

Antibiotic Commonsense

"An investment in knowledge always pays the best interest." Benjamin Franklin

Asymptomatic Bacteria or Urinary Tract Infection?*

What is asymptomatic bacteria (ASB)?

Asymptomatic bacteriuria (ASB) is the presence of a bacterial species with at least 10^5 CFU/mL from a non-contaminated urine sample in an individual without signs or symptoms of urinary tract infection.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, dysuria, or fever, the Infectious Diseases Society of America (IDSA) guidelines recommend against screening and treatment for most patients. Pyuria accompanying ASB is also not an indication for treatment without other symptoms. These guidelines, endorsed by the U.S. Preventive Services Task Force,² present evidence of 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* infection,⁶ and colonization with drug-resistant organisms. From a societal perspective, excessive and unnecessary use of antimicrobials may promote bacterial resistance and impose undue costs.

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.⁷ 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 Evidence is still lacking for the appropriate management of critically ill or neutropenic patients, those with renal transplants, and those receiving joint replacement surgery.

It is estimated that among institutionalized patients without urinary catheters, 25–50% of women and 15–40% of men demonstrate ASB.⁸ 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 and the presence of non-specific signs and symptoms such as confusion or fever. However, studies have determined that in febrile institutionalized patients, bacteriuria demonstrates a positive predictive value of only 8–11% for urinary source of infection.^{9,10}

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.¹¹ Indeed, due to the formation of biofilm, catheterization results in almost universal bacteriuria by the fourth day.⁷

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.



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Asymptomatic Bacteria or Urinary Tract Infection (continued)

ASB or UTI?

Urinalysis 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 culture *in the presence of symptoms* should only be treated when there is bacteria and *significant pyuria* (> 20,000 leukocytes/mL).¹² 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 with antibiotics in the *absence of symptoms*, especially in diabetic women, patients with spinal cord injury, patients with indwelling catheters, and elderly individuals in the community or long-term care.

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

Key Points

- Do not routinely order a screening urinalysis (UA) or urine culture
- Order UA or culture *only* for symptoms or high clinical index of suspicion for infection
- Treat symptomatic UAs *only* when bacteria and significant pyuria are present
- Remove current urinary catheter before sampling urine for symptoms in patient with chronic catheterization.

Resources

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