious Diseases Society of America Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults. *Clin Inf Dis* 2005; 40:643-54.

8

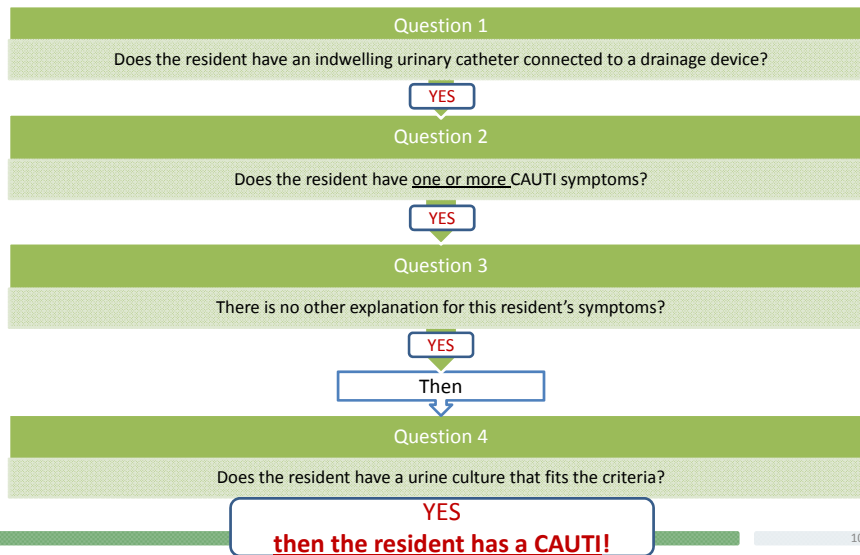
## Other Causes for Inappropriate Triggers

- Cloudy urine, a change in urine color, foul odor, and sediment are all **non-specific**
- Non-urinary causes
  - Medications
  - Certain foods
- Urinary causes other than CAUTI/UTI
  - Crystals
  - Bacteria (asymptomatic bacteriuria)



9

## What does CAUTI surveillance require?



10

## What are the signs and symptoms of a CAUTI?

**ONE or MORE** of the following:

### CAUTI Signs and Symptoms

Fever

Rigors

New confusion or functional decline  
(with **NO** alternative diagnosis **AND** leukocytosis)

New suprapubic pain or costovertebral angle pain or tenderness

New onset hypotension  
(with no alternate site of infection)

Acute pain, swelling or tenderness of the testes, epididymis or prostate

Purulent discharge around the catheter (pus)

11

## CAUTI Criteria - NHSN Definitions Pocket Card

### CAUTI Criteria - NHSN Definitions Pocket Cards

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

Criteria for defining CAUTI in long-term care residents:

**One or more of the following, with no alternate source:**

- Fever\*
- Rigors (shaking chills)
- New onset hypotension
- New onset confusion/functional decline **AND** increased leukocytosis\*
- New costovertebral angle pain or tenderness
- New or increased suprapubic pain or tenderness
- Acute pain, tenderness, or swelling of the testes, epididymis, or prostate
- Pus around the catheter insertion site

**AND**

**Any of the following:**

*If catheter removed within past 2 calendar days:*

- Clean catch (voided) urine culture with 100,000 or more colonies ( $\geq 10^5$  CFU/ml) of no more than 2 species of microorganisms
- In/Out catheter urine culture with 100 or more colonies ( $\geq 10^5$  CFU/ml) of any number of microorganisms

*If indwelling urinary catheter in place:*

- Positive urine culture with 100,000 colonies or more ( $\geq 10^5$  CFU/ml) of any number of microorganisms

REV. 2015-Jul

#### \*Constitutional Criteria for Long-term Care Residents

##### Fever

Must have one of the following:

- Single oral temperature  $>100^{\circ}\text{F}$  ( $37.8^{\circ}\text{C}$ )
- Repeated oral temperature  $>99^{\circ}\text{F}$  ( $37.2^{\circ}\text{C}$ ) **OR** rectal temperature  $>99.5^{\circ}\text{F}$  ( $37.5^{\circ}\text{C}$ )
- Repeated rectal temperatures  $>99.5^{\circ}\text{F}$
- Single temperature  $>2^{\circ}\text{F}$  ( $1.1^{\circ}\text{C}$ ) over baseline for oral or rectal

##### Leukocytosis

Must have one of the following:

- $>14,000$  white blood cells (leukocytes)/ $\text{mm}^3$
- Increase in immature white blood cells (Left Shift) with  $>6\%$  bands or  $> 1,500$  bands/ $\text{mm}^3$

##### Acute Change in Mental Status (within last 7 days)

All components must be present:

- Confusion (with no alternate diagnosis and leukocytosis)
- Fluctuating Behavior (comes and goes, or changes in severity)
- Inattention (difficulty focusing and cannot maintain attention)
- Disorganized thinking (thinking is incoherent or hard to follow)

##### **OR**

Altered level of consciousness (change is different from baseline, may be sleepy, lethargic, difficult to arouse)

##### Acute Functional Decline

- New 3 point increase in total activities of daily living (ADL) score from baseline (range: 0-28)  
Each ADL scored from 0 (independent) to 4 (totally dependent), including: bed mobility, transfer, locomotion within facility, dressing, toilet use, personal hygiene and eating

12



## NHSN Definitions Pocket Card

Are you using the NHSN Definition Pocket Card?

- a) YES
  - If “YES,” how?
- b) NO
  - If “NO,” why not?

13

## Pyuria is not diagnostic of CAUTI

Pyuria, like bacteriuria, does not help differentiate asymptomatic bacteriuria from CAUTI

- Why?
  - Pyuria, or white blood cells (WBCs) in the urine, is also non-specific
  - Pyuria can be from
    - The catheter itself
    - Bladder distension
    - Asymptomatic bacteriuria
- Generally avoid urine dipsticks in catheterized residents

Hooton, *Clin Infect Dis* 2010; 50:625–663

14



## Revisiting the Case Scenario

Mrs. Bell is an 86-year-old resident of your facility. She is being transferred back from a week long stay in the hospital. She has an indwelling urinary catheter, but you are unsure why the catheter has been placed. Yesterday her urine was clear and yellow, but today her urine is cloudy and smells bad.

What should be done next?

- a. Urinalysis
- b. Urine culture
- c. Urinalysis and antibiotics
- d. Culture and antibiotics
- e. Nothing

15

## Answer to Ms. Bell's Case

Nothing!

- At least don't send urine for urinalysis or culture.
- Definitely don't start antibiotics!

You wouldn't really do nothing.

- Ask about what she ate.
- Look at her medications.
- Assess for catheter trauma.
- Assess to ensure she is at her baseline.



16





## Case 2: Just Don't Dip (the Urine)

Mr. Parker is a 91-year-old man with an indwelling catheter who stayed in bed today rather than going to breakfast. The dipstick (urinalysis) is positive for nitrites (bacteria) and leukocyte esterase (WBC).

What should be done next?

- a. Urine culture
- b. Antibiotics
- c. Urine culture and antibiotics
- d. Re-assess the situation

17

## Case Scenario 2 Answer

**ANSWER:**

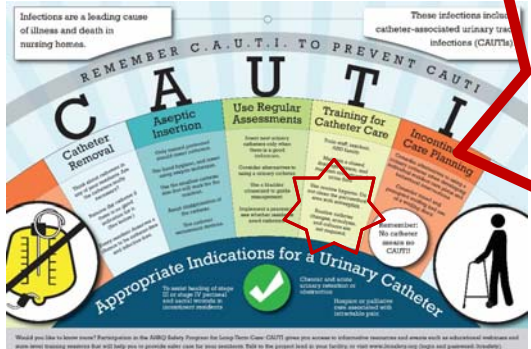
- Re-assess Mr. Parker

**EXPLANATION:**

- There may be many other reasons for his behavioral change
  - Mild diarrhea
  - Slept poorly
  - Mild dehydration
- Offering fluids is often a better initial step

18

## Remember C.A.U.T.I. to Prevent CAUTI



Routine catheter changes, urinalysis, and urine cultures are not required.

The AHRO Safety Program for Long-Term Care: CAUTI  
Funded by the Agency for Healthcare Research and Quality

19

## ? The Importance of Communication

Improving communication among staff and with residents and families can help improve urine culture practices at your facility





1. Has something similar ever happened at your facility?
2. What could person Dr. Killbug and Nurse Nohai have done differently?

Image Source: Team Formation Success Video - Sub-Acute Care: TeamSTEPS® Long-Term Care Version. April 2013. Agency for Healthcare Research and Quality, Rockville, MD.

20

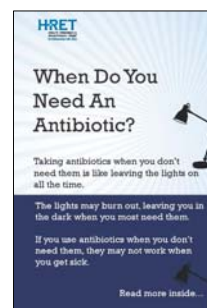
## Consider Using SBAR to Improve Communication

- SBAR is a TeamSTEPPs framework for team members to effectively communicate information to one another
- Communicate the following information:
  - **S**ituation—What is going on with the resident?
  - **B**ackground—What is the clinical background or context?
  - **A**ssessment—What do I think the problem is?
  - **R**ecommendation—What would I recommend?
- SBAR can be used with clinicians and with residents and families

21

## Communicating with Physicians

- Use SBAR to help create a mutual understanding
- Recognize pressures on physicians that drive urine culturing and antibiotic overuse. Such as:
  - Fear of missing urosepsis
  - Fear of not doing what everyone else is doing
  - Pressure to come up with a diagnosis
  - Lack of awareness of the guidelines covered today
- Acknowledge these pressures; point out your own
- Emphasize shared mission: resident care
- Share evidence-based literature to support your stance [–Antibiotic Use brochure](#)



22

## Case 3: The Importance of Communication Using SBAR

Let's see how the discussion about how Mrs. Mullins case could have gone differently if Dr. Killbug and Nurse Nohai had used SBAR...

- **S**ituation—What is happening?
  - **Nurse Nohai:** I noticed that when she was transferred back from the hospital. She now has an indwelling urinary catheter in place. While her urine is cloudy, she is still doing well without any symptoms of UTI. She does want the catheter out, as it is tugging on her leg.
- **B**ackground—What is the background?
  - **Nurse Nohai:** There is no indication provided for it. She has never needed a catheter previously. We are participating in the LTC-HAIs/CAUTI project, and one of the key steps to preventing CAUTI is to remove urinary catheters unless they are medically indicated.
- **A**ssessment—What do I think the problem is?
  - **Nurse Nohai:** On my assessment, Mrs. Mullins does not meet any of the indications for a catheter, per the documentation from the hospital, nor does she need further testing of her urine; however, she might be a little dehydrated today, which might account for her cloudy urine.
- **R**ecommendation—What would I recommend?
  - **Nurse Nohai:** Yes, I'd like to remove it and give her a voiding trial. If that's ok with you, I'll take it out and let you know how that goes. And let's hold off on the urine culture and antibiotics. I'll keep a close eye on her this shift. If anything seems out of the ordinary with her recovery, I'll call you.

23

## Using SBAR to Communicate with Residents and Families

- Some times residents and families are the ones pushing for urine cultures and antibiotics
- SBAR can also be used to improve communication with residents and families
- When forming your SBAR make sure to consider
  - What residents and their families are really asking for
  - Discuss alternatives to ordering cultures and using antibiotics
  - Highlight the possible side effects of antibiotic use
  - Promote shared decision making.

24



## Using SBAR

Do you think the SBAR communication strategy could be easily implemented in your organization? Why or why not?

- a) YES
- b) No

25

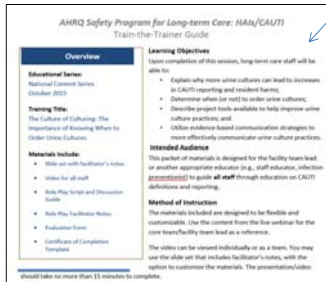
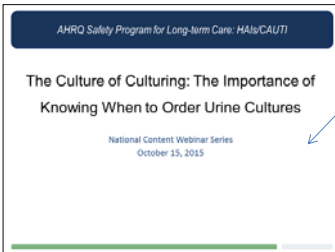
## Training Staff About The Culture of Culturing

- Present the evidence in daily huddles
  - Discuss when a urine culture is not needed
- Follow up after unnecessary culture sent
  - Review the pocket card together
- Discuss this information in educational sessions
  - Achieve shared understanding
  - Discuss concerns staff may have about changing practice
- Recognize staff who accurately observe, report, document and monitor CAUTI signs and symptoms
  - Consider recruiting them to help educate and work with other staff about urine culturing practices



26

## Educate All Staff About Appropriately Ordering Urine Cultures



- Use slide set with facilitator's notes
- Share recorded session for all staff who interact with residents
- Use the Train-the-Trainer guide to for suggestions and tips about staff education
- Provide copies of tools to guide CAUTI identification
- Provide Evaluation Form and Certificate of Completion

27

## Stay Updated with Useful Resources

1. [AHRQ Safety Program for Long-term Care: HAIs/CAUTI Project Website](#)  
Login information  
**Username:** Itcsafety  
**Password:** Itcsafety
2. [TeamSTEPPS® for Long-term Care](#)
3. [NHSN CAUTI Definition Pocket Cards](#)
4. [Antibiotic Stewardship Brochure](#)

28

## References

Al Qas-Hanna, Am J Infect Control 2013;41 (12): 1173-77

Centers for Disease Control and Prevention. Healthcare Infection Control Practices Advisory Committee (HICPAC) approved guidelines for the Prevention of catheter-associated urinary tract infections, 2009. Available at <http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf>.

Centers for Disease Control and Prevention. Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance (online). Accessible at: [http://www.cdc.gov/nhsn/PDFs/pscManual/2PSC\\_IdentifyingHAIs\\_NHSNcurrent.pdf](http://www.cdc.gov/nhsn/PDFs/pscManual/2PSC_IdentifyingHAIs_NHSNcurrent.pdf).

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Stone ND, Ashraf MS, Calder J. Surveillance Definitions of Infections in Long-Term Care Facilities: Revisiting the McGeer Criteria. *Infect Control Hosp Epidemiol* 2012;33(10):965-977.