# Screening for Asymptomatic Bacteriuria in Adults: U.S. Preventive Services Task Force Reaffirmation Recommendation Statement

U.S. Preventive Services Task Force*

**Description:** Reaffirmation of the 2004 U.S. Preventive Services Task Force recommendation statement about screening for asymptomatic bacteriuria in adults.

**Methods:** The U.S. Preventive Services Task Force did a targeted literature search for evidence on the benefits and harms of screening for asymptomatic bacteriuria in pregnant women, nonpregnant women, and men.

**Recommendations:** Screen for asymptomatic bacteriuria with urine culture in pregnant women at 12 to 16 weeks' gestation or at the first prenatal visit, if later. (Grade A recommendation.)

Do not screen for asymptomatic bacteriuria in men and nonpregnant women. (Grade D recommendation.)

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For author affiliation, see end of text.

*For a list of members of the U.S. Preventive Services Task Force, see the **Appendix** (available at www.annals.org).

*The U.S. Preventive Services Task Force (USPSTF) makes recommendations about preventive care services for patients without recognized signs or symptoms of the target condition.*

*It bases its recommendations on a systematic review of the evidence of the benefits and harms and an assessment of the net benefit of the service.*

*The USPSTF recognizes that clinical or policy decisions involve more considerations than this body of evidence alone. Clinicians and policymakers should understand the evidence but individualize decision making to the specific patient or situation.*

## Summary of Recommendations and Evidence

The USPSTF recommends screening for asymptomatic bacteriuria with urine culture for pregnant women at 12 to 16 weeks' gestation or at the first prenatal visit, if later. This is a grade A recommendation.

The USPSTF recommends against screening for asymptomatic bacteriuria in men and nonpregnant women. This is a grade D recommendation.

See the **Figure** for a summary of this recommendation and suggestions for clinical practice. See **Table 1** for a description of the USPSTF grades and **Table 2** for a description of the USPSTF classification of levels of certainty about net benefit. Both are also available online at www.annals.org.

## Rationale

### Importance

In pregnant women, asymptomatic bacteriuria has been associated with an increased incidence of pyelonephritis and low birthweight (birthweight <2500 g).

### Detection

Asymptomatic bacteriuria can be reliably detected through urine culture. The presence of at least $10^5$ colony-forming units per mL of urine, of a single uropathogen, and in a midstream clean-catch specimen is considered a positive test result.

### Benefits of Detection and Early Intervention

In pregnant women, convincing evidence indicates that detection of and treatment for asymptomatic bacteriuria with antibiotics significantly reduces the incidence of symptomatic maternal urinary tract infections and low birthweight.

In men and nonpregnant women, adequate evidence suggests that screening men and nonpregnant women for asymptomatic bacteriuria is ineffective in improving clinical outcomes.

### Harms of Detection and Early Treatment

Potential harms associated with treatment for asymptomatic bacteriuria include adverse effects from antibiotics and development of bacterial resistance. Without evidence

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of benefits from screening men and nonpregnant women, the potential harms associated with overuse of antibiotics are especially significant.

### USPSTF Assessment

The USPSTF concludes that 1) in pregnant women, there is high certainty that the net benefit of screening for asymptomatic bacteriuria is substantial, and 2) in men and nonpregnant women, there is moderate certainty that the harms of screening for asymptomatic bacteriuria outweigh the benefits.

## Clinical Considerations

### Patient Population

This recommendation applies to the general adult population, including adults with diabetes. The USPSTF did not review evidence for screening certain groups at high risk for severe urinary tract infections, such as transplant recipients, patients with sickle cell disease, and patients with recurrent urinary tract infections.

### Screening Tests

The screening tests used commonly in the primary care setting (dipstick analysis and direct microscopy) have poor positive and negative predictive value for detecting bacteriuria in asymptomatic persons (1). Urine culture is the gold standard for detecting asymptomatic bacteriuria but is expensive for routine screening in populations with a low prevalence of the condition. However, no currently available tests have a high enough sensitivity and negative predictive value in pregnant women to replace urine culture as the preferred screening test (2).

### Treatment

Pregnant women with asymptomatic bacteriuria should receive antibiotic therapy directed at the cultured organism and follow-up monitoring.

### Screening Intervals

All pregnant women should provide a clean-catch urine specimen for a screening culture at 12 to 16 weeks' gestation or at the first prenatal visit, if later. The optimal frequency of subsequent urine testing during pregnancy is uncertain.

## Other Considerations

### Research Needs/Gaps

Further research is needed to clarify the optimal timing and periodicity of screening for asymptomatic bacteriuria in pregnant women. Research is also needed to develop a screening test that could reduce the use of urine culture, which is labor-intensive and more costly than other urine tests.

## Discussion

In 2004, the USPSTF reviewed the evidence on screening for asymptomatic bacteriuria in adults and recommended screening pregnant women (3). In 2008, the USPSTF performed a brief literature review (2) and determined that the net benefit of screening pregnant women and the net harm of screening men and nonpregnant women continue to be well established. (The review is available online at www.annals.org.) The update included a search for new and substantial evidence on the benefits and harms of screening. The USPSTF found no new substantial evidence that could change its recommendation and, therefore, reaffirms its recommendation to screen pregnant women, but not men or nonpregnant women, for asymptomatic bacteriuria. The previous recommendation statement and evidence report (4), as well as the 2008 summary of the updated literature search, can be found at www.preventiveservices.ahrq.gov.

## Recommendations of Others

The American Academy of Family Physicians strongly recommends that all pregnant women be screened for asymptomatic bacteriuria by using urine culture at 12 to 16 weeks' gestation or at the first prenatal visit if after that time (5).

The Infectious Diseases Society of America recommends screening pregnant women for asymptomatic bacteriuria with a urine culture "at least once" in early pregnancy. It also states that screening for asymptomatic bacteriuria in nonpregnant women, diabetic women, or community-dwelling or institutionalized older persons is not indicated (6).

The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists recommend screening for asymptomatic bacteriuria "early in pregnancy, as appropriate" (7).

The American College of Obstetricians and Gynecologists recommends screening for asymptomatic bacteriuria in nonpregnant women with diabetes mellitus (8).

From the U.S. Preventive Services Task Force, Agency for Healthcare Research and Quality, Rockville, Maryland.



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**Potential Financial Conflicts of Interest:** None disclosed.

**Requests for Single Reprints:** Reprints are available from the USPSTF Web site (www.preventiveservices.ahrq.gov).

*Figure.* **Screening for asymptomatic bacteriuria in adults: clinical summary of a U.S. Preventive Services Task Force (*USPSTF*) recommendation.**

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## Screening for Asymptomatic Bacteriuria in Adults: Clinical Summary of a U.S. Preventive Services Task Force Recommendation Statement

| **Population** | **All Pregnant Women** | **Men and Nonpregnant Women** |
|---|---|---|
| **Recommendation** | **Screen with urine culture. Grade: A** | **Do not screen. Grade: D** |

| | | |
|---|---|---|
| Detection and screening tests | Asymptomatic bacteriuria can be reliably detected through urine culture.<br><br>The presence of at least $10^5$ colony-forming units per mL of urine, of a single uropathogen, and in a midstream clean-catch specimen is considered a positive test result. | |
| Screening intervals | A clean-catch urine specimen should be collected for screening culture at 12–16 weeks' gestation or at the first prenatal visit, if later.<br><br>The optimal frequency of subsequent urine testing during pregnancy is uncertain. | **Do not screen.** |
| Benefits of detection and early treatment | The detection and treatment of asymptomatic bacteriuria with antibiotics significantly reduces the incidence of symptomatic maternal urinary tract infections and low birthweight. | Screening men and nonpregnant women for asymptomatic bacteriuria is ineffective in improving clinical outcomes. |
| Harms of detection and early treatment | Potential harms associated with treatment of asymptomatic bacteriuria include:<br>• adverse effects from antibiotics<br>• development of bacterial resistance | |
| Other relevant recommendations from the USPSTF | Additional USPSTF recommendations involving screening for infectious conditions during pregnancy can be found at www.ahrq.gov/clinic/cps3dix.htm#obstetric and www.ahrq.gov/clinic/cps3dix.htm#infectious. | |

For the full recommendation statement and supporting documents, please go to www.preventiveservices.ahrq.gov.

*Table 1.* **What the U.S. Preventive Services Task Force (*USPSTF*) Grades Mean and Suggestions for Practice**

| Grade | Definition | Suggestions for Practice |
|---|---|---|
| A | The USPSTF recommends the service. There is high certainty that the net benefit is substantial. | Offer/provide this service. |
| B | The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. | Offer/provide this service. |
| C | The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is moderate or high certainty that the net benefit is small. | Offer/provide this service only if other considerations support offering or providing the service in an individual patient. |
| D | The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. | Discourage the use of this service. |
| I statement | The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting. | Read clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms. |

*Table 2.* **U.S. Preventive Services Task Force (*USPSTF*) Levels of Certainty Regarding Net Benefit**

| Level of Certainty* | Description |
|---|---|
| High | The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies. |
| Moderate | The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by such factors as:<br>the number, size, or quality of individual studies<br>inconsistency of findings across individual studies<br>limited generalizability of findings to routine primary care practice<br>lack of coherence in the chain of evidence.<br>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion. |
| Low | The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:<br>the limited number or size of studies<br>important flaws in study design or methods<br>inconsistency of findings across individual studies<br>gaps in the chain of evidence<br>findings that are not generalizable to routine primary care practice<br>a lack of information on important health outcomes.<br>More information may allow an estimation of effects on health outcomes. |

* The USPSTF defines *certainty* as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

## References

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## Appendix: U.S. Preventive Services Task Force

Members of the U.S. Preventive Services Task Force† are Ned Calonge, MD, MPH, *Chair* (Colorado Department of Public Health and Environment, Denver, Colorado); Diana B. Petitti, MD, MPH, *Vice Chair* (Keck School of Medicine, University of Southern California, Sierra Madre, California); Thomas G. DeWitt, MD (Children's Hospital Medical Center, Cincinnati, Ohio); Allen Dietrich, MD (Dartmouth Medical School, Lebanon, New Hampshire); Kimberly D. Gregory, MD, MPH (Cedars-Sinai Medical Center, Los Angeles, California); Russell Harris, MD, MPH (University of North Carolina School of Medicine, Chapel Hill, North Carolina); George Isham, MD, MS (HealthPartners, Minneapolis, Minnesota); Michael L. LeFevre, MD, MSPH (University of Missouri School of Medicine, Columbia, Missouri); Rosanne Leipzig, MD, PhD (Mount Sinai School of Medicine, New York, New York); Carol Loveland-Cherry, PhD, RN (University of Michigan School of Nursing, Ann Arbor, Michigan); Lucy N. Marion, PhD, RN (School of Nursing, Medical College of Georgia, Augusta, Georgia); Bernadette Melnyk, PhD, RN, CPNP/NPP (Arizona State College of Nursing and Healthcare Innovation, Phoenix, Arizona); Virginia A. Moyer, MD, MPH (University of Texas Health Science Center, Houston, Texas); Judith K. Ockene, PhD (University of Massachusetts Medical School, Worcester, Massachusetts); George F. Sawaya, MD (University of California, San Francisco, San Francisco, California); and Barbara P. Yawn, MD, MSPH, MSc (Olmsted Medical Center, Rochester, Minnesota).

†This list includes members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to www.ahrq.gov/clinic/uspstfab.htm.