

JAMA Clinical Guidelines Synopsis

Screening for Gonorrhea, Chlamydia, and Hepatitis B

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GUIDELINE TITLES Screening for Hepatitis B Virus Infection in Nonpregnant Adolescents and Adults: US Preventive Services Task Force Recommendation Statement; Screening for Chlamydia and Gonorrhea: US Preventive Services Task Force Recommendation Statement

DEVELOPER US Preventive Services Task Force (USPSTF)

RELEASE DATES September 23, 2014; May 27, 2014

PRIOR VERSIONS 2004 (hepatitis B), 2005 (gonorrhea), 2007 (chlamydia)

FUNDING SOURCE Agency for Healthcare Research and Quality (AHRQ)

TARGET POPULATION Hepatitis B: asymptomatic nonpregnant adolescents and adults; gonorrhea and chlamydia: all sexually active adolescents and adults

MAJOR RECOMMENDATIONS

- Hepatitis B: All individuals at high risk of hepatitis B infection should be screened with hepatitis B surface antigen, surface antibody, and core antigen. High-risk populations include people born in high-prevalence areas (>2%), US-born unvaccinated infants whose parents are from high-prevalence areas, patients with human immunodeficiency virus infection, injection drug users, men who have sex with men, and household contacts of hepatitis B–infected persons (B recommendation).
- Gonorrhea and chlamydia: All sexually active women aged 24 years or younger and older women at high risk of gonorrhea and chlamydia infection should be screened with a nucleic acid amplification test. Risk factors include new or multiple sex partners, inconsistent condom use in people not in monogamous relationships, previous or concurrent sexually transmitted infection (STI), and exchanging sex for money (B recommendation). There is insufficient evidence to assess the balance of benefits and harms of screening in men.

Summary of the Clinical Problem

The incidence of STIs is increasing, and these infections cause significant health and economic burden.¹ The Centers for Disease Control and Prevention (CDC) reported that an estimated 1.4 million new cases of chlamydia and 350 000 cases of gonorrhea occurred in 2014.² The highest-risk age group is between 15 and 29 years, but cases are seen at every age. Adding to the burden of the diseases, many infections are undiagnosed and untreated, potentially leading to late-term complications such as pelvic inflammatory disease, neonatal illness, and infertility. The CDC estimates that approximately 24 000 US women develop infertility related to STIs.³ Between 700 000 and 2.2 million people in the United States are infected with hepatitis B.⁴ Left untreated, 15% to 25% of these people will die of hepatic decompensation or hepatocellular carcinoma. Screening and early diagnosis have the potential to decrease both the complications and transmission of gonorrhea, chlamydia, and hepatitis B.⁴

Characteristics of the Guideline Source

These guidelines were written by the USPSTF, an independent panel of volunteer national experts in prevention and evidence-based medicine (Table).^{4,5} This research supporting the guidelines was funded by AHRQ, which supports the work of the USPSTF. AHRQ staff worked with USPSTF members to develop and refine the scope, framework, and questions, but AHRQ played no role in the study selection, quality assessment, synthesis, or development of conclusions. AHRQ also provided project oversight and reviewed the draft and final reports to ensure that they met methodological stan-

dards. Members of the USPSTF have expertise in behavioral health, family medicine, geriatrics, internal medicine, pediatrics, obstetrics and gynecology, and nursing. The USPSTF reviews existing peer-reviewed evidence to make recommendations about the effectiveness of specific preventive care services. The USPSTF considers the benefits and harms of the service but does not consider costs. Members of the task force are screened to ensure that they have no substantial conflicts of interest that could impair the scientific integrity of their work.

Evidence Base

The USPSTF guideline for hepatitis B screening is based on a systematic review performed to update the 2004 guidelines, in which

Table. Guideline Rating

Standard	Rating
1. Establishing transparency	Good
2. Management of conflicts of interest in the guideline development group	Good
3. Guideline development group composition	Good
4. Clinical practice guideline–systematic review intersection	Good
5. Establishing evidence and rating strength for each of the guideline recommendations	Good
6. Articulation of recommendations	Good
7. External review	Good
8. Updating	Good
9. Implementation issues	Good

screening for hepatitis B virus was not recommended.⁶ After reviewing the available data, no studies were found that compared the effects of screening for hepatitis B with no screening on clinical outcomes. Review of treatment studies led the authors to conclude that treatment with antiviral therapy was more effective than placebo. The benefits were nonsignificant with regard to clinical outcomes but significant with regard to intermediate outcomes such as hepatitis B virus DNA loss and hepatitis B surface antigen loss.

The chlamydia and gonorrhea screening guideline is based on a systematic review performed to update similar ones performed in 2005 and 2007.⁷ Prior reviews had identified trials of chlamydia screening in women. One of these, a randomized clinical trial (RCT) that included 2607 young women and was considered of good quality, demonstrated a significant benefit reducing the rate of pelvic inflammatory disease. The second, an RCT that enrolled 1761 high school students and was considered of poor quality, showed a nonsignificant benefit for the same outcome. One new trial was identified in the current review, a good-quality RCT of 2529 sexually active young women. Participants provided samples for chlamydia testing using self-collected vaginal swabs. Participants were randomly assigned to the screening group (specimens were immediately tested) or the control group (specimens were tested 1 year later). Pelvic inflammatory disease occurred in 1.3% of screened participants vs 1.9% of control participants (relative risk, 0.65; 95% CI, 0.34-1.22). No studies have addressed the effectiveness of screening for gonorrhea or the effectiveness of screening for chlamydia in men or pregnant women. The systematic review also found that nucleic acid amplification tests are accurate, with sensitivities of 85% or greater and specificities of 97% or greater.

Benefits and Harms

Harms of untreated hepatitis B infection include hepatic decompensation and hepatocellular carcinoma. The USPSTF considered the harms of detection and early intervention to be mainly related to the treatment of hepatitis B. Treatment with antivirals is generally well tolerated. In the studies reviewed, there was no detectable in-

crease in adverse events (primarily adverse effects of adefovir, interferon alfa-2b, lamivudine, telbivudine, or tenofovir) or serious adverse events with treatment but there was an increase in withdrawal from studies due to adverse events (relative risk, 4.0; 95% CI, 1.4-11).⁶

The USPSTF determined that there is adequate evidence that the harms of screening for chlamydia and gonorrhea are negligible. Benefits of screening are preventing pelvic inflammatory disease and potentially transmission and infertility.

Discussion

Both of these guidelines should be easy to adopt. Testing is via blood draw and urine/cervical specimen, and the risk factors that would indicate screening are easily obtained through a medical history. The CDC recommendations for STI screening are more aggressive than the USPSTF recommendations and include annual chlamydia screening for all sexually active women younger than 25 years, high-risk adult women, and gay and bisexual men and early pregnancy screening in pregnant women. The CDC also recommends annual gonorrhea and chlamydia screening for all sexually active gay and bisexual men and other men who have sex with men.⁸ The USPSTF does not recommend screening in men and low-risk women given the lack of evidence and their focus on clinical outcomes. The CDC guidelines for hepatitis B screening closely resemble the USPSTF guidelines.⁹ Another USPSTF guideline recommends screening pregnant women for hepatitis B.

Areas in Need of Future Study or Ongoing Research

In regard to hepatitis B, more research is needed to link the improvements seen with antiviral treatment in intermediate outcomes to long-term clinical outcomes. Models that predict the changing efficacy of screening programs in light of more universal hepatitis B vaccination will also be important. In regard to chlamydia and gonorrhea screening, studies of screening in lower-risk and older women, pregnant women, and men are needed. Longer studies that examine the health consequences of screening would also be welcome. The most appropriate screening interval remains unknown.

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REFERENCES

1. Mark H, Dhir A, Roth C. Sexually transmitted infections in the United States: overview and update. *Am J Nurs*. 2015;115(9):34-44.
2. Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2014*.

November 2015. <http://www.cdc.gov/std/stats14/surv-2014-print.pdf>. Accessed February 26, 2016.

3. Healthy People 2020. Sexually transmitted diseases. <http://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases#five>. Accessed September 30, 2015.
4. LeFevre ML; US Preventive Services Task Force. Screening for hepatitis B virus infection in nonpregnant adolescents and adults: US Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2014;161(1):58-66.
5. LeFevre ML; US Preventive Services Task Force. Screening for chlamydia and gonorrhea: US Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2014;161(12):902-910.
6. Chou R, Dana T, Bougatsos C, Blazina I, Khangura J, Zakher B. Screening for hepatitis B virus infection

in adolescents and adults: a systematic review to update the US Preventive Services Task Force recommendation. *Ann Intern Med*. 2014;161(1):31-45.

7. Zakher B, Cantor AG, Pappas M, Daeges M, Nelson HD. Screening for gonorrhea and chlamydia: a systematic review for the US Preventive Services Task Force. *Ann Intern Med*. 2014;161(12):884-893.
8. Workowski KA, Bolan GA; Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep*. 2015;64(RR-03):1-137.
9. Weinbaum CM, Williams I, Mast EE, et al; Centers for Disease Control and Prevention. Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. *MMWR Recomm Rep*. 2008;57(RR-8):1-20.