Asymptomatic Bacteriuria (ASB) is defined as a positive urine culture obtained from a person without signs or symptoms referable to a urinary tract infection (UTI) (Nicolle, et al., 2011; Kamel, 2005).

The treatment of ASB in elderly, institutionalized patients is not recommended. This position is held by a variety of professional organizations, including the Infectious Diseases Society of America (IDSA), Centers for Disease Control and Prevention (CDC), and the American Medical Directors Association (AMDA). “The CDC and IDSA agree that treating ASB in nursing home residents will do more harm than good” (Benton, Young & Leeper, 2006).

• UTI is considered the most common infection among elderly LTC residents. However, a significant proportion of these residents actually have ASB.
• A positive urine culture in the absence of symptoms is of limited value in identifying a true UTI
• Prospective randomized trials have repeatedly demonstrated that antimicrobial treatment of ASB in LTC residents is not clinically beneficial or cost effective
  - The presence of ASB does not increase morbidity and mortality
  - Bacteria are only temporarily eliminated with antimicrobial therapy and treatment of ASB with antibiotics has been associated with re-infection with organisms of increasing resistance
  --C. difficile infection is a common complication of antibiotic use
  -Adding an unnecessary antibiotic to a resident’s medication regimen increases the likelihood of drug-drug interactions
  -Treatment of ASB may lead to inaccurate diagnosis and undertreatment of other serious health problems
• The revised Centers for Medicare & Medicaid Services (CMS) guidelines for surveyors (F-441) state that LTC facility staff should not treat on the basis of a culture result if there are no clinical signs or symptoms supporting an infection. (AMDA, 2011; Nicolle et al., 2011; Benton, Young & Leeper, 2006; Norman, 2011)

Distinguishing ASB from symptomatic UTI
• The challenge for the clinician is not in deciding to treat ASB, but rather distinguishing ASB from UTI
• A positive urine culture in a patient with chronic GU symptoms is not sufficient for a diagnosis of symptomatic UTI
• An acute deterioration in stable chronic symptoms may be an indication of UTI
• A positive urine culture in LTC residents who do not have localizing symptoms will not represent true UTI 90% of the time (positive predictive value of 10%)
• The most reliable indicator of a true UTI in LTC residents is specific urinary tract symptoms such as flank pain, dysuria and frequency
• In the absence of fever or sepsis, an uncomplicated UTI is unlikely to cause significant central nervous system dysfunction and delirium. However, in LTC
residents with advanced dementia, delirium and functional decline may be the only symptoms of a UTI

• Foul-smelling and/or cloudy urine may be associated with UTI; however should not be interpreted as indicative of symptomatic UTI

• Pyuria alone is not evidence for a treatable infection
  - Pyuria is evidence of inflammation in the GU tract, and is present in 90% of elderly LTC patients with ASB and 50-100% of individuals with chronic indwelling catheters
  - The absence of pyuria is a good predictor that UTI is not present (Negative predictive value of 80-90%)

• The clinical diagnosis of symptomatic UTI in the LTC resident may be problematic, and is seldom based on definitive criteria
  - Diagnostic accuracy is compromised by difficulties in communication, multiple comorbid illnesses with associated chronic symptoms, and clinical presentations that are possibly infectious but without clear localized findings
  - Chronic symptoms (e.g. incontinence, frequency, urgency, nocturia) are common in LTC residents
  - Fever without other localizing symptoms in bacteriuric LTC patients is usually due to a non-urinary source (90%) unless a catheter is present

• A LTC resident with a non-specific clinical status change who can communicate the absence of localizing urinary tract symptoms will most likely not have a UTI

• With a symptomatic infection, a quantitative count of $10^5$ CFU/mL of an organism in a single specimen is diagnostic ($10^3$ CFU/mL if in and out catheterization). Lower quantitative counts may be consistent with the diagnosis of UTI in the presence of acute symptoms.

• In subjects with long-term indwelling catheters:
  - ASB is universal, with 2-5 organisms typically present
  - Symptomatic infection cannot be differentiated from asymptomatic infection on the basis of urinalysis or urine culture

(Norman, 2011; Nicolle, 2001; Kamel, 2005; Benton, Young & Leeper, 2006; Nicolle, et al., 2011)

**Appropriate Urine Collection Methods**

• A clean-catch voided urine specimen is the preferred method (male and female)

• When a voided specimen cannot be appropriately collected, a specimen should be obtained by in-and-out catheterization

• Pedibags, bedpans and urinals are not reliable collection methods, as they are likely to yield contaminated specimens

• In patients w/chronic indwelling catheters and suspected symptomatic UTI, a urine specimen should be obtained from a freshly inserted catheter prior to initiating antimicrobial therapy

• Storage of urine specimens for >4 hours should be avoided, as substantial bacterial replication still occurs, even at cold temperatures

(Nicole, 2001; Kamel, 2006)
Recommendations

• Routine screening for UTI (UA or C&S) should not be performed in LTC
• A clinical diagnosis of symptomatic UTI should not be made in the presence of stable chronic genitourinary symptoms
• If a resident cannot communicate whether or not symptoms are present, and there is a general decline in clinical status and a positive urine culture, then clinicians must use their best judgment
  - A resident who appears severely ill should receive antimicrobial therapy while the search for a definitive diagnosis continues
  - A resident who does not appear severely ill can be followed by close observation and frequent follow-up while the work-up continues
• Post-treatment cultures to document cure should not be obtained
• ASB should be treated with antibiotics in LTC residents scheduled to undergo invasive procedures of the urinary tract
• LTC facilities should have clear policies and practices to ensure that patients are not started on antibiotics without a credible clinical picture
• Education of nursing staff regarding appropriate criteria for requesting urine cultures should be a component of interventions to reduce inappropriate treatment of ASB in LTC
• Facilities should establish minimum criteria for initiating antibiotics, using the McGeer, Loeb or modified Loeb criteria as a starting point
  (Zabarsky, Sethi & Donskey, 2008; Nicolle, 2001; AMDA, 2001)

McGeer Criteria

• Three of the following must be met to identify a UTI (without indwelling catheter):
  - Fever ≥100.4°F
  - New or increased burning on urination, frequency or urgency
  - New flank or suprapubic pain or tenderness
  - Change in character of urine
  - Worsening mental or functional status
• Two of the following must be met to identify a UTI (with indwelling catheter):
  - Fever ≥100.4°F or chills
  - New flank or suprapubic pain or tenderness
  - Changes in character of urine
  - Worsening mental function
  (Juthani-Mehta, et al., 2007)

Loeb Consensus Criteria

• Minimum criteria necessary for initiating empiric antibiotic therapy (without indwelling catheter):
  - Acute dysuria alone OR fever > 100°F (or 2.4°F increase from baseline)
  PLUS at least one of the following:
- New or worsening urgency, frequency, suprapubic pain, gross hematuria, costovertebral angle tenderness (CVAT), incontinence

- Minimum criteria necessary for initiating empiric antibiotic therapy (with indwelling catheter) include at least one of the following:
  - Fever >100°F (or 2.4°F increase from baseline)
  - New CVAT
  - New rigors
  - New onset delirium

(Juthani-Mehta, et al., 2007)

**Modified Algorithm**

- The following modified algorithm was developed for nurses to use in a LTC facility. Its use yielded a 30% decrease in the rate of suspected UTI, and a 20% decrease in antibiotic use (at 3 and 12 months) (Genao & Buhr, 2012).
References

American Medical Directors Association (AMDA) (2011). Common Infections in the Long-Term Care Setting Clinical Practice Guideline. Columbia, MD: AMDA


