

EVIDENCE-STATEMENT:

HEALTHY PREGNANCY (Screening, Testing, Counseling, Immunization, and Preventive Medication)

Syphilis (Screening)

Clinical Preventive Service Recommendations

U.S. Preventive Services Task Force Recommendation

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen all pregnant women for syphilis infection.¹

Evidence Rating: A (Strongly Recommended/ Good Evidence)

The USPSTF found good evidence that screening pregnant women decreases the proportion of infants with clinical manifestations of syphilis infection and those with positive serologies. The USPSTF concludes that the benefits of screening substantially outweigh the potential harms.¹

CDC Recommendation

The Centers for Disease Control and Prevention (CDC) recommends a serologic test for syphilis for all pregnant women at the first prenatal visit. Women who are at high risk for syphilis morbidity, are previously untested, or have a positive serology in the first trimester should be screened again early in the third trimester (28 weeks gestation) and at delivery. Infants should not be discharged from the hospital unless the syphilis serologic status of the mother has been determined at least one time during pregnancy and preferably again at delivery.²

Evidence Rating:

Not Specified

Information Sources

The recommendations and supporting information contained in this document came from several sources, including the:

- Centers for Disease Control and Prevention (CDC)
- Peer-reviewed research
- U.S. Preventive Services Task Force (USPSTF)

The background and supporting information contained in this document is a compilation of research findings. All information presented in this document should be attributed to its referenced source and should not be considered a reflection of other organizations cited in the text.

Condition/Disease Specific Information

<p>Epidemiology of Condition/Disease</p>	<p>Syphilis is a serious sexually transmitted infection (STI) that, if left untreated, may result in cardiovascular and neurological complications leading to disability and ultimately death.¹</p> <p>In addition to sexual transmission, syphilis can be passed from an infected mother to her infant during pregnancy and delivery. Congenital syphilis is particularly severe and results in fetal or infant death in 40% of cases.¹ In 2002, 451 cases of congenital syphilis were reported in the United States.³ Of these cases, 333 (73.8%) occurred because the mother had no documented treatment or received inadequate treatment of syphilis before or during pregnancy.³ Infected infants who survive may suffer serious central nervous system abnormalities, deafness, bone and joint deformities, skin abnormalities, blood disorders, and other problems.³</p>
<p>Condition/Disease Risk Factors</p>	<p>Populations at increased risk for syphilis infection (as determined by incidence rates) include commercial sex workers, persons who exchange sex for drugs, and those in adult correctional facilities.</p> <p>The prevalence of syphilis infection varies widely among communities and patient populations.¹ Some populations have a particularly high risk of infection, specifically African-Americans and people living in the Southeastern United States.⁴</p>
<p>Value of Prevention</p>	
<p>Economic Burden of Condition/Disease</p>	<p>The average annual national cost of treating infants with congenital syphilis is approximately \$18.4 million (in year 1995 dollars).⁵</p>
<p>Workplace Burden of Condition/Disease</p>	<p>The health, disability, and life insurance costs of syphilis-infected employees impose a significant economic burden on employers. Affected women may also lose work time in order to seek treatment for themselves or for their affected infants.</p>
<p>Economic Benefit of Preventive Intervention</p>	<p>Screening and early detection are key to averting costs associated with disease progression, long-term complications, and neonatal transmission. For example, treatment for early stage syphilis (\$41.26) is much less expensive than treatment for later stage disease (\$2,062) (both figures in year 2001 dollars).⁶</p>
<p>Estimated Cost of Preventive Intervention</p>	<p>In 2004, the private-sector cost of screening for syphilis averaged \$12; approximately 95% of all paid claims fell within the range of \$0 to \$32.⁷</p>
<p>Estimated Cost of Treatment</p>	<p>The cost of treating syphilis will vary depending on the medication used and other factors. For azithromycin therapy, the 2001 public-sector price of the 1-g sachet formulation was \$11.50 and the wholesale price for a 1-g dose ranged from \$17.32 for the sachet formulation to \$27.89 for tablets. The public sector cost of standard IM benzathine penicillin therapy ranged from \$18.64 to \$22.22 (in year 2001 dollars).⁶</p>

<p>Cost-Effectiveness and/or Cost-Benefit Analysis of Preventive Intervention</p>	<p>Serological screening of pregnant women is cost-effective even when there is a very low prevalence of maternal infection because screening is inexpensive but treating congenital syphilis is costly.⁸</p>
<p>Preventive Intervention Information</p>	
<p>Preventive Intervention: Purpose of Screening</p>	<p>Screening for syphilis allows clinicians to identify affected patients and begin treatment early in the course of disease. Early intervention improves outcomes and avoids the health and economic consequences of latent disease in the mother and the occurrence of congenital syphilis.² Treatment also reduces the risk of transmission between the affected woman and her sexual partner(s).</p>
<p>Benefits and Risks of Intervention</p>	<p>No studies have documented harms associated with screening for syphilis. Theoretical harms include partner discord, stigma, unnecessary anxiety, treatment in the case of a false-positive result, and opportunity costs (in terms of time and resources) to both the clinician and patient. Harms of treatment include allergic reactions to penicillin and other side effects of treatment medications such as the Jarisch-Herxheimer reaction (fever, headache, and pain that occurs during the 24 hours after initiating antibiotic treatment for syphilis and is caused by the release of fragments of the dead, infective microorganism into the bloodstream).¹</p> <p>The benefits associated with screening are substantial. Screening allows for early detection and treatment, prevention of complications that may occur in later stages of the disease, and prevention of neonatal transmission. Antibiotic treatment for syphilis is effective, and inexpensive. Therefore, the USPSTF concluded that the benefits of screening pregnant women for syphilis infection substantially outweigh the potential harms.¹</p>
<p>Initiation, Cessation, and Interval of Screening</p>	<p>All pregnant women should be screened for syphilis at their first prenatal care visit. For women in high-risk groups, repeat serologic testing may be necessary in the third trimester (28 weeks) and again at delivery.^{1,2} Follow-up serologic tests should be obtained to document successful treatment.¹</p>
<p>Intervention Process</p>	<p>A variety of syphilis tests are available and in development. Screening for syphilis typically involves the use of 2 different tests, a nontreponemal test and a treponemal-specific test, for screening and confirmation. For example, a nontreponemal blood test such as the venereal disease research laboratory (VDRL) or the rapid plasma reagin (RPR) may be performed. A second, different kind of test, such as the fluorescent treponemal antibody absorbed (FTA-ABS) or the <i>T. pallidum</i> particle agglutination (TP-PA) may then be used to confirm the results of the nontreponemal test.^{1,4}</p> <p>Syphilis screening tests that are approved by the Food and Drug Administration (FDA) or are pending FDA approval include^{1,4}:</p> <ul style="list-style-type: none"> • Nontreponemal test such as the venereal disease research laboratory (VDRL) or the rapid plasma regain (RPR) on serum specimens followed by a fluorescent treponemal antibody absorbed (FTA-ABS) or <i>T. pallidum</i> particle

agglutination (TP-PA) for confirmation.

- Immunochromatographic Strip (ICS) point-of-care test on blood specimen, when FDA approved.
- Line Immunoassay (LIA) point-of-care test on blood specimen, when FDA approved.
- Enzyme-linked Immunosorbent Assay (ELISA) for treponemal antibody in serum specimens.
- RPR point-of-care test for nontreponemal antibody in serum specimens.
- Dark field microscope examination of lesion specimens.

Follow-up tests should be performed using the same nontreponemal test initially used to document infection (e.g., VDRL or RPR) to ensure comparability.¹

Treatment Information

Syphilis should be treated with an antibiotic regimen appropriate for the woman's stage of disease. Some experts recommend additional therapy (e.g., a second dose of benzathine penicillin 2.4 million units IM) one week after the initial dose, particularly for those women in the third trimester of pregnancy and for women who have secondary syphilis during pregnancy.⁹

Infants should be treated for presumed congenital syphilis if they were born to mothers who, at delivery:

- Had untreated syphilis;
- Were treated with a non-recommended antibiotic regimen;
- Were treated less than one month prior to delivery; or
- Had evidence of relapse or reinfection after treatment.

Recommended treatment regimens for infants include aqueous crystalline penicillin G (administered every 12 hours during the first 7 days of life and every 8 hours thereafter) for 10 to 14 days or procaine penicillin G (administered daily in a single dose for 10 to 14 days). If more than one day of therapy is missed, the entire course should be restarted.¹⁰

Health benefits should include provisions for treatment services.

Strength of Evidence for the Clinical Preventive Service

The level of evidence supporting the recommendations contained in this section is described below.

Evidence-Based Research:

U.S. Preventive Services Task Force (USPSTF)

Strength of Evidence: A (Strongly Recommended/Good Evidence)

- The USPSTF found good evidence that screening pregnant women decreases the proportion of infants with clinical manifestations of syphilis infection and those with positive serologies. The USPSTF concludes that the benefits of screening substantially outweigh the potential harms.¹

Recommended Guidance:

Centers for Disease Control and Prevention (CDC)

Strength of Evidence: Not Specified

- The CDC recommends a serologic test for syphilis on all pregnant women at the first prenatal visit. Women who are at high risk for syphilis morbidity, are previously untested, or have a positive serology in the first trimester should be screened again early in the third trimester (28 weeks gestation) and at delivery. Infants should not be discharged from the hospital unless the syphilis serologic status of the mother has been determined at least one time during pregnancy and preferably again at delivery.²

Authored by:

Choucair J, Lentine D, Campbell KP, Chattopadhyay S. Syphilis evidence-statement: screening. In: Campbell KP, Lanza A, Dixon R, Chattopadhyay S, Molinari N, Finch RA, editors. *A Purchaser's Guide to Clinical Preventive Services: Moving Science into Coverage*. Washington, DC: National Business Group on Health; 2006.

References

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