NATIONAL NETWORK OF STD•HIV PREVENTION TRAINING CENTERS

Syphilis

Learning Objectives:

Upon completion of this content the learner will be able to:

1. Describe the changing epidemiologic trends of infection.
2. List the stages of disease and describe clinical manifestations of each stage of syphilis.
3. List and describe the direct microscopic and serologic tests for syphilis and their application and interpretation in the diagnosis of infection.
4. Discuss the clinical management of syphilis to include treatment, follow-up, and partner management.
5. Describe the relationship between syphilis and HIV infection.

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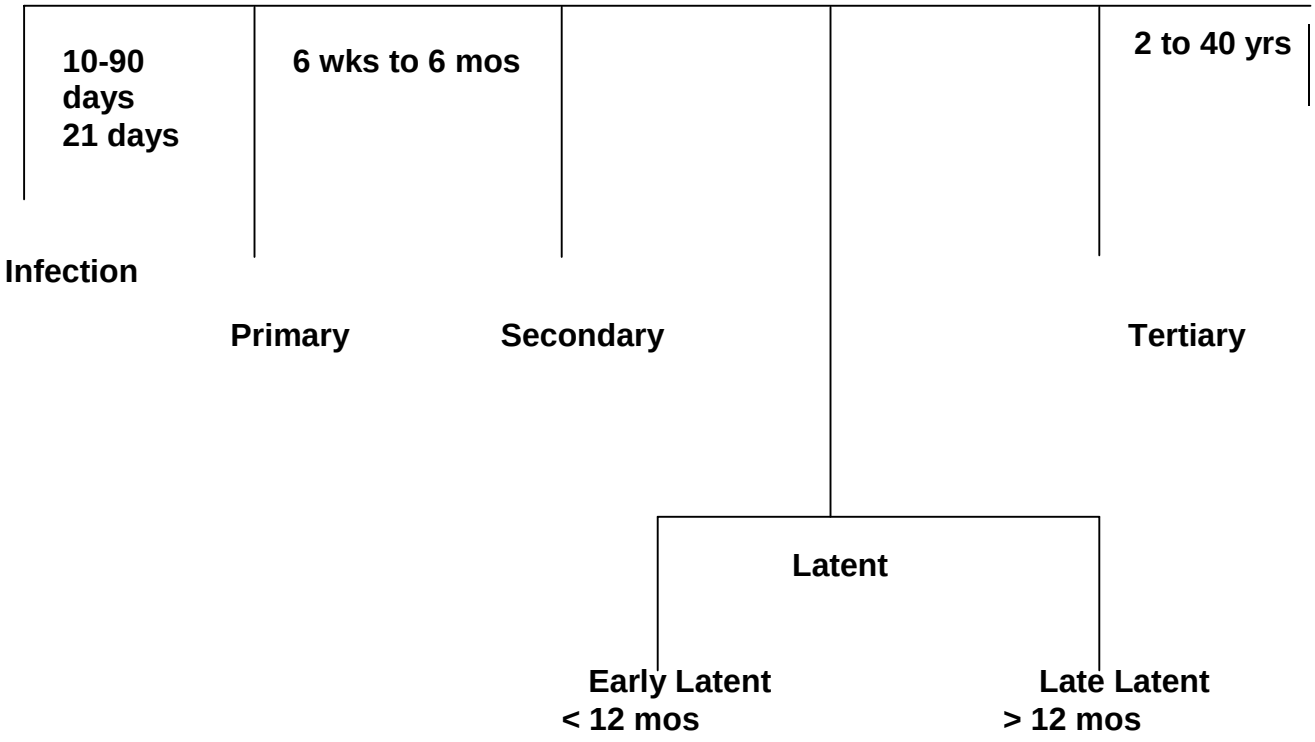
I. Epidemiology

A. Definition:

1. Syphilis is a sexually acquired infection caused by *Treponema pallidum*, which may become a chronic infection without treatment:

   a) The disease is characterized by episodes of active disease interrupted by periods of latent infection.
   b) Incubation period is estimated to be between 10 and 90 days.
   c) Primary (1°) and secondary (2°) stages are considered to be new or incident infections; other stages are considered as prevalent infections.
   d) Early clinical manifestations (1° and 2° stages) primarily involve the skin and mucosal surfaces; latent disease has no clinical signs or symptoms; late manifestations may affect virtually any organ system.
   e) Neurosyphilis can occur at any stage of syphilis

Time Line
Untreated Syphilis



B. Transmission:

1. Major routes of transmission are sexual and vertical (in utero from infected pregnant woman via hematogenous spread to her fetus).

2. Risk of infection after sexual exposure is about 30%.

3. An infected individual is most contagious to sexual partners during the primary and secondary stages of his/her infection when lesions or rash are present, and much less so in subsequent stages.

C. Trends and reported cases:

1. The distribution and trends of syphilis are influenced by biological factors, sexual behaviors, biomedical technology, availability of and access to health care, public health efforts, changes in population dynamics, and sociocultural factors.

2. Historically, syphilis was distributed widely throughout the U.S. in the 1940s, but declined rapidly in the 1950s after the introduction of penicillin therapy and broad-based public health programs.

3. Rates in white men were at intermediate levels during 1975-1982, primarily among homosexual or bisexual men, then declined to low rates in this population during the 1990s, possibly because of changes in behavior in response to the AIDS epidemic.

4. During 1986-90, there was a dramatic 85% rise in the incidence of primary and secondary syphilis. Some investigators have linked this increase to the use of crack cocaine. Since then, reported cases of syphilis have decreased approximately 15% per year nationwide to an all-time low in 2000.

5. By the late 1990s, syphilis rates in the US had declined to a point where public health authorities declared syphilis elimination a feasible goal. CDC has developed a national plan to eliminate syphilis which includes rapid case identification and reporting.

6. Current rates, however, continue to be high in some urban areas throughout the U.S.; in rural areas in the South; among members of minority groups who suffer from poverty, lack of access to health care, and breakdown of stable community and personal relationships. Recent outbreaks have been associated in men who have sex with men (MSM). Many of these cases are co-infected with HIV and some have partners identified through bathhouses and the Internet.

II. Pathogenesis

A. Etiologic agent: *Treponema pallidum*, subspecies *pallidum*, is a corkscrew-shaped, motile microaerophilic bacterium which cannot be cultured in vitro. It is a bit longer than the diameter of a white blood cell (10-20 micrometers) and thin (0.1 micrometers in diameter).

B. Penetration: *T. pallidum* enters the body via skin and mucous membranes through macroscopic and microscopic abrasions during sexual contact. The smaller the inoculum, the longer the incubation period.

C. Dissemination: before clinical signs or symptoms appear, and within a few hours after inoculation, the spirochete travels via the lymphatic system to regional lymph nodes and then throughout the body via the blood stream. Invasion of the central nervous system occurs in greater than 30-40% of patients with 1° or 2° syphilis.

D. Some organisms lodge at the entry site, proliferate, sensitize lymphocytes and activate macrophages, and a primary lesion or "chancre" develops at this site of inoculation. The chancre heals spontaneously, usually without scarring, within 1 to 6 weeks, and the serologic test for syphilis may not be positive at this stage of syphilis.

E. The secondary lesions of syphilis generally occur 3 to 6 weeks after the primary chancre appears; primary and secondary stages, therefore, may overlap. In the secondary stage, generalized or localized skin eruptions with mucosal lesions can occur. These eruptions or rashes may be mild or florid, depending on the patient's immune response. The lesions may persist for weeks to months. The secondary stage results from multiplication of the bacteria at multiple organ sites after hematogenous spread. Because the organism grows better at lower temperatures, the most common clinical findings are mucocutaneous. Serologic tests for syphilis antibodies are usually highest in titer during this stage and, despite the presence of antibodies, the patient cannot clear the infection.

F. Eventually, the host suppresses the infection enough so that no lesions are clinically apparent. Relapses of secondary symptoms can occur usually within the first year of infection.

G. In about 70% of untreated patients, the infection remains asymptomatic for the lifetime of the individual. Approximately 30% of patients may progress to the tertiary stage within 2 to 40 years, although since the widespread availability and use of antibiotics, tertiary syphilis is rarely diagnosed. Clinically, this final stage may manifest as gummas in soft tissue or viscera, central nervous

system lesions, and cardiovascular problems. Gummas are granulomatous lesions, which destroy soft tissue, cartilage and bone and may be an immunologic response to treponemal antigens, although most lesions respond to penicillin therapy.

III. Clinical Manifestations

A. Primary syphilis:

1. Chancre: local lesion at the site of inoculation; progresses from macule to papule to ulcer; is typically painless, indurated, and has a clean base; up to 25% present with multiple lesions.

2. Atypical chancres may occur and can mimic herpes or chancroid.

3. Regional adenopathy: classically rubbery, painless, bilateral.

B. Secondary syphilis:

1. Rash (75-90%): macular, papular, squamous (scale), pustular (rare), combination; usually nonpruritic; may involve palms and soles in 60%. Any new onset macular, papular or squamous rash should be evaluated to rule out secondary syphilis.

2. Generalized lymphadenopathy (70-90%) .

3. Constitutional symptoms (50-80%), most commonly malaise.

4. Mucous patches (5-30%): flat patches involving oral cavity, pharynx, larynx, and genitals.

5. Condylomata lata (5-25%): moist, heaped, wart-like papules that occur in warm intertriginous areas (most commonly, gluteal folds, perineum, perianal); teeming with treponemes.

6. Alopecia (10-15%): patchy occipital and bitemporal, loss of lateral eyebrows.

7. Neurosyphilis (<2%): early forms of basilar meningitis or meningovascular.

8. Liver and kidney involvement, usually not clinically significant.

[**Note**: Signs and symptoms of secondary syphilis often are the first observed clinical manifestation of syphilis in MSM and women.]

C. Latent syphilis:

1. No clinical manifestations. Only evidence is positive serologic test for syphilis.

2. Categories:
   a) early latent: <1 year duration.
   b) late latent: ≥1 year duration or of unknown duration.

3. Criteria for early latent syphilis:
   a) Documented seroconversion in comparison with a serologic titer obtained within the year preceding the evaluation.
   b) Unequivocal symptoms of primary or secondary syphilis reported by patient in past 12 months.
   c) Contact to an infectious case of syphilis in the past 12 months.
   d) A 4-fold increase in serologic titer in comparison with a titer within the past 12 months may represent a case of early latent syphilis or relapse of a previously treated case.

4. Relapses of secondary lesions in up to 25% of cases, usually within the first year.

D. Tertiary syphilis:

1. Late benign syphilis: gummatous lesions may occur in skeletal, spinal, and mucosal areas, eyes, and viscera (lung, stomach, liver, genitals, breast, eyes, brain, and heart); average onset 10-15 years after infection. The destructive lesions can clinically mimic carcinoma.

2. Cardiovascular syphilis: pathological lesion is endarteritis of aortic vasovasorum; clinically presents as ascending aortic aneurysm, aortic insufficiency; coronary ostial stenosis; average appearance at about 20-30 years after infection.

E. Neurosyphilis:

1. Central nervous system invasion occurs early in infection in 30-40% of patients; however most patients eventually clear this site of infection with conventional therapy.

2. Asymptomatic neurosyphilis can occur at any stage. Early forms of neurosyphilis usually occur a few months to a few years after infection. Clinical manifestations include acute syphilitic meningitis, a basilar meningitis that typically involves cranial nerves VI, VII and VIII, or

meningovascular syphilis, an endarteritis that presents as a stuttering stroke-like syndrome and seizures.

3. Late forms of neurosyphilis usually occur decades after infection and are rarely seen. Clinical manifestations of parenchymatous involvement include general paresis and tabes dorsalis.

4. Ocular involvement can also be early or late. Uveitis may be the most common early presentation.

F. Congenital syphilis:

1. Transmission to the fetus can occur during any stage of maternal syphilis, but risk is much higher with primary and secondary syphilis during pregnancy.

2. Fetal infection can occur during any trimester of pregnancy.

3 Treatment of the mother during the last month of pregnancy cannot be considered adequate treatment for the fetus.

4. Early lesions in infants (<2 years old) are usually inflammatory and may involve skin, including bullous and/or exudative lesions, mucous membranes with snuffles (chronic nasal discharge), alopecia, generalized lymphadenopathy, meningitis, osteitis or osteochondritis, or hepatosplenomegaly. Hematologic abnormalities may include thrombocytopenia and anemia.

5. Late lesions (older than 2 years) tend to be immunologic and destructive. Interstitial keratitis is most common. VIII nerve deafness, bone and teeth involvement (saber shins, mulberry molars, Hutchinson incisors) are less common.

IV. Diagnosis

A. History:

1. History of syphilis.
2. Known contact to an early case of syphilis.
3. Typical signs or symptoms of syphilis in the past 12 months..
4. Most recent serologic test for syphilis.

B. Physical examination of oral cavity, lymph nodes, skin of torso, palms and soles, neurologic including cranial nerves especially II, VI, VII, VIII, in addition

to the genitalia and perianal area.

C. Laboratory:

1. Identification of *Treponema pallidum* in lesions on tissue:
   a) Darkfield microscopy:
      1) Advantages:
         (a) Definitive immediate diagnosis, useful in primary and secondary disease.
         (b) Inexpensive, rapid.

      2) Disadvantages:
         (a) Requires specialized microscope condenser and lenses or lens adapter.
         (b) Requires experienced microscopist.
         (c) Possible confusion with non-pathogenic spirochetes.
         (d) Must be performed immediately; motility important to identify.
         (e) Generally not recommended on oral lesions because of specificity problem with nonpathogenic spirochetes in the oral cavity.
         (f) False negatives increase with use of topical substances (e.g., soap and water).

      3) What to look for:
         (a) *T. pallidum* morphology: spiral shape, with 10-14 coils, 6-20 micrometers long (a bit longer than the diameter of a white blood cell).
         (b) *T. pallidum* motility: corkscrew motion, bends and flexes at sharp angles and does not lose its convolutions; lacks translational movement.

      4) Sensitivity decreases as the lesion heals.
   b) Direct fluorescent antibody - *T. pallidum* (DFA-TP):
      1) Advantages:
         (a) Identification of *T. pallidum* in direct lesion smear by immunofluorescence using monoclonal or polyclonal antiserum. The polyclonal antiserum is preferred because it is more specific and less likely to cross-react with other treponemes that are normal flora of the oral cavity and the GI tract.
         (b) Reagent is absorbed to remove most cross-reactive antibody.
         (c) Commercially available, but not widely utilized.
         (d) Compares favorably with darkfield microscopy.

      2) Disadvantages: turnaround time 1-2 days so requires patient to return for treatment.

2. Serological tests:
   a) Nontreponemal tests: VDRL(Venereal Disease Research Laboratory), RPR (Rapid Plasma Reagin), TRUST (Toluidine Red Unheated Serum Test), USR (Unheated Serum Reagin):
      1) Principles:
         (a) Measure IgM and IgG antibody directed against a cardiolipin-lecithin-cholesterol antigen.
         (b) Not specific for *T. pallidum*.
         (c) Reaction may be microscopic (VDRL) or macroscopic (RPR).
         (d) VDRL and RPR titers are not equivalent. RPR titers tend to be higher and are not directly comparable to VDRL titers for monitoring response to therapy. RPR may be slightly more sensitive and the longer duration of infection, the wider divergence between the RPR and VDRL.
         (e) TRUST and USR are comparable to the VDRL.

         [**Note**: All positive non-treponemal tests need to be confirmed with a treponemal test for initial diagnosis.]

      2) Advantages:
         (a) Rapid (RPR) and inexpensive.
         (b) Easy to perform and can be done in clinic or office (RPR).
         (c) Quantitative.
         (d) Used to follow response to therapy.
         (e) Can be used to evaluate possible reinfection.

      3) Disadvantages:
         (a) May be insensitive in certain stages (particularly primary and late latent).
         (b) Biological false positive reactions. Febrile illnesses and recent immunizations. Chronic causes include injection drug use, autoimmune and chronic diseases.
         (c) Rarely, a phenomenon called “the prozone effect” may cause a false negative reaction. The prozone effect occurs when the reaction is overwhelmed by antibody excess and may happen in late primary or in secondary syphilis. If clinical suspicion of secondary syphilis is high, the lab should dilute the serum to at least a 1/16 dilution to rule out the prozone effect.
   b) Treponemal test: TP-PA (*Treponema pallidum* Particle Agglutination), FTA-ABS (Fluorescent Treponemal Antibody-Absorbed).
      1) Principles:
         (a) Measures antibody (IgM and IgG) directed against *T. pallidum* antigens by particle agglutination (TP-PA) or immunofluorescence (FTA-ABS).

(b) Test depends on serum dilution and absorption for specificity.
(c) Qualitative.
(d) Usually reactive for life, even after adequate treatment. However, some individuals treated early in their infections (before the secondary stage) may serorevert.
(f) In cases of tertiary syphilis where the nontreponemal test may be insensitive, use of a treponemal test may be considered.

3. Other tests:
   a) DNA amplification test (PCR) is not available.
   b) Captia EIA:
      1) Treponemal test.
      2) Approved for screening and confirmation.
      3) Not quantitative so if positive need to quantify with nontreponemal test (if nontreponemal test is negative then test with another treponemal test).
      4) Both IgM and IgG EIA tests available but no advantage of using IgM in adult syphilis diagnosis.
      5) Of value in diagnosing congenital syphilis if positive since a positive IgM test in the neonate is specific but may lack sensitivity

4. Sensitivity of serological tests in untreated syphilis:

Stage of Disease, Percent Positive				
Test	Primary	Secondary	Latent	Tertiary
VDRL/RPR	78 (74-87)	100	95 (88-100)	71 (37-94)
FTA-Abs	84 (70-100)	100	100	96
Treponemal Agglutination TP-PA*	84 (84-100)	100	100	[TP-PA has not been tested but most likely has a similar performance to the FTA-Abs]

*The TP-PA replaced the MHA-TP

V. Treatment

A. Management issues:

1. Central nervous system involvement:
   a) Early invasion of central nervous system: in about 30-40% of primary and secondary syphilis patients.
   b) Prognostic significance unknown.
   c) Conventional therapy is effective for the vast majority of immuno-competent patients with asymptomatic CNS involvement in primary and secondary syphilis.

2. Indications for CSF examination:
   a) Primary, secondary, and early latent syphilis (< 1 year duration):
      1) Clinical signs and symptoms of CNS involvement or ocular involvement.
      2) Treatment failure.
      3) Some experts recommend CSF exam in HIV-infected patients.

   b) Late latent syphilis (≥1 year duration) and latent syphilis of unknown duration:
      1) Neurologic or ophthalmic signs or symptoms.
      2) Treatment failure.
      3) HIV infection.
      4) Evidence of active tertiary syphilis (e.g., aortitis and gumma).

   c) Latent syphilis: some experts recommend CSF exam on all patients with latent syphilis and a nontreponemal serologic test of ≥1:32.

3. Standard parameters of CSF:
   a) Mononuclear cells: >5 is abnormal.
   b) Protein concentration: >40 mg/dl is abnormal.
   c) Reactive CSF-VDRL: very specific, but not highly sensitive; only test approved for CSF specimen.

4. Interpretation of CSF findings:
   a) *T. pallidum* detection correlates poorly with usual CSF results.
   b) Use CSF-VDRL as diagnostic guide.
   c) In CSF-VDRL negative patients, consider the diagnosis of neurosyphilis if CSF WBC>5 and no other etiology identified (if CSF WBC>10-20 in HIV-infected patients).
   d) CSF FTA-ABS is not specific but a negative test may rule out neurosyphilis.

5. Effect of HIV infection on syphilis:
   a) Syphilis and HIV infections commonly coexist.
   b) In general, clinical course is similar to non-HIV infected patients.
   c) Serological tests for syphilis are equivalent in sensitivity in HIV-infected and non-HIV-infected persons in the vast majority of patients. If clinical suspicion is high for syphilis and the serologic tests are negative, then biopsy of the lesion or rash is recommended.
   d) Conventional therapy is usually effective.
   e) Some investigators feel that patients may be more likely to present with symptomatic neurosyphilis.

B. Current therapy:

1. Primary, secondary, early latent:
   a) Benzathine penicillin G 2.4 million units IM.
   b) Non-pregnant, penicillin-allergic:
      1) Close follow-up of persons receiving any therapy other than Benzathine penicillin G is essential because efficacy is not well documented.
      2) Doxycycline 100 mg po twice daily for 2 weeks, **or**
      3) Tetracycline 500 mg po 4 times daily for 2 weeks, **or**
      4) Some experts recommend ceftriaxone 1 gm IM/IV daily for 8-10 days as alternative therapy.
      5) Preliminary data suggest that azithromycin 2 gm as a single oral dose may be an effective alternative. Use in HIV-infected persons has not been studied, so if used, it should be done cautiously with close follow-up.
   c) Some experts recommend that HIV-infected persons with primary, secondary, or early latent syphilis be treated with benzathine penicillin G 2.4 million units IM at 1-week intervals for 3 weeks.

2. Late latent, unknown duration, or tertiary without neurologic involvement and normal CSF exam, if performed:
   a) Benzathine penicillin G 2.4 million units IM weekly for 3 consecutive weeks.
   b) Non-pregnant, penicillin-allergic:
      1) Close follow-up of persons receiving any therapy other than Benzathine penicillin G is essential because efficacy is not well documented.
      2) Doxycycline 100 mg po twice daily for 4 weeks, **or**
      3) Tetracycline 500 mg po 4 times daily for 4 weeks.

3. Neurosyphilis:
   a) Aqueous crystalline penicillin G 18-24 million units IV daily for 10-14

days, **or**

b) Procaine penicillin G 2.4 million units IM daily plus probenecid 500 mg po 4 times daily, both for 10-14 days.
c) Non-pregnant, penicillin allergic:
    1) Patients who are allergic to penicillin ideally should be hospitalized, desensitized, and treated with penicillin.
    2) Some experts recommend ceftriaxone 2 grams daily IM/IV for 10-14 days as an alternative treatment. If used, close follow-up is essential because efficacy is not well-documented.
d) When treating neurosyphilis in late latent or unknown duration syphilis, some experts recommend adding Benzathine penicillin G 2.4 million units IM once per week for up to 3 weeks after the completion of neurosyphilis treatment regimens to provide a total duration of therapy comparable to that used for late syphilis.

4. Syphilis in pregnancy:
    a) Treat with penicillin according to stage of infection. Erythromycin is not an acceptable alternative drug in penicillin-allergic patients. Patients who are allergic to penicillin should be desensitized in the hospital and treated with penicillin.
    b) Some experts recommend that a second dose of Benzathine penicillin G 2.4 million units IM be administered 1 week after the initial dose for women who have primary, secondary, or early latent infection.
    c) In the second half of pregnancy, management and counseling may be facilitated by a sonographic fetal evaluation for congenital syphilis, but this should not delay therapy.

5. Epidemiologic treatment (sexual contacts to 1º, 2 º or early latent syphilis or syphilis of unknown duration with titer of ≥1:32:
    a) Draw syphilis serology.
    b) Perform physical exam.
    c) Treat all as for early syphilis, at the time of test, unless the nontreponemal test result is known and negative, and last sexual contact with the index case is > 3 months.
    d) Azithromycin 1 gm po is currently being studied as an epidemiologic treatment.

6. Jarisch-Herxheimer reaction:
    a) Self-limited reaction to anti-treponemal therapy, characterized by fever, malaise, nausea/vomiting; may be associated with chills and exacerbation of secondary rash.
    b) Occurs within 24 hours after therapy and usually resolves within 24 hours.
    c) Patients should be warned it is not an allergic reaction to penicillin and can be treated with symptomatic support.

d) More frequent after the treatment with penicillin and treatment of early syphilis, especially at the secondary stage.
e) Pregnant women, in particular, should be informed of this possible reaction, that it may precipitate early labor, and to call obstetrician if problems develop.

C. Partner management: refer all cases of primary, secondary, early latent syphilis, syphilis of unknown duration with a titer of ≥ 1:32, or a recent (within the past year) 4-fold increase in nontreponemal serologic titer to local health department Disease Intervention Staff for interview and partner elicitation and partner follow-up for counseling, evaluation, and treatment.

D. Follow-Up:

1. Follow-up titers should be compared to the nontreponemal titer obtained on day of treatment.

2. Primary and secondary syphilis: clinical evaluation at 1-2 weeks and 1 month after treatment to ensure improvement and resolution of symptoms. Serological (quantitative VDRL or RPR) evaluation at 6 and 12 months. Earlier serologic follow-up should be considered in certain circumstances (e.g., if continued risk: to ensure titer is not increasing because of reinfection, or if non-compliant: to follow more closely to maximize compliance with serologic follow-up.

3. Latent: serological (quantitative VDRL or RPR) evaluation at 6, 12, and 24 months.

4. Neurosyphilis: serological testing as above, with repeat CSF examination if CSF pleocytosis present initially, at 6-month intervals until normal. CSF pleocytosis should be improved by 6 months and CSF-VDRL negative by 2 years.

5. HIV-infected patients: clinical and serological evaluation at 3, 6, 9, 12, and 24 months for primary and secondary syphilis and at 6, 12, 18, and 24 months for latent syphilis.

6. Recommend HIV test for all patients with syphilis and consider retesting in 3-6 months, if initially negative.

7. Treatment failure:
   a) Perform CSF examination if any of the following occurs:
      1) Clinical signs or symptoms persist or recur.
      2) There is a sustained (greater than 2 weeks) 4-fold increase in titer.
      3) An initially high-titer nontreponemal test fails to show a 4-fold

decrease within 6 months for primary or secondary syphilis, or 12-24 months for latent syphilis.

b) If CSF abnormal, treat for neurosyphilis.
c) If CSF normal, retreat with benzathine penicillin G IM weekly for 3 weeks. Additional therapy and/or repeat LP is not warranted.

VI. Prevention

A. Screening:

1. Screen high-risk populations (patients with HIV/other STDs, detention/corrections populations, pregnant women).

2. Screen pregnant women at least at first prenatal visit. For communities and populations in which the prevalence of syphilis is high or for patients at risk, serologic testing should be performed twice during the third trimester, at 28 weeks and at delivery, in addition to routine early screening. Any woman who delivers a stillborn infant after 20 weeks gestation should be tested for syphilis. No infant should leave the hospital without the maternal serologic status having been determined at least once during pregnancy.

B. Partner management: sexual transmission of *T. pallidum* occurs only when mucocutaneous syphilitic lesions are present; such manifestations are uncommon after the first year of infection. However, persons exposed to a patient who has syphilis in any stage should be evaluated clinically and serologically according to the following recommendations:

1. Persons who were exposed within the 90 days preceding the diagnosis of primary, secondary, or early latent syphilis in a sex partner might be infected even if seronegative; therefore, such persons should be treated presumptively.

2. Persons who were exposed >90 days before the diagnosis of primary, secondary, or early latent syphilis in a sex partner should be treated presumptively if serologic test results are not available immediately and the opportunity for follow-up is uncertain.

3. For purposes of partner notification and presumptive treatment of exposed sex partners, patients with syphilis of unknown duration who have high nontreponemal serologic test titers (i.e., ≥1:32) or who have a 4-fold increase in serologic titer in comparison with a titer within the past 12 months may be considered as having early syphilis. However, these serologic titers should not be used to differentiate early from late latent syphilis for the purpose of determining treatment.

4. Long-term sex partners of patients who have latent syphilis should be evaluated clinically and serologically for syphilis and treated on the basis of the findings of the evaluation.

   The time periods before treatment used for identifying at-risk sex partners are:
   a) 3 months plus duration of symptoms for primary syphilis
   b) 6 months plus duration of symptoms for secondary syphilis
   c) 1 year for early latent syphilis.

C. Reporting: laws and regulations in all states require that persons diagnosed with syphilis are reported to public health authorities by clinicians, labs, or both. Ideally, all suspected or documented cases of primary or secondary syphilis should be reported to local health department within 24 hours of diagnosis.

D. Patient counseling/education: risk reduction:

1. Assess client's behavior-change potential.

2. Discuss prevention strategies (abstinence, monogamy, condoms, limit number of sex partners, etc.). Genital ulcer diseases can occur in both male or female genital areas that are covered or protected by a latex condom, as well as in areas that are not covered. Correct and consistent use of latex condoms can reduce the risk of syphilis only when the infected area or site of potential exposure is protected.

3. Develop individualized risk-reduction plans.

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