



Chlamydia

Disease Plan

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Last updated: February 19, 2020, by Nikki Baer and Scott Steiner.

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"> • The majority of women are asymptomatic, but may present with findings typical of cervicitis: <ul style="list-style-type: none"> ○ Vaginal discharge ○ Abnormal vaginal bleeding ○ Pelvic inflammatory disease • The majority of men are asymptomatic, but may present with findings typical of urethritis and/or proctitis: <ul style="list-style-type: none"> ○ Urethral discharge that is mucoid or watery ○ Dysuria ○ Epididymitis ○ Rectal pain ○ Rectal discharge • Common syndromes to women and men: <ul style="list-style-type: none"> ○ Conjunctivitis ○ Dysuria
<p>Period of Communicability</p> <ul style="list-style-type: none"> • It is unclear how long those with untreated infection may carry the disease. A systematic review of ten studies detected persistent chlamydia for months in 56 to 89 percent of cases and for at least one year in 46 to 57 of cases.
<p>Incubation Period</p> <ul style="list-style-type: none"> • In those with asymptomatic disease, it is unclear how long the incubation period is. • In those with symptomatic disease, incubation ranges from 7 to 21 days following infection.
<p>Mode of Transmission</p> <ul style="list-style-type: none"> • Sexual: person-to-person via vaginal, anal, or oral sex • Vertical: from infected mother to her unborn baby via the bloodstream
Laboratory Testing
<p>Type of Lab Test/Timing of Specimen Collection</p> <ul style="list-style-type: none"> • Nucleic Acid Amplification Testing (NAAT)
<p>Type of Specimens</p> <ul style="list-style-type: none"> • Women <ul style="list-style-type: none"> ○ First-catch urine ○ Vaginal swab ○ Endocervical swab ○ Rectal swab ○ Pharyngeal swab • Men <ul style="list-style-type: none"> • First-catch urine • Urethral swab • Rectal swab • Pharyngeal swab
Treatment Recommendations
<p>Type of Treatment</p> <ul style="list-style-type: none"> • Azithromycin (1 gram orally in a single-dose) is preferred for non-pregnant and pregnant patients.

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<ul style="list-style-type: none">• Doxycycline (100 mg twice daily for seven days) may be used as an alternative in non-pregnant patients.
Time Period to Treat <ul style="list-style-type: none">• Azithromycin: Single-dose• Doxycycline: 7 days
Prophylaxis <ul style="list-style-type: none">• All contacts of cases of chlamydia exposed within 60 days of examination should receive treatment.
Contact Management
Isolation of Case <ul style="list-style-type: none">• Azithromycin: cases should avoid sexual contact for 7 days after the single-dose therapy is administered and 7 days after their sex partners have been treated.• Doxycycline: cases should avoid sexual contact until 24 hours after the course of antibiotics is completed and their sex partners have completed treatment.
Quarantine of Contacts <ul style="list-style-type: none">• Not applicable
Infection Control Procedures
<ul style="list-style-type: none">• Standard body substance precautions

✓ WHY IS CHLAMYDIA IMPORTANT TO PUBLIC HEALTH?

Chlamydia is the leading reportable disease in Utah and the United States (U.S.). Chlamydia is easily transmitted through infected fluids, and is the leading cause of preventable infertility in women. Pregnant women who have chlamydia can pass this infection on to the child during vaginal delivery. Pelvic Inflammatory Disease (PID) is a serious complication of chlamydia in women, and can lead to infertility and chronic pelvic pain. In men, epididymitis, a testicular condition, is a concern for untreated chlamydia. Chlamydia is easily treated; medication is fairly low cost and easily accessible.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

Chlamydia is a common sexually transmitted disease (STD) caused by the bacteria *Chlamydia trachomatis*, which can be transmitted during vaginal, anal, or oral sex. Most frequently, no noticeable symptoms are present; about three quarters of infected women and about half of infected men have no symptoms. Symptomatic females can have mucopurulent endocervical discharge, dysuria (painful urination), and pain in the lower abdomen. Males with urethral infections may have a mucoid or clear urethral discharge and dysuria. Men may develop epididymitis. Infection of the rectum may also occur and is often asymptomatic. Perinatal infections may result in inclusion conjunctivitis or *ophthalmia neonatorum* (red, irritable eyes with a sticky discharge) and pneumonia in newborns.

In up to 40 percent of untreated women with chlamydia, the infection can spread into the uterus or fallopian tubes and cause PID. Infected women are also up to five times more likely to become infected with HIV, if exposed. Complications among men are rare. Infection sometimes spreads to the epididymis, causing pain, fever, and, rarely, sterility.

Causative Agent

Chlamydia trachomatis is an intracellular bacterial pathogen.

Differential Diagnosis

The differential diagnosis for chlamydia depends on the particular clinical syndrome and includes other sexually transmitted pathogens such as *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, and *Mycoplasma genitalium*. Among men who have sex with men with infectious proctitis, the differential diagnosis includes *N. gonorrhoeae*, herpes simplex virus, and *Treponema pallidum* infections.

Laboratory Identification

A person with one or more of the laboratory findings listed below is confirmed to have chlamydia:

- Isolation of *C. trachomatis* by culture of a clinical specimen,
- Detection of *C. trachomatis* antigen by direct fluorescent antibody (DFA) staining in a clinical specimen,
- Detection of *C. trachomatis* antigen by enzyme-linked immunosorbent assay in a clinical specimen,
- Detection of *C. trachomatis* nucleic acid by hybridization with a nucleic acid probe in a clinical specimen,
- Detection of *C. trachomatis* by nucleic acid amplification (e.g., PCR) in a clinical specimen (specimens from appropriate patient sites only).

Nucleic acid amplification test (NAAT) for *C. trachomatis* is the most sensitive test currently available. It is the preferred method for the diagnostic evaluation and can be performed on either endocervical, vaginal or urine samples.

Utah Public Health Laboratory (UPHL): The UPHL provides NAAT testing for both gonorrhea and chlamydia.

Chlamydia is typically identified by testing endocervical, vaginal, male urethra or urine specimens. In women, *C. trachomatis* urogenital infection can be diagnosed by testing first catch urine or by collecting swab specimens from the endocervix or vagina. In men, diagnosis of *C. trachomatis* urethral infection can be made by testing a urethral swab or first catch urine specimen. Rectal and oropharyngeal *C. trachomatis* infection in persons engaging in receptive anal or oral intercourse can be diagnosed by testing at the anatomic site of exposure.

Annual screening of all sexually active women younger than 25 years of age is recommended, as is screening of older women with risk factors (e.g., those who have a new sex partner or multiple sex partners, and those reporting their sex partner may have a concurrent sex partner). The screening of sexually active young men should be considered in clinical settings with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities, and STD clinics) or in populations with high burden of infection [e.g. men who have sex with men (MSM)].

All pregnant women should be routinely screened for *C. trachomatis* during the first prenatal visit. Women younger than 25 years of age and those at increased risk for chlamydia (e.g., women who have a new or more than one sex partner) also should be retested during the third trimester to prevent maternal postnatal complications and chlamydial infection in the infant. Women found to have chlamydial infection during the first trimester should be retested within approximately 3–6 months, preferably in the third trimester.

Except in pregnant women, a test-of-cure (i.e., repeat testing 3–4 weeks after completing therapy) is not advised for persons treated with the recommended or alternative regimens, unless therapeutic adherence is in question, symptoms persist, or reinfection is suspected. Moreover, the use of chlamydial NAAT testing less than three weeks after completion of therapy is not

recommended because false-positive results might occur due to the continued presence of nonviable organisms.

Treatment

The following treatment is recommended for uncomplicated chlamydial infections of the cervix, urethra, rectum and pharynx:

Azithromycin, 1 gram orally in a single dose
OR
Doxycycline, 100 mg orally twice a day for 7 days*

Alternative Regimens

Erythromycin base 500 mg orally four times a day for 7 days
OR
Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days
OR
Levofloxacin 500 mg orally once daily for 7 days*
OR
Ofloxacin 300 mg orally twice a day for 7 days*

Pregnancy Treatment Considerations

Azithromycin, 1 gram orally in a single dose

Alternative Regimens

Amoxicillin 500 mg orally three times a day
OR
Erythromycin base 500 mg orally four times a day for 7 days
OR
Erythromycin base 250 mg orally four times a day for 14 days
OR
Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days
OR
Erythromycin ethylsuccinate 400 mg orally four times a day for 14 days

***Doxycycline, Levofloxacin and Ofloxacin are contraindicated in pregnant women. However, clinical experience and studies suggest that azithromycin is safe and effective. Repeat testing to document the test-of-cure three weeks after completion of therapy in pregnant women.**

For additional treatment options, visit www.cdc.gov/std/treatment for the Sexually Transmitted Disease Treatment Guidelines, 2010.

[Expedited Partner Therapy \(EPT\)](#) is the clinical practice of treating the sex partners of patients diagnosed with chlamydia by providing prescriptions or medications to the patient to take to his/her partner without the healthcare provider first examining the partner. EPT is legal in Utah; for details see [Utah's EPT law](#).

Case Fatality

Chlamydia is not fatal.

Reservoir

Humans are the only known natural hosts and reservoirs of infection.

Transmission

Chlamydia is transmitted by direct sexual contact either through oral, vaginal or rectal sex. Chlamydia can also be transmitted at birth through contact with an infected birth canal.

Susceptibility

Sexually active individuals are susceptible to infection.

Incubation Period

The incubation period of chlamydia is highly variable and poorly defined. For symptomatic patients, an incubation period of 7–14 days or longer is estimated.

Period of Communicability

The period of communicability is unknown, and may be prolonged in untreated individuals.

Epidemiology

C. trachomatis infection is the most commonly reported notifiable disease in the U.S. It is among the most prevalent of all STDs, and since 1994, has comprised the largest proportion of all STDs reported to the Centers for Disease Control and Prevention (CDC). Studies also demonstrate the high prevalence of chlamydial infections in the general U.S. population. In 2018, a total of 1,758,668 chlamydial infections were reported to CDC in 50 states and the District of Columbia, which corresponds to a rate of 539.9 cases per 100,000 population.

In Utah, 10,542 cases of chlamydia were reported in 2018. From 2014 to 2018, Utah's chlamydia rate increased 18.1% from 279.6 cases per 100,000 population in 2014 to 330.1 in 2018. During this period, chlamydia rates in females have been twice that of males, most likely a result of higher screening rates in women.

In 2018, two-thirds of the chlamydia cases reported in Utah were among persons 15-24 years of age, and the majority of chlamydial infections were identified in the four counties along the Wasatch Front: Salt Lake (50.2% of cases), Utah (12.0%), Davis (10.8%), and Weber (9.8%). In 2017, the highest chlamydia rate among racial and ethnic groups was reported among

Black/African Americans (1,376 cases per 100,000 population), followed by Pacific Islanders (952), Hispanics (580), and American Indian/Alaska Natives (494).

Chlamydial infections in women are usually asymptomatic. However, these can result in PID, which is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Investigate suspect cases of chlamydia as determined by local chlamydia case investigation procedure.
- Complete and submit appropriate disease reporting forms that include the identified minimum fields.
- 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.
- Facilitate early detection and effective treatment of patients and their contacts.

Prevention

- Emphasis should be placed on early detection and effective treatment of patients and their contacts.
- Educate the community in general health promotion measures:
 - Provide health and sex education that teaches the importance 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;
 - 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;
 - Protect the community by controlling STDs in sex workers and their clients.
- Ensure the availability of healthcare facilities for early diagnosis and treatment:
 - Encourage their use through education of the public about symptoms of sexually transmitted infections and modes of transmission;
 - Ensure these services are culturally appropriate and readily accessible and acceptable, regardless of economic status;
 - Provide adequate partner notification;
 - Conduct routine annual screening of sexually active adolescent girls;
 - Provide annual screening to women who are younger than 25 years of age and to women 25 years of age or older who have sex with more than one partner, have a new partner, and/or use barrier contraceptives inconsistently. Both males and females with other STDs should be screened as well;

- Screen all pregnant women during their first prenatal visit. Women younger than 25 years of age, at increased risk for chlamydia (e.g., women who have a new or more than one sex partner), and/or found to have chlamydial infection during the first trimester should be retested during the third trimester.
- Subgroups of MSM are at high risk for chlamydia infection and should be screened at multiple sites of exposure (urethral, pharyngeal, and rectal).
- Test and adequately treat individuals who engage in commercial sex work and illicit drug use.

Chemoprophylaxis

All sexual partners of infected patients should receive prophylaxis as well as infants born to untreated mothers with chlamydia. For dosage information, see the treatment section of this document.

Vaccine

None.

Isolation and Quarantine Requirements

Isolation: Avoid sexual contact until 7 days post-treatment.

Hospital: Not applicable.

Quarantine: Not applicable.

✓ CASE INVESTIGATION

Reporting

Chlamydia is a reportable disease. Providers should report cases meeting the following criteria using the [case report form](#):

Criterion	Reporting Chlamydia
<i>Clinical Presentation</i>	
Urethral discharge	C
Dysuria	C
Epididymal tenderness	C
Purulent cervical discharge	C
Lower abdominal pain	C
Low back pain	C
Urinary frequency	C
Pelvic inflammatory disease	C
Vaginal discharge	C
Rectal pain	C
Rectal discharge	C
Rectal bleeding	C
Pharyngitis	C
Pneumonia	C
Conjunctivitis	C
Health record contains a diagnosis of infection caused by <i>Chlamydia trachomatis</i>	S
<i>Laboratory Evidence</i>	
Isolation of <i>C. trachomatis</i> by culture of a clinical specimen	S
Detection of <i>C. trachomatis</i> antigen by direct fluorescent antibody staining in a clinical specimen	S
Detection of <i>C. trachomatis</i> antigen by enzyme-linked immunosorbent assay in a clinical specimen	S
Detection of <i>C. trachomatis</i> nucleic acid by hybridization with a nucleic acid probe in a clinical specimen	S
Detection of <i>C. trachomatis</i> by nucleic acid amplification (e.g., PCR) in a clinical specimen	S

<i>Epidemiological Risk Factors</i>	
Sexual contact with a partner infected with <i>C. Trachomatis</i>	C
New or multiple sexual partners	C

Notes:

S = This criterion alone is sufficient to report a case

C = This finding corroborates (i.e., supports) the diagnosis of, or is associated with, *C. trachomatis*, but is not included in the case definition and is not required for reporting.

Case Definition

Epidemiologists classify infections according to the following:

Criterion	Case Definition: Confirmed
<i>Clinical Presentation</i>	
Healthcare record contains a diagnosis of infection caused by <i>C. trachomatis</i>	O
<i>Laboratory Findings</i>	
Isolation of <i>C. trachomatis</i> by culture of a clinical specimen	O
Detection of <i>C. trachomatis</i> antigen by direct fluorescent antibody staining in a clinical specimen	O
Detection of <i>C. trachomatis</i> antigen by enzyme-linked immunosorbent assay in a clinical specimen	O
Detection of <i>C. trachomatis</i> nucleic acid by hybridization with a nucleic acid probe in a clinical specimen	O
Detection of <i>C. trachomatis</i> by nucleic acid amplification (e.g., PCR) in a clinical specimen (specimens from appropriate patient sites only)	O

Notes:

O = At least one of these "O" criteria in each category in the same column is required to classify a case.

Chlamydia (2009)

Clinical Description

Infection with *C. trachomatis* may result in urethritis, epididymitis, cervicitis, acute salpingitis, or other syndromes when sexually transmitted; however, the infection is often asymptomatic in women. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Other syndromes caused by *C. trachomatis* include lymphogranuloma venereum (see Lymphogranuloma Venereum) and trachoma.

Laboratory Criteria

- Isolation of *C. trachomatis* by culture, or
- Demonstration of *C. trachomatis* in a clinical specimen by detection of antigen or nucleic acid.

Case Classification

Confirmed: a case that is laboratory confirmed.

Case Investigation Process

- Contact medical provider to gather patient demographics, clinical, and treatment information, as well as patient notification status.
- Conduct a client interview.
- Complete a Case Morbidity Record (CMR) in UT-NEDSS/EpiTrax according to the minimum data set on the original patient.
- Conduct investigations on contact event(s) and create UT-NEDSS/Epitrax contact event(s) for contacts identified.
- Provide/facilitate treatment and follow-up for contacts.
- Complete CMR and contact event, if applicable.

Outbreaks

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

Identifying Case Contacts

Patients should be instructed to refer their sex partners for evaluation, testing, and treatment if they had sexual contact with the patient during the 90 days preceding onset of the patient's symptoms or chlamydia diagnosis. Although the exposure intervals defined for the identification of at-risk sex partners are based on limited evaluation, the most recent sex partner should be evaluated and treated, even if the time of the last sexual contact was greater than 90 days before symptom onset or diagnosis.

Case Contact Management

Among heterosexual patients, if concerns exist that sex partners who are referred to evaluation and treatment will not seek services (or if other management strategies are impractical or unsuccessful), patient delivery of antibiotic therapy (expedited partner therapy or EPT) to their partners can be considered. Compared with standard partner referral, this approach, which involves delivering a prescription or the medication itself, has been associated with a trend toward a decrease in rates of persistent or recurrent chlamydia. Patients must also inform their partners of their infection and provide them with written materials about the importance of seeking evaluation for any symptoms suggestive of complications (e.g., testicular pain in men and pelvic or abdominal pain in women). Patient-delivered partner therapy is not routinely

recommended for MSM because of a high risk for coexisting infections, especially undiagnosed HIV infection, in their partners.

All contacts should be instructed to abstain from sexual intercourse until seven days after a single-dose regimen or 24 hours after completion of a seven-day regimen. Timely treatment of sex partners is essential for decreasing the risk for re-infecting the index patient.

✓ REFERENCES

Centers for Disease Control and Prevention, Sexually Transmitted Diseases Treatment Guidelines, 2010.

Council of State and Territorial Epidemiologists, Update to Public Health Reporting and National Notification for Chlamydia. August 2009.

Marrazzo, J. (2019). Clinical manifestations and diagnosis of Chlamydia trachomatis infections. *UpToDate*. Retrieved June 4, 2019, from https://www-uptodate-com.ezproxy.lib.utah.edu/contents/clinical-manifestations-and-diagnosis-of-chlamydia-trachomatis-infections?search=Chlamydia&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2.

2018 Sexually Transmitted Disease Surveillance, Chlamydia. <https://www.cdc.gov/std/stats18/chlamydia.htm>.

2018 Sexually Transmitted Disease Surveillance, Interpreting STD Surveillance Data. <https://www.cdc.gov/std/stats18/appendix-a.htm>.

2018 Sexually Transmitted Disease Surveillance, STD Case Definitions. <https://www.cdc.gov/std/stats18/appendix-c.htm>.

✓ VERSION CONTROL

V.03.15: Updated Epidemiology information, added Utah specific epidemiology. Updated treatment according to 2010 CDC treatment guidelines and included information regarding Expedited Partner Therapy (EPT). Added Minimum Data Set (MDS), added Table of Contents.

V.10.16: Updated Minimum Data Set (MDS).

V.02.20: Critical Clinician Information and Electronic Laboratory Reporting sections added to disease plan. Epidemiology section updated with current national and Utah specific data. Updated Minimum Data Set (MDS) and Public Health Responsibility Section to reflect current Utah procedure.

✓ UT-NEDSS Minimum/Required Fields by Tab

Demographic

- Last Name
- First Name
- State
- County
- Zip code
- Date of Birth
- Birth Sex
- Ethnicity
- Race

Clinical

- Disease

Laboratory

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

Reporting

- Date first reported to public health

Administrative

- State Case Status (*completed by UDOH*)

✓ ELECTRONIC LABORATORY REPORTING PROCESSING RULES

Chlamydia Rules for Entering 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
Culture	Positive	Yes	Yes
	Negative	No	Yes
	Other	No	Yes
IgA Antibody	Positive	Yes	Yes
	Negative	No	Yes
IgG Antibody	Positive	Yes	Yes
	Negative	No	Yes
IgM Antibody	Positive	Yes	Yes
	Negative	No	Yes
PCR/amplification	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	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.

Chlamydia Morbidity Whitelist Rule

If there is a treatment start date:

If the specimen collection date of the laboratory result is 30 days or less after last treatment start date, the laboratory result should be added to the morbidity event.

If there is no treatment start date:

If the specimen collection date of the laboratory result is 90 days or less after the event date, the laboratory result should be added to the morbidity event.

Chlamydia Contact Whitelist Rule

If there is a treatment start date:

If the specimen collection date of the laboratory result is 30 days or less after last treatment start date, the laboratory result should be added to the contact event.

If there is no treatment start date:

If the specimen collection date of the laboratory result is 90 days or less after the event date of the contact event, the laboratory result 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.

Chlamydia Graylist Rule

If the specimen collection date of the laboratory result is 30 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.