Gonococcal Infections

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Case Definition

Confirmed case

Genital Infections
Laboratory confirmation of infection in genitourinary specimens:
• Isolation of Neisseria gonorrhoeae by culture
  OR
• Detection of N. gonorrhoeae nucleic acid (e.g., PCR).

Extra-genital Infections
Laboratory confirmation of infection from pharynx, rectum, joint, conjunctiva, blood or other extra-genital sites:
• Isolation of N. gonorrhoeae by culture
  OR
• Detection of N. gonorrhoeae nucleic acid (e.g., PCR).

Perinatally Acquired Infections
Laboratory confirmation of infection from a neonate in the first four weeks of life leading to the diagnosis of gonococcal conjunctivitis, scalp abscess, vaginitis, bacteremia, arthritis, meningitis or endocarditis:
• Isolation of N. gonorrhoeae by culture
  OR
• Detection of N. gonorrhoeae nucleic acid (e.g., PCR).

Notes:
Further strain characterization is indicated for epidemiological, public health and control purposes.

A positive test for Gram-negative intracellular diplococci in symptomatic males with urethral discharge provides a presumptive diagnosis for gonorrhea in men.

Each case classification is mutually exclusive.

Individuals with more than one site of infection concurrently may fall under more than one case classification but will be counted as one case with multiple sites of infection identified, to avoid duplicate counting of cases.
Reporting Requirements

1. Physicians, Health Practitioners and others
   - Physicians, nurses, nurse practitioners, midwives, persons in charge of an institution, or operators of a supportive living accommodation as listed in Section 22(3) and 22(4) of the Public Health Act, shall notify the Chief Medical Officer of Health (CMOH) (or designate) of all confirmed cases in the prescribed form by mail, fax or electronic transfer within 48 hours (two days). The completed Notification of Sexually Transmitted Infection (STI) form shall be forwarded to the CMOH (or designate) within two weeks of notification. The Notification of STI Form will include:
     - index patient information,
     - laboratory/clinical findings,
     - treatment details and
     - contact information and their treatment.
   - For out-of-zone, out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer within 48 hours (two days) including:
     - name,
     - date of birth,
     - current health care number,
     - current address of residence and phone number,
     - attending physician (locally and out-of-province),
     - positive laboratory report (faxed) and
     - date of exposure.

2. Laboratories
   - Section 23(b) of the Public Health Act (1) requires that all laboratories, including the Provincial Laboratory for Public Health (ProvLab), shall report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two days) to the:
     - CMOH (or designate) and
     - attending/ordering physician or health practitioner.

3. Alberta Health Services
   - The Medical Officer of Health (MOH) (or designate) is responsible for ensuring investigation, treatment and follow-up of all reported confirmed cases and contacts.

4. Additional Reporting Requirements for Physicians, Health Practitioners and Others
   - In all cases, where a person under 18 is suspected or confirmed to have an STI, an assessment should be carried out by the clinician to determine if additional reporting is required.

1. To Child and Family Services
   - The clinician should determine whether there are reasonable and probable grounds to believe that they are in contact with “a child in need of intervention” [as per Section 1(2) of the Child, Youth and Family Enhancement Act (CYFEA)(2)] and shall report to a director pursuant to Section 4 of the CYFEA (2).

   Reporting is done by contacting the local Child and Family Services office or calling the CHILD ABUSE HOTLINE: 1-800-387-5437 (KIDS). For local office contact information see: www.child.alberta.ca/home/782.cfm
2. **To Law Enforcement Agency**

Consent is a key factor in determining whether any form of sexual activity is a criminal offence. Children under 12 do not have the legal capacity to consent to any form of sexual activity. The law identifies the exception for minors under age 16 years as having the ability to consent, in “close in age” or “peer group” situations. The law recognizes that the age of consent for sexual activity is 16.

Reporting is done by contacting your local City Police Detachment or RCMP Detachment [http://www.rcmp-grc.gc.ca/ab/det-eng.htm](http://www.rcmp-grc.gc.ca/ab/det-eng.htm).

For additional information see: Frequently Asked Questions:

- Age of Consent to Sexual Activity [www.justice.gc.ca/eng/dept-min/clp/faq.html](http://www.justice.gc.ca/eng/dept-min/clp/faq.html) (3)
Etiology
*Neisseria gonorrhoeae* is an aerobic gram negative bacteria. (5)

Clinical Presentation

**Genital Infections**
In men, urethral infection commonly causes urethral discharge (81%) and /or dysuria (53%) (6). The discharge is often mucopurulent or purulent. Rarely, epididymal tenderness/swelling or balanitis may be present. (5)

Women are often asymptomatic (up to 40%) (7). Commonly no abnormal findings are present on examination, however if symptoms are present they may include mucopurulent endocervical discharge and cervical friability. (8)

**Extra-Genital Infections**
Infections include infection in the pharynx, rectum, joints, conjunctiva, blood, and other sites. In females and men who have sex with men (MSM), pharyngeal and anorectal infections are common and are most often asymptomatic. Anorectal infections may cause pruritus, tenesmus, and discharge. Conjunctivitis may occur in adults, however, this infection is more prevalent in newborns and may cause blindness if not treated adequately. Bacteremia is rare, occurring in only 0.5 – 1% of gonorrheal infections. Meningitis, arthritis, skin lesions, and endocarditis also occur infrequently. Death is uncommon. (5;8;9)

**Perinatally Acquired Infections**
Infections occur in newborns as a result of passage through an infected cervix and /or birth canal. The most common presentation of infection is ophthalmia neonatorum. Other presentations such as vaginitis, rhinitis, anorectal infection, funisitis, urethritis, scalp abscesses or other disseminated diseases (bacteremia, arthritis, meningitis or endocarditis) may also occur. (10)

Diagnosis
The diagnosis is established by the identification of *N. gonorrhoeae* at an infected site. As part of Alberta’s plan to maintain surveillance for antimicrobial resistant gonorrhea, the following sites or indications are situations where gonorrhea culture is routinely performed or recommended:

- infection acquired outside of Alberta,
- treatment failure,
- sexual abuse of children,
- sexual assault,
- evaluation of pelvic inflammatory disease,
- non-genital sites (e.g., eye, pharynx, rectum) and
- STI Clinics in Edmonton and Calgary.

Nucleic acid tests were first introduced in Alberta in 1997 and are preferred in situations where urine testing is more feasible or delays in transport of specimens may occur.
Epidemiology

Reservoir
The only known reservoir is humans. (9)

Transmission
Gonorrhea is transmitted by direct inoculation of infected secretions from one mucous membrane to another, usually through sexual activity or through the birth process (vertical transmission). (5)

Incubation Period
The incubation period is typically two to seven days, with a range of 1 – 14 days. (5;9;11)

Period of Communicability
*N. gonorrhoea* is communicable for as long as the person harbours the organism. This may be months in untreated individuals. Effective therapy ends communicability in hours.

Host Susceptibility
Susceptibility is universal and re-infection is common. Co-infection with *Chlamydia trachomatis* is common. Epidemiologic studies provide strong evidence that gonorrheal infections facilitate HIV transmission. (5)

Occurrence

General
Gonorrhea is common worldwide. It is the second most frequently reported communicable disease in the United States with 339,593 cases documented in 2005. It is a frequently reported STI in sexually active adolescent and young adults. WHO reports an estimated 62 million new infections world wide each year.

Gonorrhea affects both genders. More cases are reported in men than women due to ease in diagnosis. Prevalence rates tend to be higher in low socioeconomic communities. The highest incidence of gonorrhea and its complications occurs in developing countries.

In the United States and Canada, gonorrhea infections are second only to Chlamydia infections. The highest incidence is reported in high-density areas among individuals under 25 years of age who have multiple sex partners and engage in unprotected sex.

The prevalence of quinolone resistance in *N. gonorrhoeae* is well documented. (12-14) As a result experts no longer recommend the use of quinolones for the treatment of gonococcal infections and associated conditions such as pelvic inflammatory disease (PID). (11)

In recent years, documentation of *N. gonorrhoeae* strains with decreasing susceptibility to ceftriaxone and cefixime are notably increasing, both in Canada and internationally. The identification of this decrease in susceptibility has prompted international recognition of the likely development of resistance to another antimicrobial agent. In 2011, PHAC released an update to their management guideline, and recommends higher doses of cefixime or ceftriaxone, with the recommendation of concurrent treatment for chlamydia. (15) The additional treatment for chlamydia is thought to provide additional therapy for the treatment of gonorrhea. (12;13)
Canada

*N. gonorrhoeae* became reportable in Canada in 1924. (16) From 2000 thru 2008 national case rates steadily increased in Canada. In 2009, the first decrease was identified in over a decade. (17)

Alberta

Cases and rates of gonorrhea increased until 2006. After remaining steady for a few years, both cases and rates then dropped significantly since 2009. In 2010, the rate of gonorrhea was 32 cases per 100,000 persons, or half the rate from 2006. (17-19)

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**Gonocccocal Case and Rates in Alberta and Canada, 2001-2011**

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* National data unavailable from PHAC for 2010.

**Key Investigation**

**Single Case**

The diagnosis and treatment is performed by community physicians (in the majority of cases) and STI Clinics (Edmonton, Calgary and Fort McMurray).

- Determine the presence or absence of symptoms.
- Determine if risk factors for gonorrhea are present:
  - sexual contact with person(s) with known infection or compatible syndrome,
  - unprotected sex with partner(s) originating from or following travel to an area with high endemicity for gonorrhea. (note that drug resistance is more likely in this setting),
  - travelers to endemic countries who have had unprotected sex with a resident of that area,
  - sexually active under 25 years of age with multiple partners,
  - previous gonorrhea or other STI,
○ vulnerable populations (e.g., IDU, incarcerated individuals, sex trade workers, street youth, men who have unprotected sex with other men, etc.).

- Offer testing for HIV and other STI.
- Counsel and identify partners including locating information. (11;20)

Control

Management of a Case (11;15;20)

- Culture for *N. gonorrhoeae* is the preferred diagnostic test for symptomatic men who have sex with men (MSM) when possible.
- All patients treated for gonorrhea should also be treated for chlamydia infection regardless of chlamydia test result.
- Test of cure for *N. gonorrhoeae* is not routinely indicated if a recommended treatment agent has been taken, symptoms and signs disappear and there is no re-exposure to an untreated partner.
- Follow-up testing for test of cure by culture approximately 4 – 5 days after the completion of therapy is essential in any of the following situations:
  - child (< 14 years of age)
  - pregnant woman
  - all pharyngeal infections
  - antimicrobial resistance is documented
  - PID or disseminated gonococcal infection
  - non-genital site involved (e.g., eye, rectum, pharynx)
  - persistent symptoms or signs post-therapy
  - cases treated with a regimen other than the preferred treatment
  - quinolones were administered for treatment in the absence of confirmation of susceptibility
  - case is linked to another case with documented antimicrobial resistance to the treatment given
  - case is linked to a treatment failure case who was treated with the same antibiotic
  - treatment failure for gonorrhea has occurred previously in the patient
  - compliance is uncertain
  - there is re-exposure to an untreated partner
  - a false-positive NAAT result is suspected
- Immediate treatment is recommended in men and women with suspected urethritis, cervicitis or proctitis.
- Patients should be counseled about the importance of abstaining from unprotected intercourse until 7 days after treatment of both case and partner(s).
- Cases should be interviewed for history of exposure, risk assessment, and sexual partner(s) and/or perinatal contact(s).
- All cases should be instructed about infection transmission.
- Test for HIV and other STI e.g., chlamydia, syphilis, etc.
- All cases should be provided with individualized STI prevention education targeted at developing knowledge, skills, attitudes and behaviors to reduce the risk and prevent recurrences of STI.
- Immunization against hepatitis A may be recommended. Refer to *Alberta Immunization Policy* manual for immunization eligibility (21).
- Immunization against hepatitis B is recommended if not already given. Refer to *Alberta Immunization Policy* manual for immunization eligibility. (21)
- All patients with a notifiable STI qualify for provincially funded medication.
STI Services will send replacement medication upon receipt of a Notification of STI Form when the physician mailing address is indicated on the form.

- Physicians and STI clinics may order additional quantities of medication by contacting STI Services. (20)

- Sexual assault in adults should be managed in conjunction with local Sexual Assault services and other appropriate community support services.

- **Recalcitrant Patients**
  - The *Public Health Act* (1) (sections 39 through 52) authorizes detention of recalcitrant patients for medical examination, treatment, and/or counselling.
  - The CMOH [or designate (section 13(3) of the *Public Health Act*)] or MOH may issue a certificate to detain an individual who is believed to be infected and refuses or neglects to comply with treatment.
  - There must be proof of infection or contact to an infected person and documentation of failure to comply with prescribed treatment and medical examination or non compliance for testing and/or treatment.

### Treatment of a Case

#### Indications for Treatment:
- positive diagnostic test results,
- diagnosis of a syndrome compatible with gonorrheal infection, without waiting for test results,
- partner with a positive gonorrhea test result or diagnosis of a syndrome compatible with a gonorrhea infection without waiting for test results and
- all patients treated for gonorrhea should also be treated for chlamydial infection, regardless of chlamydial test result, unless treatment for gonorrhea was with azithromycin. (11;20)

#### Adults:

**Heterosexual and Pregnant Women (any site except pharyngeal)**

**Preferred:**
- cefixime 800 mg po as a single dose PLUS co-treatment for chlamydia with azithromycin 1gm po as a single dose.

**Alternate:**
- spectinomycin 2gm by intramuscular injection as a single dose PLUS co-treatment for chlamydia with azithromycin 1gm po as a single dose

  OR

- azithromycin 2 gm po as a single dose.

**Infections in MSM (any site) and Pharyngeal Infections (regardless of sexual orientation)**

**Preferred:**
- ceftriaxone 250 mg IM as a single dose PLUS co-treatment for chlamydia with azithromycin 1gm po as a single dose.

**Alternate:**
- cefixime 800 mg po as a single dose PLUS co-treatment for chlamydia with azithromycin 1gm po as a single dose.
OR

- azithromycin 2 gm po as a single dose.

**Considerations:**
- Quinolone antibiotics are no longer recommended as preferred treatment agents. They may be used as an alternate treatment agent if:
  - antimicrobial susceptibility testing is available and quinolone susceptibility is demonstrated, OR
  - Local quinolone resistance is under 5% AND a test of cure can be performed. (15)
- Ciprofloxacin is contraindicated during pregnancy.
- Disseminated infections and infections involving the eye require expert consultation and systemic antibiotics.


**Pediatric Cases**
- If the case is < 14 years of age a referral to a pediatrician should be made.
- Neonates born to untreated, infected mothers must be tested and treated.
- If the case is in an infant, the mother and her sexual partner(s) should be examined and tested.
- **Because of the high risk of sexual abuse, it is recommended that all children < 14 years of age be managed in consultation with a referral centre in either:**
  - Edmonton:
    - Child and Adolescent Protection Centre
    - Stollery Children's Hospital
    - 1C4.24 Mackenzie Health Sciences Centre
    - 8440-112 Street
    - Edmonton, Alberta T6G 2B7
    - Tel: 780-407-1240
  - OR
  - Calgary:
    - Child Abuse Service
    - Child Development Centre
    - Suite 200, 3820-24 Ave NW
    - Calgary, Alberta. T2N 1N4
    - Tel: 403-955-5959

**Management of Contacts**

**Partner Notification**
- Partner notification will identify those at risk, reduce disease transmission/re-infection and ultimately prevent disease sequelae.
- **It is mandated under the Public Health Act that every attempt is made to identify, locate, examine and treat partners/contacts of all cases. (1)**
• Physician/case manager are required to provide partner names and locating information on the Notification of STI Form and forward to STI Services.

• If testing and/or treatment of partner(s) are not confirmed on the Notification of STI Form, STI Services will initiate follow up by a Partner Notification Nurse.
  o Partner Notification Nurse (PNN) is specially trained to conduct notification of partners and contacts in a confidential manner that protects the identity of the index case.
  o The phone number for your designated PNN is available by calling STI Services at 780-735-1466 or toll free 1-888-535-1466.

• All contacts should be screened for HIV and other STI.
• All contacts should be instructed about infection transmission.
• All contacts should be provided with individualized STI prevention education, targeted at developing knowledge, skills, attitudes and behaviors to reduce the risk and prevent recurrences of STI.
• STI Services initiates follow-up on all out-of-province/country referrals of cases and partner(s).

Preventive Measures
• Ensure appropriate treatment for *N. gonorrhoeae* cases.
• Interview case and identify and ensure appropriate treatment and follow-up of *N. gonorrhoeae* for sexual partner(s).
• Include information about risk for STI during pre-travel health counselling.
• Make STI services culturally appropriate, and readily accessible and acceptable, regardless of economic status.
• Educate the case, sexual partner(s), and the public about symptoms, transmission and prevention of infection including: (1;9;11)
  o personal protective measures including the correct and consistent use of condoms,
  o abstinence,
  o delaying onset of sexual activity,
  o developing mutually monogamous relationships,
  o reducing the numbers of sexual partners,
  o discouraging anonymous or casual sexual activity and
  o sound decision making.

Screening
• Individuals with risk factors for gonococcal infections: sexual contact with gonococcal infected person(s), new sexual partner or more than 2 sexual partners in preceding year, previous STI, vulnerable populations (e.g., IDU, incarcerated individuals, sex workers, street involved youth, etc.).
• All sexually active persons under 25 years of age, at least annually.
• All pregnant women (at first prenatal visit; re-screen all who are positive at first screen and those at high risk in third trimester).
• Women should be tested for gonococcal infection prior to insertion of an IUD, a therapeutic abortion, or a dilation and curettage (D & C).
• Victims of sexual assault.

Re-Screening
• Re-screening of all individuals diagnosed with gonorrhea is recommended 6 months post-treatment.
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