Syphilis *(Treponema pallidum)*

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1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Syphilis is caused by the spirochete *Treponema pallidum*.

B. Clinical Description and Laboratory Diagnosis

A contagious systemic disease characterized by primary lesions (i.e., painless, indurated ulcer or chancre with serous exudate appearing at the infection site), secondary eruptions (i.e., manifestations that include but are not limited to skin rash, mucocutaneous lesions, and lymphadenopathy), long periods of latency, and tertiary manifestations (e.g., cardiac, ophthalmic, auditory, central nervous system abnormalities, and gummatous lesions). Fetal infection frequently causes abortion or stillbirth and may cause infant death due to preterm delivery of low-birth weight infants or from general systemic disease. Congenital infection may result in late manifestations, including involvement of the CNS and occasionally causing stigmata as Hutchinson teeth, saddle nose, saber shins, interstitial keratitis and deafness. Congenital syphilis can be asymptomatic, especially in the first weeks of life.

Laboratory diagnosis is based upon serological tests of blood and CSF. Reactive tests with nontreponemal antigens (rapid plasma reagin [RPR], Venereal Disease Research Laboratory [VDRL]) need to be confirmed by specific tests using treponemal antigens (fluorescent treponemal antibody absorbed test [FTA-ABS], or *T. pallidum* particle agglutination antibody [TPPA]). Primary and secondary syphilis can be confirmed by visualization of spirochetes in dark-field or phase-contrast examination microscopy or using fluorescent-labeled antibody.

C. Vectors and Reservoirs

Humans.

D. Modes of Transmission

By sexual contact with moist mucosal or cutaneous lesions. Congenital syphilis is acquired by transplacental transmission of *T. pallidum*.

E. Incubation Period

The incubation period ranges from 10 to 90 days with an average of 21 days.

F. Period of Communicability or Infectious Period

Variable and indefinite; during primary and secondary stages and also in mucocutaneous recurrences that may occur during the first four years of latency. Extent of communicability in the latency period has not been established. Fetal infection occurs with high frequency in untreated early infections of pregnant women and with lower frequency later in latency. Adequate antibiotic therapy usually ends infectivity in 24 – 48 hours.

G. Epidemiology

Syphilis is distributed worldwide but is especially prevalent in developing countries. Historically, syphilis was distributed throughout the United States but rates declined during the late 1940s after the advent of penicillin therapy and public health programs. Syphilis rates have fluctuated since the 1960s with the most recent peak rates in 1990; rates have been in rapid decline since. More than 80% of recent cases were reported in the southern United States; however, there are still significant pockets of infection in large urban centers outside the south. In the last decade the demographics of the disease has changed from one affecting white homosexual

males to one that is predominately found among heterosexual African-Americans. The disease is most commonly found in persons in their early 20s to early 30s. In the year 2000, 71 cases of primary and secondary syphilis, 608 cases of early, late and late latent stage syphilis, and 22 cases of congenital syphilis were reported to the New Jersey Department of Health and Senior Services.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition

SYPHILIS, PRIMARY

CASE CLASSIFICATION

A. Confirmed

A clinically compatible case, **AND**

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

B. Probable

A clinically compatible case with (one or more ulcers [chancres] consistent with primary syphilis), **AND**

- Reactive nontreponemal serologic test VDRL or RPR, **OR**
- Reactive treponemal test: FT-ABS or TP-PA.

SYPHILIS, SECONDARY

CASE CLASSIFICATION

A. Confirmed

A clinically compatible case, **AND**

- Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, DFA-TP, or equivalent methods.

B. Probable

A clinically compatible case, **AND**

- A nontreponemal (VDRL or RPR) titer greater than or equal to 4.

SYPHILIS, LATENT

CASE CLASSIFICATION

Probable

A case with **No** clinical signs or symptoms of syphilis, **AND**

- No past diagnosis of syphilis, **AND** a reactive nontreponemal test (i.e., VDRL or RPR), and treponemal test (i.e., FTA-ABS or 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.

SYPHILIS, EARLY LATENT

A subcategory of latent syphilis. When initial infection has occurred within the previous 12 months, latent syphilis is classified as early latent.

CASE CLASSIFICATION

Probable

Latent syphilis (see "Syphilis, latent") in a person who has evidence of having acquired the infection within the previous 12 months based on **one or more** of the following criteria:

- Documented seroconversion or fourfold or greater increase in titer of a nontreponemal test during the previous 12 months, **OR**
- A history of symptoms consistent with primary or secondary syphilis during the previous 12 months, **OR**
- 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 less than 1 year), **OR**
- Reactive nontreponemal and treponemal tests from a person whose only possible exposure occurred within the preceding 12 months.

SYPHILIS, LATE LATENT

A subcategory of latent syphilis. When initial infection has occurred greater than 1 year previously, latent syphilis is classified as late latent.

CASE CLASSIFICATION

Probable

Latent syphilis (see "Syphilis, latent") in a patient who has no evidence of having acquired the disease within the preceding 12 months (see "Syphilis, early latent") and whose age and titer do not meet the criteria specified for latent syphilis of unknown duration.

SYPHILIS, LATENT, OF UNKNOWN DURATION

A subcategory of latent syphilis. When the date of initial infection cannot be established as having occurred within the previous year and the patient's age and titer meet criteria described below, latent syphilis is classified as latent syphilis of unknown duration.

CASE CLASSIFICATION

Probable

Latent syphilis (see Syphilis, latent) that does not meet the criteria for early latent syphilis, and the patient is aged 13-35 years, **AND**

- A nontreponemal titer greater than or equal to 32.

NEUROSYPHILIS

CASE CLASSIFICATION

A. Confirmed

Syphilis of any stage, **AND**

- A reactive serologic test for syphilis and reactive VDRL in cerebrospinal fluid (CSF).

B. Probable

Syphilis of any stage, a negative VDRL in CSF, **AND**

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

SYPHILIS, LATE, WITH CLINICAL MANIFESTATIONS OTHER THAN NEUROSYPHILIS (LATE BENIGN SYPHILIS AND CARDIOVASCULAR SYPHILIS)

CASE CLASSIFICATION

A. Confirmed

A clinically compatible case, **AND**

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

B. Probable

A case with characteristic abnormalities or lesions of the cardiovascular system, skin, bone, or other structures, in the absence of other known causes of these abnormalities, and without CSF abnormalities and clinical symptoms or signs consistent with neurosyphilis, **AND**

- Reactive treponemal test.

Comment: Analysis of CSF for evidence of neurosyphilis is necessary in the evaluation of late syphilis with clinical manifestations.

SYPHILITIC STILLBIRTH

A fetal death that occurs after a 20-week gestation or in which the fetus weighs greater than 500 g and the mother had untreated or inadequately treated syphilis at delivery.

Comment: For reporting purposes, syphilitic stillbirths should be reported as cases of congenital syphilis.

SYPHILIS, CONGENITAL

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 less than 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).

CASE CLASSIFICATION

A. Confirmed

Clinical case, **AND**

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

B. Probable

A condition affecting an infant whose mother had untreated or inadequately treated syphilis at delivery,

regardless of signs in the infant, or an infant or child who has a reactive treponemal test for syphilis **AND**:

- Any evidence of congenital syphilis on physical examination, **OR**
- Any evidence of congenital syphilis on radiographs of long bones, **OR**
- A reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL), **OR**
- An elevated CSF cell count or protein (without other cause), **OR**
- A reactive fluorescent treponemal antibody absorbed -- 19S-IgM antibody test or IgM enzyme-linked immunosorbent assay.

Comment: 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. For reporting purposes, congenital syphilis includes cases of congenitally acquired syphilis among infants and children as well as syphilitic stillbirths.

***Note*: See Section 3 B & C below for information on how to report cases of syphilis.**

B. Laboratory Testing Services Available

Laboratory testing for syphilis is available on site at the Public Health and Environmental Laboratories (PHEL). For additional information on submitting samples, contact the PHEL (phone 609.292.7368).

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify the prevalence of syphilis in New Jersey.
- To identify where syphilis occurs in New Jersey.

- To recognize areas in New Jersey where syphilis incidence has increased or decreased.
- To focus preventive education.

B. Laboratory and Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (N.J.A.C. 8:57-1.8) stipulates that laboratories and the health care providers report all cases of syphilis **to the NJDHSS Sexually Transmitted Diseases Program** by telephone (609.588.7526), confidential fax (609.588.7462) or in writing using STD-11 form. The STD-11 form can be obtained from the Sexually Transmitted Diseases Program (at phone 609.588.7526).

C. Health Officer's Reporting and Follow-up Responsibilities

1. **Reporting Requirements**

The New Jersey Administrative Code (N.J.A.C. 8:57-1.6) stipulates that positive tests for syphilis and/or cases of syphilis, as defined by the criteria in Section 2A, be reported directly to the Department of Health and Senior Services using a STD-11 form. Form may be mailed or faxed (609.588.7462) to the STD Program. A local health officer who is notified of the existence of positive tests for syphilis and/or cases of syphilis shall forward the case report to the NJDHSS Sexually Transmitted Disease Program.
The mailing address is:

NJDHSS
Division of Epidemiology, Environmental and Occupational Health
Sexually Transmitted Diseases Program
P.O.Box 369
Trenton, NJ 08625-0369

2. **Case Investigation**

Institution of disease control measures is an integral part of case investigation. It is the local health officer's responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4, "Controlling Further Spread."

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements

Minimum Period of Isolation of Patient

Patients should refrain from sexual intercourse until treatment is completed and lesions have healed and refrain from sexual contact with previous sexual partners until they have been treated. Universal precautions for blood and body secretions should be applied to hospitalized patients.

Minimum Period of Quarantine of Contacts

No restrictions.

B. Protection of Contacts of a Case

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 sexually to a person who has syphilis in any stage should be evaluated clinically and serologically according to the following recommendations:

- Persons who were exposed within 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.

- Persons who were exposed >90 days preceding 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.
- For purposes of partner notification and presumptive treatment of exposed sex partners, patients with syphilis of unknown duration who have high treponemal serologic test titers (i.e., $\geq$1:32) can be assumed to have early syphilis. However, serologic titers should not be used to differentiate early from late syphilis for the purpose of determining treatment.
- 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 evaluation findings.

For identification of at-risk sex partners, the time periods before treatment 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. Managing Special Situations

None.

D. Preventive Measures

Personal Preventive Measures/Education

In general, the following preventive measures are applicable to all sexually transmitted diseases (STD):

- The patient should be strongly advised to avoid sexual contact while symptoms are present as they can be highly infectious.
- The patient should be strongly encouraged to ensure that their recent sexual partners (see Section B above) be tested and treated if necessary.
- The patient should be strongly advised to avoid high-risk sexual behaviors, wear condoms and avoid having multiple sexual partners.

ADDITIONAL INFORMATION

The Centers for Disease Control and Prevention (CDC) surveillance definition for syphilis is the same as the criteria in Section 2 A of this chapter. CDC case definitions are used by state health departments and CDC to maintain uniform standards for national reporting. For reporting to the NJDHSS, always refer to the criteria in Section 2A.

REFERENCES

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