Asymptomatic Bacteriuria (ASB) Optimizing Antimicrobial Use

Arizona Healthcare-Associated Infections (HAI) Advisory Committee

Urinary tract infections (UTIs) may be misdiagnosed in up to 40% of cases, with a tendency towards over-diagnosis. One study found 80% of antibiotic prescriptions were written for catheterized individuals with ASB (Phillips, 2012). Inaccurate diagnosis of UTI is one of the leading causes of unnecessary antimicrobial exposure. A key feature in optimizing antimicrobial use for bacteriuria is identifying the presence of symptoms indicative of urinary tract infection. While presence of bacteria in the urine is necessary for the development of a urinary tract infection, it does not always indicate infection. Bacteria in the urine in the absence of signs and symptoms of infection, a condition referred to as asymptomatic bacteriuria (ASB), is common in non-catheterized institutionalized adults and should be differentiated from infection such as acute cystitis (symptomatic bladder infection) and acute pyelonephritis (AP; a kidney infection).

ASB is a common finding in elderly institutionalized non-catheterized adults. In this setting, attribution of ASB to behavioral effects of residents has not been substantiated. Treatment of ASB has not resulted in any change in physical or mental functioning in clinical studies compared to placebo. While bacteriuria increases incontinence, antibiotics do not decrease the number of episodes or severity of incontinence by eradication of bacteriuria.

Guidelines from the Infectious Diseases Society of America (2005) state that screening for and treatment of ASB in elderly institutionalized residents of long-term care facilities is not recommended.

Definition of Asymptomatic Bacteriuria:
- Presence of bacteria in the urine of an individual without signs and symptoms suggestive of a urinary tract infection.

Reasons to Avoid Antimicrobial Use in ASB:
- Although antibiotic use may lead to short-term microbial eradication, the clinical significance is greatly diminished due to several findings from clinical studies:
  - Bacterial eradication is rarely sustained. Antibiotic use sometimes improves short-term microbiologic outcomes but bacteriuria returns. Some studies demonstrate no greater clearance of bacteria from urine using antibiotics compared to placebo.
  - Treatment of ASB is associated with significantly increased colonization with organisms of increasing resistance.
  - Puts the patient at risk for Clostridium difficile infection.
  - Studies have not demonstrated a measurable improvement in morbidity and mortality
  - Antibiotic therapy may cause adverse side effects.
  - Gram-negative bacteria commonly found in ASB may play a protective role against uropathogenic strains of bacteria. In other words, not all Escherichia coli are bad.
Re-Evaluate Use of Urinalysis (UA) and Culture and Sensitivities (Urine C&S)

The decision to order a urine culture should be guided by the presence or suspicion of symptoms related to a UTI. Urine studies have many false-positives and false-negatives. The following events should not be used as sole criteria for ordering urine studies (UA or urine C&S):

- Change in urine color, odor or turbidity. These are not indicators of infection.
- Presence or degree of pyuria, even in the presence of bacteriuria, is not an indication for treatment when symptoms are absent. Pyuria is a sign of inflammation (i.e., catheterization) and does not differentiate between infectious and non-infectious etiologies.
- Nonspecific symptoms of clinical decline such as malaise, behavioral changes, lethargy, general weakness, falls, or poor appetite.
- Screening of patients prior to non-urologic procedures
- Catheterized residents while the catheter remains in situ. This includes both Foley and suprapubic catheters.
- Routine screening of patients with diabetes, spinal cord injury, or elderly institutionalized
- To document microbiologic elimination after treatment of UTI.

Case Myths and Best Practice Responses:

Unfortunately, detecting symptoms of a UTI in some adults can be particularly challenging, and many healthcare practitioners believe that symptoms are too subtle and thereby rely on nonspecific functional and behavioral changes as indicators of UTI.

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<tr>
<th>Myths</th>
<th>Best Practice Response</th>
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<tr>
<td>A UA report states that gram-negative bacteria are present at &lt; 50,000 CFU/mL.</td>
<td>Bacteriuria is not an indication for use of antibiotics; assessment of signs and symptoms indicative of a UTI need to be performed</td>
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<td>A positive urine C&amp;S result (i.e., <em>E. coli</em> with susceptibilities provided) without symptoms or signs is a “positive test” that cannot be ignored</td>
<td>A positive culture often masquerades as a “positive test requiring treatment”. Develop and implement a clinical decision pathway.</td>
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<td>A positive UA/C&amp;S result predicts “risk of later invasive infection” even when there are no signs and symptoms of infection</td>
<td>Multiple studies show antibiotic use in an event consistent with ASB confers no benefit, does not prevent invasive disease, and may lead to adverse drug reactions which could be avoided.</td>
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<td>“Confused this morning ... start Cipro and get a UA/C&amp;S”</td>
<td>Assess for other reasons for confusion, such as medications.</td>
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<td>C&amp;S result = 50,000 colonies <em>E. coli</em> ESBL+; “This is a superbug ... should be treated”</td>
<td>Demonstrating growth of a multidrug-resistant organism (MDRO) is not an indication for antibiotic therapy</td>
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References, including surveillance definitions:


Healthcare-Associated Infections (HAI) Program

[www.preventHAIaz.gov](http://www.preventHAIaz.gov)