

# Syphilis

## 1. DISEASE REPORTING

### A. Purposes of Reporting and Surveillance

1. To assess trends in epidemic patterns, understand the impact of the burden of disease on populations and the health care infrastructure, and to better target population-level disease prevention efforts;
2. To assure the adequate treatment of infected individuals in order to reduce the duration of infectiousness and prevent sequelae of infection (e.g., neurosyphilis, gumma);
3. To identify cases in a timely fashion in order to interrupt the chain of infection through patient-level interventions such as management of sexual contacts and behavioral risk reduction counseling.

### B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 3 work days. Cases should be reported using the Sexually Transmitted Disease (STD) Morbidity Report Form. See: <http://www.doh.wa.gov/cfh/STD/casereports/default.htm>
2. Hospitals: notifiable to local health jurisdiction within 3 work days. Cases should be reported using the STD Morbidity Report Form. See: <http://www.doh.wa.gov/cfh/STD/casereports/default.htm>
3. Laboratories: notifiable to local health jurisdiction within 2 work days, specimen submission required to the State Public Health Laboratory. See: <http://www.doh.wa.gov/EHSPHL/PHL/packaging.htm>
4. Local health jurisdictions: notify the Washington State Department of Health (DOH), STD Services Section within 7 days of case investigation completion; summary information required within 21 days for all reported cases. Enter case report information into the Public Health Issue Management System – Sexually Transmitted Disease (PHIMS-STD).

### C. Local Health Jurisdiction Investigation Responsibilities

1. Syphilis cases should be reported to DOH using the PHIMS-STD system to enter investigation information including provider case report, laboratory, interview, and partner management data.
2. Local health jurisdiction staff should initiate an investigation of the index patient within 3 working days of receiving a report indicative of syphilis.
3. Local health jurisdiction staff should inform health care providers of the importance of instructing patients to refer sex partners for evaluation and treatment.

## 2. THE DISEASE AND ITS EPIDEMIOLOGY

### A. Etiologic Agent

*Treponema pallidum* bacterium.

## B. Description of Illness

Symptoms of infection are often subtle and easily confused with other sexually transmitted infections, such as genital herpes infection.

### Primary Infection

The primary stage of syphilis infection is usually marked by the appearance of a single sore (chancre), but there may be multiple sores. The time between infection and the onset of symptoms can range from 10 to 90 days (average 21 days). The chancre is usually firm, round, small, and painless. It appears at the spot where syphilis entered the body. The chancre lasts 3 to 6 weeks, and it heals without treatment. However, if appropriate treatment is not administered, the infection progresses to the secondary stage.

### Secondary Infection

Skin rash and mucous membrane lesions characterize the secondary stage. This stage typically starts with the development of a rash on one or more areas of the body. The rash usually does not cause itching. Rashes associated with secondary syphilis can appear as the chancre is healing, or several weeks after the chancre has healed. The characteristic rash of secondary syphilis may appear as rough, red, or reddish brown spots both on the palms of the hands and the bottoms of the feet. However, rashes with a different appearance may occur on other parts of the body, sometimes resembling rashes caused by other diseases. Sometimes rashes associated with secondary syphilis are so faint that they are not noticed. In addition to rashes, symptoms of secondary syphilis may include fever, swollen lymph glands, sore throat, patchy hair loss, headaches, weight loss, muscle aches, and fatigue. The signs and symptoms of secondary syphilis will resolve with or without treatment, but without treatment, the infection will progress to the latent and late stages of disease.

### Latent Stage

The latent (hidden) stage of syphilis begins when secondary symptoms disappear. Without treatment, the infected person will continue to have syphilis even though there are no signs or symptoms; infection remains in the body.

### Late Stage

In the late stages of syphilis, damage may occur to the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. This internal damage may show up many years after initial infection. Signs and symptoms of the late stage of syphilis include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, and dementia. This damage may be serious enough to cause death.

### Congenital Syphilis

Fetal infection occurs with high frequency in untreated early infections of pregnant women and with lower frequency later in latency. It frequently causes spontaneous abortion or stillbirth and may cause infant death due to preterm delivery of low birthweight infants or from generalized systemic disease. Congenital infection may result in late manifestations that include involvement of the central nervous system and occasionally cause interstitial keratitis or deafness. Congenital syphilis can be asymptomatic, especially in the first weeks of life. See the CDC treatment guidelines for

more complete information on the diagnosis and treatment of congenital syphilis.  
<http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf>

### C. Syphilis in Washington State

Most cases are predominately found in men who have sex with men (MSM). To view the most recent morbidity information on reported syphilis cases, see <http://www.doh.wa.gov/cfh/STD/data/morbidity.htm>

### D. Reservoir

Humans.

### E. Modes of Transmission

Syphilis is passed from person to person through direct contact with infectious exudates from obvious or concealed, moist, early lesions of skin and mucous membranes of infected people during sexual contacts. Exposure almost always occurs during oral, anal, or vaginal intercourse. A pregnant woman with the disease can pass it to her unborn child.

### F. Incubation Period

10 days to 3 months, usually 3 weeks.

### G. Period of Communicability

Syphilis is transmissible whenever moist mucocutaneous lesions are present. The distinction between the infectious primary and secondary stages and the noninfectious early latent stage of syphilis is somewhat arbitrary with regard to communicability, since primary and secondary stage lesions may not be apparent to the infected individual. Lesions of secondary syphilis may recur with decreasing frequency up to 4 years after infection, but transmission of infection is rare after the first year.

Transmission of syphilis from mother to fetus is probably during early maternal syphilis but can occur throughout the latent period. Infected infants may have moist mucocutaneous lesions that are more widespread than in adult syphilis and are a potential source of infection.

### H. Treatment

Treatment options include benzathine penicillin G and doxycycline. See full CDC treatment guidelines at: <http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf>

## 3A. CASE DEFINITIONS: Primary Syphilis

### A. Clinical Criteria for Diagnosis

A stage of infection with *Treponema pallidum* characterized by one or more chancres (ulcers); chancres might differ considerably in clinical appearance.

### B. Laboratory Criteria for Diagnosis

1. Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or equivalent methods, or

2. Reactive nontreponemal blood test (Venereal Disease Research Laboratory [VDRL] or rapid plasma reagin [RPR]) and a reactive treponemal blood test (fluorescent treponemal antibody absorbed [FTA-ABS] or *Treponema pallidum* particle agglutination [TP-PA]).

### C. Case Definition

Probable: a clinically compatible case with one or more ulcers (chancres) consistent with primary syphilis and a reactive serologic test (nontreponemal: VDRL or RPR; treponemal: FTA-ABS or TP-PA).

Confirmed: a clinically compatible case that is laboratory confirmed.

## 3B. CASE DEFINITIONS: Secondary Syphilis

### A. Clinical Criteria for Diagnosis

A stage of infection caused by *T. pallidum* and characterized by localized or diffuse mucocutaneous lesions, often with generalized lymphadenopathy. The primary chancre may still be present.

### B. Laboratory Criteria for Diagnosis

Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, DFATP, or equivalent methods. Reactive nontreponemal blood test (RPR or VDRL) and a reactive treponemal blood test (TP-PA).

### C. Case Definition

Probable: a clinically compatible case with a nontreponemal (VDRL or RPR) titer  $\geq 1:8$ .

Confirmed: a clinically compatible case that is laboratory confirmed.

## 3C. CASE DEFINITIONS: Early Latent Syphilis

### A. Clinical Criteria for Diagnosis

Latent syphilis is an infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs. The early latent subcategory is diagnosed when the initial infection has occurred within the previous 12 months.

### B. Laboratory Criteria for Diagnosis

No past diagnosis of syphilis, a reactive nontreponemal blood test (RPR or VDRL) and a reactive treponemal blood test (TP-PA), or

A past history of syphilis therapy and a current nontreponemal test titer demonstrating fourfold or greater increase from the last nontreponemal test titer.

### C. Case Definition

Probable: no clinical signs or symptoms of syphilis and evidence of having acquired the infection within the previous 12 months based on one or more of the following criteria:

1. Documented seroconversion or fourfold or greater increase in titer of a nontreponemal test during the previous 12 months, or

2. A history of symptoms consistent with primary or secondary syphilis during the past 12 months, or
3. A history of sexual exposure to a partner who had confirmed or probable primary or secondary syphilis or probable early latent syphilis (documented independently as duration < 1 year), or
4. Reactive nontreponemal and treponemal tests from a person whose only possible exposure occurred within the preceding 12 months.

### **3D. CASE DEFINITIONS: Late Latent Syphilis**

#### **A. Clinical Criteria for Diagnosis**

Latent syphilis is an infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs. The late latent subcategory is diagnosed when the initial infection has occurred greater than one year previously.

#### **B. Laboratory Criteria for Diagnosis**

No past diagnosis of syphilis, a reactive nontreponemal blood test (RPR or VDRL) and a reactive treponemal blood test (TP-PA), or

A past history of syphilis therapy and a current nontreponemal test titer demonstrating fourfold or greater increase from the last nontreponemal test titer.

#### **C. Case Definition**

Probable: latent syphilis in a patient who has no evidence of having acquired the disease within the preceding twelve (12) months and whose age and titer do not meet the criteria specified for latent syphilis of unknown duration.

### **3E. CASE DEFINITIONS: Latent Syphilis, of unknown duration**

#### **A. Clinical Criteria for Diagnosis**

Latent syphilis is an infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs. The latent of unknown duration subcategory is diagnosed when the date of initial infection cannot be established as having occurred in the previous year and the patient's age and titer meet criteria described below.

#### **B. Laboratory Criteria for Diagnosis**

No past diagnosis of syphilis, a nontreponemal blood test (RPR or VDRL) with a titer of 1:32 or greater, and a reactive treponemal blood test (TP-PA).

#### **C. Case Definition**

Probable: latent syphilis that does not meet criteria for early latent syphilis, and the patient is aged 13-35 years and has a nontreponemal titer greater than or equal to 1:32.

### **3F. CASE DEFINITIONS: Late Syphilis with clinical manifestations**

#### **A. Clinical Criteria for Diagnosis**

Clinical manifestations of late syphilis other than neurosyphilis may include inflammatory lesions of the cardiovascular system, skin, and bone. Rarely, other

structures may be involved. Late syphilis usually becomes clinically manifest only after a period of 15-30 years of untreated infection.

### **B. Laboratory Criteria for Diagnosis**

A reactive treponemal blood test (TP-PA), or

Demonstration of *T. pallidum* in late lesions by fluorescent antibody or special stains (although organisms are rarely visualized in late lesions).

### **C. Case Definition**

Probable: characteristic abnormalities or lesions of the cardiovascular system, skin, bone, or other structures with a reactive treponemal test, in the absence of other known causes of these abnormalities, and without cerebrospinal fluid (CSF) abnormalities and clinical symptoms or signs consistent with neurosyphilis.

## **3G. CASE DEFINITIONS: Neurosyphilis**

Neurosyphilis can occur at almost any stage of syphilis. Therefore, if the patient has confirmed or probable neurosyphilis, the case should be reported as the appropriate stage of syphilis and the neurological manifestations should be noted.

### **A. Clinical Criteria for Diagnosis**

Evidence of central nervous system infection with *T. pallidum*.

### **B. Laboratory Criteria for Diagnosis**

A reactive serologic test for syphilis and a reactive VDRL in CSF.

### **C. Case Definition**

Probable: syphilis of any stage, a negative VDRL in CSF and both of the following:

1. Elevated CSF protein or leukocyte count in the absence of other known causes of these abnormalities.
2. Clinical symptoms or signs consistent with neurosyphilis without other known causes for these clinical abnormalities.

Confirmed: syphilis of any stage that meets laboratory criteria for neurosyphilis.

## **3H. CASE DEFINITIONS: Congenital Syphilis**

### **A. Clinical Criteria for Diagnosis**

A condition caused by infection in utero with *T. pallidum*. A wide spectrum of severity exists, and only severe cases are clinically apparent at birth. An infant or child (aged <2 years) may have signs such as hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (nonviral hepatitis), pseudoparalysis, anemia, or edema (nephrotic syndrome and/or malnutrition). An older child may have stigmata (e.g., interstitial keratitis, nerve deafness, anterior bowing of shins, frontal bossing, mulberry molars, Hutchinson teeth, saddle nose, rhagades, or Clutton joints).

Syphilitic stillbirth is a fetal death that occurs after a 20-week gestation or in which the fetus weighs >500 grams and the mother had untreated or inadequately treated (any nonpenicillin therapy or penicillin administered <30 days before delivery) syphilis at

delivery. Syphilitic stillbirths are reported as a congenital syphilis case.

### **B. Laboratory Criteria for Diagnosis**

Demonstration of *T. pallidum* by darkfield microscopy, fluorescent antibody, or other specific stains in specimens from lesions, placenta, umbilical cord, or autopsy material.

Reactive nontreponemal blood test (RPR or VDRL) and a reactive treponemal blood test (TP-PA).

### **C. Case Definition**

Probable: a condition affecting an infant whose mother had untreated or inadequately treated (any nonpenicillin therapy or penicillin administered <30 days before delivery) syphilis at delivery, regardless of signs in the infant, or an infant or child who has a reactive treponemal test for syphilis and any one of the following:

1. Any evidence of congenital syphilis on physical examination,
2. Any evidence of congenital syphilis on radiographs of long bones,
3. A reactive cerebrospinal fluid VDRL test,
4. An elevated CSF cell count or protein (without other cause),
5. A reactive fluorescent treponemal antibody absorbed—19S-immunoglobulin M (IgM) antibody test, or
6. A reactive IgM enzyme-linked immunosorbent assay

Confirmed: a case that is laboratory confirmed.

Congenital and acquired syphilis may be difficult to distinguish when a child is seropositive after infancy. Signs of congenital syphilis may not be obvious, and stigmata may not yet have developed. Abnormal values for CSF VDRL, cell count, and protein, as well as IgM antibodies, may be found in either congenital or acquired syphilis. Findings on radiographs of long bones may help because radiographic changes in the metaphysis and epiphysis are considered classic signs of congenitally acquired syphilis. The decision may ultimately be based on maternal history and clinical judgment. In a young child, the possibility of sexual abuse should be considered as a cause of acquired rather than congenital syphilis, depending on the clinical picture.

## **4. DIAGNOSIS AND LABORATORY SERVICES**

### **A. Diagnosis**

Demonstration of *T. pallidum* by darkfield microscopy, fluorescent antibody, or other specific stains in specimens from lesions, placenta, umbilical cord, or autopsy material. Reactive nontreponemal blood test (RPR or VDRL) and treponemal blood test (TP-PA).

### **B. Tests Available at PHL**

The Syphilis Serology Unit at the Washington State Public Health Laboratory (PHL) serves primarily as the Washington State reference laboratory for the confirmation of sera results that are reactive by any serological test for syphilis. The VDRL or RPR test is performed on all sera and spinal fluids submitted to the Syphilis Serology Unit. If the result is reactive, a confirmatory test that is specific for *T. pallidum* antibody (TP-PA) is

performed. The Syphilis Serology Unit also uses the treponemal screening enzyme immunoassay (EIA).

The TP-PA is not routinely performed on sera that are non-reactive. Exceptions can be made but must be communicated to the Syphilis Serology Unit by checking the Reference box on the requisition slip.

The VDRL is used to evaluate the results of treatment therapy as it tends to revert to a lower titer or non-reactive after treatment. The TP-PA will likely remain positive after treatment.

### **C. Criteria for Testing at PHL**

All reactive serologies (RPR, VDRL, EIA) must have a subsample submitted to the State Public Health Laboratory for a confirmatory test.

### **D. Specimen Transport**

See the Washington State laboratory web page for information on specimen mailing instructions. <http://www.doh.wa.gov/EHSPHL/PHL/packaging.htm>

## **5. ROUTINE CASE INVESTIGATION**

### **A. Evaluate the Diagnosis**

The diagnosis should be made with the criteria listed in case definitions above.

### **B. Identify Source of Infection**

Health department staff should attempt to interview all (100%) early cases of syphilis (primary, secondary and early latent staged). These should be initiated within three (3) working days after the receipt of newly documented positive results on all primary, secondary, and early latent cases. The goal of partner elicitation is to obtain sufficient information to confidentially locate, notify, and refer the partners or suspects for necessary examination, treatment (if appropriate), and risk reduction counseling. In-person interview is the preferred methodology, but telephone interview is also acceptable. Anyone attempting a syphilis interview should follow the CDC Guidelines for these interviews which can be found at: <http://www.cdc.gov/std/program/partners.pdf>

### **C. Managing Potentially Exposed Persons**

All sexual contacts (within 90 days) to early syphilis should be tested and treated. Those exposed over 90 days previous need a syphilis serology test only. An attempt to notify exposed partners should begin 24 hours after identifying information is obtained by LHJ staff.

See above CDC links for management of exposed persons.

### **D. Environmental Evaluation**

Not applicable

## 6. CONTROLLING FURTHER SPREAD

### A. Infection Control Recommendations

#### 1. Health care setting:

Standard Precautions are a set of protocols designed to reduce the risk of (or prevent) transmission of pathogens. Standard precautions synthesize the major features of Universal (Blood and Body Fluid) Precautions (designed to reduce the risk of transmission of bloodborne pathogens) and Body Substance Isolation (designed to reduce the risk of transmission of pathogens from moist body substances). Under standard precautions blood, all body fluids, and all body substances of patients are considered potentially infectious (CDC, 1997).

For more information, see CDC Program Guidelines:

<http://www.cdc.gov/std/program/med&lab.pdf>

#### 2. General

When used consistently and correctly, condoms are effective in preventing the sexual transmission of STDs.

### B. Case Management

See routine case investigation in Section 5 above.

### C. Contact Management

See routine case investigation in Section 5 above.

### D. Environmental Measures

None applicable.

## 7. MANAGING SPECIAL SITUATIONS

Special considerations should be followed in accordance with the CDC diagnostic and treatment guidelines at: <http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf>

Call the WA Department of Health STD Services for special situations. (360-236-3460)

## 8. ROUTINE PREVENTION

### A. Vaccine Recommendations

No vaccine currently exists for syphilis.

### B. Prevention Recommendations

Key individual STD prevention messages include:

#### **Abstinence**

Abstain from sex (do not have oral, anal, or vaginal sex) until you are in a relationship with only one person, are having sex with only each other, and each of you knows the other's STD, including HIV, status.

**If you have, or plan to have, more than one sex partner:**

- Use a latex condom and lubricant every time you have sex.
- Get tested for asymptomatic STDs including HIV.
- If you are a man who has had sex with other men, get tested at least once a year.
- If you are a woman who is planning to get pregnant or who is pregnant, get tested for syphilis and HIV as soon as possible, before you have your baby. Ask your health care provider about being tested for other STDs.
- Talk about STDs, including HIV, with each partner before you have sex.
- Learn as much as you can about each partner's past behavior (sex and drug use).
- Ask your partners if they have recently been treated for an STD or have been tested for HIV; encourage those who have not been tested to do so.

Key STD prevention strategies include:

**STD prevention counseling, testing, and referral services** – Individuals at risk for STD should be offered counseling regarding methods to eliminate or reduce their risk and testing so that they can be aware of their status and take steps to protect their own health and that of their partners.

**Partner Services (or Partner Notification) with strong linkages to prevention and treatment/care services** – Sexual partners of STD-infected persons have been exposed to an STD and are at-risk of being infected. Partner services locate these individuals based on information provided by the patient and provide counseling and education about the exposure as well as services to prevent infection or, if infected, linkages to care.

**Prevention for high-risk populations** – Prevention interventions for high-risk populations at high-risk for STDs, including HIV-infected persons, are critical to reducing the spread of STDs and HIV and ensure that those at highest risk of acquiring or transmitting these diseases are given the tools necessary to protect themselves and others from HIV infection. Prevention includes targeted health education and risk reduction, health communication programs, and public information programs for at-risk populations and the general public.

**School-based STD Prevention** – Schools have a critical role to play in promoting the health and safety of young people and helping them establish lifelong healthy behavior patterns. Washington State requires schools to teach medically accurate comprehensive sex education if such is provided by the school district.

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