Screening for Chlamydial Infection: Recommendation Statement: United States Preventive Services Task Force

United States Preventive Services Task Force

Citation

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Abstract

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.

The USPSTF 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 policy-makers should understand the evidence but individualize decision-making to the specific patient or situation.

Figure 5

Agency for Healthcare Research and Quality

Figure 2

US Department of Health and Human Services

SUMMARY OF RECOMMENDATION AND EVIDENCE

The U.S. Preventive Services Task Force (USPSTF) recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger, and for older non-pregnant women who are at increased risk. (A recommendation)

The USPSTF recommends screening for chlamydial infection for all pregnant women aged 24 and younger, and for older pregnant women who are at increased risk. (B recommendation)

The USPSTF recommends against routinely providing screening for chlamydial infection for women aged 25 and

older, whether or not they are pregnant, if they are not at increased risk. (C recommendation)

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men. (I statement)

See "Assessment of Risk" and "Suggestions for Practice Regarding an I Statement" in the Clinical Considerations section, below, for discussions of assessing risk for chlamydial infection in women and suggestions for practice regarding screening for men.

RATIONALE

Importance. Chlamydial infection is the most common sexually transmitted bacterial infection in the United States. In women, genital chlamydial infection may result in urethritis, cervicitis, pelvic inflammatory disease (PID), infertility, ectopic pregnancy, and chronic pelvic pain. Chlamydial infection during pregnancy is related to adverse pregnancy outcomes, including miscarriage, premature rupture of membranes, preterm labor, low birth weight, and infant mortality.

Detection. The USPSTF found fair evidence that nucleic acid amplification tests (NAATs) can identify chlamydial infection in asymptomatic men and women, including asymptomatic pregnant women, with high test specificity. In low prevalence populations, however, a positive test is more likely to be a false positive than a true positive, even with the most accurate tests available.

BENEFITS OF DETECTION AND EARLY INTERVENTION

- Non-pregnant women at increased risk. There is good evidence that screening for chlamydial infection in women who are at increased risk can reduce the incidence of PID. The USPSTF concluded that the benefits of screening women at increased risk are substantial.

- Pregnant women at increased risk. There are no studies evaluating the effectiveness of screening for chlamydial infection in pregnant women who are at increased risk. The USPSTF, however, found the following: 1) screening identifies infection in asymptomatic pregnant women; 2) there is a relatively high prevalence of infection among pregnant women who are at increased risk; and 3) there is fair evidence of improved pregnancy and birth outcomes for women who are treated for chlamydial infection. The USPSTF concluded that the benefits of screening pregnant women who are at increased risk are substantial.

- Women not at increased risk. The USPSTF identified no studies documenting the benefits of screening women, including pregnant women, who are not at increased risk for chlamydial infection. While recognizing the potential benefit to women identified through screening, the USPSTF concluded the overall benefit of screening would be small, given the low prevalence of infection among women not at increased risk.

- Men. While concluding that the direct benefit to men of screening was likely to be small, the USPSTF noted that screening for chlamydial infection in men may be beneficial if it were to lead to a decreased incidence of chlamydial infection in women. The USPSTF did not, however, find evidence to support this outcome, and therefore concluded that the benefits of screening men are unknown. The USPSTF identified this as a critical gap in the evidence.

- Harms of detection and early treatment. The USPSTF concluded that the harms of screening for chlamydial infection are no greater than small, although few studies have been published on this subject. Potential harms include anxiety and relationship problems arising from false positive results and over-treatment. The USPSTF identified the lack of evidence related to potential harms of screening as a gap in the evidence.

THE USPSTF REACHED THE FOLLOWING CONCLUSIONS

- for non-pregnant women at increased risk, the certainty is high that the benefits of screening for chlamydial infection substantially outweigh the harms. (A recommendation)

- for pregnant women at increased risk, the certainty is moderate that the benefits substantially outweigh the harms of screening for chlamydial infection. (B recommendation)

- for women not at increased risk (including

pregnant women not at increased risk), the certainty is moderate that the benefits outweigh the harms of screening to only a small degree. There may be considerations that support screening an individual patient. (C recommendation)

- for men, the benefits of screening are not known; thus, the USPSTF could not determine the balance of benefits and harms of screening men for chlamydial infection. (I statement)

CLINICAL CONSIDERATIONS

Patient population under consideration. These recommendations target all sexually active individuals, including adolescents and pregnant women.

Assessment of risk. All sexually active women 24 years and younger – including adolescents – are at increased risk for chlamydial infection. In addition to sexual activity and age, other risk factors for chlamydial infection include a history of previous chlamydial or other sexually transmitted infection, new or multiple sexual partners, inconsistent condom use, and exchanging sex for money or drugs. Risk factors for pregnant women are the same as for non-pregnant women. Prevalence of chlamydial infection varies widely among patient populations. African American and Hispanic women have a higher prevalence of infection than the general population in many communities and settings. Among men and women, increased prevalence rates are also found in incarcerated populations, military recruits, and patients at public sexually transmitted infection clinics.

Screening tests. Nucleic acid amplification tests (NAATs) have high specificity and sensitivity when used as screening tests for chlamydial infection. NAATs can be used with urine and vaginal swabs, enabling screening when a pelvic examination is not performed.

Treatment. Appropriate treatment of chlamydial infection has been outlined by the Centers for Disease Control and Prevention (CDC) http://www.cdc.gov/std/treatment/. In its 2006 sexually transmitted disease treatment guidelines, the CDC recommends that chlamydia infection be treated with 1 gram of azithromycin in a single oral dose or with oral doxycline, 100 mg twice daily for 7 days. Pregnant women with chlamydial infection may be treated with a single dose of one gram of azithromycin or amoxicillin 500 mg orally three times daily for 7 days.[1] Because the CDC updates these recommendations regularly, clinicians are encouraged to access the CDC website to obtain the most up-to-date information. (http://www.cdc.gov/STD/treatment).

To prevent recurrent transmission, clinicians should ensure that all sexual partners of infected individuals are tested and treated if infected, or treated presumptively.

Screening intervals. Screening for pregnant women who are at increased risk for chlamydial infection is recommended at the first prenatal visit. For pregnant women who remain at increased risk, and for those who acquire a new risk factor such as a new sexual partner, a screening should be conducted during the third trimester. The optimal interval for screening for non-pregnant women is unknown. The CDC recommends at least annual screening for women at increased risk.1

Suggestions for practice in the face of insufficient evidence regarding screening in men. The USPSTF concluded that the evidence is insufficient to determine the balance of benefits and harms related to screening men for chlamydial infection. Specifically, the USPSTF did not find evidence that screening programs that target men result in a decreased incidence of infection in women. The USPSTF notes that programs that screen men as a means of reducing transmission to women are not common practice, that primary care clinicians are capable of instituting screening in men, that the costs of additional screening tests per individual are relatively low, and that the potential harms of screening are small. The USPSTF recognizes that asymptomatic, untreated infections in men provide a reservoir of infection that may make it difficult to improve health outcomes in women through screening programs that target only women. However, given the low national rates of screening in women at risk, the USPSTF believes that clinicians and health care systems should focus on improving the screening rates among women at increased risk, a group in which the benefits of screening are certain.

Other approaches to prevention. Primary care clinicians and the health care systems in which they work are responsible for ensuring that asymptomatic women at risk for chlamydial infection are screened. In some communities, this may involve home- or school-based screening programs.

Useful resources. See other USPSTF recommendations on screening for sexually transmitted infections (Hepatitis B and C virus infection, HIV, genital herpes simplex, gonorrhea and syphilis) at http://preventiveservices.ahrq.gov/.

OTHER CONSIDERATIONS

Healthcare System Needs. U.S. screening rates for chlamydial infection among young women remain very low. Public health organizations, health care systems, and clinicians must work together to develop and implement effective programs to ensure that all women at increased risk are screened for chlamydial infection.

Research Needs. There is currently a critical gap in the evidence relating to whether chlamydia screening programs that target men decrease the incidence of infection among women. Additional research is also needed to determine the most effective intervals for screening non-pregnant women, including the potential for different follow-up intervals for women with positive or negative test results. Continued research is also needed on the potential harms of screening.

DISCUSSION

Burden of Disease.Chlamydia trachomatis infection is the most commonly reported sexually transmitted infection in the United States. In women, chlamydial infections commonly result in cervicitis and urethritis. Untreated cases of Chlamydia trachomatis infection in women frequently progress to PID. Pelvic inflammatory disease, in turn, can lead to ectopic pregnancy, infertility, and chronic pelvic pain. Chlamydial infection during pregnancy is associated with adverse outcomes, including miscarriages, premature rupture of membranes, preterm labor, low birth-weight, infant mortality, neonatal chlamydial infection, and postpartum endometritis. Chlamydial infection in men can cause nongonococcal urethritis and acute epididymitis, and rarely may result in urethral strictures and Reiter Syndrome. In both men and women, chlamydial infection is usually asymptomatic and, as with other inflammatory STIs, chlamydial infection facilitates the transmission of HIV infection among both men and women in both the HIV carrier and recipient.[2]

In 2004, 929,462 chlamydial infections were reported to the CDC. Unlike gonorrhea, the number of cases of chlamydial infection reported to the CDC has increased steadily over the past 10 years. This increase is thought to be due to a combination of increased screening, more sensitive screening tests, and increased emphasis on reporting rather than an increasing incidence of infection. Since 2000, all 50 States and the District of Columbia have had regulations requiring that cases of chlamydial infection be reported to the CDC. Because many cases continue to remain undetected and unreported, the actual number of new cases of chlamydial infection is thought to be more than 2.8 million per year.2

Sexually active young women are at highest risk for chlamydial infection. Women 24 years and younger are more than 5 times as likely to be infected as women older than 30. Although chlamydial infection is widely distributed among all racial and ethnic groups in the United States, higher prevalence rates are found in African-Americans and Hispanics. Other risk factors include a history of chlamydial infection or other sexually transmitted infections, new or multiple sexual partners, inconsistent condom use, and sex work. Risk factors for pregnant women are the same as those for non-pregnant women.2

Scope of Review. In 2005, to update its 2001 recommendation on screening for chlamydial infection, the USPSTF reviewed the literature published on this topic between July 2000 and July 2005. The review focused on a systematic search for direct evidence of the effect of screening in asymptomatic individuals on health outcomes.

Assessment of Evidence. The 2001 USPSTF recommendation supporting screening of women at increased risk for chlamydial infection was based largely on the results of a good quality, randomized controlled trial of screening in a managed care organization. This trial found that screening and treatment of young women at risk for chlamydial infection reduced the incidence of pelvic inflammatory disease at 1-year of follow-up. [3] In its update, the USPSTF found only one study addressing the effectiveness of screening for chlamydial infection among non-pregnant women at increased risk. In a cluster-randomized trial, Ostergaard and colleagues found that a one-time home-based screening intervention was associated with a lower prevalence of chlamydial infection and fewer reported cases of PID at 1-year of follow-up. [4] This study was rated as being of poor quality due to significant loss to follow-up; nonetheless, its findings were in line with the findings of the earlier study. In its earlier review and in 2005, the USPSTF did not find any studies evaluating health outcomes related to screening programs in non-pregnant women not at increased risk for infection, pregnant women, or men.

The USPSTF considered each link in the evidence chain for a screening service to make its recommendation [for a further discussion of USPSTF methods, please see:

http://www.ahrq.gov/clinic/ajpmsuppl/harris1.htm]. These included the accuracy of screening tests, the effectiveness of treatment, estimating the potential magnitude of benefit from screening, and bounding the potential for harms of screening and treatment.

The USPSTF recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger. This represents a change in age from the previous USPSTF recommendation on chlamydia screening. This was done to align the recommendation with the evidence in support of screening, including national surveillance data assembled by the CDC.

Accuracy of Screening Tests. In 2001, the USPSTF conducted a systematic review of the evidence related to screening technologies and concluded that the body of evidence was fair. The USPSTF noted at that time that many studies were performed under optimal conditions and that most studies did not include large screening populations with low prevalence rates. While noting that nucleic acid amplification tests (NAATs) had higher sensitivities and specificities than older antigen detection tests and better sensitivities than culture, the USPSTF did not offer any specific clinical guidance as to what type of testing should be utilized. In 2002, the CDC published recommendations concluding that NAATs be utilized when screening for chlamydial infection in both women and men. [5] Cook and colleagues published a systematic review of non-invasive testing for chlamydial infection in 2005, concluding that urine-based screening using NAATs resulted in comparable sensitivity and specificity to cervical and urethral specimens. [6]

Effectiveness of Treatment.The USPSTF recognizes the clinical benefits of treatment of chlamydial infection in women who have recognized infection and therefore did not perform a systematic review of the evidence of treatment. In 2001, the USPSTF found fair evidence that treatment of chlamydial infection during pregnancy improves pregnancy outcomes. [7] The USPSTF assessed the potential benefit of treating women with chlamydial infection as substantial.

Harms. The USPSTF found no direct evidence of the harms of chlamydia screening programs. Several small qualitative studies, however, describe how women diagnosed with chlamydial infection (including women not diagnosed as part of screening programs) experience anxiety and have significant concerns about their relationships with male partners. The CDC has recently commissioned a study of the harms of STI screening, including the harms associated with a false positive diagnosis. The harms associated with treatment of chlamydial infection are mild to moderate gastrointestinal symptoms, including nausea, diarrhea, and abdominal pain.7 The USPSTF bounded the harms of screening and treatment in men, women, and pregnant women as small.

Estimate of Magnitude of Net Benefit. In considering the potential magnitude of benefit from a screening program for chlamydial infection among women, the USPSTF noted the documented effectiveness of programs screening non-pregnant women at increased risk and concluded with high certainty that the benefits are substantial. The USPSTF also concluded with moderate certainty that the benefits of screening among pregnant women at increased risk are substantial. Given substantial benefits and small harms, the USPSTF recommends screening for chlamydial infection in all women at increased risk, including pregnant women.

Women not at increased risk who are found to have chlamydial infection through screening programs are likely to benefit from treatment. Nevertheless, the USPSTF concluded with moderate certainty that given the low prevalence of infection among such women, the overall benefits are likely to be small. Balancing the small benefits and small harms, the USPSTF does not recommend routine screening for chlamydial infection in women not at increased risk for infection, including pregnant women not at increased risk.

While the direct benefits to men from screening and treatment are relatively small, if benefits are found among women resulting from screening in men the potential benefits to society are very large. In considering the magnitude of benefit in screening men for chlamydial infection, the USPSTF identified a significant evidence gap. It is not known whether screening programs for men improve health outcomes in women. Therefore, the USPSTF found insufficient evidence to make a recommendation regarding screening for chlamydia infection in men.

Figure 3

Table 1: What the USPSTF Grades Mean and Suggestions for Practice

Grade	Grade Definitions	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 there are other considerations in support of the offering/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, and the balance of benefits and harms cannot be determined.	Read "Clinical Considerations" section of USPSTF Recommendation Statement. If offered, patients should understand the uncertainty about the balance of benefits and harms.

Figure 4

Table 2: USPSTF Levels of Certainty Regarding Net Benefit

Definition: The U.S. Preventive Services Task Force 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.

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 factors such as: - the number, size, or quality of individual studies; - inconsistency of findings across individual studies; - limited generalizability of findings to routine primary care practice; or - lack of coherence in the chain of evidence. 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: - the limited number or size of studies; - important flaws in study design or methods; - inconsistency of findings across individual studies - gaps in the chain of evidence; - findings not generalizable to routine primary care practice; or - a lack of information on important health outcomes. More information may allow an estimation of effects on health outcomes.

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RECOMMENDATIONS OF OTHERS

The American Academy of Family Physicians (AAFP), The American College of Obstetricians and Gynecologists (ACOG), American College of Preventive Medicine (ACPM), Canadian Task Force on Preventive Health, and the Centers for Disease Control and Prevention (CDC) all recommend screening for chlamydia in women at increased risk for chlamydial infection. The ACPM and Canadian Task Force recommend screening all pregnant women, while the AAFP and ACOG recommend screening pregnant women who are at increased risk for chlamydial infection. The CDC also recommends at least annual screening for chlamydia in men who have sex with men.

American Academy of Family Physicians (2001) http://www.aafp.org/PreBuilt/RCPS_August2005.pdf

American College of Obstetricians and Gynecologists (2002, 2003) http://www.acog.org/publications/guidelinesForPerinatalCare/ http://www.acog.org/publications/committee_opinions/co292.cfm

American College of Preventive Medicine Practice Policy Statement (2003) http://www.acpm.org/chlamydia.pdf

Canadian Task Force on Preventive Health Care (1996) http://www.ctfphc.org/

The Centers for Disease Control and Prevention (2006) http://www.cdc.gov/std/treatment/

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Corresponding Author: Ned Calonge, MD, MPH, Chair, U.S. Preventive Services Task Force, c/o Program Director, USPSTF, Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, e-mail: uspstf@ahrq.gov

Members of the U.S. Preventive Services Task Force* are Ned Calonge, MD, MPH, Chair, USPSTF (Chief Medical Officer and State Epidemiologist, Colorado Department of Public Health and Environment, Denver, CO); Diana B. Petitti, MD, MPH , Vice-chair, USPSTF (Senior Scientific Advisor for Health Policy and Medicine, Regional Administration, Kaiser Permanente Southern California, Pasadena, CA); Thomas G. DeWitt, MD (Carl Weihl Professor of Pediatrics and Director of the Division of General and Community Pediatrics, Department of

Pediatrics, Children's Hospital Medical Center, Cincinnati, OH); Leon Gordis, MD, MPH, DrPH (Professor, Epidemiology Department, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD); Kimberly D. Gregory, MD, MPH (Director, Women's Health Services Research and Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA); Russell Harris, MD, MPH (Professor of Medicine, Sheps Center for Health Services Research, University of North Carolina School of Medicine, Chapel Hill, NC); Kenneth W. Kizer, MD, MPH (President and CEO, National Quality Forum, Washington, DC); Michael L. LeFevre, MD, MSPH (Professor, Department of Family and Community Medicine, University of Missouri School of Medicine, Columbia, MO); Carol Loveland-Cherry, PhD, RN (Executive Associate Dean, Office of Academic Affairs, University of Michigan School of Nursing, Ann Arbor, MI); Lucy N. Marion, PhD, RN (Dean and Professor, School of Nursing, Medical College of Georgia, Augusta, GA); Virginia A. Moyer, MD, MPH (Professor, Department of Pediatrics, University of Texas Health Science Center, Houston, TX); Judith K. Ockene, PhD (Professor of Medicine and Chief of Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School, Worcester, MA); George F. Sawaya, MD (Associate Professor, Department of Obstetrics, Gynecology, and Reproductive Sciences and Department of Epidemiology and Biostatistics, University of California, San Francisco, CA); Albert L. Siu, MD, MSPH (Professor and Chairman, Brookdale Department of Geriatrics and Adult Development, Mount Sinai Medical Center, New York, NY); Steven M. Teutsch, MD, MPH (Executive Director, Outcomes Research and Management, Merck & Company, Inc., West Point, PA); and Barbara P. Yawn, MD, MSc (Director of Research, Olmstead Research Center, Rochester, MN).

*Members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to http://www.ahrq.gov/clinic/uspstfab.htm.

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Author Information

United States Preventive Services Task Force
Agency for Healthcare Research and Quality , US Department of Health and Human Services