

# Urinary Uncertainty: Demystifying Culture Collection in Urinary Tract Infections (UTI)



Obtaining urine culture from patients with various forms of UTI can represent an important step in providing definitive therapy. In others, cultures may not be indicated and, in fact, may lead to inappropriate treatment. Knowing which clinical syndromes require urine culture and how to navigate typical urinalysis (UA) and urine culture order variations will assist the clinician in providing superior care to patients.

## **General Guidelines for Appropriate Urine Culturing:**

When obtaining urine cultures it is important to collect culture specimens in a manner that minimizes the potential for culture contamination. Additionally, urine cultures should be obtained prior to the administration of antibiotics in order to maximize the diagnostic yield of the culture.<sup>1-3</sup>

Urine cultures in non-catheterized patients should be collected from a clean-catch, midstream void.<sup>1,2</sup> When urine cultures are indicated in a catheterized patient and the catheter has been in place for longer than 2 weeks, the catheter should be changed prior to obtaining the culture with the collected specimen coming from the freshly placed catheter. If the catheter can be discontinued at the time the culture is indicated then the specimen should be obtained via a clean-catch, midstream void.<sup>3</sup>

## **Asymptomatic Bacteriuria (ASB):**

The Infectious Diseases Society of America (IDSA) defines ASB as “isolation of a specified quantitative count of bacteria in an appropriately collected urine specimen obtained from a person without symptoms or signs referable to urinary infection”.<sup>1</sup> The only two patient populations which have shown benefit from antimicrobial management of ASB are pregnant patients and those scheduled to undergo urologic procedures that will compromise the urogenital mucosa. In patients with the above two indications routine screening is appropriate with the use of a **urine culture**. When screening for ASB the UA with reflex culture should NOT be used given that screening for pyuria has a low sensitivity for the identification of bacteriuria. Use of the UA with reflex culture order may result in cultures not being performed due to a lack of pyuria and, therefore, lack of identification of bacteriuric patients. If the patient does not have one of the above listed indications for screening and treatment then no routine screening or culturing of the urine is recommended.<sup>1</sup>

## **Acute Cystitis and Pyelonephritis:**

Acute bacterial cystitis implies the patient is acutely experiencing urinary symptoms; however, is another condition which may not always require obtaining urine culture to guide management.<sup>2</sup> In the outpatient care setting, in women without risk factors for resistant pathogens (i.e. antibiotic exposure/hospitalization in the previous 90 days or previous infection/colonization with multidrug resistant bacteria) empiric management can be initiated using agents with adequate local bacterial susceptibility rates. In outpatient complicated cystitis (i.e. infection in males, those with urogenital structural abnormalities, or recurrence), inpatient acute cystitis (complicated or uncomplicated), or acute pyelonephritis appropriate obtainment of urine cultures and antimicrobial sensitivities is critical to the management of antimicrobial therapy. In these cases providers should consider utilization of an

order for **UA with urine culture**. The UA with reflex culture if indicated is NOT recommended in this scenario as a culture is likely indicated due to the presence of symptoms regardless of UA findings.<sup>2</sup> In the cases where the patient is unable to provide information regarding symptoms and cystitis or pyelonephritis is possible (i.e. fever or sepsis of unknown origin), it may be reasonable to utilize the UA with reflex culture if indicated order.

### **Catheter Associated UTI:**

Patients with urinary catheters are at a higher risk for the development of UTI. Urinalysis and/or urine cultures should ONLY be collected in catheterized patients when symptom(s) are present. Conversely, it is important to NOT perform urinalysis and/or urine cultures when the only symptoms present are malodorous urine, cloudy appearance, or change in color.<sup>3</sup> In most cases, if the catheter is functioning properly and the patient does NOT have urinary symptoms (i.e. urgency, suprapubic tenderness, or back/flank pain, or fever), then UA and culture will only identify ASB/pyuria related to catheter colonization. This is typically clinically insignificant and should not be empirically treated with antibiotics. When high suspicion of catheter associated urinary tract infection exists due to the presence of symptoms a **UA with urine culture** should be utilized. Similar to non-catheterized patients, in catheterized patients with fever or sepsis of unknown origin it is reasonable to utilize the UA with reflex culture if indicated order.

For more information on the diagnosis, testing, and treatment of urinary tract infections please refer to the Alaska Antimicrobial Stewardship Collaborative's statewide UTI guidelines for inpatients, outpatients, and those residing in long term care facilities (attached).

### References:

1. Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM. Infectious Diseases Society of America Guidelines for the diagnosis and treatment of asymptomatic bacteriuria. CID 2005;40:643-54.
2. Gupta K, Hooton TM, Naber KG, et al. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: a 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. CID 2011;52(5):e103-e120.
3. Hooton TM, Bradley SF, Cardenas DD, et al. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America. CID 2010;50:625-663.