ONE MINUTE CONSULT

BRIEF ANSWERS TO SPECIFIC CLINICAL QUESTIONS

Q: Is antibiotic treatment indicated in a patient with a positive urine culture but no symptoms?

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A: The 2005 Infectious Diseases Society of America (IDSA) guidelines[1] recommend screening pregnant women and patients who will undergo an invasive urologic procedure with a urine culture and treating them with antibiotics if bacteriuria is significant. The IDSA recommends against screening for or treating asymptomatic bacteriuria in other populations.

WHAT IS ASYMPTOMATIC BACTERIURIA?

A positive urine culture can represent three different conditions:

- Symptomatic urinary tract infection
- Contamination of the sample by organisms that are present distal to the bladder and that enter the urine at the time the specimen is collected
- Asymptomatic bacteriuria, defined as the isolation of a specified quantitative count of a single uropathogen in an appropriately collected urine specimen obtained from someone without symptoms or signs attributable to a urinary tract infection (TABLE 1). It represents the true presence of bacteria in the bladder and may be thought of as a state of colonization.

HOW COMMON IS ASYMPTOMATIC BACTERIURIA?

Rates vary depending on the age (higher in older persons), sex (higher in women), and presence of genitourinary abnormalities of the population studied. Prevalence rates are estimated to be 1% to 5% in healthy premenopausal women, 2% to 9% in pregnant women, 9% to 27% in diabetic women, 15% to 50% in elderly men and women in long-term care facilities, and 28% in patients undergoing hemodialysis.[2–6] In patients with an indwelling urinary catheter, the rate goes up by 3% to 8% per day, and bacteriuria is nearly universal at 30 days.[7,8] Asymptomatic bacteriuria can be transient, as commonly occurs in healthy young women, or it may be more prolonged, as commonly occurs in elderly patients or those with a chronic indwelling urinary catheter.

WHOM SHOULD WE SCREEN?

Screening for asymptomatic bacteriuria and treating it are strongly recommended (grade A-I recommendation) in pregnant women and in men who will undergo transurethral resection of the prostate.

Pregnant women have a risk of pyelonephritis 20 to 30 times higher if they have asymptomatic bacteriuria.[9] Cohort studies and randomized clinical trials have consistently reported significant reductions in rates of pyelonephritis and low birth weight when antibiotic therapy is given for asymptomatic bacteriuria during pregnancy.

The ideal time to screen for this in pregnancy is between the 9th and 16th weeks of gestation. The appropriate screening test is a urine culture, since screening for pyuria has a low sensitivity and specificity. The choice of

Screen for and treat asymptomatic bacteriuria in pregnant women and patients undergoing invasive urologic procedures

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TABLE 1

Definitions for asymptomatic bacteriuria based on sex and method of urine collection

Sex	Method of obtaining specimen	Microbiologic criteria
Women	Clean void (midstream)	≥ 10^5 CFU/mL from two consecutive specimens [a]
Men	Clean void (midstream)	≥ 10^5 CFU/mL from a single specimen
Women and men	Straight catheterization	≥ 10^2 CFU/mL from a single specimen

[a]Same bacterial strain in both specimens; in clinical practice and in some studies, only a single specimen is required. CFU = colony-forming units.

BASED ON INFORMATION IN 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 IN ADULTS. CLIN INFECT DIS 2005; 40:643–654.

antibiotic is based on the results of culture. Antibiotics that have been safely used in these patients include nitrofurantoin, cephalexin, amoxicillin, and fosfomycin.[10] The recommended treatment duration is between 3 and 7 days. Periodic screening for recurrent bacteriuria should be performed during the remainder of the pregnancy.

Men about to undergo transurethral resection of the prostate[1] who have asymptomatic bacteriuria before the procedure have a 60% rate of bacteremia and a 6% to 10% rate of sepsis after the procedure if they do not receive antibiotic therapy. Clinical trials have documented significant reductions in these complications when antimicrobial therapy is given before the procedure.

The optimal time for obtaining the urine culture, the optimal time for starting antimicrobial therapy, and the optimal duration of antimicrobial therapy are not well defined, although some data support giving antibiotics the night before or just before the procedure.

The recommendation has been extrapolated to include not only men undergoing transurethral resection of the prostate but also any patient undergoing a urologic procedure associated with significant mucosal bleeding.

Women with catheter-acquired asymptomatic bacteriuria. If the bacteriuria persists 48 hours after catheter removal, the IDSA guidelines state that antibiotic therapy may be considered (grade B-I recommendation). However, there are no recommendations to screen women 48 hours after catheter removal.

A positive culture should not be treated in a patient whose symptoms are attributable to another cause

WHAT IS THE EVIDENCE FOR NO TREATMENT?

Asymptomatic bacteriuria should not be screened for or treated in:

- Premenopausal women who are not pregnant (grade A-I recommendation)
- Diabetic women (A-I)
- Older persons residing in the community (A-II)
- Elderly residents of long-term care facilities (A-I)
- Patients with spinal cord injury (A-I)
- Patients with an indwelling urethral catheter (A-I).

Randomized controlled trials comparing antibiotic therapy with no therapy in these groups showed no benefit of antibiotic treatment in reducing the frequency of symptomatic urinary tract infection[11–16] and no decrease in rates of fever or reinfection in patients with a long-term catheter.[17] Moreover, in a number of trials,[12,14,17] antibiotic therapy for asymptomatic bacteriuria was associated with an increase in adverse antimicrobial effects and reinfection with resistant organisms.

In transplant recipients. Because of lack of evidence, the 2005 IDSA guidelines could not make a recommendation for or against screening for or treatment of asymptomatic bacteriuria in renal transplant or other solid-organ transplant recipients (C-III). A more recent review[18] noted a lack of consensus as to

whether asymptomatic bacteriuria should be treated in renal transplant recipients. Based on available data, the authors recommended limiting routine screening for it to the first 1 to 3 months after renal transplantation and limiting treatment to 5 to 7 days, using the narrowest-spectrum antibiotic available.[18]

In prosthetic joint recipients. The 2005 IDSA guidelines recommended further research to determine if screening and treatment before surgical procedures with prosthetic implantation have clinical benefit.

Since then, two studies[19,20] have suggested no benefit of screening or treatment before prosthetic joint implantation. Rates of prosthetic joint infection were not different in patients with asymptomatic bacteriuria before hip arthroplasty randomized to receive no antibiotic therapy vs those receiving antibiotic therapy specific for organisms cultured from the urine.[19] Asymptomatic bacteriuria was found to be an independent risk factor for prosthetic joint infection.[20] However, rates of joint infection were not different in those treated with antibiotics than in those not treated, and in no case were the microorganisms isolated in the prosthetic joint infection the same as in their preoperative urine culture.[20]

The authors concluded that asymptomatic bacteriuria may be a surrogate marker for increased risk of infection, but that preoperative antibiotic treatment was not beneficial.[20]

WHAT DOES 'ASYMPTOMATIC' MEAN?

According to the definition, asymptomatic refers to patients who do not have symptoms or signs attributable to a urinary tract infection. Thus, in patients who have symptoms or signs clearly attributable to another condition, screening with urine culture testing and treatment are not indicated. In nursing home residents, nonspecific symptoms such as a change in mental status, fever, and leukocytosis should not automatically be attributed to a positive urine culture without a careful evaluation for another cause, given the high prevalence of asymptomatic bacteriuria in this population.[21] Screening with urine culture testing in this population is also not recommended for isolated foul-smelling or cloudy urine, after every urethral catheter change, upon admission, or after treatment to document cure.[22]

Finally, pyuria (defined as the presence of at least 5 to 10 white blood cells per high-power field) is not by itself a reason to perform a urine culture or to treat a positive urine culture, since pyuria is common in asymptomatic bacteriuria, as well as in other conditions associated with inflammation in the genitourinary system.[1]

TAKE-HOME POINTS

- Screening for and treating asymptomatic bacteriuria is recommended for pregnant women and for patients about to undergo an invasive urologic procedure associated with significant mucosal injury.
- Screening and treatment are not recommended for premenopausal nonpregnant women, diabetic women, older persons residing in the community, elderly residents of long-term care facilities, patients with spinal cord injury, or patients with an indwelling urethral catheter.
- A urine culture should not be ordered, but if it is ordered, a positive culture should not be treated in a patient whose symptoms are attributable to another cause.
- Pyuria is not helpful in distinguishing symptomatic from asymptomatic bacteriuria.

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