5.4 GONORRHEA REPORTABLE

ETIOLOGY

Neisseria gonorrhoeae is an aerobic gram negative diplococcal bacteria.

CASE DEFINITION

Confirmed Case of Genital Infection

Laboratory confirmation of infection:

- detection of *Neisseria gonorhoeae* by appropriate laboratory techniques in genitourinary specimens

Confirmed Case of Extra-genital Infections

Laboratory confirmation of infection:

- detection of *Neisseria gonorhoeae* by appropriate laboratory techniques in specimens from pharynx, rectum, joint, conjunctiva, blood, and other extra-genital sites

Confirmed case of Perinatally Acquired Infection

Laboratory confirmation of infection:

- detection of *Neisseria gonorhoeae* by appropriate laboratory techniques in a neonate (up to 4 weeks of age) leading to the diagnosis of gonococcal conjunctivitis, scalp abscess, vaginitis, bacteremia, arthritis, meningitis or endocarditis

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

Note: Reports to the Provincial Communicable Disease Surveillance System includes only laboratory confirmed cases. Contact information may be recorded with the case in the provincial CDSS.

CLINICAL FEATURES

Infection is often asymptomatic in females and symptomatic in males. In both males and females, rectal and pharyngeal infections are more likely to be asymptomatic.

Table 1: Symptoms of Gonorrhea Infection

Females	Males
• Vaginal discharge • Dysuria • Abnormal vaginal bleeding • Lower abdominal pain • Deep dyspareunia • Rectal pain and discharge with proctitis	• Urethral discharge • Dysuria • Urethral itch • Testicular pain and/or swelling or symptoms of epididymitis • Rectal pain and discharge with proctitis

Source: Canadian Guidelines on Sexually Transmitted Infections, 2014

Table 2: Clinical Manifestations of Gonorrhea Infection

Infants	Children	Adult Females	Adult Males	Females and Males
• Ophthalmia neonatorum • Conjunctivitis • Sepsis • Disseminated gonococcal infection*	• Urethritis • Vaginitis • Conjunctivitis • Pharyngeal infection • Proctitis • Disseminated gonococcal infection*	• Cervicitis • PID • Urethritis • Perihepatitis • Bartholinitis	• Urethritis • Epididymitis	• Pharyngeal infection • Conjunctivitis • Proctitis • Disseminated gonococcal infection*

*for example, arthritis, dermatitis, endocarditis, meningitis

Source: Canadian Guidelines on Sexually Transmitted Infections, 2014

Table 3: Major Complications of Gonorrhea Infection

Females	Males
• Pelvic inflammatory disease • Infertility • Ectopic pregnancy • Chronic pelvic pain • Reactive arthritis (oculo-urethro-synovial syndrome) • Disseminated gonococcal infection*	• Epididymo-orchitis • Reactive arthritis (oculo-urethro-synovial syndrome) • Infertility (rare) • Disseminated gonococcal infection*

*for example, arthritis, dermatitis, endocarditis, meningitis

Source: Canadian Guidelines on Sexually Transmitted Infections, 2014

DIAGNOSIS

The diagnosis is established by the identification of *N. gonorrhoeae* at an infected site. For confirmation on laboratory specimens consult the PHL website www.publichealthlab.ca or call 709-777-6583.

Laboratory Tests

Refer to the NL Public Health Laboratory website: http://publichealthlab.ca/service/chlamydia-trachomatis-neisseria-gonorrhoeae-ctng-dna/.

The Public Health Laboratory will automatically test for *N. gonorrhoeae* when *C. trachomatis* testing is ordered.

There are two laboratory methods to detect *N. gonorrhoeae*:

1. Nucleic acid amplification tests (NAATs)
    - The C. trachomatis & N. gonorrhoeae multiplex PCR assay detects these infections from endocervical swab or first void urine specimens from symptomatic or asymptomatic individuals.
2. Culture
    - While NAATs are noninvasive and have high sensitivity and specificity, culture of at least some patients is necessary to guide and to provide adequate data for surveillance of antimicrobial resistance.
    - Cultures obtained less than 48 hours after exposure may give false negative results.
    - All suspected treatment failures should be investigated using culture, allowing for antimicrobial susceptibility testing

Culture is strongly recommended in the following situations:

- Symptomatic MSM (prior to treatment)
- Contacts of a confirmed case
- In the case of sexual abuse/sexual assault
- Evaluation of PID
- Infection acquired during travel to an area with known antimicrobial resistance
- As a test of cure in cases of:
    - Prior treatment failure
    - All pharyngeal infections
    - Persistent signs of symptoms post treatment
    - Cases treated using a regimen other than the preferred treatment
    - Case linked to a drug resistant/treatment failure case which was treated with the same antibiotic

Specimen Collection

Female: Endocervical swab and vaginal swab

Container/Tube: Cobas® PCR Female Swab Collection Kit

Collection Instructions:

5. Remove excess mucus from exocervix with medium cleaning swab provided in Cobas PCR collection kit and discard. This step is important in removing mucus which may prohibit nucleic acid extraction.
6. Insert second medium swab into endocervix, rotate swab for 15 to 30 seconds to ensure adequate sampling.
7. Withdraw swab.
8. Holding tube upright, verify that all Cobas PCR collection medium is at bottom of transport tube. Unscrew cap of transport tube, fully insert swab into tube, and break swab at score line. Screw cap on securely.

Note: 1. Specimen source is required.

2. Spermicidal agents and feminine powder sprays interfere with the assay and should not be used prior to collection.

Male and Female: First Void Urine

Container/Tube: Cobas® PCR Urine Sample Kit

Specimen Volume**:** 10 mL urine

Collection Instructions:

3. Patient should not have urinated for at least 1 hour prior to specimen collection.

4. Patient/ health care provider should collect first portion of a voided urine (first part of stream) into a sterile, plastic, preservative-free specimen collection container.

Note: Specimen source is required.

Other specimen sources

Nasopharyngeal, rectal and conjunctival specimens collected in Cobas® PCR Female Swab Collection Kit have not been validated at the Newfoundland & Labrador Public Health Laboratory.

Interpretation of Results

NG DETECTED: indicates the presence of *N. gonorrhoeae* DNA. This assay is not intended as a test of cure as non-viable CT may be detected when performed < 3 weeks after completion of therapy. In cases of treatment failure isolation/culture should be attempted.

NG NOT DETECTED: absence of *N. gonorrhoeae* DNA.

NG INDETERMINATE: the specimen submitted contained substances inhibitory to the assay. Please recollect a specimen to complete follow up.

EPIDEMIOLOGY

Occurrence

- Gonorrhea is common worldwide. It is a frequently reported STI in sexually active adolescent and young adults. The most affected are males 20-24 years of age and females age 15-19.
- Since 1997, there has been a gradual but steady increase in reported cases of gonococcal 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.
- Infection rates are increasing more rapidly among women than men.
- HIV transmission and acquisition is enhanced in people with gonococcal infections.
- Due to the changing epidemiology of this infection and the evolution of antimicrobial resistance *N. gonorrhoea* ; the proportion of penicillin – resistant organisms may have reached 15% or higher in certain areas in Canada.

- Monitoring for antimicrobial resistance is important to prevent the spread of drug-resistant gonorrhea and to ensure high cure rates for this treatable infection.
- **Local public health should be promptly notified of cefixime, ceftriaxone or azithromycin treatment failures.**

Reservoir

Humans are the only known reservoir.

Incubation

Usually, two to seven days, but may be longer.

Transmission

- Genital infections: contact with exudates from mucus membranes of infected people, typically as a result of sexual activity.
- Perinatal infections: passage through the birth canal.
- Secondary gonococcal bacterial conjunctivitis may follow accidental inoculation by fingers.

Communicability

- It is commonly 7 – 14 days, but can be as long as six weeks.
- Effective treatment ends communicability within hours.
- Without treatment, communicability may extend for months.

CONTROL MEASURES

Management of Cases

Investigations

- Test symptomatic or asymptomatic clients who identify risk behavior through unprotected sexual intercourse and/or known contacts of chlamydia, gonorrhea, epididymitis/orchitis or pelvic inflammatory disease.
- Rectal and pharyngeal swabs as indicated by history.
- Cooperation of the index case is essential to successful contact tracing; enhance cooperation of the index case by obtaining trust and providing an explanation of the reasons for contact tracing.
- Counsel and identify partners, obtain contact information.

Treatment Principles

- Antibiotics are required for all confirmed cases and should be considered for suspected cases.
- Choice of antibiotic regimen should be based on local patterns of resistance.

- All cases treated for gonorrhea should also be treated for chlamydia infection, regardless of chlamydia test result.
- Directly observed therapy with single-dose regimens is desirable.
- **For detailed treatment regimens for the adult and MSM populations, refer to PHAC guidelines: http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/section-5-6-eng.php**

Table 4: Recommended treatment of uncomplicated anogenital and pharyngeal infection in adults and youth ≥ 9 years of age.

Anogenital infection (urethral, endocervical, vaginal, rectal)	
Preferred treatment	**Ceftriaxone** 250 mg IM in a single dose **PLUS azithromycin** 1 g PO in a single dose **OR** **Cefixime** 800 mg PO in a single dose **PLUS azithromycin** 1 g PO in a single dose
Alternate treatment	**Spectinomycin** 2 g IM in a single dose **PLUS azithromycin** 1 g PO in a single dose **OR** **Azithromycin** 2 g PO in a single dose
Pharyngeal infection	
Preferred treatment	**Ceftriaxone** 250 mg IM in a single dose **PLUS azithromycin** 1 g PO in a single dose
Alternate treatment	**Cefixime** 800 mg PO in a single dose **PLUS azithromycin** 1 g PO in a single dose **OR** **Azithromycin** 2 g PO in a single dose

Source: Source: Canadian Guidelines on Sexually Transmitted Infections, 2014

Table 5: Recommended treatment of uncomplicated anogenital and pharyngeal infections in men who have sex with men (MSM)

Anogenital infection (urethral, rectal)	
Preferred treatment	**Ceftriaxone** 250 mg IM in a single dose **PLUS azithromycin** 1 g PO in a single dose
Alternate treatment	**Cefixime** 800 mg PO in a single dose **PLUS azithromycin** 1 g PO in a single dose **OR** **Spectinomycin** 2 g IM in a single dose **PLUS azithromycin** 1 g PO in a single dose **OR** **Azithromycin** 2 g PO in a single dose
Pharyngeal infection	
Preferred treatment	**Ceftriaxone** 250 mg IM in a single dose **PLUS azithromycin** 1 g PO in a single dose
Alternate treatment	**Cefixime** 800 mg PO in a single dose **PLUS azithromycin** 1 g PO in a single dose

Source: Source: Canadian Guidelines on Sexually Transmitted Infections, 2014

Pediatric Cases

- Neonates born to untreated, infected mothers must be tested for N. gonorrhoeae.
- Neonates should be treated if test results are positive.
- When a case is diagnosed in an infant, the mother and her sexual partner(s) should be located, clinically evaluated and treated regardless of clinical findings and without waiting for test results.
- If the case is <14 years of age sexual abuse must be considered and reported to CYFS as per the Children and Youth Care and Protection Act.
- For specific treatment regimens for the pediatric population, refer to PHAC guidelines: http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/section-5-6-eng.php

Consideration for other STIs

- Obtain a specimen to test for chlamydial infection (refer to Section 5.2 Chlamydia).
- Obtain a blood sample for serologic testing for syphilis.
- HIV counselling and testing are recommended.
- Immunization is recommended for:
    - Hepatitis B for all individuals being evaluated or treated for an STI, if not already immune,
    - Hepatitis A for high-risk individuals (e.g., MSM, injection drug users) if not already immune.
- Discuss human papillomavirus (HPV) vaccine with male and female patients as per the recommendations outlined in the National Advisory Committee on Immunization (NACI) Update on Human Papillomavirus (HPV) Vaccines; and the Canadian Immunization Guide, Part 4, Active Vaccines, Human Papillomavirus Vaccine.

Management of Contacts

Definition of a Contact

- A person who has had sex, or has had some relevant exposure to the case within 60 days prior to symptom onset or date of diagnosis if asymotomatic.
- With the changing epidemiology of N. gonorrhoeae, case finding and contact tracing is critical for maintaining control of gonococcal infections.

Notification

- Partner notification will identify those at risk, reduce disease transmission/re-infection and ultimately prevent disease sequelae.
- Notification of partners and contacts is done in a confidential manner that protects the identity of the index case.
- It is done in collaboration with the case and may be done by the index case or the HCP. (See guideline's around contact tracing)
- All contacts should be screened for HIV and other STIs (See **Consideration for other STIs** section, above).
- All contacts should be instructed about prevention of 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.
- Follow-up on all out of province/country referrals of cases and partner is done in collaboration with provincial office.

Management of Outbreaks

An outbreak management team should be established to address infection prevention and control measures.

PREVENTION

Screening

Consideration should be undertaken to test for gonorrhea in the following circumstances:

- Individuals with risk factors for gonococcal infections.
- Sexual contact with gonococcal infected person(s)
- A new sexual partner or more than 2 sexual partners in preceding year
- A previous STI
- Vulnerable populations (e.g., Injection Drug Users, incarcerated individuals, sex workers, street involved youth)
- 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)
- Cases of sexual assault.

Follow-up Testing

- Repeat screening for individuals with a gonococcal infection is recommended 6 months post-treatment
- Follow-up cultures for test of cure from all positive sites should be done 3–7 days after the completion of therapy, particularly in the following situations:
    - All pharyngeal infections
    - Persistent symptoms or signs post-therapy
    - Case treated with a regimen other than ceftriaxone, where ceftriaxone is first line,
    - Quinolones were given for treatment in the absence of susceptibility testing,
    - Case is linked to another case with documented antimicrobial resistance to the treatment given,
    - Antimicrobial resistance to the administered therapy is documented
    - Case is linked to a treatment failure case that was treated with the same antibiotic
    - Treatment failure for gonorrhea has occurred previously in the individual,
    - Compliance is uncertain,
    - There is re-exposure to an untreated partner
    - Infection occurs during pregnancy

  - Disseminated gonococcal infection is diagnosed
  - Case is a child
  - Follow-up testing should also be considered for PID if N. gonorrhea was initially isolated
  - Women undergoing therapeutic abortion who have a positive test result for gonococcal infection, as they are at increased risk of developing pelvic inflammatory disease.
- If NAAT is the only choice for test of cure, tests should not be done for 2–3 weeks after treatment to avoid false-positive results due to the presence of non-viable organisms**.**

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) report case/s to the attending physician, the Chief Medical Officer of Health and the Medical Officers of Health (MOH)
- MOH office will notify, as required, local physicians, nurse practitioners, environmental health officers, community health nurses, communicable disease control nurses (CDCNs) and Infection Control Practitioners (ICP), in the particular region as required for follow-up and case investigation
- CDCN in collaboration with the ICP (if necessary) will collect case details
- CDCN enters the case details into the electronic reporting system and uses the CNPHI tool, if indicated, for alerts or outbreak summaries

Provincial Disease Control

- Reports the aggregate case data to Public Health Agency of Canada
- Provides an analysis of the case/s with reports in the Quarterly Communicable Disease Report (CDR), also posted on the Public Health website
- Coordinates the response if an outbreak across RHAs

DOCUMENTS