PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

Name	*Neisseria gonorrhoeae*
Reservoir & Transmission	Humans Sexually transmitted; perinatal transmission
Incubation Period	Generally, 1–14 days; can be longer
Common Symptoms	Urethritis, purulent discharge, cervicitis, salpingitis, or pharyngitis
Gold standard Diagnostic Test	Gram stain of discharge, bacteriological culture on selective media (e.g., modified Thayer–Martin agar), or molecular tests that detect gonococcal nucleic acid. Typical Gram-negative intracellular diplococci can be considered diagnostic in male urethral smears, but Gram stain is not recommended to diagnose *N. gonorrhoeae* infection in women or from extragenital sites.
Risk Groups	Men who have sex with men (MSM), commercial sex workers, socioeconomically marginalized groups, and sexually active youth
Geographic Significance	Worldwide; prevalence is generally higher in communities of lower socioeconomic status

What is gonorrhea?
Gonorrhea is a sexually transmitted infection (STI) caused by infection with the *Neisseria gonorrhoeae* bacterium. *N. gonorrhoeae* can infect the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and the urethra in women and men. *N. gonorrhoeae* can also infect the mucous membranes of the mouth, throat, eyes, and rectum.

N. gonorrhoeae is also the cause for Gonococcal Ophthalmia Neonatorum disease, which is an important cause of blindness throughout the world. Occurrence varies widely according to prevalence of maternal infection, prenatal screening coverage, and use of infant eye prophylaxis at delivery. This infection presents with acute redness and swelling of conjunctiva in one or both eyes with mucopurulent and purulent discharge, typically occurring within 1–5 days of birth. Corneal ulcer, perforation, scarring, and blindness may occur if antimicrobial treatment is not given promptly.

What is the occurrence of gonorrhea?
Gonorrhea is a very common infectious disease. CDC estimates that approximately 1.6 million new gonococcal infections occurred in the United States in 2018, and more than half occur among young people aged 15–24. Gonorrhea is the second most reported bacterial STI in the United States. However, many infections are asymptomatic, so reported cases only capture a fraction of the true burden.

How is gonorrhea transmitted?
Gonorrhea is transmitted through contact with exudates from mucous membranes of infected people, almost always because of sexual activity. Ejaculation does not have to occur for gonorrhea to be transmitted or acquired. Gonorrhea can also be spread perinatally from mother to baby during childbirth. People who have had gonorrhea and received treatment may be reinfected if they have sexual contact with a person infected with gonorrhea. Gonorrhea in children older than 1 year is considered indicative of sexual abuse. The disease may be

communicable for months in untreated individuals. Effective treatment ends communicability within hours. Transmission by fomites is extremely rare.

Who is at risk for gonorrhea?
Any sexually active person can be infected with gonorrhea. Those at risk tend to belong to sexual networks characterized by high rates of partner change and condomless sex; men who have sex with men (MSM), female key populations, socioeconomically marginalized groups, and sexually active youth are disproportionately affected. Infection with gonorrhea increases the risk of both acquisition and transmission of human immunodeficiency virus (HIV) infection, either biologically, behaviorally, or both. Humoral and secretory antibodies have been demonstrated, but gonococcal strains are antigenically heterogeneous, and reinfection is common.

What are the signs and symptoms of gonorrhea?
In men, gonococcal infection generally presents as an acute purulent discharge from the anterior urethra with dysuria within 2–7 days after exposure but can sometimes take longer. Most urogenital gonococcal infections in males are symptomatic but sometimes may be only mildly symptomatic or truly asymptomatic. In cases where urethral infection is complicated by epididymitis, men with gonorrhea may also complain of testicular or scrotal pain.

Most women with gonorrhea are asymptomatic. Even when a woman has symptoms, they are often so mild and nonspecific that they are mistaken for a bladder or vaginal infection. The initial symptoms and signs in women include dysuria, increased vaginal discharge, or vaginal bleeding between periods. Women with gonorrhea are at risk of developing serious complications from the infection, regardless of the presence or severity of symptoms. Symptoms of rectal infection in both men and women may include discharge, anal itching, soreness, bleeding, or painful bowel movements. Rectal infection also may be asymptomatic. Pharyngeal infection may cause a sore throat, but usually is asymptomatic. Infection of the eye (by autoinoculation) causes purulent conjunctivitis and can lead to permanent corneal damage.

What are the potential complications of gonorrhea?
Untreated gonorrhea can cause serious and permanent health problems in both women and men. In women, gonorrhea can spread into the uterus or fallopian tubes and cause pelvic inflammatory disease (PID). The symptoms may be quite mild or can be very severe and can include abdominal pain and fever. PID can lead to internal abscesses and chronic pelvic pain. PID can also damage the fallopian tubes enough to cause infertility or increase the risk of ectopic pregnancy. In men, gonorrhea may be complicated by epididymitis. In rare cases, this may lead to infertility. If left untreated, gonorrhea can also spread to the blood and cause disseminated gonococcal infection (DGI). DGI is usually characterized by arthritis, tenosynovitis, and/or dermatitis. This condition can be life threatening. Untreated gonorrhea can increase a person’s risk of acquiring or transmitting HIV.

If a pregnant woman has gonorrhea, she may give the infection to her baby as the baby passes through the birth canal during delivery. This can cause blindness, joint infection, or a life-threatening blood infection in the baby. Treatment of gonorrhea as soon as it is detected in pregnant women will reduce the risk of these complications. Pregnant women should consult a healthcare provider for appropriate examination, testing, and treatment, as necessary.

PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

How is gonorrhea diagnosed?

Any sexually active person can be infected with gonorrhea. Anyone with genital symptoms such as discharge, burning during urination, unusual sores, or rash should stop having sex and see a healthcare provider immediately. Also, anyone with an oral, anal, or vaginal sex partner who has been recently diagnosed with an STI should see a healthcare provider for evaluation.

The CDC recommends yearly gonorrhea screening for all sexually active women younger than 25 years, as well as older women with risk factors such as new or multiple sex partners, or a sex partner who has an STI. People who have gonorrhea should also be tested for other STIs.

Urogenital gonorrhea can be diagnosed by testing urine, urethral (for men), or endocervical or vaginal (for women) specimens using nucleic acid amplification testing (NAAT). It can also be diagnosed using gonorrhea culture, which requires endocervical or urethral swab specimens. FDA-cleared rectal and oral diagnostic tests for gonorrhea have been validated for clinical use.

How is gonorrhea treated?

CDC now recommends a single 500 mg intramuscular dose of ceftriaxone for the treatment of uncomplicated gonorrhea. Alternative regimens are available when ceftriaxone cannot be used to treat urogenital or rectal gonorrhea. Although medication will stop the infection, it will not repair any permanent damage done by the disease. Antimicrobial resistance in gonorrhea is of increasing concern, and successful treatment of gonorrhea is becoming more difficult. A test-of-cure (i.e., follow-up testing to be sure the infection was treated successfully) is not needed for genital and rectal infections; however, if a person's symptoms continue for more than a few days after receiving treatment, he or she should return to a healthcare provider to be reevaluated. If symptoms persist, reinfection is most likely, but specimens should be obtained for culture and antimicrobial susceptibility testing to rule out treatment failure. Retreatment is recommended, sometimes with a doubling of doses of therapies, particularly azithromycin. A test-of-cure is needed 7–14 days after treatment for people who are treated for pharyngeal (infection of the throat) gonorrhea. If NAAT is performed as test-of-cure, it should be done with sufficient time after treatment (i.e., closer to 14 days after treatment) to avoid false-positive results from detection of nonviable organisms that may not represent persistent infection. Because re-infection is common, men and women with gonorrhea should be retested 3 months after treatment of the initial infection, regardless of whether they believe that their sex partners were successfully treated. Patients should refrain from sexual intercourse until antimicrobial therapy is completed and for 7 days after treatment. To avoid reinfection, abstain from sex with previous sex partners until they have been treated. All infants born to infected mothers must receive prophylactic treatment.

How can gonorrhea be prevented?

Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea. The surest way to avoid transmission of gonorrhea or other STIs is to abstain from vaginal, anal, and oral sex, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Having easy and rapid access to treatment facilities would help with diagnosis. Regular screening of key populations or users of HIV preexposure prophylaxis, who may be at greater risk of several STIs (gonorrhea, chlamydia, syphilis), is advisable to detect asymptomatic infections when feasible.

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PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

What are some public health considerations?

- Suspected gonorrhea cephalosporin treatment failure or any *N. gonorrhoeae* specimen with decreased cephalosporin susceptibility should be reported directly to CDC. Clinicians or health departments should complete the Suspected Gonorrhea Treatment Failure Consultation Form. Clinicians should contact their state or local health department to coordinate completion of the report form prior to submitting it to CDC.
- If a person has been diagnosed and treated for gonorrhea, he or she should tell all recent anal, vaginal, or oral sex partners so they can see a health provider and be treated. Sexual contacts of cases should be examined, tested, and treated if their last sexual contact with the case was within 60 days before the onset of symptoms or diagnosis in the case. A person with gonorrhea and all his or her sex partners must avoid having sex until they have completed their treatment for gonorrhea and until they no longer have symptoms.
- Report co-infections with other organisms, like chlamydia, separately as individual reportable medical events.

References:

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