

# SYPHILIS

**Also known as:** Syph, the pox, bad blood

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**Responsibilities:**

**Hospital:** Report by mail or phone

**Lab:** by mail

**Physician:** Report by mail or phone

**Local Public Health Agency (LPHA):** Follow-up Iowa Department of Public Health

**Iowa Department of Public Health**

**Sexually Transmitted Disease Reporting: (515) 281-3031**

## 1) THE DISEASE AND ITS EPIDEMIOLOGY

### A. Agent

Syphilis is a sexually transmitted disease (STD) caused by the bacterium *Treponema pallidum*, subspecies pallidum, a spirochete. It has often been called "the great imitator" because so many of the signs and symptoms are indistinguishable from those of other diseases.

### B. Clinical Description

- **Primary Stage:** The primary stage of syphilis is usually marked by the appearance of a single sore (called a chancre) at the site of infection. Primary lesions are not confined to the genital area; they may be seen on the lips, tongue, tonsils, nipples, fingers, anus, or other area that comes in contact with the infection. The chancre may not be visible if inside the vagina, anus or mouth. The time between infection with syphilis and the start of the first symptom can range from 10 to 90 days (average 21 days). The chancre is usually firm, round, small and painless. The chancre lasts 3 to 6 weeks and it heals without treatment. However, if adequate treatment is not administered, the infection progresses to the secondary stage.
- **Secondary Stage:** 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 soles 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 may not be noticed. Other symptoms of secondary syphilis may include fever, swollen lymph glands, sore throat, patchy hair loss, headaches, weight loss, muscle aches and fatigue. These symptoms may last 2 - 6 weeks (4 weeks average) and they may recur. 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/Late Stage:** Latent syphilis is the stage in which no observable clinical signs or symptoms are present to suggest infection, yet the serologic tests for syphilis are reactive. The latent stage of syphilis begins when secondary symptoms disappear. Early latent syphilis is defined as latent disease within the first year after infection. Late latent infection is when more than a year has passed since the patient became infected and there are no signs of disease. The reason for separating latent stages into early and late is that secondary relapses generally do not occur following the first year and that early latent disease is treated with a single dose of long acting benzathine penicillin vs. three doses for late latent disease. Without treatment, the bacteria

remain in the body even though there may be no clinical signs and symptoms. In the late stages of syphilis, it may subsequently damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones and joints. This internal damage may show up many years later. Signs and symptoms of the late stage of syphilis include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, deafness and dementia. This damage may be serious enough to cause death. For more information on neurosyphilis, cardiovascular syphilis, and other late stage syphilis, please contact the Sexually Transmitted Disease Program at 515-281-3031, or see the Centers for Disease Control and Prevention's STD Treatment Guidelines 2010 for more information: [www.cdc.gov/std/treatment/2010/default.htm](http://www.cdc.gov/std/treatment/2010/default.htm)

- **Onset**
  - Primary – 10 to 90 days (average 21 days)
  - Secondary – 6 weeks to 6 months
  - Early Latent – 6 months to 1 year
  - Late Latent – More than one year after infection
  - Late Stage – Years after initial infection
- **Complications** Pregnant women **MUST** be treated with long-acting benzathine penicillin during pregnancy to reduce the risk of transmitting the infection to their unborn children. Please see the Centers for Disease Control and Prevention's STD Treatment Guidelines 2010 for more information: [www.cdc.gov/std/treatment/2010/default.htm](http://www.cdc.gov/std/treatment/2010/default.htm)

### C. Reservoirs

Common reservoirs: Humans.

### D. Modes of Transmission

Spread: By direct contact with infectious exudates from obvious or concealed, moist, early lesions of skin and mucous membranes of infected people during sexual contact, most often in the primary stage of infection. Transmission by kissing occurs rarely. Transplacental infection of the fetus occurs during the pregnancy of an infected woman.

Rarely, transmission can occur through blood transfusion if the donor is in the early stages of disease. Blood donations are screened for syphilis, but early infections may not show up on screening tests. Infection by contact with contaminated articles may be theoretically possible but is extraordinarily rare. Health professionals have developed primary lesions on the hands following clinical examination of infectious lesions.

### E. Incubation period

Primary syphilis - from 10 days to 3 months, usually 3 weeks.

### F. Period of Communicability or Infectious Period

Communicability exists when moist mucocutaneous lesions of primary and secondary syphilis are present. However, 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. The lesions of secondary syphilis may recur with decreasing frequency up to four years after infection. However, transmission of infection is rare after the first year. Consequently, in the United States infectious early syphilis is usually defined as ending after the first year of infection.

Transmission of syphilis from mother to fetus is most probable 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.

## **G. Epidemiology**

In the United States, health officials reported 46,042 cases of syphilis in 2011, including 13,970 cases of primary and secondary (P&S) syphilis. Cases among males, and particularly among men who have sex with men (MSM), have increased since 2000. The rate of P&S syphilis increased 3.8% among men (from 7.9 cases to 8.2 cases per 100,000 men) between 2010 and 2011. These cases have been associated with high rates of HIV co-infection and high-risk sexual behavior. Case rates are lower among women; the rate of P&S syphilis decreased 9.1% among women from 2010 to 2011, from 1.1 to 1.0 cases per 100,000 women. Finally, after an increase of 18% during 2006-2008, the overall rate of congenital syphilis decreased, from 10.5 to 8.5 cases per 100,000 live births during 2008-2011. This decrease in the rate of congenital syphilis likely reflects the decrease in the rate of P&S syphilis among women during 2008-2011.

The number of syphilis cases in Iowa is increasing as well. Total syphilis case numbers increased from 29 in 2005 to 70 in 2011. Healthcare providers should be vigilant to watch for signs of primary and secondary syphilis, and take care to conduct thorough social history, including travel and sexual activity in high syphilis incidence areas.

## **H. Bioterrorism Potential:**

None.

## **2) DISEASE REPORTING AND CASE INVESTIGATION**

### **A. Purpose of Surveillance and Reporting**

- To interrupt disease transmission, the Iowa Department of Public Health (IDPH) provides partner counseling and referral services for persons recently diagnosed with syphilis infection, and their exposed partner(s).
- To monitor trends in syphilis diagnoses so that prevention and treatment funds may be targeted efficiently, and prevention programs may be evaluated.
- To monitor perinatal exposures to syphilis infection and morbidity in infants born to syphilis-infected women.

### **B. Laboratory and Healthcare Provider Reporting Requirements**

Iowa Administrative Code 641-1.3(139A) stipulates that the laboratory and healthcare providers must report syphilis. Laboratory personnel should forward results of tests directly to the Iowa Department of Public Health.

All confirmed laboratory diagnoses of syphilis are to be reported to the IDPH STD Program by mail or phone.

Healthcare Providers must complete an "Iowa Confidential Report of Sexually Transmitted Diseases and HIV Infection" morbidity report within 3 days of diagnosing a positive syphilis infection.

Healthcare Providers are to provide a date of birth, home address, phone number and treatment information on each reported case. Providers should also report any partner information that is available, including treatment information for the partners.

Laboratory personnel should forward results of tests directly to the IDPH STD Program. "Iowa Confidential Report of Sexually Transmitted Diseases and HIV Infection," "Laboratory Report of Tests Processed for STD," and postage paid envelopes (coded #00) are available at the clearinghouse at [http://healthclearinghouse.drugfreeinfo.org/cart.php?target=category&category\\_id=303](http://healthclearinghouse.drugfreeinfo.org/cart.php?target=category&category_id=303) . Send completed reports to the address below:

Iowa Department of Public Health  
STD Program (#00)  
321 East 12<sup>th</sup> Street, 5<sup>th</sup> Floor  
Des Moines, IA 50319-0075

## **C. Local Public Health Agency Follow-up Responsibilities**

### Case Investigation

Partner notification and referral services will be provided by Disease Prevention Specialists employed by the IDPH, or by Black Hawk, Linn, Polk, or Scott county health departments.

## **3) CONTROLLING FURTHER SPREAD**

### **A. Isolation and Quarantine Requirements**

None.

### **B. Protection of Contacts of a Case**

The IDPH will initiate the partner notification program with all persons who are newly diagnosed with syphilis infection. Healthcare providers can facilitate this process by describing the program to the patient and encouraging the patient to meet with the disease prevention specialist assigned to his or her region.

Patients' names and times of exposures are not used in the notification of partners. Syphilis testing is offered to all partners free of charge and appropriate referrals to other services are provided during the partner counseling sessions.

Physicians should assist the disease prevention specialists with the collection of partner information for notification. In such cases, the physician should collect the following information: Partner name, address, home phone number, age and/or date of birth, race, sex, partner/marital status, height, size/build, general description of the partner, and dates of first and last exposure. Any other information that may help in locating and counseling the partner may also be included, such as medical conditions, place of employment, cell phone numbers, or other unusual circumstances/situations.

### **C. Managing Special Situations**

#### **Occupational Exposures**

None.

#### **Reported Incidence Is Higher than Usual/Outbreak Suspected**

Report unusual cases to the Iowa Department of Public Health at (515) 281-3031.

### **D. Preventive Measures**

#### **Preventive Measures/Education**

Risk reduction counseling/education and testing should be offered to all persons with risk factors for syphilis infection and transmission.

The best way to avoid transmission of sexually transmitted diseases is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex male condoms for vaginal, oral or anal sex, when used consistently and correctly, can reduce the risk of transmission of syphilis.

The Centers for Disease Control STD Treatment Guidelines provide specific recommendations for STD prevention services that should be provided for all sexually active men who have sex with men (MSM). [www.cdc.gov/std/treatment/2010/default.htm](http://www.cdc.gov/std/treatment/2010/default.htm) The first recommendation for this population is that STD screening be performed at least annually.

Any genital symptoms such as an unusual sore or rash should be a sign to stop having sex and consult a healthcare provider immediately. If a person has been diagnosed with syphilis (or any other STD), he or she must notify all recent sex partners so they can see a healthcare provider and

be treated. The person and all of his or her sex partners must avoid sex until they have completed their treatment for syphilis. Disease prevention specialists will assist infected patients with this process.

In addition to treatment for syphilis, an infected patient should be tested for other sexually transmitted diseases including HIV.

See

<http://hivtest.cdc.gov/STDTesting.aspx>

for a current list of sites which can provide STD testing, as well as HIV testing and counseling.

For information on STD/HIV testing sites, please call the Iowa Department of Public Health STD Program at 515-281-3031.

## 4) ADDITIONAL INFORMATION

### Laboratory criteria for diagnosis

The State Hygienic Lab will be discontinuing the confirmatory syphilis Fluorescent treponemal antibody absorption test (FTA-ABS) effective 1 Feb 2015. Scientific literature notes that while the FTA-ABS is highly sensitive and specific, it has been known to produce variable results due to variation in equipment, reagents and interpretation. Additionally, the CDC and other agencies recommend replacing the FTA-ABS with the *Treponema pallidum* – particle agglutination (TP-PA) test which is currently performed at SHL. The TP-PA test is less complicated than the FTA-ABS test, and the results are more accurately interpreted.

Darkfield examinations and direct fluorescent antibody tests of lesion exudates or tissue are the definitive methods for diagnosing early syphilis. A presumptive diagnosis is possible with the use of two types of serologic tests for syphilis: a) nontreponemal tests (e.g., Venereal Disease Research Laboratory [VDRL] and Rapid Plasma Reagin [RPR]) and b) treponemal tests (e.g., fluorescent treponemal antibody absorbed [FTA-ABS] and *T. pallidum* particle agglutination [TP-PA]). The use of only one type of serologic test is insufficient for diagnosis, because false-positive nontreponemal test results may occur secondary to various medical conditions.

Nontreponemal test antibody titers usually correlate with disease activity, and results should be reported quantitatively. A fourfold change in titer, equivalent to a change of two dilutions (e.g., from 1:16 to 1:4 or from 1:8 to 1:32), is considered necessary to demonstrate a clinically significant difference between two nontreponemal test results that were obtained using the same serologic test. Sequential serologic tests in individual patients should be performed by using the same testing method (e.g., VDRL or RPR), preferably by the same laboratory. The VDRL and RPR are equally valid assays, but quantitative results from the two tests cannot be compared directly because RPR titers often are slightly higher than VDRL titers. Nontreponemal tests usually become nonreactive with time after treatment; however, in some patients, nontreponemal antibodies can persist at a low titer for a long period of time, sometimes for the life of the patient. This response is referred to as the "serofast reaction."

Most patients who have reactive treponemal tests will have reactive tests for the remainder of their lives, regardless of treatment or disease activity. However, 15%-25% of patients treated during the primary stage revert to being serologically nonreactive after 2-3 years. Treponemal test antibody titers correlate poorly with disease activity and should not be used to assess treatment response.

### Case Definitions

The Council of State and Territorial Epidemiologists (CSTE) surveillance case definitions for Syphilis can be found at: [www.cdc.gov/osels/ph\\_surveillance/nndss/phs/infdis.htm#top](http://www.cdc.gov/osels/ph_surveillance/nndss/phs/infdis.htm#top)

CSTE case definitions should not affect the investigation or reporting of a case that fulfills the criteria in this chapter. (CSTE case definitions are used by the state health department and the CDC to maintain uniform standards for national reporting.)

### **Treatment**

Long acting Penicillin G, administered parenterally, is the preferred drug for treatment of all stages of syphilis. The preparation(s) used (i.e., benzathine, aqueous procaine, or aqueous crystalline), the dosage, and the length of treatment depend on the stage and clinical manifestations of disease. However, neither combinations of benzathine penicillin and procaine penicillin nor oral penicillin preparations are considered appropriate for the treatment of syphilis.

The efficacy of penicillin for the treatment of syphilis was well established through clinical experience before the value of randomized controlled clinical trials was recognized. Therefore, almost all the recommendations for the treatment of syphilis are based on the opinions of persons knowledgeable about STDs and are reinforced by case series, clinical trials, and 50 years of clinical experience.

For treatment information related to the stages of syphilis, recommended dosage, and special considerations, please refer to the 2010 CDC STD Treatment Guidelines.

[www.cdc.gov/std/treatment/2010/default.htm](http://www.cdc.gov/std/treatment/2010/default.htm)

### **References**

Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2007 Supplement, Syphilis Surveillance Report*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, March 2009.

Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines 2010. MMWR 2010; 59, RR-12 [www.cdc.gov/std/treatment/2010/default.htm](http://www.cdc.gov/std/treatment/2010/default.htm)

Heymann, D.L., ed. *Control of Communicable Diseases Manual, 20<sup>th</sup> Edition*. Washington, DC, American Public Health Association, 2015.

Notification And Surveillance of Reportable Communicable and Infectious Diseases, Poisonings and Conditions. Iowa Code 2003 Section 139A.

### **Additional Resources**

CDC website with most current guidelines for prevention, surveillance, and treatment:

[www.cdc.gov/std/syphilis/default.htm](http://www.cdc.gov/std/syphilis/default.htm)

HIV/AIDS Program web site, Iowa Department of Public Health.

[www.idph.state.ia.us/HivStdHep/](http://www.idph.state.ia.us/HivStdHep/)

CDC Factsheet

[www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm](http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm)

Syphilis and Men Who Have Sex With Men (MSM)

[www.cdc.gov/std/syphilis/STDFact-MSM-Syphilis.htm](http://www.cdc.gov/std/syphilis/STDFact-MSM-Syphilis.htm)

The National Plan to Eliminate Syphilis from the United States

[www.cdc.gov/stopsyphilis/plan.htm](http://www.cdc.gov/stopsyphilis/plan.htm)