

Antibiotic Commonsense

Inappropriate Treatment of Asymptomatic Bacteriuria (ASB)



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What is ASB?

Asymptomatic bacteriuria (ASB) is the presence of a bacterial species with at least 10⁵ CFU/mL from a non-contaminated urine sample in an individual without signs or symptoms of urinary tract infection (UTI).¹ In women, the same organism must be present in at least two consecutive voided specimens.

Should ASB be treated?

In the absence of urinary urgency, hesitancy, frequency, or dysuria, the Infectious Diseases Society of America guidelines recommend against screening and treatment for most patients.¹ Fever in a non-catheterized patient would not be expected to occur in simple cystitis. One should consider assessing for alternate source of fever for patients with otherwise asymptomatic bacteriuria (e.g. post-operative status, alternate infection source, significant clot burden, etc) as opposed to treating ASB. Pyuria accompanying ASB is also not an indication for treatment without other symptoms.¹ These guidelines, endorsed by the US Preventive Services Task Force,² present evidence of a treatment benefit only in pregnant women and patients undergoing invasive urologic procedures.

Despite national guidelines, studies have demonstrated inappropriate ASB treatment rates between 17–26%^{3,4} and up to 52% in patients with urinary catheters.⁵ Overtreatment may result in harmful patient side effects, the development of *Clostridium difficile* infection⁶, and colonization with drug-resistant organisms. A recent systematic review reported number needed to harm (NNH) ranging from 2–10 for treatment-related side effects in patients with ASB.⁷ From a societal perspective, excessive and unnecessary use of antimicrobials may promote bacterial resistance and impose undue costs.

Key Points

- “Asymptomatic” or “subclinical” UTI is a clinical non-entity.
- For most patients, treat bacteriuria ONLY when accompanied by urinary symptoms or other systemic evidence of infection with unknown source.
- ASB should be treated only in patients who are pregnant or about to undergo invasive urologic procedure with the potential for mucosal bleeding.
- Order UA or culture only for symptoms or high clinical index of suspicion for infection.
- Treat symptomatic UAs only when bacteria and significant pyuria present.
- Remove current urinary catheter before sampling urine for symptoms in patient with chronic catheterization.

Who has ASB?

Asymptomatic bacteriuria is especially prevalent in patients with urinary catheters or other impairment in bladder emptying, such as cerebrovascular disease, Alzheimer’s disease, Parkinson’s disease, or diabetes mellitus.⁸ Poor glycemic control in diabetic patients is also thought to contribute to the growth of bacteria. While these patient populations may have higher rates of ASB, guidelines recommend against their routine screening and treatment.¹

Prevalence of ASB increases with age occurring in up to 20% of otherwise healthy elderly women living in the community setting.⁹ It is estimated that among institutionalized patients without urinary catheters, 25–50% of women and 15–40% of men also demonstrate ASB.¹⁰

What about elderly patients unable to report symptoms?

Providers may have particular difficulty determining ASB from urinary tract infection (UTI) in this patient population due to a frequent inability to express subjective urinary symptoms. Traditional medical teaching holds they may present with non-urinary signs of UTI such as malaise, behavioral changes, falls, anorexia, or delirium and should receive treatment. However, there are myriad other causes for unexplained delirium and no medical evidence that these patients improve after antibiotic administration beyond anecdote.¹¹

Indeed, studies have determined that even in febrile institutionalized patients, bacteriuria demonstrates a positive predictive value of only 8–11% for urinary source of infection.^{12,13}

Should patients with indwelling catheters be screened routinely for bacteria?

Bacterial screening in patients with indwelling urinary catheters is not routinely recommended due to the high rates of asymptomatic bacteriuria in this population.¹⁴ In fact, due to the formation of biofilm, catheterization results in almost universal bacteriuria by the fourth day.⁸ In patients with indwelling catheter present for at least two weeks and signs or symptoms of UTI, it is best to discontinue the catheter and obtain either a midstream urine specimen or a specimen from a newly placed catheter prior to treatment.

ASB or UTI?

Distinguishing ASB from UTI represents a unique opportunity for antimicrobial stewardship intervention. Urinalysis (UA) and culture should only be obtained when signs and symptoms of infection specific to the urinary tract are present, in pregnant women at 12–16 weeks gestation, and prior to invasive urologic procedures.

A positive urinalysis in the presence of symptoms should only be treated when there is bacteria and significant pyuria (> 20,000 leukocytes/mL).¹⁵ Leukocyte esterase is an indirect test for the presence of pyuria. Positive nitrite with significant bacteriuria occurs in approximately 80% of cases due to bacterial conversion of nitrate but only in organisms capable of such conversion.

Positive cultures should not be treated in the absence of symptoms, especially in diabetic women, patients with spinal cord injury, indwelling catheters, and elderly individuals in the community or long-term care.

Distinguishing ASB from UTI represents a unique opportunity for antimicrobial stewardship intervention.

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