



Syphilis

Disease Plan

Quick Links

www.cdc.gov/std/treatment

<http://health.utah.gov/epi/diseases/syphilis/>

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Last updated: 02/28/2018, by Scott White.

Questions about this disease plan?

Contact the Utah Department of Health Bureau of Epidemiology: 801-538-6191.

✓ **CRITICAL CLINICIAN INFORMATION**

Clinical Evidence
<p>Signs/Symptoms</p> <ul style="list-style-type: none"> • Primary syphilis: Ulcerative lesion (i.e., chancre) that is usually firm, round, small and painless • Secondary syphilis: Localized or diffuse mucocutaneous lesions (non-pruritic macular, maculopapular, papular or pustular lesions), generalized lymphadenopathy, mucous patches, condyloma lata, and/or alopecia • Neurosyphilis: syphilitic meningitis, meningovascular syphilis, general paresis, including dementia, and/or tabes dorsalis • Ocular syphilis: posterior uveitis, panuveitis, anterior uveitis, optic neuropathy, and/or retinal vasculitis • Otic manifestations: sensorineural hearing loss, tinnitus, and/or vertigo • Late clinical manifestations: inflammatory lesions of the cardiovascular system (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis), and/or other tissue. • Congenital: Fetal death, hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (non-viral hepatitis), pseudo-paralysis, anemia, and/or edema (nephrotic syndrome and/or malnutrition).
<p>Period of Communicability</p> <ul style="list-style-type: none"> • The extent of communicability depends on the existence of infectious lesions (sores), which may or may not be visible
<p>Incubation Period</p> <ul style="list-style-type: none"> • The average time between infection with syphilis and the development of a painless lesion known as a chancre is 21 days, but can range from 10-90 days.
<p>Mode of Transmission</p> <ul style="list-style-type: none"> • Sexual: person to person via vaginal, anal, or oral sex through direct contact with syphilis sores or lesions. • Vertical: from infected mother to her unborn baby via the bloodstream.
Laboratory Testing
<ul style="list-style-type: none"> • Darkfield microscopy • Special stains (e.g., silver staining) • Polymerase chain reaction (PCR) or equivalent direct molecular tests • Non-treponemal serologic tests <ul style="list-style-type: none"> • Venereal Disease Research Laboratory [VDRL] • Rapid plasma reagin [RPR] • Treponemal serologic tests <ul style="list-style-type: none"> • <i>Treponema pallidum</i> particle agglutination [TP-PA] • Treponemal enzyme immunoassay (EIA) • Treponemal chemiluminescence immunoassay (CIA) <p>A positive treponemal and a positive non-treponemal test are usually required to confirm a syphilis infection.</p>
<p>Type of Specimens</p> <ul style="list-style-type: none"> • Blood • Cerebrospinal fluid (CSF) • Specimens from lesions, neonatal nasal discharge, placenta, umbilical cord, or autopsy material

Treatment Recommendations
Type of Treatment <ul style="list-style-type: none">• Benzathine penicillin G – 2.4 million units IM• See complete CDC guidelines for treatment of pregnant women, children, congenital syphilis, and clinical manifestations including neurosyphilis, ocular syphilis, and otic manifestations
Time Period to Treat <ul style="list-style-type: none">• Early Syphilis: Single dose• Unknown duration or late: Three doses each at 1 week intervals
Prophylaxis <ul style="list-style-type: none">• All contacts of cases of early syphilis exposed within 90 days of examination should receive treatment.
Contact Management
Isolation of Case <ul style="list-style-type: none">• Cases should avoid sexual contact until treatment is completed.
Quarantine of Contacts <ul style="list-style-type: none">• Not applicable
Infection Control Procedures
<ul style="list-style-type: none">• Standard body substance precautions in hospitals.

✓ WHY IS DISEASE IMPORTANT TO PUBLIC HEALTH?

Syphilis is a complex, sexually transmitted disease comprised of several stages throughout the duration of infection. Untreated syphilis can cause clinical manifestations affecting the cardiovascular system, skin, bone, and other tissues. Neurological manifestations are also possible. A pregnant woman who has syphilis can pass this infection to her infant *in utero*. If left untreated, severe birth defects and fetal death can occur.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

Syphilis is a sexually transmitted disease (STD) caused by the bacterium *Treponema pallidum*. Acute infection is characterized clinically by a primary lesion (i.e., chancre) or a secondary rash eruption involving skin and mucous membranes. Chronic infection is characterized by long periods of latency and late lesions of the skin, bone, viscera, central nervous system (CNS), and cardiovascular system.

Primary Syphilis: In the primary stage of syphilis, the average time between infection with syphilis and the development of a painless lesion known as a chancre is 21 days, but can range from 10-90 days. Chancres most frequently occur in the genital, oral, perineal, or anal area; however, any part of the body may be infected.

Secondary Syphilis: In the secondary stage, a disseminated skin rash and lesions of the mucous membranes are most common. Other manifestations include malaise, lymphadenopathy, mucous patches (elevated patches in the mouth or anus), condylomata lata (syphilitic wart-like lesions generally in the perineal and perirectal areas) and alopecia (patchy hair loss). The rash of secondary syphilis usually begins after the primary lesion (chancre) is healing or several weeks after the sore has healed.

Early Non-Primary Non-Secondary Syphilis: This stage of infection occurs in the first year of infection and the patient is entirely free of primary and secondary symptoms.

Unknown Duration or Late Syphilis: A stage of infection in which initial infection has occurred >12 months previously or in which there is insufficient evidence to conclude that infection was acquired during the previous 12 months.

Congenital Syphilis: A condition caused by an infection *in utero* with *Treponema pallidum*. A wide spectrum of severity exists, from unapparent infection to severe cases that are clinically apparent at birth. An infant or child (aged <2 years) may have signs such as hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (non-viral 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 [fissures, cracks, or linear scars in skin, especially at the angles of the mouth and nose], or Clutton's joints).

Syphilis 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.

Neurological Manifestations: These can occur at any stage of syphilis and include syphilitic meningitis, meningovascular syphilis, general paresis, including dementia, and tabes dorsalis.

Ocular Manifestations: These can occur at any stage of syphilis and include posterior uveitis, panuveitis, anterior uveitis, optic neuropathy, and retinal vasculitis. Ocular syphilis may lead to decreased visual acuity including permanent blindness.

Otic Manifestations: These can occur at any stage of syphilis and include sensorineural hearing loss, tinnitus, and vertigo.

Causative Agent

Syphilis is caused *Treponema pallidum*, a corkscrew shaped bacterium (spirochete).

Differential Diagnosis

The differential diagnosis for primary syphilis includes chancroid, granuloma inguinale, trauma to the penis, genital herpes, lymphogranuloma venereum, malignancy, or a fixed drug eruption, which may cause lesions resembling a chancre. An important distinguishing feature is that a chancre is usually painless. The differential diagnosis for secondary syphilis lesions includes pityriasis rosea, which may closely resemble psoriasis, erythema multiforme, or a drug eruption.

Laboratory Identification

- Direct methods of diagnosis. *T. pallidum* cannot be cultured in a laboratory and must be identified through direct visualization or detection in clinical specimens.
 - Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy
 - Demonstration of *T. pallidum* in late lesions by special stains
 - Reactive direct fluorescent antibody (DFA) test
 - Reactive polymerase chain reaction (PCR) or equivalent direct molecular test.
Depending on the laboratory test used, the sensitivity ranges from 70%-95% and the specificity from 92%-98%.
- Reactive non-treponemal serologic tests
 - Reactive Venereal Disease Research Laboratory (VDRL) serologic test
 - Reactive rapid plasma reagin (RPR) serologic test
 - Reactive results with equivalent serologic methods
- Reactive treponemal serologic tests
 - Reactive *T. pallidum* particle agglutination (TP-PA) serologic test
 - Reactive Microhemagglutination test for antibodies to *T. pallidum* (MHA-TP)
 - Reactive treponemal enzyme immunoassay (EIA) serologic test
 - Reactive treponemal chemiluminescence immunoassay (CIA) serologic test
 - Reactive fluorescent treponemal antibody absorbed [FTA-ABS] serologic test
 - Reactive results with equivalent serologic methods
- Reactive VDRL in a specimen of cerebrospinal fluid

In addition, other laboratory test results associated with congenital syphilis include:

- Demonstration of *T. pallidum* in lesions, body fluids, or neonatal discharge by darkfield microscopy

- Demonstration of *T. pallidum* by PCR or other equivalent direct molecular methods of lesions, neonatal nasal discharge, placenta, umbilical cord or autopsy material
- Demonstration of *T. pallidum* by immunohistochemistry (IHC), or special stains (e.g., silver staining) of specimens from lesions, placenta, umbilical cord, or autopsy material

NOTE: Treponemal and/or non-treponemal tests are often performed to confirm or follow up a reactive serologic test for syphilis. All such confirmatory test results (both reactive and nonreactive) should be reported when available, but their availability should not delay report of an initial reactive serologic test result. All reactive results should be reported regardless of treatment status of the patient.

Treatment

Penicillin G., administered parenterally, is the preferred drug for all stages of syphilis.

Primary, Secondary or Early Non-Primary Non-Secondary Syphilis

Benzathine penicillin G 2.4 million units IM in a single dose.

Unknown Duration or Late Syphilis

Benzathine penicillin G 7.2 million units total, administered as 3 doses of 2.4 million units IM each at 1 week intervals (up to 9 days apart for non-pregnant women).

Clinical Manifestations: *Neurosyphilis and Ocular Syphilis*

Aqueous crystalline penicillin G 18-24 million units per day, administered as 3-4 million units IV every 4 hours or continuous infusion, for 10-14 days.

Congenital Syphilis

Aqueous crystalline penicillin G 100,000-150,000 units/kg/day, administered as 500,000 units/kg/dose IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days.

OR

Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days.

Penicillin is the drug that has been most well-evaluated for the treatment of syphilis. Alternatives for patients who are allergic to penicillin:

- Testing for penicillin allergy and/or rechallenging with penicillin
- Desensitizing to penicillin if allergy testing is positive
- Using an alternative agent with close post-treatment monitoring.

For additional treatment options and alternatives, visit www.cdc.gov/std/treatment for the Sexually Transmitted Disease Treatment Guidelines, 2015.

Case Fatality

Up to 20% of untreated cases die from this disease. Untreated early syphilis in pregnant women results in perinatal death in up to 40% of cases.

Reservoir

Humans are the only known natural hosts.

Transmission

Syphilis is transmitted by direct contact with a syphilitic sore, known as a chancre, during vaginal, anal, or oral sex. Transmission may also occur across the placenta prior to birth. Transmission rarely occurs by blood transfusion.

Susceptibility

Susceptibility is universal, though only approximately 30% of exposures result in infection.

Incubation Period

The incubation period of primary syphilis is 9-90 days, with a median incubation period of 21 days. The incubation period for secondary syphilis is 3-6 months.

Period of Communicability

Patients are most infectious during the primary and secondary stages of syphilis when symptoms, such as lesions or a rash, are present.

Epidemiology

Syphilis is a complex, sexually transmitted disease comprised of several stages throughout the duration of infection. Primary and secondary syphilis represent symptomatic disease and indicate incident infection. Consequently, rates of primary and secondary syphilis are utilized to monitor trends in disease. Reported national rates of syphilis reached record lows in 2000. The rate of primary and secondary syphilis that year was 2.1 cases per 100,000 population. Since then, rates have steadily increased with a national rate of 8.7 cases per 100,000 population reported in 2016. Nationally, rates are highest among males, persons aged 25-29 and 20-24 years, and Black non-Hispanics.

Primary and secondary syphilis rates have been sporadic since 2004 in Utah, reaching a high in 2013 with a rate of 2.6 cases per 100,000 population, then dropping to 1.6 cases per 100,000 population in 2014. In 2016, the rate of reported cases increased to 3.0 cases per 100,000 population. Consistent with national trends, rates were highest among males, persons aged 20-24 years, and Black non-Hispanics. Ninety-four percent (n=87) of the early syphilis cases reported in Utah were males, of which 89% were men who have sex with men (MSM). Primary and secondary rates among Utahns have remained almost half of the national rate for the past 10 years.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public and clinicians regarding disease transmission and prevention.
- Identify clusters or outbreaks of this disease.
- Identify sources of exposure and stop further transmission.

Prevention

- Emphasis should be placed on early detection and effective treatment of patients with transmissible syphilis and their contacts.
- Educate the community regarding general health promotion measures:
 - Provide health and sex instruction that teaches the value of delaying sexual activity until the onset of sexual maturity, as well as the importance of establishing mutually monogamous relationships and reducing the numbers of sexual partners.
- Protect the community and control STDs in sex workers and their clients:
 - Discourage multiple sexual partners and anonymous or casual sexual activity.
 - Teach methods of personal prophylaxis applicable before, during, and after exposure, especially the correct and consistent use of condoms.
- Ensure access to health care facilities for early diagnosis and treatment:
 - Encourage their use through education of the public about symptoms of sexually transmitted infections and modes of transmission.
 - Make these services culturally appropriate, readily accessible, and acceptable, regardless of economic status.
 - Establish intensive case-finding programs that include interviewing patients and partner notification.
 - Implement repeated serological screening for syphilis within special populations with known high incidence of STDs.
 - Exclude other STD infections (e.g., HIV) through testing.

Chemoprophylaxis

All contacts of cases of early syphilis exposed within 90 days of examination should receive treatment.

Vaccine

None.

Isolation and Quarantine Requirements

Isolation: Avoid sexual contact until treatment is completed.

Hospital: Standard body substance precautions.

Quarantine: Not applicable.

✓ CASE INVESTIGATION

Reporting

All cases of syphilis are reportable, even asymptomatic syphilis.

Criteria to determine whether a case should be reported to public health authorities

Criterion	Syphilis		Congenital Syphilis
<i>Clinical Presentation</i>			
Ulcerative lesion (e.g., chancre)		O	
Localized or diffuse mucocutaneous lesions (non-pruritic macular, maculopapular, papular or pustular lesions)		O	
Generalized lymphadenopathy		O	
Mucous patches		O	
Condyloma lata		O	
Alopecia		O	
Clinical signs or symptoms and laboratory results that meet the likely or verified criteria for neurologic, ocular, otic, or late clinical manifestations syphilis	S		
Evidence of congenital syphilis on physical examination			S
Evidence of congenital syphilis on radiographs of long bones			S
<i>Laboratory Findings</i>			
Demonstration of <i>Treponema pallidum</i> in clinical specimens by darkfield microscopy	S	O	
Demonstration of <i>T. pallidum</i> in late lesions by special stains	S	O	
Reactive PCR test or equivalent direct molecular methods	S	O	
Reactive non-treponemal serologic test (VDRL, RPR, or equivalent serologic methods)	S	O	S
Reactive treponemal serologic test (TP-PA, EIA, CIA, or equivalent serologic methods)	S	O	S
Reactive VDRL test in a specimen of cerebrospinal fluid	S	O	S
Demonstration of <i>T. pallidum</i> in lesions, body fluids, or neonatal nasal discharge by darkfield microscopy			S
Reactive PCR or other equivalent direct molecular methods of lesions, neonatal nasal discharge, placenta, umbilical cord or autopsy material			S
Demonstration of <i>T. pallidum</i> in lesions, placenta, umbilical cord, or autopsy material by immunohistochemistry, or special stains (silver staining)			S

Syphilis: Utah Public Health Disease Investigation Plan

<i>Epidemiological Risk Factors</i>			
An infant whose mother had untreated or inadequately treated syphilis at delivery, regardless of signs in the infant. (Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.)			S
Any death certificate that lists syphilis as a cause of death or a significant condition contributing to death			S

Notes:

S = These criterion alone are Sufficient to report a case.

N = All “N” criteria in the same column are Necessary to report a case.

O = At least one of these “O” (One or more) criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to report a case.

* A requisition or order for any of the “S” laboratory tests is sufficient to meet the reporting criteria.

Case Definition

Syphilis is a complex, sexually transmitted disease that has a highly variable clinical course.

Adherence to the following surveillance case definitions will facilitate understanding the epidemiology of this disease across the U.S. Epidemiologists classify infections according to the following:

Criteria for defining a case of syphilis

Criterion	Confirmed			Probable						
	Primary	Secondary	Congenital	Primary	Secondary	Early non-primary, non-secondary	Unknown Duration/Late			Congenital
Clinical presentation										
Ulcerative lesion (e.g., chancre)	N	O		N	O					
Localized or diffuse mucocutaneous lesions (non-pruritic macular, maculopapular, papular or pustular lesions)		O			O					
Generalized lymphadenopathy		O			O					
mucous patches		O			O					
Condyloma lata		O			O					
Alopecia		O			O					
Syphilitic inflammatory lesions of the cardiovascular system, (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis) or other tissue or structure									N	
Clinical signs or symptoms and laboratory results that meet the likely or verified criteria for neurologic, ocular, otic, or late clinical manifestations syphilis									N	
Evidence of congenital syphilis on physical examination (see signs and stigmata, based upon age, detailed below)										O
An infant or child (aged <2 years) with signs such as hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (nonviral hepatitis), pseudoparalysis, anemia, or edema (nephrotic syndrome and/or malnutrition)										O

Demonstration of Treponema pallidum by darkfield microscopy (of lesions, body fluids, or neonatal nasal discharge), or by PCR or other equivalent direct molecular methods (of lesions, neonatal nasal discharge, placenta, umbilical cord, or autopsy material), or by immunohistochemistry (IHC) or other special stains (e.g. silver staining) (of lesions, placenta, umbilical cord, or autopsy material)			N								
Seroconversion or fourfold or greater increase in titer of a nontreponemal test during the previous 12 months sustained for >2 weeks						O	O				
Documented seroconversion of a treponemal test during the previous 12 months						O	O				
<i>Epidemiological Risk Factors</i>											
An infant whose mother had untreated or inadequately treated syphilis at delivery, regardless of signs in the infant. (Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.)											O
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. (Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.)											S
History of syphilis diagnosis							N		N		
No evidence of having acquired disease within previous 12 months								N	N	N	

History of symptoms consistent with primary or secondary syphilis within the previous 12 months						O	O				
History of sexual exposure within the previous 12 months to a partner who had confirmed or probable primary or secondary syphilis or probable early non-primary, non-secondary syphilis (documented independently as duration less than 12 months)						O	O				
Only sexual contact (sexual debut) was within the last 12 months						O	O				
Criteria to distinguish a new case											
No history of syphilis diagnosis						N		N			

Notes:

***When reporting neurosyphilis to CDC, the case should be reported as the stage of infection with “neurologic manifestations present” noted in the case report data.**

S = These criterion alone are sufficient to classify a case.

N = These criterion in conjunction with all other “N” and any “O” criteria in the same column are required to classify a case.

O = At least one of these “O” criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to classify a case.

Syphilis, primary

Clinical description

A stage of infection with *T. pallidum* characterized by one or more ulcerative lesions (e.g. chancre), which might differ considerably in clinical appearance.

Laboratory criteria for diagnosis

Confirmatory:

- Demonstration of *T. pallidum* by darkfield microscopy in a clinical specimen that was not obtained from the oropharynx and is not potentially contaminated by stool, **OR**
- Demonstration of *T. pallidum* by PCR or equivalent direct molecular methods in any clinical specimen.

Supportive:

- A reactive non-treponemal serologic test (VDRL, RPR, or equivalent serologic methods), **OR**
- A reactive treponemal serologic test (TP-PA, EIA, CIA, or equivalent serologic methods).¹

¹These treponemal tests supersede older testing technologies, including microhemagglutination assay for antibody to *T. pallidum* [MHA-TP].

Case classification

Probable: a case that meets the clinical description of primary syphilis and the supportive laboratory criteria

Confirmed: a case that meets the clinical description of primary syphilis and the confirmatory laboratory criteria

Syphilis, secondary

Clinical description

A stage of infection caused by *T. pallidum* characterized by localized or diffuse mucocutaneous lesions (e.g., rash — such as non-pruritic macular, maculopapular, papular, or pustular lesions), often with generalized lymphadenopathy. Other signs can include mucous patches, condyloma lata, and alopecia. The primary ulcerative lesion may still be present.

Because of the wide array of symptoms possibly indicating secondary syphilis, serologic tests for syphilis and a thorough sexual history and physical examination are crucial to determining if a case should be classified as secondary syphilis.

Laboratory criteria for diagnosis

Confirmatory:

- Demonstration of *T. pallidum* by darkfield microscopy in a clinical specimen that was not obtained from the oropharynx and is not potentially contaminated by stool, **OR**
- Demonstration of *T. pallidum* by PCR or equivalent direct molecular methods in any clinical specimen.

Supportive:

- A reactive non-treponemal serologic test (VDRL, RPR, or equivalent serologic methods), **AND**
- A reactive treponemal serologic test (TP-PA, EIA, CIA, or equivalent serologic methods).

Case classification

Probable: a case that meets the clinical description of secondary syphilis and the supportive laboratory criteria.

Confirmed: a case that meets the clinical description of secondary syphilis and the confirmatory laboratory criteria.

Syphilis, early non-primary non-secondary

Clinical description

A stage of infection caused by *T. pallidum* in which initial infection has occurred within the previous 12 months, but there are no signs or symptoms of primary or secondary syphilis.

Laboratory criteria for diagnosis

Confirmatory: N/A

Supportive:

- A current non-treponemal test titer demonstrating fourfold or greater increase from the last non-treponemal test titer, unless there is evidence that this increase was not sustained for >2 weeks.

Epidemiologic Criteria

- A history of sexual exposure to a partner within the previous 12 months who had primary, secondary, or early non-primary non-secondary syphilis (documented independently as duration <12 months)
- Only sexual contact was within the previous 12 months (sexual debut)

Case classification

Probable: a person with no clinical signs or symptoms of primary or secondary syphilis who has one of the following:

- No prior history of syphilis, AND a current reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods), AND a current reactive treponemal test (e.g., TP-PA, EIA, CIA, or equivalent serologic methods), **OR**
- A prior history of syphilis and meets the supportive laboratory criteria.
- **AND** 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 non-treponemal test during the previous 12 months, unless there is evidence that this increase was not sustained for >2 weeks
 - Documented seroconversion of a treponemal test during the previous 12 months
 - A history of symptoms consistent with primary or secondary syphilis during the previous 12 months
 - Meets epidemiologic criteria

Confirmed: There is no confirmed case classification for early non-primary non-secondary syphilis.

Syphilis, unknown duration or late

Clinical description

A stage of infection caused by *T. pallidum* in which initial infection has occurred >12 months previously or in which there is insufficient evidence to conclude that infection was acquired during the previous 12 months.

Case classification

Probable: a person with no clinical signs or symptoms of primary or secondary syphilis who meets one of the following criteria:

- No prior history of syphilis, AND a current reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods), AND a current reactive treponemal test (e.g., TP-PA, EIA, CIA, or equivalent serologic methods), **OR**
- A prior history of syphilis, and a current non-treponemal test titer demonstrating fourfold or greater increase from the last non-treponemal test titer, unless there is evidence that this increase was not sustained for >2 weeks, **OR**
- Clinical signs or symptoms and laboratory results that meet the likely or verified criteria for neurologic, ocular, otic, or late clinical manifestations syphilis **AND** who has no evidence of having acquired the disease within the preceding 12 months (see Syphilis, early non-primary non-secondary).

Confirmed: There is no confirmed case definition for unknown duration or late syphilis.

Syphilitic Stillbirth

Clinical case definition

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.

*Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.

Syphilis, Congenital

Clinical description

A condition caused by infection in utero with *Treponema 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).

Laboratory criteria for diagnosis

Demonstration of *Treponema pallidum* by:

- Darkfield microscopy of lesions, body fluids, or neonatal nasal discharge, **OR**

- PCR or other equivalent direct molecular methods of lesions, neonatal nasal discharge, placenta, umbilical cord, or autopsy material, **OR**
- Immunohistochemistry (IHC) - or other special stains (e.g., silver staining) of specimens from lesions, placenta, umbilical cord, or autopsy material.

Case classification

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 non-treponemal test for syphilis (VDRL, RPR, or equivalent serologic methods) **AND** any one of the following:

- Any evidence of congenital syphilis on physical examination
- Any evidence of congenital syphilis on radiographs of long bones
- A reactive VDRL test in a specimen of CSF
- In a non-traumatic lumbar puncture, an elevated CSF protein or CSF leukocyte count (without other cause):
 - Suggested parameters for abnormal CSF WBC and protein values:
 - During the first 30 days of life, a CSF WBC count of >15 WBC/mm³ or a CSF protein >120 mg/dl is abnormal.
 - After the first 30 days of life, a CSF WBC count of >5 WBC/mm³ or a CSF protein >40 mg/dl is abnormal.

Confirmed: A case that is laboratory confirmed.

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 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. While maternal antibodies can complicate interpretation of serologic tests in an infant, reactive tests past 18 months of age are considered to reflect the status of the child. 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.

Clinical manifestations

Late Clinical Manifestations

Late clinical manifestations of syphilis usually develop only after a period of 15-30 years of untreated infection. Therefore, if the patient has late clinical manifestations of syphilis, the case should be reported with the appropriate stage of infection (for the vast majority of cases, unknown duration or late syphilis) and late clinical manifestations should be noted in the case report data.

Clinical description

Late clinical manifestations of syphilis (tertiary syphilis) may include inflammatory lesions of the cardiovascular system, (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis) or other tissue. Rarely, other structures (e.g., the upper and lower respiratory tracts, mouth, eye, abdominal organs, reproductive organs, lymph nodes, and skeletal muscle) may be involved. In addition, certain neurologic manifestations (e.g., general paresis and tabes dorsalis) are also late clinical manifestations of syphilis.

Classification

Likely: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) with either of the following:

- Characteristic abnormalities or lesions of the cardiovascular system (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis), or other tissue in the absence of other known causes of these abnormalities, **OR**
- Clinical symptoms or signs consistent with late neurologic manifestations of syphilis (e.g., general paresis, including dementia, or tabes dorsalis).

Verified: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and either of the following:

- Characteristic abnormalities or lesions of the cardiovascular system (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis), or other tissue in the absence of other known causes of these abnormalities, in combination with either demonstration of *T. pallidum* in late lesions by special stains or equivalent methods, or by PCR or equivalent direct molecular methods, or demonstration of pathologic changes that are consistent with *T. pallidum* infection on histologic examination of late lesions, **OR**
- Clinical signs and symptoms consistent with late neurologic manifestations of syphilis (e.g., general paresis, including dementia, or tabes dorsalis) in a case that meets the criteria for verified neurologic manifestations of syphilis.

Neurologic Manifestations

Neurologic manifestations (neurosyphilis) can occur at any stage of syphilis. If the patient has neurologic manifestations of syphilis, the case should be reported with the appropriate stage of infection (as if neurologic manifestations were not present) and neurologic manifestations should be noted in the case report data.

Clinical description

Infection of the central nervous system with *T. pallidum*, as evidenced by manifestations including syphilitic meningitis, meningovascular syphilis, general paresis, including dementia, and tabes dorsalis.

Classification

Possible: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and clinical symptoms or signs that are consistent with neurosyphilis without other known causes for these clinical abnormalities.

Likely: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) with both the following:

- Elevated cerebrospinal fluid (CSF) protein (>50 mg/dL²) or leukocyte count (>5 white blood cells/cubic millimeter CSF) in the absence of other known causes of these abnormalities, **AND**
- Clinical symptoms or signs that are consistent with neurosyphilis without other known causes for these clinical abnormalities.

Verified: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) with both of the following:

- A reactive VDRL in CSF in the absence of grossly bloody contamination of the CSF, **AND**
- Clinical symptoms or signs that are consistent with neurosyphilis without other known causes for these clinical abnormalities.

Ocular Manifestations

Ocular manifestations (ocular syphilis) can occur at any stage of syphilis. If the patient has ocular manifestations of syphilis, the case should be reported with the appropriate stage of infection (as if ocular manifestations were not present) and ocular manifestations should be noted in the case report data.

Clinical description

Infection of any eye structure with *T. pallidum*, as evidenced by manifestations including posterior uveitis, panuveitis, anterior uveitis, optic neuropathy, and retinal vasculitis. Ocular syphilis may lead to decreased visual acuity including permanent blindness.

Classification

Possible: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and clinical symptoms or signs consistent with ocular syphilis without other known causes for these clinical abnormalities.

Likely: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and both of the following:

- Clinical symptoms or signs consistent with ocular syphilis without other known causes for these clinical abnormalities, **AND**

- Findings on exam by an ophthalmologist that are consistent with ocular syphilis in the absence of other known causes for these abnormalities

Verified: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and both of the following:

- Clinical symptoms or signs consistent with ocular syphilis without other known causes for these clinical abnormalities, **AND**
- Demonstration of *T. pallidum* in aqueous or vitreous fluid by darkfield microscopy, or by PCR or equivalent direct molecular methods.

Otic Manifestations

Otic manifestations can occur at any stage of syphilis. If the patient has otic manifestations of syphilis, the case should be reported with the appropriate stage of infection (as if otic manifestations were not present) and otic manifestations should be noted in the case report data.

Clinical description

Infection of the cochleovestibular system with *T. pallidum*, as evidenced by manifestations including sensorineural hearing loss, tinnitus, and vertigo.

Classification

Possible: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and clinical symptoms or signs consistent with otosyphilis without other known causes for these clinical abnormalities.

Likely: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and both of the following:

- Clinical symptoms or signs consistent with otosyphilis without other known causes for these clinical abnormalities, **AND**
- Findings on exam by an otolaryngologist that are consistent with otosyphilis in the absence of other known causes for these abnormalities.

Verified: a person with a reactive non-treponemal test (e.g., VDRL, RPR, or equivalent serologic methods) and a reactive treponemal test (e.g., TP-PA, EIA, CIA or equivalent serologic methods) and both of the following:

- Clinical symptoms or signs consistent with otosyphilis without other known causes for these clinical abnormalities, **AND**
- Demonstration of *T. pallidum* in inner ear fluid by darkfield microscopy, or by PCR or equivalent direct molecular detection methods.

Case Investigation Process

- Contact medical provider to gather patient demographics, clinical, and treatment information, as well as patient notification status.
- Fill out a morbidity form.
- Conduct a client interview.
- Fill out a client interview record on original patient and field records for contacts and suspects identified.
- Conduct field investigations on contacts and suspects.
- Provide/facilitate treatment based on case definitions and follow-up for contacts.
- Re-interview client for additional contacts and suspects.
- Complete interview record.

Outbreaks

A syphilis outbreak occurs when the observed rate of disease in a geographical area exceeds the normal (endemic) rate.

Identifying Case Contacts

The stage of disease determines the criteria for partner notification:

- For primary, all sexual contacts during the 3 months preceding onset of symptoms.
- For secondary, all sexual contacts during the 6 months preceding onset of symptoms.
- For early non-primary non-secondary, all sexual contacts during the preceding year, if time of primary infection and secondary infection cannot be established.
- For unknown duration or late, long-term partners and children of infected mothers.
- For congenital syphilis, all members of the immediate family.
 - If appropriate treatment of the mother prior to the last month of pregnancy cannot be established, all infants born to seroactive mothers should be treated.

Case Contact Management

A fundamental feature of programs for syphilis control is the interviewing of patients to identify sexual contacts from whom the infection was acquired, in addition to those whom the patient infected.

- All sexual partners of cases of primary syphilis during the 3 months preceding onset of symptoms should be examined, tested, and treated.
- All sexual partners of cases of secondary syphilis during the 6 months preceding onset of symptoms should be examined, tested, and treated.
- For early non-primary non-secondary syphilis, all sexual contacts during the preceding year, if time of primary infection and secondary infection cannot be established, should be examined and tested.
- All contacts of cases of early syphilis exposed within 90 days of examination should receive treatment.
- For unknown duration or late syphilis, long-term partners and children of infected mothers should be examined and tested.
- For congenital syphilis, all members of the immediate family should be examined and tested. If adequate and appropriate treatment of the mother prior to the last month of

pregnancy cannot be established, all infants born to seroreactive mothers should be treated.

- All patients who have syphilis should be tested for HIV.

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✓ VERSION CONTROL

V.08.15 Updated epidemiological information, adding Utah specific epidemiology. Updated the treatment section according to 2015 CDC treatment guidelines. Added Minimum Data Set (MDS), added Table of Contents, updated swim lanes.

V.12.15 Changed incubation period for secondary syphilis to 3-6 months from 3-12 months.

V.02.18 Critical Clinician Information and Electronic Laboratory Reporting sections added to disease plan. Epidemiology section updated with current national and Utah specific data. Content changes were made throughout the document (including the swim lanes) to align the disease plan definitions with the new CSTE syphilis case definitions. A summary of the changes is as follows:

- Changed “Early Latent” syphilis to “Early Non-Primary Non-Secondary” syphilis.
- Combined “Late Latent” syphilis and “Late with Clinical Manifestations” syphilis into a new stage, “Unknown Duration or Late.”
- Included new clinical manifestations variables (to be answered for all stages of syphilis) and possible, likely, and verified responses are thoroughly defined.
 - Neurologic Manifestations
 - Ocular Manifestations
 - Otic Manifestations
 - Late Clinical Manifestations
- Updated UT-NEDSS Minimum/Required Fields by Tab section.

✓ UT-NEDSS Minimum/Required Fields by Tab

MORBIDITY EVENT

(Primary, Secondary, Early Non-Primary
Non-Secondary, Unknown Duration or Late)

Demographic

- Last Name
- First Name
- Street
- Unit Number
- City
- State
- County
- Zip code
- Date of Birth
- Area Code
- Phone Number
- Birth Sex
- Ethnicity
- Race
- Disposition (*if promoted contact*)
- Disposition Date (*if promoted contact*)
- Contact Type (*if promoted contact*)

Clinical

- Disease
- Date Diagnosed
- Pregnant (*if female*)
- Expected Delivery Date (*if pregnant*)
- Treatment Given
- Treatment (*if treated*)
- Date of Treatment (*if treated*)
- Clinician Last Name
- Clinician Area Code
- Clinician Phone
- Diagnostic Facility
- Type of facility:
- Method of Case Detection
- Symptoms Observed or Present
- Clinician Observed Symptoms
- Clinician Observed Symptom Type (*if applicable*)
- Anatomic Site of Clinician Observed Lesions (*if applicable*)

- Patient Observed Symptoms
- Patient Observed Symptom Type (*if applicable*)
- Anatomic Site of Patient Observed Lesions (*if applicable*)
- Neurological manifestations
- Ocular manifestations
- Otic manifestations
- Late clinical manifestations
- HIV Status
- Previous STD Diagnosis
- Ever Tested for HIV?
- Most Recent HIV Test Date (MM/YY) (*if tested*)

Laboratory

- Lab
- Test Type
- Organism
- Test Result
- Specimen Source
- Collection Date

Specimen Source Section

- Specimen Source
- Collection Date

Test Type and Quantitative Result Section

- Non-Treponemal Serologic Test Type
- Quantitative Test Result

Investigation

- Date Case Assigned
- Was the case interviewed?
 - Interview date (*if yes*)
 - Interview period (*if yes*)
 - Reason not interviewed (*if no*)
- Date closed
- Is the patient MSM? (*if male*)
- Had sex with a male?
- Had sex with a female?
- Met sex partners via the Internet?
- Had sex with an anonymous partner?

- Had sex with a person known to be an IDU?
- Had sex while intoxicated/high on drugs?
- Exchanged drugs and/or money for sex?
- Been incarcerated?
- Engaged in IDU?
- Had sex with a person known MSM?
(*if female*)
- Drug Use?

Contacts

- Total number of sex partners during interview period
- Total number of sex partners in past 12 months

Reporting

- Date first reported to public health

Administrative

- State Case Status (completed by UDOH)
- Outbreak Association

CONTACT EVENT

Demographic

- Contact Name
- Contact Address County (*if known*)
- Contact Date of Birth (*if known*)
- Contact Birth Sex (*if known*)
- Contact Disposition
- Contact Disposition Date
- Contact Type

Clinical

- Contact Lab Collection Date
- Contact Lab Test Results
- Contact Pregnant (*if known*)(*if female*)
- Contact Expected Delivery Date
(*if pregnant*)
- Contact Treatment Given (*if known*)
- Contact Date of Treatment (*if treated*)

✓ Electronic Laboratory Reporting Processing Rules

Syphilis Rules for Entering Laboratory Test Results

The following rules describe how laboratory results reported to public health should be added to new or existing events in UT-NEDSS. These rules have been developed for the automated processing of electronic laboratory reports, although they apply to manual data entry, as well.

Test-Specific Rules

Test specific rules describe what test type and test result combinations are allowed to create new morbidity events in UT-NEDSS, and what test type and test result combinations are allowed to update existing events (morbidity or contact) in UT-NEDSS.

Test Type	Test Result	Create a New Event	Update an Existing Event
FTA (treponemal antibody test)	Positive	Yes	Yes
	Negative	No	Yes
IgG Antibody	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
IgM antibody	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
VDRL	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
TPPA	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
MHA-TP	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
Microscopy (darkfield)	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	Yes	Yes
Total Antibody	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
RPR	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
Western (immune) blot IgG	Positive	Yes	Yes
	Negative	No	Yes
	Other	No	Yes

Whitelist Rules

Whitelist rules describe how long an existing event can have new laboratory data appended to it. If a laboratory result falls outside the whitelist rules for an existing event, it should not be added to that event, and should be evaluated to determine if a new event (CMR) should be created.

Syphilis Morbidity Whitelist Rule: Add to newest case.

Syphilis Contact Whitelist Rule: If the specimen collection date of the laboratory result is one year or less after the event date of the contact event, the laboratory results should be added to the contact event.

Graylist Rule

We often receive laboratory results through ELR that cannot create cases, but can be useful if a case is created in the future. These laboratory results go to the graylist. The graylist rule describes how long an existing event can have an old laboratory result appended to it.

Syphilis Graylist Rule: If the specimen collection date of the laboratory result is 365 days before to 7 days after the event date of the morbidity event, the laboratory result should be added to the morbidity event.

Other Electronic Laboratory Processing Rules

- If an existing event has a state case status of “not a case,” ELR will never add additional test results to that case. New labs will be evaluated to determine if a new CMR should be created.