Gonorrhea

Manitoba Health
Public Health
Communicable Disease Control Unit

Case Definition

Confirmed case: Detection of *Neisseria gonorrhoeae* from any site by culture, antigen detection, DNA probe technique or nucleic acid amplification. In males, cases with intracellular gram-negative diplococci present on gram stain of urethral exudate are also considered laboratory-confirmed.

Clinical case: Urethral or cervical/vaginal discharge without laboratory confirmation, in a person with a history of sexual contact with a laboratory-confirmed case in the preceding six to eight weeks. Laboratory confirmation should always be sought in this situation.

Cases comprise both genital and extra-genital infections. Perinatally acquired cases are cases occurring in neonates (up to four weeks of age), leading to the diagnosis of gonococcal conjunctivitis, scalp abscess, vaginitis, bacteremia, arthritis, meningitis or endocarditis.

Surveillance reports include only laboratory-confirmed cases.

Reporting Requirements

- All positive laboratory tests are reportable by laboratory.
- All cases are reportable by attending health care professional.

Clinical Presentation/Natural History

Genitourinary:

Male	Female
- can be asymptomatic	- can be asymptomatic
- urethral discharge	- cervine/vaginal discharge
- dysuria & frequency	- vaginal discharge scant to copious
- non-specific urethral symptoms (e.g., redness, itch, swelling)	- dysuria & frequency
	- dysparemnia
	- lower abdominal pain
	- abnormal bleeding between periods
	- non-specific vaginal symptoms (e.g., redness, itch, swelling)

Complications	Complications
- epididymitis	- oophoritis } also referred
- orchitis	- endometritis } to as pelvic
- prostatitis	- salpingitis } inflammatory
- infertility	} disease (PID)
	- peritonitis
	- bartholinitis
	- ectopic pregnancy
	- infertility

Pharyngeal:

Pharyngeal:

- often asymptomatic
- at risk are those persons who engage in oro-genital sexual activity

Rectal:

- often asymptomatic
- mucoid discharge
- tenesmus
- rectal pain
- blood-streaked stool

Disseminated Gonococcal Infection:

- results from bacteremia
- fever, chills
- migratory polyarthritis (wrists, hips, knees, ankles)
- skin lesions (pustular, petechial, hemorrhagic or necrotic)
- gonococcal endocarditis, perihepatitis and meningitis can occur

Gonococcal Conjunctivitis:
- non-purulent or purulent conjunctivitis
- newborns – result of passage through infected cervix
- adults – result of inoculation with infected genital secretions

- **Acute Pelvic Inflammatory Disease (PID):**
  - Acute pelvic inflammatory disease refers to the acute clinical syndrome attributed to the ascending spread of microorganisms from the vagina and endocervix to the endometrium, fallopian tubes, and/or contiguous structures. It comprises endometritis, salpingitis, tubo-ovarian abscess and pelvic peritonitis.
  - Etiologic agents include *N. gonorrhoeae*, *C. trachomatis*, and other organisms such as anaerobes, gram-negative rods, streptococci and mycoplasmas. It is often impossible to differentiate among these agents in a patient.

Etiology

Neisseria gonorrhoeae is a gram-negative diplococcus, usually intracellular. The presence of plasmids coding for beta-lactamases render some strains resistant to penicillin.

Epidemiology

Reservoir: Humans

Transmission: By direct sexual contact from an infected person to a sex partner via oral, vaginal, cervical, urethral or rectal routes. The bacteria may spread from the primary sites causing infection of the uterus, fallopian tubes, ovaries, abdominal cavity and the glands of the vulvar area in females, as well as testicles in males. Newborns delivered vaginally to infected mothers are at risk for developing gonococcal conjunctivitis (*ophthalmia neonatorum*).

Occurrence:

General: Worldwide, affects both sexes and all age groups, especially younger adult groups.

Manitoba: Gonorrhea incidence declined steadily over the decade prior to 1996, and has stabilized at about 500 to 600 cases per year. Incidence is highest in the 15 to 24 year age group. Although the largest number of reported cases are from Winnipeg, the highest rates of infection are in northern jurisdictions. In Winnipeg, infection is increasingly being concentrated in a small number of geographic "core" areas.

Incubation Period: For uncomplicated disease, usually two to seven days.

Susceptibility and Resistance: Although strain-specific immunity probably exists, for practical purposes susceptibility is universal and immunity is not important on an individual basis. The transmission probability of *N. gonorrhoeae* has been estimated to be as high as 50% per genital sexual contact, and is more efficient male-to-female than female-to-male.

Period of Communicability: May extend for months if untreated, especially in asymptomatic persons. Effective therapy usually ends communicability within hours.

Diagnosis

Based on history, physical examination and laboratory investigation.

Male:
Intracellular gram-negative diplococci (GND) present on gram stain of urethral exudate.

Positive culture, antigen detection test (e.g., Gonozyme), DNA probe test (e.g., GenProbe) or nucleic acid amplification test (e.g., Amplicor). Culture and the GenProbe DNA probe test are the techniques generally used by the Cadham Provincial Laboratory (CPL). However, GenProbe is only recommended for male urethral specimens. For specimens from the throat, rectum or other sites, culture is recommended. Nucleic acid amplification tests are not routinely available at present.

Laboratory confirmation should be sought when there is urethral discharge in a male with history of sexual contact with a laboratory-confirmed case.

Female:
Positive culture, antigen detection test (e.g., Gonozyme), DNA probe test (e.g., GenProbe) or nucleic acid amplification test (e.g., Amplicor). Culture and the GenProbe DNA probe test are the techniques generally used by CPL. However, GenProbe is only recommended for female cervical specimens. For specimens from the throat, rectum or other sites, culture is recommended. Nucleic acid amplification tests are not routinely available at present.

Laboratory confirmation should be sought when there is vaginal discharge in a female with history of sexual contact with a laboratory-confirmed case.

Children (12 years and under):
N. gonorrhoeae isolated on culture from any site.

Gram-negative diplococci present on gram stain of urethral or vaginal exudate, or detection by nucleic acid amplification, are technically diagnostic, but culture should always be taken.

Note: Children aged 12 or under presenting with a vaginal, urethral or a rectal discharge (or older children with any suggestion of sexual abuse) require diagnostic testing from the pharynx and rectum as well as from the vagina (girls) or urethra (boys). Suspected cases should be referred (see protocol "Children with Sexually Transmitted Diseases").

Newborn:
N. gonorrhoeae isolated by culture or detected by nucleic acid amplification, from any site, e.g., urethra, vagina, rectum, pharynx, eyes, umbilicus.

Antibiotic Resistant *Neisseria Gonorrhoeae*

Gonococcal infections due to resistant organisms are clinically indistinguishable from those due to susceptible organisms.

Penicillinase producing *Neisseria gonorrhoeae* (PPNG):
- Plasmid-directed penicillinase production
- Organism is highly resistant to penicillins

Chromosomally-mediated resistant *Neisseria gonorrhoeae* (CMRNG):
- Resistance due to changes in gonococcal cell wall
- Organism is resistant to penicillins and often to tetracycline and erythromycin

Tetracycline-resistant *Neisseria gonorrhoeae* (TRNG):
- Organism is resistant to tetracycline

These organisms can only be identified by culture techniques. Such cases should be treated and investigated promptly.

Key Investigations

- Interview case for history of exposure, risk assessment, contacts, adequacy of treatment and promotion of safer sex practices.
- Interview contacts and provide epidemiological treatment, with risk assessment and promotion of safer sex practices.

Control

Management of Cases:

- Cases should be interviewed for history of exposure, risk assessment, contacts, and promotion of safer sex practices. Test for HIV infection and other STDs if indicated.
- Provincial guidelines for the treatment of gonococcal infection take into account several observations:
  - infections due to antibiotic-resistant *N. gonorrhoeae*, (PPNG, CMRNG, TRNG)
  - the high frequency of coexisting chlamydial and gonococcal infections
  - the increased recognition of the serious complications of chlamydial and gonococcal infections
- The guidelines do not attempt to be a comprehensive list of all possible treatment regimens. Rather, they seek to provide guidance for regimens that meet general criteria of efficacy,

safety, ease of administration and cost. Where possible, single-dose oral therapy is preferred. See Manitoba Health's "*Sexually Transmitted Diseases Treatment Guidelines*" for details (see **Additional Resources**).

- **Ambulatory Treatment of PID:**
  - Ceftriaxone 250 mg IM, followed by
  - Doxycycline 100 mg orally twice a day for 10 to 14 days.
  - Metronidazole 500 mg tid for 14 days.

    Note: Persons treated on an ambulatory basis need to be monitored closely and re-evaluated in 72 hours. The intrauterine device is a risk factor for the development of PID. Although the exact effect of removing an IUD on the response of acute salpingitis to antimicrobial therapy and on the risk of recurrent salpingitis is unknown, removal of the IUD is recommended soon after antimicrobial therapy has been initiated. When an IUD is removed, contraceptive counselling is necessary.
  - For treatment of hospitalized patients, see *Canadian STD Guidelines, 1998 Edition* (see **Additional Resources**).
- **Treatment failures**

  Recurrent gonococcal infections after treatment with the recommended schedules may be due to reinfection, and indicate a need for improved contact tracing and patient education.
- **Issues in case management**
  - Immediate antimicrobial therapy is recommended. Men and women with suspected urethritis, cervicitis or proctitis should be treated presumptively for gonorrhea and chlamydial infection, pending the results of laboratory testing for both. Serologic testing for syphilis and HIV are also recommended. All persons treated for gonorrhea should also be treated for chlamydial infection.
  - Patients should abstain from sex for seven days after treatment. At minimum, condoms should always be used during sex.
  - Interview as soon as possible, preferably within five working days. Repeaters (persons with more than one documented episode of STD in the preceding 12 months), women with PID, individuals with PPNG and other high-risk individuals are the highest priority.
  - Test of cure is generally not recommended if a recommended treatment is given, and symptoms and signs disappear, and there is no re-exposure to an untreated partner. Repeat testing is advisable if any of the following exist:
    - treatment failure has previously occurred
    - antimicrobial resistance to therapy is documented
    - compliance is an issue
    - pharyngeal or rectal gonorrhea is diagnosed
    - there is re-exposure to an untreated partner
    - infection occurs during pregnancy
    - PID or disseminated gonococcal infection is diagnosed
    - the patient is a child

    If done, repeat testing should be by culture and should be performed four to five days after completion of therapy.
- **Management of gonococcal infections in pregnancy, at delivery and in the postnatal period**
  - All pregnant women reporting risky sexual behaviour should have endocervical testing for *Neisseria gonorrhoeae*.
  - If women are found to have gonorrhea during pregnancy or at the time of delivery, they should be treated with drug regimens as described in the provincial STD treatment guidelines.

- The most common form of gonococcal infection in infants who are born to mothers with untreated gonorrhea is conjunctival infection, but the mucous membranes of the vagina, urethra, pharynx or rectum may also be colonized, and therefore all sites should be tested.
- Neonates born to women with untreated gonococcal infections are at high risk of infection and require ceftriaxone 25-50 mg/kg IM (maximum 125 mg) in a single dose after testing has been performed. Ceftriaxone should be given cautiously to hyperbilirubinemic infants, especially premature infants. Infectious disease consultation is recommended.
- Neonates with clinical gonococcal ophthalmia should be hospitalized and managed with routine infection control precautions. Untreated gonococcal ophthalmia may rapidly lead to blindness. Infectious disease consultation is recommended. Eye irrigations with buffered saline solutions until the discharge has cleared are indicated, in addition to treatment with antibiotics. Both parents of a newborn with gonococcal ophthalmia should be tested and treated.
- Topical prophylaxis for neonatal ophthalmia is not adequate treatment for infections at other sites, and clinical illness requires additional treatment.
- Women who are found to have gonorrhea in the postnatal period should be investigated for possible co-existing sexually transmitted diseases, particularly *Chlamydia trachomatis*. The woman should be treated appropriately with a recommended regimen. The infant should be examined carefully for ophthalmia neonatorum, vulvo-vaginitis, urethritis, pharyngitis or disseminated disease. If infection is suspected, the appropriate site(s) should be tested.

- **Disseminated Gonococcal Infection**
  - Hospitalization is usually indicated, especially for those who cannot reliably comply with treatment, have uncertain diagnosis, or have purulent joint effusions or other complications. Hospitalized persons should be managed with routine infection control precautions.
  - There are several acceptable treatment schedules for the gonococcal arthritis-dermatitis syndrome. Consultation with a specialist is recommended.
- For treatment of hospitalized patients, see Health Canada's "*Canadian STD Guidelines*", 1998 edition (see **Additional Resources**).

Management of Contacts:

- If the case is a male or female with symptomatic, uncomplicated gonorrhea, all sexual contacts exposed two months prior to the onset of symptoms in the case, up to and including the interview date, should be examined, tested and provided epidemiologic treatment. For example, if a case noted symptoms on June 1, was tested on June 4, diagnosed on June 6 and interviewed on June 10, the interview period is April 1 to June 10.
- If the case is a male or female with asymptomatic gonorrhea, complicated gonorrhea, or with repeated infections (i.e., two or more infections in a 12-month period), the interview period should extend to three months prior to the diagnosis in the case.
- Contacts should also be screened for syphilis and HIV infection.

Preventive Measures:

- Women should be tested for gonorrhea at least once during pregnancy.
- Screening and case-finding for gonorrhea should be undertaken in the following circumstances. Frequency of testing will depend upon individual risk circumstances:
  - women prior to insertion of an intrauterine device;

- women prior to therapeutic abortion or D&C;
- persons with more than one sex partner in the past year;
- persons with a new sex partner in the past year;
- persons whose partner has other sex partners;
- street-involved persons (living on the street, gang activity, etc.);
- persons involved in substance misuse (e.g., injection drug use, sniff use);
- persons with a history of an STD in the past year;
- history of unprotected sex with a person in one of the above categories.

Additional Resources

For Health Care Professionals:

- *Sexually Transmitted Diseases Treatment Guidelines*, revised March 1998. Available from Audiovisual and Publications Department, Manitoba Health, telephone (204) 786-7112, fax (204) 772-7213.
- *Canadian STD Guidelines, 1998 Edition*. Available from Audiovisual and Publications Department, Manitoba Health, telephone (204) 786-7112, fax (204) 772-7213.
- Holmes KK, Sparling PF, Mårdh P-A, Lemon SM, Stamm WE, Piot P, Wasserheit JN, eds. *Sexually Transmitted Diseases, Third Edition*. New York: McGraw-Hill, 1999.
- STD/HIV Information Line (Winnipeg RHA), 940-2200
- AIDS/STD Information (Village Clinic/Nine Circles Community Health Centre)
  Winnipeg, 945-2437
  Outside Winnipeg, 1-800-782-2437
- Facts of LIFE Line (Sexuality Education Resource Centre)
  Winnipeg, 947-9222
  Outside Winnipeg, 1-800-452-1957