Gonorrhea (GC)

Disease Plan

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Questions about this disease plan?

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

✓ CRITICAL CLINICIAN INFORMATION

Clinical Evidence

Signs/Symptoms
• The majority of women are asymptomatic but may present with findings typical of cervicitis:
  ○ 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:
  ○ Purulent or mucopurulent urethral discharge
  ○ Dysuria
  ○ Epididymitis
  ○ Rectal pain
  ○ Rectal discharge
• Common syndromes to women and men:
  ○ Conjunctivitis
  ○ Dysuria

Period of Communicability • May extend for months in untreated individuals. Effective treatment ends communicability within hours.
Incubation Period • In those with asymptomatic disease it is unclear how long the incubation period is. • In those with symptomatic disease incubation ranges from 1 to 14 days following infection.
Mode of Transmission • Sexual: person to person via vaginal, anal, or oral sex • Vertical: from infected mother to her unborn baby via the bloodstream
Laboratory Testing
Type of Lab Test/Timing of Specimen Collection • Nucleic Acid Amplification Testing (NAAT)

Type of Specimens
• Women
  ○ Vaginal swab
  ○ Endocervical swab
  ○ Rectal swab
  ○ Pharyngeal swab
  ○ First-catch urine
• Men
  ○ First-catch urine
  ○ Urethral swab
  ○ Rectal swab
  ○ Pharyngeal swab

Treatment Recommendations
Type of Treatment • Ceftriaxone 250 mg in a single intramuscular (IM) dose *PLUS* Azithromycin 1 g orally in a single dose

Time Period to Treat • Ceftriaxone and Azithromycin: Single-dose
Prophylaxis • All contacts of cases of Gonorrhea exposed within 60 days of examination should receive treatment
Contact Management
Isolation of Case • 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
Quarantine of Contacts • Not applicable
Infection Control Procedures
• Standard body substance precautions

✓ WHY IS GONORRHEA IMPORTANT TO PUBLIC HEALTH?

Gonorrhea is the second highest reportable sexually transmitted disease (STD) in Utah and the United States. Gonorrhea is easily transmitted through infected fluids, and is one of the leading causes of preventable infertility in women.

Pregnant women who have gonorrhea can pass this infection on to the child during vaginal delivery. Pelvic Inflammatory Disease (PID) is a serious complication of gonorrhea in women, and can lead to infertility and chronic pelvic pain. In men, epididymitis, a testicular condition, is a concern for untreated gonorrhea. Gonorrhea is a treatable condition, although there have been reported resistant strains of gonorrhea in other countries. There is only one recommended regimen currently in place as adequate treatment for this infection.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

Gonorrhea is a common sexually transmitted disease caused by the bacterium *Neisseria gonorrhoeae*. Most males with urethral infection have symptoms of purulent or mucopurulent urethral discharge. Men may also have epididymitis (inflammation of the epididymis – swollen/painful testes) due to *N. gonorrhoeae*. In women, the symptoms of gonorrhea are often mild, or they have no symptoms. If present, symptoms for women can include abdominal pain, and mucopurulent or purulent cervical discharge. Women may also get urethritis (inflammation of the urethra – painful urination). *N. gonorrhoeae* can cause pelvic inflammatory disease (PID) in women. Disseminated (bloodstream) infection can occur with rash, and joint and tendon inflammation. Infection of the throat and the rectum can also occur and are often asymptomatic. Perinatal infections may result in inclusion conjunctivitis or *ophthalmia neonatorum* (red, irritable eyes with a sticky discharge) and pneumonia in newborns.

Causative Agent

Gonorrhea is caused by *Neisseria gonorrhoeae*, a gram-negative oxidase-positive bacterium that appears as a diplococcus.

Differential Diagnosis

The differential diagnosis for gonorrhea depends on the particular clinical syndrome and includes other sexually transmitted pathogens such as *Chlamydia trachomatis, Trichomonas vaginalis, and Mycoplasma gentalium.* Among men who have sex with men with infectious proctitis, the differential diagnosis includes *C. trachomatis,* herpes simplex virus, and *Treponema pallidum* infections.

Laboratory Identification

A person with one or more of the laboratory findings listed below:

- Isolation of *Neisseria gonorrhoeae* by culture of a clinical specimen.
- Microscopic visualization of *N. gonorrhoeae* (gram-negative intracellular diplococci of typical morphology associated with neutrophils) in a urethral specimen from men.
- Detection of *N. gonorrhoeae* by nucleic acid amplification (e.g., PCR) in a clinical specimen.
- Detection of *N. gonorrhoeae* nucleic acid by hybridization with a nucleic acid probe in a clinical specimen.
- Detection of *N. gonorrhoeae* antigens in a clinical specimen.
- Microscopic visualization of *N. gonorrhoeae* (gram-negative intracellular diplococci of typical morphology associated with neutrophils) in an endocervical specimen from a woman.

Gonorrhea is typically identified by testing endocervical, vaginal, male urethra or urine specimens. Culture, nucleic acid hybridization tests, and nucleic acid amplification tests (NAAT) are available for the detection of genitourinary infection with *N. gonorrhoeae.* Culture and nucleic acid hybridization tests require female endocervical or male urethral swab specimens. NAAT offer the widest range of testing specimen types because they are FDA-cleared for use with endocervical swabs, vaginal swabs, male urethra swabs, and female and male urine. In general, culture is the most widely available option for the diagnosis of infection with *N. gonorrhoeae* in nongenital sites (e.g., rectum and pharynx).

While the nucleic acid tests are more sensitive than culture, there are some situations where culture is recommended: rectal and pharyngeal cultures, pediatric patients with suspicion of sexual abuse, and individuals who have failed antibiotic therapy.

Some laboratories have initiated NAAT of rectal and pharyngeal swab specimens after establishing the performance of the test to meet CLIA requirements.

> **Utah Public Health Laboratory (UPHL):** The UPHL provides NAAT testing for both gonorrhea and chlamydia. UPHL can facilitate culture and antimicrobial susceptibility testing (AST). In the event a specimen requires AST, contact the UDOH Bureau of Epidemiology 801-538-6191.

Treatment

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

Ceftriaxone 250 mg in a single intramuscular (IM) dose
PLUS
Azithromycin 1 g orally in a single dose

As dual therapy, ceftriaxone and azithromycin should be administered together on the same day, preferably simultaneously and under direct observation.

Alternate regimens

If ceftriaxone is not available:

Cefixime 400 mg single oral dose (not recommended for oropharyngeal infections)
PLUS
Azithromycin 1 g orally in a single dose

If documented allergy to:

Cephalosporin:

Gemifloxacin 320mg orally in a single dose
PLUS
Azithromycin 2 g orally in a single dose

OR

Gentamicin 240mg in a single intramuscular (IM) dose
PLUS
Azithromycin 2 g orally in a single dose

Azithromycin/erythromycin:

Ceftriaxone 250 mg in a single intramuscular (IM) dose
PLUS
Doxycycline 100 mg orally twice daily for 7 days*
*Contraindicated in pregnant women

For unique circumstances or additional treatment options please go to http://www.cdc.gov/std/tg2015/gonorrhea.htm for CDC's Sexually Transmitted Disease Treatment Guidelines, 2015 and Updates.

Expedited Partner Therapy (EPT) is the clinical practice of treating the sex partners of patients diagnosed with gonorrhea 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

Gonorrhea is not fatal.

Reservoir

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

Transmission

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

Susceptibility

Sexually active individuals are susceptible to infection. People who are infected develop antibodies, but there are many different gonococcal strains so prior infection does not confer immunity to all strains and reinfection is common. Women using an intrauterine contraceptive device have higher risks of gonococcal salpingitis (infection of the fallopian tubes) during the first three months of insertion. Some people have hereditary complement deficiency and may be more susceptible to bacteremia. Younger women are more susceptible to infection than older women due to a change in the vaginal epithelium that occurs during aging.

Incubation Period

The incubation period of gonorrhea is highly variable and poorly defined. For symptomatic patients, an incubation period of 1–14 days or longer is estimated.

Period of Communicability

The period of communicability is unknown, and may be prolonged in untreated individuals. Effective treatment ends communicability within hours.

Epidemiology

Gonorrhea is the second most frequently reported communicable disease in Utah and in the United States. In 2018, a total of 583,405 cases of gonorrhea were reported to the CDC in 50 states and the District of Columbia, which corresponds to a rate of 179.1 cases per 100,000 population.

In Utah, 2,894 cases of gonorrhea were reported in 2018. From 2014 to 2018, Utah's gonorrhea rate increased 800% from 49.0 cases per 100,000 population in 2014 to 90.6 in 2018. Salt Lake County and Weber-Morgan saw the highest rates of gonorrhea in 2018, with 163.1 and 106.8 cases per 100,000 population respectively.

In 2017, 60.9% of reported gonorrhea cases in Utah were among people aged 20-34, and rates among males were about two times higher than females. Of these male cases, 38% occurred among men who have sex with men (MSM), although this number has decreased from 66% in 2009. The highest rate of gonorrhea among racial and ethnic groups in 2017 was reported among

non-Hispanic Blacks (545.6 cases per 100,000 population), followed by non-Hispanic Pacific Islanders (164.0 cases per 100,000 population), and Hispanics (132.2 cases per 100,000 population).

Drug resistance is an increasingly important concern in the treatment and prevention of gonorrhea. CDC monitors trends in gonorrhea drug resistance through the Gonococcal Isolate Surveillance Project (GISP), which tests gonorrhea samples ("isolates") from the first 25 men with urethral gonorrhea attending STD clinics each month in sentinel clinics across the United States (27 cities in 2014). Utah does not currently participate in GISP.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Investigate all suspect cases of gonorrhea, complete and submit appropriate disease investigation forms.
- Facilitate early detection and effective treatment of patients and their contacts.
- 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 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 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;
    - 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 less than 25 years and to women 25 years 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 less than 25 years, at increased risk for gonorrhea (e.g., women who have a new or more than one sex partner), and/or found to have gonorrhea infection during the first trimester should be retested during the third trimester.
- Subgroups of men who have sex with men (MSM) are at high risk for gonorrhea 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 gonorrhea. 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

Gonorrhea is a reportable disease. Providers should report cases meeting the following criteria using the UDOH case report form.

Criterion	Reporting Gonorrhea
Laboratory Evidence	
Isolation of *Neisseria gonorrhoeae* by culture of a clinical specimen	S
Microscopic visualization of *N. gonorrhoeae* (gram-negative intracellular diplococci of typical morphology associated with neutrophils) in a urethral specimen from men	S
Detection of *Neisseria gonorrhoeae* by nucleic acid amplification in a clinical specimen	S
Detection of *Neisseria gonorrhoeae* nucleic acid by hybridization with a nucleic acid probe in a clinical specimen	S
Detection of *Neisseria gonorrhoeae* antigens in a clinical Specimen	S
Microscopic visualization of *Neisseria gonorrhoeae* (gram-negative intracellular diplococci of typical morphology associated with neutrophils) in an endocervical specimen from a woman	S

Note:
S = This criterion alone is sufficient to report a case

Case Definition (2013)

Epidemiologists classify infections according to the following:

Criterion	Case Definition	
Laboratory Evidence	Confirmed	Probable
Isolation of *Neisseria gonorrhoeae* by culture of a clinical specimen	S	
Microscopic visualization of *Neisseria gonorrhoeae* (gram-negative intracellular diplococci of typical		S

morphology associated with neutrophils) in a urethral specimen from men		
Detection of *Neisseria gonorrhoeae* by nucleic acid amplification in a clinical specimen	S	
Detection of *Neisseria gonorrhoeae* nucleic acid by hybridization with a nucleic acid probe in a clinical specimen	S	
Detection of *Neisseria gonorrhoeae* antigens in a clinical specimen	S	
Microscopic visualization of *Neisseria gonorrhoeae* (gram-negative intracellular diplococci of typical morphology associated with neutrophils) in an endocervical specimen from a woman		S

Note:
S = This criterion alone is sufficient to report a case.

Gonorrhea (2013)

Clinical Description

Infection with *N. gonorrhoeae* may result in urethritis, epididymitis, cervicitis, acute salpingitis, or other syndromes when sexually transmitted; however, the infection may be asymptomatic. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns.

Laboratory Criteria

- Observation of gram-negative intracellular diplococci in a urethral smear obtained from a male or an endocervical smear obtained from a female, or
- Isolation of typical gram-negative, oxidase-positive diplococci by culture (presumptive *N. gonorrhoeae*) from a clinical specimen, or
- Demonstration of N. gonorrhoeae in a clinical specimen by detection of antigen or nucleic acid.

Case Classification

Probable: demonstration of gram-negative intracellular diplococci in a urethral smear obtained from a male or an endocervical smear obtained from a female.

Confirmed: a person with laboratory isolation of typical gram-negative, oxidase-positive diplococci by culture (presumptive *N. gonorrhoeae*) from a clinical specimen, or demonstration of *N. gonorrhoeae* in a clinical specimen by detection of antigen or detection of nucleic acid via nucleic acid amplification (e.g., PCR) or hybridization with a nucleic acid probe.

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/TriSano according to the minimum data set on the original patient.
- Conduct investigations on contact event(s) and create UT-NEDSS contact event(s) for contacts identified.
- Provide/facilitate treatment and follow-up for contacts.
- Complete CMR and contact event, if applicable.

Outbreaks

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

Identify 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 gonorrhea 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 gonorrhea. 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

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Centers for Disease Control and Prevention, Sexually Transmitted Diseases Treatment Guidelines, 2015.

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Council of State and Territorial Epidemiologists, Update to Public Health Reporting and National Notification for Gonorrhea. April 4, 2013.

Principles and Practice of Infectious Disease (6th Edition), Gerald L. Mandell, John E. Bennett, and Raphael Dolin Eds; 2005.

Red Book: 2003 Report of the Committee on Infectious Diseases (26th Edition), Larry K. Pickering MD, Ed; 2003.

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2018 Sexually Transmitted Disease Surveillance, Gonorrhea. https://www.cdc.gov/std/stats18/gonorrhea.htm.

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✓ VERSION CONTROL

V.06.15: 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.08.15: Updated treatment according to 2015 CDC treatment guidelines.

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

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

✓ UT-NEDSS MINIMUM/REQUIRED FIELDS BY TAB

MORBIDITY EVENT

Demographic
- Last Name
- First Name
- Street
- Unit Number
- City
- State
- County
- Zip code
- Date of Birth
- Area Code
- Phone Number
- Birth Gender
- 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

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

Contacts
- How many sex partners has the case had in the past 3 months?

Reporting
- Date first reported to public health

Investigation
- 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)*

Administrative
- State Case Status *(completed by UDOH)*

CONTACT EVENT

Demographic
- Contact Name
- Contact Address County *(if known)*
- Contact Birth Gender *(if known)*
- Contact Disposition
- Contact Disposition Date
- Contact Type

Clinical
- 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

Gonorrhea 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
DNA probe	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	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.

Gonorrhea 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.

Gonorrhea 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.

Gonorrhea 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.