

Notification Timeline:

From Lab/Practitioner to Public Health: Within 72 hours.

From Public Health to Saskatchewan Health: Within 2 weeks.

Public Health Follow-up Timeline: Initiate within 72 hours.

Public Health Purpose for Notification of Gonococcal infections

- To minimize mortality and morbidity from gonococcal infections through contact tracing;
- To track epidemiology trends of gonococcal infections in Saskatchewan including risk factors and distribution;
- To monitor the incidence and frequency of antimicrobial resistant *N. gonorrhoeae* in Saskatchewan in order to inform treatment guidelines;
- To identify at risk populations in order to inform prevention and control programming;
- To monitor the effectiveness of prevention and control measures; and
- To inform the public and medical community about gonococcal infections.

Surveillance Case Definition¹

Confirmed Case – Genital Infections (Public Health Agency of Canada, 2008)	Laboratory confirmation of infection in genitourinary specimens: <ul style="list-style-type: none"> • detection of <i>N. gonorrhoeae</i> by culture; OR • detection of <i>N. gonorrhoeae</i> nucleic acid.
Confirmed Case – Extra-genital Infections (Public Health Agency of Canada, 2008)	Laboratory confirmation of infection from pharynx, rectum, joint, conjunctiva, blood and other extra-genital sites: <ul style="list-style-type: none"> • detection of <i>N. gonorrhoeae</i> by culture; OR • detection of <i>N. gonorrhoeae</i> nucleic acid.

¹ Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definition is not intended to be used for clinical or laboratory diagnosis or management of cases.

<p>Confirmed Case – Perinatally Acquired Infections (Public Health Agency of Canada, 2008)</p>	<p>Laboratory confirmation of infection from a neonate in the first 4 weeks of life leading to the diagnosis of gonococcal conjunctivitis, scalp abscess, vaginitis, bacteremia, arthritis, meningitis or endocarditis:</p> <ul style="list-style-type: none"> • detection of <i>N. gonorrhoeae</i> by culture; OR • detection of <i>N. gonorrhoeae</i> nucleic acid.
<p>Treatment Failure (Public Health Agency of Canada, 2017)</p>	<p>absence of reported sexual contact during the post-treatment period AND one of the following:</p> <ul style="list-style-type: none"> • The presence of intracellular Gram-negative diplococci on microscopy in specimens taken at least 72 hours after completion of treatment, <p>OR</p> <ul style="list-style-type: none"> • Positive <i>N. gonorrhoeae</i> on culture of specimens taken at least 72 hours after completion of treatment, <p>OR</p> <ul style="list-style-type: none"> • Positive nucleic acid amplification tests (NAAT) of specimens taken at least 2–3 weeks after completion of treatment.

Epidemiology and Occurrence

- Worldwide.
- Most common in males age 20-24 years and females age 15-19 years.
- A network of people with high-risk behaviours may play a key role in current prevalence levels and in sustaining infections within a community.
- The proportion of penicillin-resistant organisms may reach 15% or higher in certain areas in Canada.
- Quinolone resistance in Canada has been steadily increasing. Shifts in minimal inhibitory concentrations (MICs) for third-generation oral and injectable cephalosporins have been increasing in Canada and globally, particularly among men who have sex with men (MSM).
- Continued monitoring for antimicrobial resistance is important to prevent the spread of drug-resistant *N. gonorrhoeae* and to ensure high cure rates for this treatable infection.

- The epidemiology in Saskatchewan:
 - Gonococcal infection rates in Saskatchewan are over double those in Canada, albeit the majority of jurisdictions in Canada are also experiencing an upward trend in number of identified cases.
 - Gonococcal infection rates are highest in the northern population of Saskatchewan. This is presumed to be related to barriers in accessing health care services or reluctance to seek health care because of the lack of anonymity in small communities.
 - The sharp rate increase in 2016 and 2017 reflects a large cluster of cases among men practicing sex with men in Saskatoon area.
 - Commonly reported risk factors include unprotected sex; new or multiple partners in the past 3 months; alcohol use (about a quarter of cases aged 15-29 years); and having sex with a person with a known sexually transmitted infection (STI).
 - Even though *N. gonorrhoeae* has been traditionally easily treated with antibiotics, Saskatchewan reported cases of anti-microbial resistant *N. gonorrhoeae* since 2017. If undiagnosed, this can be transmitted to several partners before it is treated and treatment options are limited.
- Public Health Agency of Canada (2010) reports there is under-screening of high-risk males and females. Males often have infrequent health maintenance visits.
- Without treatment, infection persists for many months.
- Chlamydia is often a co-infection for those diagnosed with *N. gonorrhoeae*.

Additional Background Information

Causative Agent

Bacterial infection caused by *Neisseria gonorrhoeae*.

Identification*Table 1. Manifestations*

Neonates and infants	Children	Youth and adults		
		Females	Males	Females and males
<ul style="list-style-type: none"> • Ophthalmia neonatorum • Neonatal amniotic fluid infection • Disseminated gonococcal infection[^] 	<ul style="list-style-type: none"> • Urethritis • Vaginitis • Conjunctivitis • Pharyngeal infection[*] • Proctitis • Disseminated gonococcal infection[^] 	<ul style="list-style-type: none"> • Cervicitis • Pelvic inflammatory disease • Urethritis • Perihepatitis • Bartholinitis 	<ul style="list-style-type: none"> • Urethritis • Epididymitis 	<ul style="list-style-type: none"> • Pharyngeal infection[*] • Conjunctivitis • Proctitis • Disseminated gonococcal infection[^]

Source: Canadian Guidelines on Sexually Transmitted Infections, 2017.

*Infections of pharynx and rectum are often asymptomatic

[^] e.g. arthritis, dermatitis, endocarditis, meningitis

Table 2. Symptoms of genital tract infection with N. gonorrhoeae

Females	Males
<ul style="list-style-type: none"> • Vaginal discharge • Dysuria • Abnormal vaginal bleeding • Lower abdominal pain • Rectal pain and discharge with proctitis • Deep dyspareunia 	<ul style="list-style-type: none"> • Urethral discharge • Dysuria • Urethral itch • Testicular pain, swelling or symptoms of epididymitis • Rectal pain and discharge with proctitis

Source: Canadian Guidelines on Sexually Transmitted Infections, 2017.

Table 3. Major Sequelae

Females	Males
<ul style="list-style-type: none"> • Pelvic inflammatory disease (PID) • Infertility • Ectopic pregnancy • Chronic pelvic pain • Reactive arthritis (oculo-urethro-synovial syndrome) • Disseminated gonococcal infection[^] 	<ul style="list-style-type: none"> • Epididymo-orchitis • Reactive arthritis (oculo-urethro-synovial syndrome) • Infertility (rare) • Disseminated gonococcal infection[^]

Source: Canadian Guidelines on Sexually Transmitted Infections, 2017.

[^] e.g. arthritis, dermatitis, endocarditis, meningitis

Reservoir

Humans.

Mode of Transmission

Genital infections: contact with exudates from mucous membranes of infected people, typically as a result of sexual activity.

Perinatal infections: passage through birth canal.

Secondary gonococcal bacterial conjunctivitis may follow accidental inoculation by fingers (Sowka, J., et al., 2000).

Incubation Period

Usually 2-7 days.

Period of Communicability

Effective treatment ends communicability within hours. Without treatment, communicability may extend for months.

Specimen Collection and Transport

In response to increasing gonococcal antimicrobial resistance being observed in Canada and other parts of the world, improved monitoring of trends in antimicrobial resistance patterns is desirable. While NAAT are non-invasive and have high sensitivity and specificity, culture of at least some patients is necessary to guide therapy and to provide adequate data for surveillance of antimicrobial resistance in order to inform treatment guidelines in general.

Whenever possible, **cultures** for *N. gonorrhoeae* should be done, especially in the following circumstances:

1. In men who have sex with men (MSM), cultures are recommended in symptomatic patients prior to treatment. (Due to increased sensitivity of NAAT over culture, both gonococcal culture and NAAT are indicated).
NAAT should continue to be used for screening genital tract specimens (urine, cervix or urethra) from asymptomatic individuals.
2. Patients with a travel history during the potential period of exposure.
3. For all cases, test of cure with an appropriate sample for gonococcal culture is recommended for any of the following situations:
 - a. All pharyngeal infections
 - b. Persistent signs or symptoms post-treatment
 - c. Cases treated using a regimen other than the preferred treatment
 - d. Case who is linked to a drug resistant/treatment failure case and was treated with that same antibiotic.

Genital infection:

- NAAT should be performed on first void urine because of greater sensitivity than culture.
- Culture and Gram stain are recommended for the following specimens:
 - urethra in young and adult males with or without meatal discharge;
 - cervix in young and adult females.
- Culture is recommended for the following specimens:
 - rectum in females and males who have sex with men (colonization can occur without anal intercourse);
 - vagina in prepubertal girls or women without cervix.

Extra-genital infection:

- Culture:
 - pharynx in those with a history of oral-genital contact;
 - conjunctiva for ocular infections.

Disseminated infection:

- genital testing as outlined above;
- blood culture;

- synovial fluid for culture and gram stain if arthritis;
- Gram stain and culture of skin lesion.

Special considerations:

Cultures obtained less than 48 hours after exposure may be negative.

- Culture is especially important in the following cases:
 - sexual abuse of children (rectal, pharyngeal, vaginal);
 - sexual assault;
 - treatment failure;
 - evaluation of pelvic inflammatory disease (PID);
 - infection acquired overseas or in areas with recognized antimicrobial resistance.

NAAT ***should not be used*** for test of cure.

For information on specimen sources and culture media refer to [Attachment - Transport Media for Specific STIs](#).

Public Health Investigation

I. Case

Refer to [Attachment – Confidential Notification of Chlamydia and Gonorrhoea](#) to assist.

History

- Patients should be informed that their sexual history is confidential. Key elements to inquire about include:
 - Onset of illness
 - Risk factors including:
 - sexual contact with a gonococcal-infected person or with a person with a compatible syndrome;
 - more than two sexual partners in the past 6 months;
 - vulnerable populations (for example persons who inject drugs, individuals who receive food shelter money or drugs for sex, street youth, men who have unprotected sex with men, sexually active youth <25 years of age with multiple partners, etc.).
 - unprotected sex with a partner from a highly endemic area (either international or within Canada);
 - previous gonococcal infection and other STI infection;

- Sexual contacts in order to interrupt the cycle of transmission. Travel history may be of significance in contact tracing.

Treatment

Treatment for gonococcal infection is indicated for the following:

- a positive *N. gonorrhoeae* test;
- presumptive diagnosis of a syndrome compatible with a gonococcal infection, (without waiting for the test results of *N. gonorrhoeae*);
- laboratory diagnosis of gonococcal infection in a sexual partner;

Increasing gonococcal antimicrobial resistance being observed in Canada. In response, the Public Health Agency of Canada has been updating treatment recommendations since December 2011. See [Attachment – STI Treatment Guidelines](#) for reference, however, the latest version of the Canadian Guidelines on Sexually Transmitted Infections should be referred to for current treatment guidelines at <https://www.canada.ca/en/public-health/services/infectious-diseases/sexual-health-sexually-transmitted-infections/canadian-guidelines.html>

Public Health Interventions

Refer to [Attachment - Chlamydia and Gonorrhea Public Health Follow-up Data Collection Worksheet](#) to support public health follow-up.

Assessment

- Assess for contacts.

Communication

- Individuals may be difficult to reach in the era of technology and mobile phones. It is important to attempt to contact individuals using various methods such as phone calls at various times of the day. Some individuals' mobile service contracts only allow for text messaging. It is important to have policies and procedures that support the use of alternate modes of communication to assist in case follow-up.
- The primary care provider is an essential partner in the management of gonococcal infections. It is important to provide updates to care providers when they have referred cases to public health to assist in follow-up.

Education

- Provide disease information as well as information on prevention and control measures including safer sex practices and behavioural practices that support improved decision-making and reducing risk of reinfection and other STIs.
- Provide education on treatment; patients and contacts should abstain from unprotected intercourse until treatment of both partners is complete (i.e., 7 days after completion of a multiple-dose treatment or for 7 days after single-dose therapy).

Immunization

- Recommend immunizations they are eligible for as per the Saskatchewan Immunization Manual. Sexual risk factors may render individuals eligible for Hepatitis A and B vaccines.

Referral

- Refer to harm reduction or other supportive services as indicated (see [Introduction and General Considerations](#))

Testing

- Additional testing, including HIV, should be recommended for individuals based on the risk assessment and testing history.
 - Follow up **cultures** for test of cure are indicated approximately 4-5 days following completion of therapy. This must be completed in the following circumstances:
 - treatment failure has occurred previously;
 - antimicrobial resistance to therapy is documented;
 - re-exposure to untreated partner;
 - where compliance is unknown;
 - if an alternative treatment has been used;
 - in all prepubertal children;
 - in all pregnant women;
 - in cases of PID or disseminated gonococcal infection;
 - quinolones were administered for treatment and there was no previous antimicrobial testing done;
 - there is concern over a false-positive non-culture test result.
 - NAATs are **not recommended** for test of cure. If this is the only test available, it should be performed at least 4 weeks following completion of therapy to avoid false-positive results due to the presence of non-viable organisms. Positive NAAT test results within 30 days of treatment should be considered a duplicate case unless re-infection is likely to have occurred.
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- Antimicrobial susceptibility testing is required for all isolates from positive (test of cure) follow-up cultures and treatment failures.
- Repeat testing in all individuals is recommended 6 months post-treatment, as re-infection risk is high. Positive NAAT test results within 30 days of treatment are considered a duplicate case unless re-infection is likely to have occurred.

II. Contacts

Contact tracing relies on the cooperation of the patient; it is important that health care providers offer supportive, non-judgmental advice and assistance to patients and their contacts. Most individuals feel notifying partners is the 'right thing to do'; however, they also want advice and support for this from their health care provider.

It is important to understand the patient's particular situation and identify individual barriers to notifying contacts. Inform patients that for many individuals who discuss their STI diagnosis with a partner, the experience is better than they had anticipated (Australian Government Department of Health, 2016).

Sexual Contact	<ul style="list-style-type: none"> • All individuals who have had sexual contact with the index case within 60 days prior to symptom onset or date of diagnosis. • If there is no partner during this period, the last sexual partner should be identified.
Neonatal Contact	<ul style="list-style-type: none"> • Neonates born to infected mothers. • Mothers of infected neonates. • Sexual partners of mothers with infected neonates.

Public Health Interventions

Assessment

- Assess for symptoms.

Communication

- Individual follow-up of contacts is important to intercept the transmission of STIs. These individuals must be notified of their exposure within 72 hours.
- Offer supportive, non-judgmental advice and assistance to contacts.

Education

- Provide disease information as well as information on prevention and control measures including safer sex practices to all contacts and behavioural practices that support improved decision-making and reducing risk of reinfection and other STIs.
- Provide education on treatment. Patients and contacts should abstain from unprotected intercourse until treatment of both partners is complete (i.e., 7 days after completion of a multiple-dose treatment or for 7 days after single-dose therapy).

Immunization

- Recommend immunizations contacts are eligible for as per the Saskatchewan Immunization Manual. Sexual risk factors may render individuals eligible for Hepatitis A and B vaccines.

Testing

- Recommendations for testing for other sexually transmitted infections including HIV should be made.

Treatment

- Provide treatment for gonococcal infection to contacts at the same time of testing. It is not advised to await test results for these individuals.

Prevention Measures

Refer to the [Sexually Transmitted Infections Introduction and General Considerations](#) section of the manual that highlights topics for client education that should be considered as well as provides information on high-risk groups and activities.

Immunization

Currently no vaccine for *N. gonorrhoeae*.

Education

Education should be provided regarding healthy dating relationships and consent. The Saskatchewan Prevention Institute has several resources to support these topics.

Revisions

October 2018	Updated contact tracing timelines from 90 days to 60 days in alignments with the Canadian STI Guidelines.
September 2018	Incorporated Public Health Purpose of Notification. Added Epidemiology and Occurrence section. Updated Table 2 to align with Canadian STI Guidelines. Reorganized chapter and applied new format. References reaffirmed or updated as necessary. Aligned with Panorama and included the updated Confidential Notification of Chlamydia and Gonorrhoea. Incorporated PHAC definition of treatment failure.
August 2018	Removed reference to preventative treatment for ophthalmia neonatorum with erythromycin ophthalmic prophylaxis.

References

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