Practice Cases
Catheter Associated Urinary Tract Infections

CAUTI #1

A 64 year-old man who is status-post orthotopic heart transplant 16 years ago is admitted on 2/1 for an elective Percutaneous Endoscopic Gastrostomy (PEG) tube placement. Medical history is significant for respiratory failure due to H1N1 influenza pneumonia resulting in a tracheostomy and ventilator dependency, end-stage renal disease on hemodialysis three times/week, and hypertension. He was transferred from the ventilator unit of a long-term acute care facility (LTAC). A left internal jugular (IJ) tunneled catheter was in place for dialysis and a condom catheter was present, draining clear amber urine.

On 2/2, the patient was taken to the OR for elective placement of the PEG tube and tolerated the procedure well. He was transferred to the Surgical ICU (SICU) due to his ventilator requirement.

Temperature range: 37.2°C - 37.6°C.
Lungs clear bilaterally.
PEG site oozing serosanguinous drainage.
Notified by LTAC facility that a stool specimen collected for abdominal pain and diarrhea prior to transfer was positive for 
C. difficile; Metronidazole started.

On 2/4, the patient remains in SICU due to lack of a bed at the LTAC. At 2300, the patient has a temperature of 38.3°C. The PEG site is clean and dry. No evidence of inflammation or drainage at the left IJ tunneled catheter site. Lungs clear bilaterally. Blood, urine, and sputum cultures are sent.

On 2/5 in the AM, the urinalysis is reported as 3+ leukocyte esterase, WBC-too numerous to count and moderate bacteria. Patient continues with fever to 38°C. Co-trimoxazole is started and patient receives hemodialysis.

On 2/6, the urine culture from 2/4 is reported as positive for 60,000 CFU/ml gram-negative bacilli which are subsequently identified as 
Providencia stuartii. Blood and sputum cultures are negative. Plans to send the patient back to the LTAC facility are cancelled due to increasing watery stools and complaints of abdominal pain with an increase in peripheral WBC from 11,000 to 25,000. CT of the abdomen suggestive of colitis and patient continues with temperature of 38°C.

On 2/9 the patient is moved to the intermediate care unit. Late that evening, he has a temperature spike to 38.8°C. Blood cultures are repeated.

On 2/10 the blood culture from 2/9 is reported as positive for gram-negative bacilli, which are subsequently identified as 
Providencia stuartii.

1. Does this patient have a healthcare-associated infection (HAI) associated with the SICU?
   a. No, the patient does not have a HAI associated with the SICU. The 
   C. difficile infection was present on admission and his positive urine culture had <100,000 CFU/ml of an organism without the necessary clinical symptoms for a UTI. The positive blood culture is related to the intermediate care unit.
   b. Yes, this patient meets criterion 2b of symptomatic UTI with 
   Providencia stuartii and also has a central line-associated bloodstream infection (CLABSI) with 
   Providencia stuartii since the BSI occurred 5 days after the UTI.
   c. Yes, this patient meets criterion 2b of symptomatic UTI with 
   Providencia stuartii, and the bacteremia is secondary to the UTI.

2. Does the patient have a catheter associated UTI (CAUTI)?
   a. No, there were no symptoms present so the patient does not have a CAUTI.
   b. Yes, this is a CAUTI.
   c. No, the patient was not catheterized.
3. What if we altered the scenario and set the patient’s maximum temperature on 2/4 as 38.0°C. Does this patient have a HAI?
   a. Yes, the patient meets criterion 2b of symptomatic UTI (SUTI) with *Providencia stuartii* and the bacteremia secondary to the UTI.
   b. No, the patient was never symptomatic.
   c. Yes, this is an asymptomatic bacteremic urinary tract infection (ABUTI).
   d. Yes, this is a CLABSI with *Providencia stuartii*.

Answers:
• #1 - (c) Yes, this patient meets criterion 2b of symptomatic UTI with *Providencia stuartii*, and the bacteremia is secondary to the UTI.  
  
  **Explanation:** The patient meets criterion 2b of symptomatic UTI. He did not have an indwelling urinary catheter at the time of specimen collection nor within 48 hours prior to specimen collection. He had fever of 38.3°C, a positive urinalysis with leukocyte esterase, pyuria, and a urine culture positive for *Providencia stuartii* with 60,000 CFU/ml. The *C. difficile* infection was present on admission. The Bacteremia is associated with the SICU as it occurred within 48 hours of transfer, but is secondary to the UTI.

• #2 - (c) No, the patient was not catheterized.  
  
  **Explanation:** Although the patient meets the criteria for a UTI, it is not a catheter-associated UTI because no indwelling catheter was present in the 48 hours before the infection. An indwelling catheter is defined as a “drainage tube that is inserted into the urinary bladder through the urethra.” A condom catheter does not meet this definition.

• #3 – (d) Yes, this is a CLABSI with *Providencia stuartii*.  
  
  **Explanation:** Symptoms are required to meet criterion 2b of symptomatic UTI, and include fever which is defined as >38°C or >100.4°F. The patient’s temperature never surpassed 38°C. The left IJ was inserted on 2/2 and was in place within the 48 hours prior to culture. *Providencia stuartii* is not a common skin contaminant organism, therefore it meets BSI criterion 1, which does not require the presence or absence of symptoms, is met, making this a healthcare-associated CLABSI. NHSN criteria are not met for a symptomatic bacteremic urinary tract infection (ABUTI), because the patient lacks sufficient quantity of organisms in the urine specimen (must be >100,000 CFU/ml).
CAUTI #2

A 30-year-old woman is transferred to the surgical floor on 1/8 after a two week stay in the Surgical ICU following a MVA with a CHI (closed head injury). On 12/25, a triple lumen catheter (TLC) line and Foley catheter are placed in the emergency department. The TLC has been removed and the patient has a peripheral line. The Foley catheter is discontinued on 1/11. On 1/12, the patient has a temperature of 100.2˚F and is complaining of suprapubic tenderness; a urine culture and blood cultures x 2 are ordered.

The blood culture results from 1/12 are reported as 1 of 2 Staph epi. Repeat blood cultures were subsequently negative. The urine culture obtained on 1/12 grows >100,000 CFU/ml of Escherichia coli.

1. **What HAI(s) would be reported?**

   a. No HAI, the patient doesn’t meet the “fever” criteria of >38˚C (100.4˚F).
   b. A symptomatic urinary tract infection (SUTI Criterion 1a) with *E. coli* attributed to the surgical floor.
   c. Both a laboratory confirmed BSI and SUTI
   d. A symptomatic urinary tract infection (SUTI Criterion 1a) with *E. coli* attributed to the surgical ICU since the patient was in that unit for 2 weeks with a Foley catheter.

**Answers:**

- **#1 – (b) A symptomatic urinary tract infection (SUTI Criterion 1a) with *E. coli* attributed to the surgical floor.**

  **Explanation:** The case meets SUTI criterion 1a. Even thought the patient does not meet the “fever” criteria, the patient is experiencing supra-pubic tenderness along with the >100,000 colony count on the urine culture. It is catheter associated since the Foley catheter was in place within 48 hours of the first symptoms on 1/12 (suprapubic tenderness). The CAUTI is attributed to the surgical floor since the patient had been on the floor >48 hours since transfer from the SICU. There is no BSI, because a common skin contaminant must be cultured from two or more blood cultures drawn on separate occasions.