Newfoundland and Labrador Disease Control Manual	
Section 5	Introduction

Contents

5.1 INTRODUCTION

This section outlines the policy and procedure required to complete investigation, control and reporting for infections transmitted through exposure to blood or bodily fluids or sexual contact.

For sexually transmitted infections and blood-borne pathogens (STBBIs), contact follow up and notification is required and is completed in a confidential and timely manner at the local or regional level. Partner notification may be done by the client, public health or physician as decided by the attending health care professional in consultation with office of the Regional Medical Officer of Health (RMOH). The purpose of this notification and follow-up is to prevent transmission of these infections.

Investigations and reporting are the responsibility of the office of the Regional Medical Officer of Health (RMOH). As the lead in the region the RMOH collaborates with family physicians, Communicable Disease Control (CDC) and public health staff to provide effective and confidential follow-up of laboratory confirmed cases of STBBIs.

All HCP have a professional responsibility and duty to report under the Federal Criminal Code of Canada and Children and Youth Care Protection Act and Family Services Act to report to Child Youth and Family Services (CYFS) any minor they suspect as having been sexually abused. At any time when there is concern about the ages or the relationship of individuals diagnosed with a STI, CYFS should be consulted for further advice. As of May 1, 2008 the age at which youths can consent to non-exploitative sexual activity has been raised from 14 to 16 years of age. More information may be obtained from the following links:

- Federal Criminal Code of Canada
  http://www.efc.ca/pages/law/cc/cc.htm
- Children and Youth Care Protection Act
  http://www.assembly.nl.ca/Legislation/sr/statutes/c12-2.htm

Policy

All laboratory-confirmed reportable STBBIs are to be reported to the RMOH or designate, appropriately treated and case follow-up completed. Reports from the provincial public health laboratory are sent to the office of the RMOH, CMOH (Chief Medical Officer of Health), and the attending physician. Reporting of these

infections allows for public health agencies to monitor the prevalence and incidence of these infections in the community and thus help to plan prevention and intervention programs to reduce the risk of infection and disease.
Reportable STIs in Newfoundland and Labrador include:

- Chancroid
- Chlamydia
- Gonorrhea
- Lymphogranuloma venereum (LGV)
- Syphilis

Reportable BBPs in Newfoundland and Labrador include:

- Hepatitis C
- HIV infection
- Hepatitis B (See Section 4 Diseases Preventable by Vaccination)

Regional health unit may also test for, manage and treat other sexually transmitted infections that are not reportable to the CMHO. These include:

- Granuloma inguinale
- Human Papillomavirus
- Genital herpes (HSV-1 & -2)
- Ectoparasitic infestions (Pubic lice, scabies)

These non-reportable infections are not addressed in the Disease Control Manual but are addressed in the Public Health Agency's Canadian Guidelines on Sexually Transmitted Infections. http://www.phac-aspc.gc.ca/std-mts/index-eng.php

Abbreviations

CDCN	Communicable Disease Control Nurse
CHN	Community Health Nurse
CMOH	Chief Medical Officer of Health
DCNS	Disease Control Nurse Specialist
HBV	Hepatitis B Virus
HCP	Health care provider
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
ICP	Infection Control Practitioner
MCP	Medical Care Plan
MSM	Men who have sex with men
NP	Nurse Practitioner
RMOH	Regional Medical Officer of Health

STBBIs	Sexually transmitted infections and blood borne pathogens

Definitions

Anonymous Testing	An HIV test that is carried out using an alphanumeric code, initials or a false name. The person ordering the test and the laboratory carrying out the test on the blood sample do not know the identity of the person to whom the code belongs. There is no address or contact information collected that could lead to the identification of the person presenting for testing. Face-to-face pre-test and post-test counseling is considered part of the testing. This testing in not available in Newfoundland and Labrador
Case	A person who has a diagnosed STBBI
Case Management	Consists of treatment, counseling and obtaining the names of contacts and determining how they will be notified of their potential exposure, need for evaluation and possible treatment
Confidential Testing	All testing is confidential and must not be shared without the client's permission. Client is to be advised that some STIs are reportable by law provincially and nationally.
Contact	A person who has had sex, reused injecting equipment or has had some relevant exposure to the case. Relevancy of risk would be directly related to the degree of precautions used during exposure.
Contact Tracing	The process of identifying contacts of a person with and STBBI and ensuring that they are aware of their exposure. Relevant contacts include those with

	whom the case had sex during the period when the case was infectious. No information about the case is shared with the contact.
Co-infection	Having two infections in the same person at the same time. For example, a person infected with both HIV and HCV has a co-infection. With a co-infection the progression of either disease can potentially be accelerated as a result of infection with the other disease.
Incubation Period	The period of time between acquisition of an infection and the appearance of symptoms
Index Case	The original person identified with an infection. The index may or may not have infected other persons but represents a starting point for the process of contact tracing.
Infectious Period	The period of risk of transmission of infection, not to be confused with incubation period. The infectious period varies for different infections and can begin before symptoms appear. All asymptomatic infected people should be assumed to be infectious for contact tracing purposes.
Non-nominal Testing	Initials or a false name or an alphanumerical code are used instead of a name on the laboratory requisition, but the client record, a confidential document, contains the true identification and contact information. Face to face pre- and post-testing counseling is undertaken as part of the assessment. In NL this testing is the testing procedure of choice.
Nominal Testing	The correct name and other identifying information (such as MCP number) is used on laboratory requisition and client record. Pre- and post-testing counseling is undertaken as part of the assessment.
Partner Notification	The client takes the responsibility for

	contacting those individuals who may be contacts. This is a voluntary process.
Repeat Infection	A second episode, which may be the same STI or a different one, within a specified time frame generally 1 or 2 years.
Safer Sex	For HIV infection, safer sex can be defined as any form of sex in which HIV does not pass from the blood, semen or vaginal fluids of one person directly into the body of another. This may include the proper use of condoms or avoiding anal or vaginal intercourse. Although lower in risk, there is still some risk associated with oral sex.
STBBIs	Sexually transmitted infections and bloodborne pathogens that are reportable infections in NL and managed by RHA/public health. Includes: Chlamydia, gonorrhea, infectious syphilis, late syphilis, HIV, HCV, and HBV.
Trace Back Period	The period prior to diagnosis of STI where the case is asked to name all sexual contact in order to do contact tracing.

Roles and Responsibilities

Public Health Laboratory:

Routine reporting to CMOH, RMOH and attending physician within four working days.

RMOH or designate:

- Assign and initiate investigation within four working days
- Ensure confidentiality
- Ensure completion of investigation, follow up and reporting

Investigator:

- Communicable disease control nurse (CDCNs) or community health nurses (CHNs) educated in communicable disease and nurse practitioners (NPs) are permitted to undertake testing for STIs or BBPs at selected sites with in a regional health authority under direction/designation of their MOH.

- Ensure case has been informed, counseled, tested and treated by public health or designate
- Follows up as necessary with contacts (through the physician or public health)
- Contacts physician of case to verify that follow up of case and contacts has taken place with the appropriate time frame
- Ensure education for prevention has been appropriately disseminated
- If STIs are identified in children, child abuse must be considered and reported by the health care provider (HCP) managing the case to Child, Youth and Family Services

Guidelines around confidentiality:

- Explain the method of contact notification to case to ensure full cooperation
- Never divulge personal information of the case or any contacts
- Never e-mail names of cases or contacts
- Mark all correspondence as personal and medical confidential
- Test results are not to be given over the telephone

Guidelines around contact tracing:

- Every attempt must be made to identify, locate, examine and treat partners/contacts of cases
- If physician of the case, other than the MOH or the CDCN, CDN or NP, completes the follow up of contacts then they are to notify the RHA that this follow up has been taken place
- A physician/HCP may choose to have the assistance of the MOH or the CDCN, CDN or NP to do contact tracing and follow up for the notifiable STI case. In this case the physician shall advise the RHA of this within two weeks of receiving notification of the case
- In absence of a response from the physician within the two week time frame to the RHA then the appropriate services will be initiated by the MOH or the CDCN, CDN or NP.

Reports from other Provinces and Territories

Persons testing positive for STIs or BBPs in other provinces are reportable in the province or territory where the person resides. These reports are forwarded to the office of the CMOH for follow up as necessary. When follow up is complete the region must notify the office of CMOH of the outcome of follow-up within two months.

Persons who have moved from Newfoundland and Labrador who may be cases or contacts will also be followed up through contact within provincial/territorial CMOH offices through the Newfoundland and Labrador Provincial Medical Officer of Health.

For the most up to date information on STI's please refer to Public Health Agency's Canadian Guidelines on Sexually Transmitted Infections
http://www.phac-aspc.gc.ca/std-mts/index-eng.php

5.2 CHANCROID **REPORTABLE**

ETIOLOGY

Chancroid is an acute bacterial infection caused by *Haemophilus ducreyi*, a gram-negative coccobacillus.

CASE DEFINITION

Laboratory-confirmed case:

- detection of *Haemophilus ducreyi* taken from an ulcerated lesion in the genital area.

CLINICAL FEATURES

- This ulcerative disease is generally found in the genital area.
- The infection begins as a tender erythematous papule 4 – 7 days after infection. The papule becomes pustular and breaks down over several days into a shallow painful ulcer with ragged edges and a red border or halo. One or more of the necrotizing ulcers may join together.
    - In males, lesions occur on the prepuce, coronal sulcus and shaft of the penis.
    - In females, lesions are rarely seen in the vagina or on the cervix but can occur anywhere on the external genitalia
- Lymph nodes in the area (usually unilateral) become swollen, painful, and matted together forming an abscess or bubo in the groin.
- Chancroid ulcers increase the risk of HIV infection.
- Co-infection with syphilis or herpes simplex virus is common.
- Chancroid can mimic other genital ulcer diseases, particularly syphilis; however, chancroid lesions are usually painful, and classic primary syphilis chancres are generally painless.

DIAGNOSIS

- Identification of the organism is made by isolating it from the base of the ulcer, or pus from the affected lymph nodes.
- Clinical etiologic diagnosis is frequently erroneous; in Canada, careful etiologic investigation of an ulcer should be carried out, since chancroid is not known to be endemic.
- There are no useful serologic tests for diagnosis of *H. ducreyi*.

Laboratory Tests

What to order:

- HSV/VZV DNA Panel, mnemonic HSVVZVDP

- If negative and further investigation is warranted call the PHL and ask them to send for H.ducreyi/T.pallidum molecular detection. This testing will be performed at NML. The same specimen can be used and will be available for several months.

Specimen Collection

- Universal Transport Medium (UTM)
    - viral transport media. This has a red top with pink liquid media inside
- Transport at 2 to 8 ºC, if going to be delayed over a weekend, or for any other reason, freeze.

For confirmation on laboratory specimens to collect go to the PHL website www.publichealthlab.ca or call (709)-777-6583.

EPIDEMIOLOGY

Occurrence

- **The risk of HIV transmission increases by 10–50-fold following sexual exposure to an individual with concomitant *H. ducreyi* and HIV infection**
- Chancroid is most prevalent in tropical and subtropical regions of the world.
- It is less common in temperate zones but is considered to have worldwide distribution.
- It is readily eliminated with control activities directed toward sex workers, treatment of men with genital ulcers and enhanced attention to STI-control efforts.
- Chancroid is transmitted only by individuals with ulcerations; no latent reservoir of transmissible chancroid without active disease is known.
- The last reported case in Newfoundland and Labrador was in 1992.

Reservoir

- Humans are the only known reservoir.
- Females (particularly sex workers) who have multiple partners in spite of genital ulceration are the usual reservoir.

Incubation

3-5 days, up to 14 days

Transmission

Exchange of infected secretions from open lesions during direct sexual contact can affect vaginal or rectal or urethral tracts. Auto-inoculation to non-genital sites may occur but is rare. *H. ducreyi* is often identified as a co-infection of HIV or syphilis.

Communicability

- The infection may be passed until lesions or buboes are healed.
- Without treatment, the infectious agent may persist in the lesion or discharging lymph nodes for several weeks or months.
- Treatment with antibiotics eradicates *H. ducreyi* and lesions heal in 1-2 weeks.

CONTROL MEASURES

Management of Cases

- Determine the presence or absence of symptoms.
- Assess risk factors for chancroid
- Offer testing for other STBBIs.
    - Patients suspected of having chancroid should also be considered for the following STIs:
        - Lymphogranuloma venereum
        - HSV
        - Syphilis
        - Donovanosis (granuloma inguinale)
    - All patients with presumed chancroid should also be tested for syphilis and HIV infection at presentation and 3 months later. Patients should also be tested appropriately for gonorrhea.
    - Immunization for hepatitis B should be offered to non-immune patients.

- Provide safer sex counselling
- Identify sexual partners requiring notification and collect locating information.

Treatment

- Appropriate antibiotic treatment is recommended according to the MOH/Designate or attending physician.

Table 1: Adult Treatment of Chancroid Infection

Antibiotic Regimen	Notes
Ciprofloxacin 500mg po single dose	Cure rate of >90%
Erythromycin 500mg po tid x7days	Cure rate >90% Poorer compliance
Azithromycin 1g po single dose	Cure rate >90%
Ceftriaxone 250mg IM single dose	Failure is common in HIV co-infection

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

- Treatment failures may occur, especially in HIV co-infected patients. All treatment failures should be carefully evaluated with respect to both the etiology and the possible co-existence of other pathogens.
- Chancroid buboes should be aspirated or incised to relieve pain and prevent

spontaneous rupture

- All cases should abstain from unprotected sex until the treatment is complete.
- All cases should be educated regarding infection transmission.
- 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.
- Provide HB vaccine to susceptible individuals.

Pediatric Cases

- 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.
- Beyond the neonatal period sexual abuse must be considered and reported to CYFS as per the Children and Youth Care and Protection Act.

Management of Contacts

Definition of Contact:

- A person who has had sexual contact or some relevant exposure to the case within 14 days of symptom onset.
- Relevancy of risk would be directly related to the degree of precautions used during exposure.
- A contact that becomes a case is subsequently managed as case.

Notification

- Partner notification will identify those at risk, reduce 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. This may be done by the index case or by the HCP
- 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 STIs
- Follow up on all out of town province/country referrals of cases and partners 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

Follow-up Testing

Repeat diagnostic testing for the detection of *H. ducreyi* is not routinely indicated if a recommended treatment is given and taken AND symptoms and signs disappear AND there is no re-exposure to an untreated partner.

Education and Preventive Measures

- Ensure appropriate treatment for H. ducreyi cases.
- Make STI services culturally appropriate, accessible and acceptable.
- Interview case, identify and ensure appropriate treatment and follow-up of H. ducreyi for sexual partners.
- Educate the case, sexual partner(s), and the public about symptoms, transmission and prevention of infection including:
    - personal protective measures including the correct and consistent use of condoms
    - delaying onset of sexual activity
    - developing mutually monogamous relationships
    - reducing the numbers of sexual partners
    - minimize anonymous or casual sexual activity
    - make STI services culturally appropriate, and readily accessible and acceptable
    - provide information about risk of STIs when travelling.

DOCUMENTS

Reference: http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/section-5-1-eng.php

5.3 CHLAMYDIA TRACHOMATIS REPORTABLE

ETIOLOGY

Chlamydia trachomatis is a bacterial agent. Serotypes D through K are responsible for sexually transmitted infections in the adult and perinatally transmitted infections in the neonate and infant.

CASE DEFINITIONS

Genital Infections: Confirmed Case:

Laboratory evidence of infection in genitourinary specimens:

- detection of *C. trachomatis* by culture
  -OR-
- detection of *C. trachomatis* nucleic acid
  -OR-
- detection of *C. trachomatis* antigen)

Extra-genital infections: Confirmed Case:

Laboratory evidence of infection in rectum, conjunctiva, pharynx and other extra-genital sites:

- detection of *C. trachomatis* by culture
  -OR-
- detection of *C. trachomatis* nucleic acid
  -OR-
- detection of *C. trachomatis* antigen

Perinatally Acquired Infections: Confirmed Case:

Laboratory evidence of infection:

- detection and confirmation of *C. trachomatis* in nasopharyngeal on other respiratory tract specimens from an infant who developed pneumonia in the first 6 months of life:
  - isolation of *C. trachomatis* by culture
    -OR-
  - demonstration of *C. trachomatis* nucleic acid
    -OR-
  - demonstration of *C. trachomatis* antigen

  -OR-
- detection and confirmation of *C. trachomatis* in conjunctival specimens from an infant who developed conjunctivitis in the first month of life:
  - isolation of *C. trachomatis* by culture
    -OR-
  - demonstration of *C. trachomatis* nucleic acid
    -OR-
  - demonstration of *C. trachomatis* antigen

CLINICAL FEATURES

Genital Infections

Most genital chlamydial infections are asymptomatic and can persist for months. When symptoms occur, the spectrum of clinical manifestations is varied.

Males:
Symptomatic infection is generally characterized by urethritis including urethral discharge, dysuria and frequency, and non-specific symptoms such as redness, pruritus and swelling of the urethra. These symptoms, if untreated, can lead to complications including epididymitis, Reiter's Syndrome (reactive arthritis) and occasionally infertility.

Females:
Symptomatic females may experience cervical or vaginal discharge, dysuria and urinary frequency, dyspareunia, lower abdominal pain, abnormal vaginal bleeding, or vaginal symptoms (redness, pruritus and swelling). If untreated, complications such as ectopic pregnancy, infertility, pelvic inflammatory disease (oophoritis, endometritis, salpingitis), and, rarely, Reiter's syndrome may occur. Up to 2/3 of cases of tubal-factor infertility and 1/3 of cases of ectopic pregnancy may be attributed to *C. trachomatis* infection.

Extra-Genital Infections

Pharyngeal and rectal infections are often asymptomatic. Rectal symptoms can include rectal pain (proctitis or proctocolitis), mucoid discharge, blood in the stool, and tenesmus.

Conjunctivitis in adults manifests with pre-auricular lymphadenopathy, hyperemia, infiltration, and mucopurulent discharge. There may also be a chronic phase with discharge and symptoms which may last for a year or longer if untreated.

Perinatally Acquired Infections

Most infants remain asymptomatic after exposure in the birth canal but conjunctivitis and
pneumonia occur in about 15% and 7% of exposed infants, respectively.

Conjunctivitis symptoms usually appear between 7 and 21 days postnatally. Typically, a mucoid discharge progresses to a more purulent discharge with conjunctivitis and edematous eyelids.

Symptoms of infant pneumonia usually appear between 10 days and five months of age and include staccato cough, dyspnea, and a low-grade fever.

Table 1: Symptoms and Signs of Chlamydial Infection

Females	Males	Neonates and Infants
Most often asymptomatic	Often asymptomatic	Conjunctivitis in neonates
Cervicitis	Urethral discharge	Pneumonia in infants <6 months of age
Vaginal discharge	Urethritis	
Dysuria	Urethral itch	
Lower abdominal pain	Dysuria	
Abnormal vaginal bleeding	Testicular pain	
Dyspareunia	Conjunctivitis	
Conjunctivitis	Proctitis (commonly asymptomatic)	
Proctitis (commonly asymptomatic)		

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

DIAGNOSIS

Laboratory Tests

Refer to: http://publichealthlab.ca/service/chlamydia-trachomatis-neisseria-gonorrhoeae-ctng-dna/.

The diagnosis of *C. trachomatis* is based on the history, physical examination and the laboratory test performed. There are several types of tests used to diagnose chlamydia. Most use a sample of urine or a swab from the cervix, vagina or urethra. The type of diagnostic test used may depend on the symptoms or the type of laboratory tests available in the regional health authority. The Public Health Laboratory in NL will automatically test for *N. gonorrhoeae* when *C. trachomatis* testing is ordered.

The *C. trachomatis* & *N. gonorrhoeae* multiplex PCR assay detects these infections from endocervical swab or first void urine specimens from symptomatic or asymptomatic individuals.

For confirmation on laboratory specimens go to the NL Public Health Laboratory web site www.publichealthlab.ca or call (709)777-6583.

Specimen Collection:

Female: Endocervical swab and vaginal swab

Container/Tube: Cobas® PCR Female Swab Collection Kit

Collection Instructions:

1. 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.
2. Insert second medium swab into endocervix, rotate swab for 15 to 30 seconds to ensure adequate sampling.
3. Withdraw swab.
4. 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:

1. Patient should not have urinated for at least 1 hour prior to specimen collection.
2. 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

CT DETECTED: indicates the presence of *Chlamydia trachomatis* 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.

CT NOT DETECTED: absence of *Chlamydia trachomatis* DNA.

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

EPIDEMIOLOGY

Occurrence

- In Canada chlamydia is the most commonly diagnosed and reported bacterial STI.
- Chlamydia is underdiagnosed because the majority of infected individuals are asymptomatic
- Chlamydia is also often a co-infection for those diagnosed with *N. gonorrhea*.
- Chlamydia is more common among youth between the ages of 15-24 years.
- Risk factors:
    - Sexual contact with a chlamydia-infected person.
    - A new sexual partner or more than two sexual partners in the past year.
    - Previous sexually transmitted infections (STIs).
    - Vulnerable populations (e.g., injection drug users, incarcerated individuals, sex trade workers, street youth etc.)

Reservoir

Individuals who are asymptomatic, particularly untreated infected males continue to serve as a large reservoir capable of transmitting *C. trachomatis* to sexual partners. *C. trachomatis* grows in the vagina and/or urethra of infected persons. It may be found in the rectum and/or throat as well. The bacteria may spread to other parts of the reproductive tract causing major sequelae.

Incubation

The usual incubation period from time of exposure to onset of symptoms is 2 to 3 weeks, but can be as long as 6 weeks.

Transmission

Transmission of *Chlamydia trachomatis* is person to person via sexual contact (oral, vaginal, or rectal routes), or through the birth process (vertical transmission). The transmission is more efficient male to female than female to male.

The bacteria may also spread from the primary site of the case to other sites causing infection of the cervix, uterus, fallopian tubes, ovaries, abdominal cavity, glands of the vulva area in females and urethra and testes in males. The eyes of adults may become infected through the transmission of the infected genital secretions to the eye, typically by the fingers.

Newborns become infected by direct contact with an infected birth canal.

Communicability

Individuals and contacts are advised to abstain from unprotected intercourse until treatment is complete- 7 days after single dose therapy, or until a full course of multi-day therapy.

CONTROL MEASURES

Management of Cases

Evaluation should be appropriate for the presenting symptoms, signs and sexual history.

Test symptomatic or asymptomatic clients who identify risk behavior through unprotected sexual intercourse and/or known contacts of chlamydia, gonorrhea, epididymitis/orchitis or PID.

Testing for chlamydia should not occur in isolation, offer other additional STI screening. PHAC suggests:

- Obtain specimen(s) for the diagnosis of N. gonorrhoeae.
- Obtain a blood sample for serologic testing for syphilis
- HIV testing and counselling are recommended
- Immunization against hepatitis B is recommended in non-immune individuals
- Discuss HPV vaccine with women and men

In February 2015, the National Advisory Committee on Immunization (NACI) published an update on the recommended Human Papillomavirus (HPV) vaccine immunization schedule:

http://www.phac-aspc.gc.ca/naci-ccni/acs-dcc/2015/hpv-vph_0215-eng.php

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 for chlamydia is indicated for the following:

- A positive chlamydia test.
- Diagnosis of a syndrome compatible with a chlamydial infection, without waiting for the test results of *C. trachomatis*.
- Diagnosis of chlamydial infection in a sexual partner.
- Empirical co-treatment when a diagnosis of *N. gonorrhoeae* is made without waiting for test results of C. trachomatis due to the significant probability of co-infection (20–42%) and the possibility of false-negative results, especially with non-NAAT methods.

Treatment of Choice

Adult Cases

Efficacy and use-effectiveness studies evaluating single-dose azithromycin and a 7-day course of doxycycline have demonstrated similarly high cure rates; azithromycin is much more expensive.

Ofloxacin has an efficacy similar to doxycycline and azithromycin, but it is more expensive and needs to be taken as a multiple-dose course.

Erythromycin is associated with significantly higher gastrointestinal side effects than other regimens.

Drug resistance is rare but may become an emerging issue.

In the absence of a contraindication, the following treatment options are recommended:

Table 2. Adults (non-pregnant and non-lactating): urethral, endocervical, rectal, conjunctival infection

Preferred	Alternative
Doxycycline 100 mg PO bid for 7 days OR Azithromycin 1 g PO in a single dose if poor compliance is expected*	Ofloxacin 300 mg PO bid for 7 days OR Erythromycin 2 g/day PO in divided doses for 7 days† OR Erythromycin 1g/day PO in divided doses for 14 days†

***** If vomiting occurs more than 1 hour post-administration, a repeat dose is not required.
† Erythromycin dosages refer to erythromycin base. Equivalent dosages of other formulations may be substituted **(with the exception of the estolate formulation, which is contraindicated in pregnancy**). If erythromycin has been used for treatment, test of cure should be performed 3-4 weeks after completion of therapy.

For treatment of pregnant or lactating women, consult the Public Health Agency of Canada *Guidelines on Sexually Transmitted Infections* or the Regional Medical Officer of Health.

Chlamydial Infections - Section 5 - Management and Treatment of Specific Infections - Canadian Guidelines on Sexually Transmitted Infections - Public Health Agency of Canada

Pediatric Cases

Neonates born to untreated, infected mothers must be tested for *C. trachomatis*.

Neonates should be treated if their test results are positive. Neonates should be closely monitored for signs of chlamydial infection (e.g., conjunctivitis, pneumonitis). Prophylaxis is not recommended unless follow-up cannot be guaranteed.

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.

Management of Contacts

Definition of a Contact

All partners who have had sexual contact with the index case within 60 days prior to symptom onset or date of specimen collection (if asymptomatic) should be tested and empirically treated regardless of clinical findings and without waiting for test results.

The length of time for the trace-back period should be extended:

- to include additional time up to the date of treatment
- if the index case states that there were no partners during the recommended trace-back period, then the last partner should be notified
- if all partners traced (according to recommended trace-back period) test negative, then the partner prior to the trace-back period should be notified

Notification

Partner notification will identify those at risk, reduce disease transmission/reinfection and ultimately prevent disease sequelae.

Notification of contacts is done in a confidential manner that protects the identity of the index case.

- 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.

Follow-up on all out of province/country referrals of cases and contacts is done in collaboration with provincial office Department of Health and Community Services, Disease Control Division.

Management of Outbreaks

An outbreak management team should be established to address infection prevention and control measures.
The provincial *Outbreak Management Protocol* is Section 10 of the DCM and can be accessed at
http://www.health.gov.nl.ca/health/publications/diseasecontrol/S10_Outbreak_Protocol.pdf

PREVENTION

Ensure appropriate treatment of *C. trachomatis* for cases.

Every newborn born in a hospital in Newfoundland and Labrador receives preventive treatment for ophthalmia neonatorum with erythromycin ophthalmic prophylaxis or another appropriate therapeutic agent.

Interview case, identify and ensure appropriate treatment and follow-up of C. trachomatis for sexual partner(s).

Educate the case, sexual partners, and the public about symptoms, transmission and prevention of infections including:

- personal protective measures, particularly the correct and consistent use of condoms
- delaying onset of sexual activity
- developing mutually monogamous relationships
- reducing the numbers of sexual partners
- minimize anonymous or casual sexual activity
- culturally appropriate, accessible and acceptable STI services
- providing information about risk for STI when travelling.

Screening

Individuals with risk factors for chlamydia infections:

- sexual contact with chlamydia-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)

Follow-up Testing

Repeat testing for all individuals with chlamydia infections is recommended 6 months post-treatment.

DOCUMENTS

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

5.5 Hepatitis C REPORTABLE

ETIOLOGY

- Hepatitis C (HCV) is an enveloped RNA virus. It is a member of the *Flaviridae* family, genus *Hepacivirus*.
- At least 6 major genotypes and approximately 100 subtypes exist.
- Genotypes vary in pathogenicity and response to antiviral therapy.
- Genotype 1a and 1b are the most common types found in North America. However, all types have been reported in Canada.

CASE DEFINITIONS

Table 1: Case definitions of hepatitis C

Confirmed Case: Acute or Recent Infection	Detection of hepatitis C virus antibodies (anti-HCV) or hepatitis C virus RNA (HCV RNA) in a person with discrete onset of any symptom or sign of acute viral hepatitis within 6 months preceding the first positive HCV test* **AND** negative anti-HAV IgM, and negative anti-HBc IgM or HBsAg tests **AND** serum alanine aminotransferase (ALT) > 2.5 times the upper normal limit **OR** detection of anti-HCV in a person with a documented negative anti-HCV test within the preceding 12 months **OR** detection of HCV RNA in a person with a documented negative HCV RNA test within the preceding 12 months.
Confirmed Case: Unspecified (including chronic and resolved infections)	Detection anti-HCV **OR** detection of HCV RNA
Confirmed Case: Infants < 18 months**	PCR positive for HCV RNA.***
*HCV PCR is important as individuals who are viremic will be considered for antiviral treatment and PCR is a useful diagnostic tool in immunocompromised individuals who might not mount an antibody response.	
** In infants < 18 months of age, anti-HCV testing should not be performed as the presence of anti-HCV may represent passive maternal antibody. Cord blood should not	

be used because of potential cross-contamination with maternal antibody.
*** If testing for HCV RNA is done, it should be delayed beyond 4-12 weeks in order to avoid false negative HCV RNA test results

CLINICAL FEATURES

- Most people (more than 90%) infected with HCV have either no symptoms or exhibit only mild symptoms of illness, such as anorexia, vague abdominal discomfort, nausea and vomiting.
- In acute infections, the most common symptoms are fatigue and jaundice. A person with acute disease may have elevated serum ALT levels, often in a fluctuating pattern.
- Although initial illness may be asymptomatic or mild, a high percentage (50%–80%) go on to develop chronic HCV infection.
- Up to 70% of individuals with chronic HCV infection may have evidence of active liver disease, however, the majority of these individuals may not be aware of infection because they do not appear ill, and symptoms are often non-specific.
- Chronic HCV infection can manifest by changes in clinical symptoms and liver enzyme tests such as serum transaminases. Many people complain of chronic or intermittent fatigue. This fatigue can be debilitating however the degree of fatigue is not correlated with the severity of the liver disease.
- Most people with chronic HCV infection show few physical signs of the disease during the first 20 years of infection however half will develop complications such as cirrhosis or hepatocellular carcinoma (HCC) later in life. These long-term complications generally occur 20 years or more after infection and then rapid progression of disease is seen.
- HCV is the leading cause for liver transplants worldwide.
- Alcohol consumption, age at time of infection (>40 years old), male gender, and co-morbidities including obesity, co-infection with hepatitis B, and co-infection with HIV are factors that all accelerate liver disease progression in people with HCV infection.
- It is estimated that approximately 20% of HIV-positive people in Canada are also co-infected with HCV and the risk for cirrhosis in these individuals is nearly doubled in that of persons with HCV infection.

DIAGNOSIS

Laboratory Tests

Serology and nucleic acid testing (NAT) for HCV is done at the Provincial Public Health Laboratory. For confirmation on laboratory specimens, contact the NL Public Health Laboratory at 709-777-6583 or visit their website:

http://publichealthlab.ca/service/hcv-rna-hepatitis-c-virus-rna-nucleic-acid-amplification-test/

Figure 1: Recommended diagnostic approach to infectious hepatitis

Newfoundland Labrador
Public Health Laboratory

Government of Newfoundland and Labrador
Department of Health and Community Services

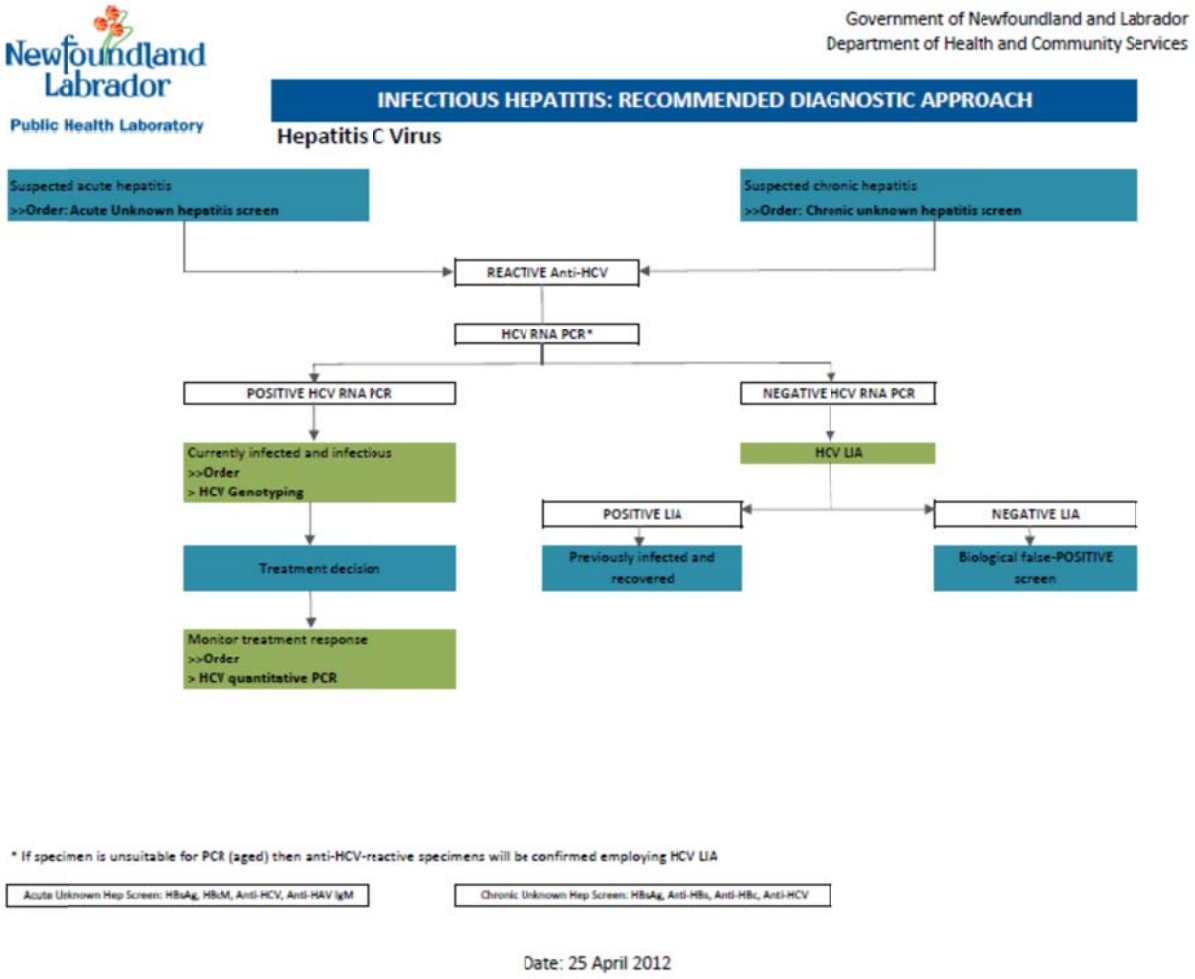
INFECTIOUS HEPATITIS: RECOMMENDED DIAGNOSTIC APPROACH

Infectious hepatitis serologic profile interpretation guidelines

	Profile Name	HBsAg	Anti-HBs	HBc total	HBc IgM	HBeAg	Anti-HBe	Anti-HAV total	Anti-HAV IgM	Anti-HVC	Interpretation
A	Acute unkown hepatitis	-			-				+	-	Acute Hepatitis A
		+		+	+	+			-	-	Acute Hepatitis B[1]
		-			-				-	+	Acute or chronic Hepatitis C
		-			-				-	-	Consider early hepatitis C or hepatitis E, CMV, or EBV[2]
B	Acute hepatitis B follow-up	+	+/-	+/-							Possible chronic hepatitis B
		-	+	+							Resolved past infection
		-	-	+	+						HBsAg-negative acute infection
C	Chronic hepatitis B monitoring					+	-				Actively replicating virus, infectious
						-	+				Evidence of previous active infection
D	Chronic unknown hepatitis screen	+	-	+	-					-	Chronic Hepatitis B
		-	-	-	NT					+	Chronic Hepatitis C
		-	-	-	NT					-	Consider Alternate Etiology*
		+	-	+	-					+	Chronic Hepatitis B and Hepatitis C co-infection
		-	+	+	+	-				+	Chronic HCV & exposure to HBV with recovery/immunity
E	Previous Hepatitis Exposure	-	-	-				+	-	-	Exposure to Hepatitis A with recovery / immunity
		-	-	-				+	+	-	Recent Hepatitis A
		-	-	-				-		+	Exposure to Hepatitis C with receovery or chronicity
		+	-	-				-		-	Exposure to Hepatitis B, early infection, asymptomatic
		+	-	+	-			-		-	Hepatitis B, chronic or carrier state
		+	-	+	+			-		-	Acute Hepatitis B
		-	+/-	+	-			-		-	Exposure to Hepatitis B with recovery / immunity
		-	-	+	+			-		-	Early acute Hepatitis B (core window)
		-	-	-				-		-	Consider Alternative Etiology

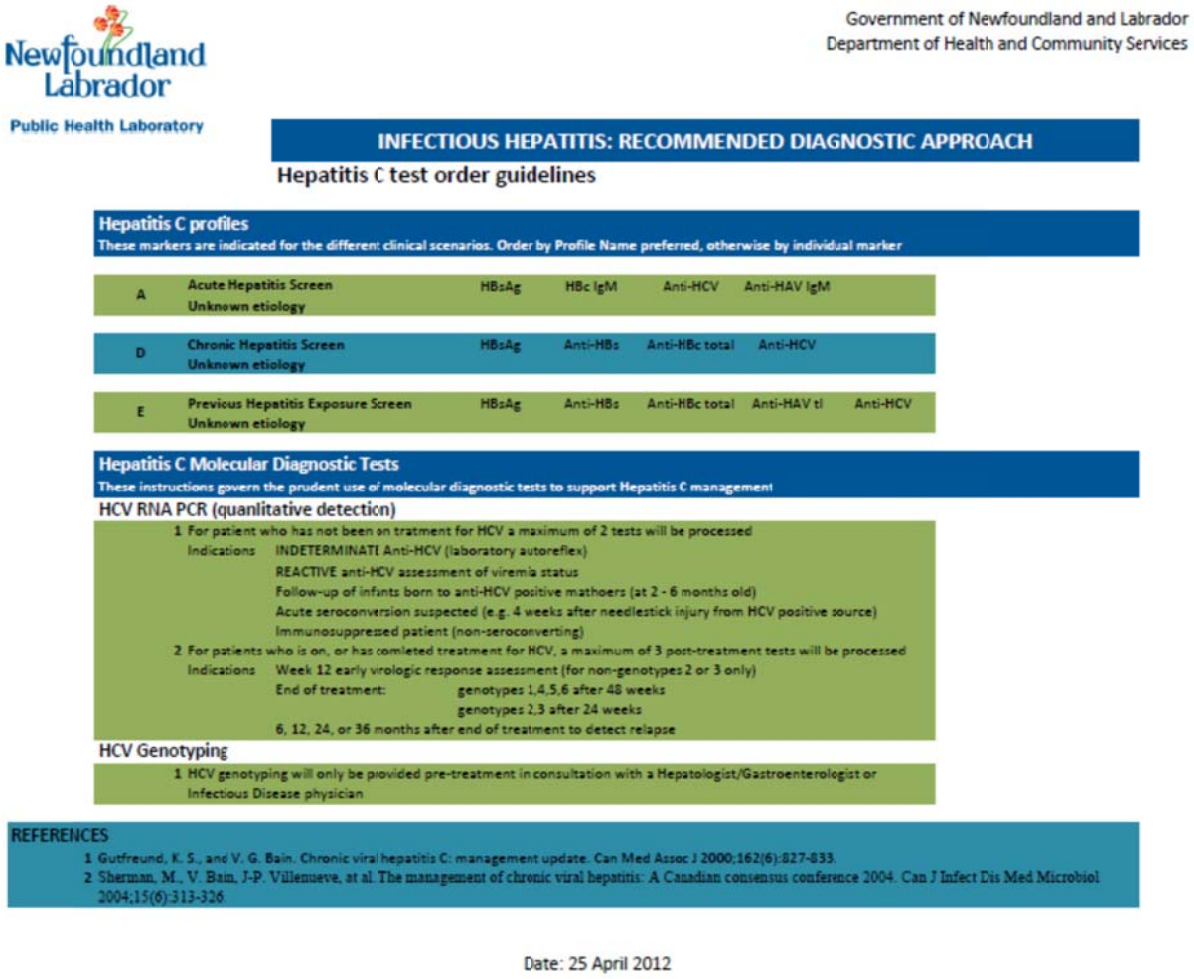
Source: NL Public Health Laboratory. http://publichealthlab.ca/wp-content/uploads/2012/10/Hepatitis-Interpretive.pdf

Figure 2: Recommended diagnostic approach for hepatitis C



Source: NL Public Health Laboratory. http://publichealthlab.ca/wp-content/uploads/2012/10/Hepatitis-Algorithm.pdf

Figure 3: Hepatitis C test ordering guidelines



Newfoundland Labrador
Public Health Laboratory

Government of Newfoundland and Labrador
Department of Health and Community Services

INFECTIOUS HEPATITIS: RECOMMENDED DIAGNOSTIC APPROACH

Hepatitis C test order guidelines

Hepatitis C profiles
These markers are indicated for the different clinical scenarios. Order by Profile Name preferred, otherwise by individual marker

A	Acute Hepatitis Screen Unknown etiology	HBsAg	HBc IgM	Anti-HCV	Anti-HAV IgM	
D	Chronic Hepatitis Screen Unknown etiology	HBsAg	Anti-HBs	Anti-HBc total	Anti-HCV	
E	Previous Hepatitis Exposure Screen Unknown etiology	HBsAg	Anti-HBs	Anti-HBc total	Anti-HAV tl	Anti-HCV

Hepatitis C Molecular Diagnostic Tests
These instructions govern the prudent use of molecular diagnostic tests to support Hepatitis C management

HCV RNA PCR (quanlitative detection)

1 For patient who has not been on tratment for HCV a maximum of 2 tests will be processed
Indications INDETERMINATI Anti-HCV (laboratory autoreflex)
REACTIVE anti-HCV assessment of viremia status
Follow-up of infints born to anti-HCV positive mathoers (at 2 - 6 months old)
Acute seroconversion suspected (e.g. 4 weeks after needlestick injury from HCV positive source)
Immunosuppressed patient (non-seroconverting)
2 For patients who is on, or has comleted treatment for HCV, a maximum of 3 post-treatment tests will be processed
Indications Week 12 early virologic response assessment (for non-genotypes 2 or 3 only)
End of treatment: genotypes 1,4,5,6 after 48 weeks
genotypes 2,3 after 24 weeks
6, 12, 24, or 36 months after end of treatment to detect relapse

HCV Genotyping

1 HCV genotyping will only be provided pre-treatment in consultation with a Hepatologist/Gastroenterologist or Infectious Disease physician

REFERENCES

1 Gutfreund, K. S., and V. G. Bain. Chronic viral hepatitis C: management update. Can Med Assoc J 2000;162(6):827-833.
2 Sherman, M., V. Bain, J-P. Villeneueve, at al. The management of chronic viral hepatitis: A Canadian consensus conference 2004. Can J Infect Dis Med Microbiol 2004;15(6):313-326

Date: 25 April 2012

Source: NL Public Health Laboratory. http://publichealthlab.ca/wp-content/uploads/2012/10/Hepatitis-Algorithm.pdf

Specimen Collection

Specimen Required

Serology: Suitable specimens are individual samples (human sera or EDTA plasma) obtained by standard laboratory techniques.

Blood:

Container/Tube: Serum separator (SST), EDTA plasma or Plain Red-top tube(s)

Specimen Volume: 5 mL of whole blood

Separate plasma or serum within 6 hours and store at 2-8°C and transport on ice packs within 72 hours.

Limitations of Hepatitis C Serology

Despite the value of serologic tests to screen for HCV infection, several limitations of serologic testing exist:

1. There may be a long delay (up to 6 months) between exposure to the virus and the development of detectable HCV antibodies.
2. False-reactive screening test results can occur.
3. A reactive screening test result does not distinguish between past (resolved) and chronic HCV infection.
4. Serologic tests cannot provide information on clinical response to anti-HCV therapy.

Interpretation of HCV RNA (Hepatitis C virus RNA nucleic acid amplification test)

DETECTED: Hepatitis C virus RNA detected indicative of viremia and infectiousness.

NOT DETECTED: Hepatitis C virus RNA was not detected indicating absence of viremia. A single negative HCV RNA PCR should not be used to exclude viremia. A repeat HCV RNA PCR should be ordered to confirm absence of intermittent viremia.

Interpretation of Results

Figure 4: Interpretation of results of HCV testing

Interpretation of hepatitis C virus (HCV) virological test results

Patient age	Born to HCV-infected mother	HCV antibodies	HCV RNA PCR	HCV RNA in liver or PBMCs*	Interpretation	Significance in paediatric patients
≤2 mo	Yes	Present	Not detected		Too early to interpret result because patient may not yet be viremic if transmission occurred at birth.	
2–17 mo	Yes	Present	Not detected		Vertical transmission of HCV did not occur, or the child has cleared HCV	Because the sensitivity of HCV RNA PCR may be <100%, antibodies should be tested at ≥18 months of age. If still present, HCV RNA PCR should be repeated to ensure HCV has been cleared. Children who clear HCV likely have no or very rare sequelae.
≥6 mo	Yes/No	Present	Detectable for >6 mo		Chronic HCV	Usually persists indefinitely in the absence of antiviral therapy, but spontaneous clearance likely more common in children than in adults.
≥18 mo	Yes/No	Present	Not detected	Small studies (15,16) in adults show virus almost always detectable in PBMCs and liver	Clearance of HCV†	Clearance occurs spontaneously with approximately 25% of acute HCV and an undetermined small percentage of chronic HCV, or occurs with successful antiviral therapy.
Any age	Yes	Absent	No need to test		Vertical transmission of HCV did not occur, or the child has cleared HCV	Children who clear HCV likely have no or very rare sequelae.
Any age	Yes/No	Present	Detectable in a child <6 mo of age, or detectable <6 mo after a negative antibody or PCR test		Acute HCV	An estimated 75% will develop chronic HCV and 25% will clear HCV.
Any age	Yes/No	Absent	Present		Seronegative (immunosilent) HCV, or very early acute HCV (infection typically occurred 20 to 60 days prior)	Seronegative HCV mainly described in HIV coinfected adults and other immunosuppressed patients with the incidence in children not known.
Any age	Yes/No	Absent	Absent	Present	Occult HCV	Described in adults with unexplained elevated transaminase levels (18), with there being no paediatric studies.

*Interpretation assumes the HCV RNA result is not a false-positive, which occurs on rare occasions. *Only available as a research tool; †Some experts label this 'occult HCV' if virus is detectable in peripheral blood mononuclear cells (PBMCs) or in the liver, and transaminases are normal; most reserve the term 'occult HCV' for seronegative patients. Mo Months; PCR Polymerase chain reaction*

Source: NL Public Health Laboratory.
http://publichealthlab.ca/wp-content/uploads/2012/10/Pediatric-HCV-Interpretation.pdf

EPIDEMIOLOGY

Occurrence

- Hepatitis C is a major public health concern around the world.
- It is estimated that approximately 3% of the world's population, or 180 million persons worldwide are infected with HCV, 130 million people are also chronic HCV carriers at risk of developing liver cirrhosis and/or liver cancer.
- It is estimated that 3-4 million people worldwide are newly infected with HCV each year.
- The majority of HCV cases in Canada are among people who inject drugs.
- Disease prevalence is considered low (<1%) in Canada. Many countries in Africa, Latin America, and Central and Southeastern Asia are considered high endemicity (>2%), with some countries in these areas reporting prevalence rates between 5 and 10%.
- Prior to 1989, when HCV was first identified, it was known that there was an association between hepatitis and transfusion of blood products. At that time it was originally known as "non-A, non-B" hepatitis.
- A test for HCV was introduced in Canada in 1990.
- Reported cases of HCV have declined in Canada in recent years. However, the health care burden presented by existing cases that progress to more serious sequelae continues to escalate.
- In 2009, 11,357 cases of HCV were reported through the Canadian Notifiable Disease Surveillance System (CNDSS), corresponding to a rate of 33.7 per 100,000 populations. This rate has decreased since 2005 (40.5 per 100,000).
- The majority of cases are over the age of 30 years and among males, but the gender gap is narrowing, which is mainly driven by increasing rates in younger females.
- Among newly acquired HCV cases with known risk factor information, injection drug use was associated with 61% of infections. HCV infection from transfusion of blood products accounts for only approximately 13 % of all cases. In Canada, approximately 20% of reported HCV infections are in immigrants. It is estimated that perhaps only 65% of the estimated cases in Canada have actually been diagnosed.

Reservoir

Humans: blood, blood products or any body fluid containing blood can be a source of infection.

Incubation

Ranges from 2 weeks to 6 months, but usually from 6 to 9 weeks.

Transmission

- HCV is primarily transmitted through parenteral exposure to HCV infected blood
- Transmission is most efficient through large or repeated percutaneous exposures to blood such as transfusion of blood from unscreened donors or through injection drug use.
- Highest rate of transmission of HCV is injection drug users who share drug paraphernalia (e.g. needles, spoons, bills, straws etc.); sexual transmission of hepatitis C is much less efficient than for hepatitis B (HBV).
- Perinatal transmission occurs less efficiently than HBV.
- Other activities involving inadequately sterilized equipment and needles, such as tattooing, piercing, electrolysis and acupuncture may pose a risk of HCV transmission.
- Household (non-sexual) transmission has been reported through sharing personal hygiene equipment with an infected person (e.g., toothbrushes, nail scissors and clippers, and razors).
- In Canada, since the early 1990s, the risk of transmission from screened and donated blood, manufactured blood products, and transplanted organs has been minimal due to strict screening and processing of all blood products.
- Individuals who were exposed to contaminated blood, blood products or transplantation prior to 1992 in Canada may be at risk of having HCV infection.
- HCV is not transmitted efficiently through occupational exposures to blood. The average incidence of anti-HCV sero-conversion after accidental percutaneous exposure (i.e. needle stick injury) from an HCV positive source is 1.8% (range 0 – 7%).

Communicability

A source is infectious from one (1) or more weeks before the onset of symptoms and can continue indefinitely.

CONTROL MEASURES

Management of Cases

- Determine the reason for testing (from case or physician).
- Assess risk factors for potential source of infection which include:
    - current or past injection drug use(even once)
    - needle sharing
    - incarceration,
    - homelessness and/or unstable housing
    - having resided in a country where HCV is common
    - having received a blood transfusion, blood products, or organ transplant before 1992
    - having received medical or dental care where basic infection control practices were not followed
    - having been on chronic(long term) hemodialysis

    - skin piercing procedures e.g., tattooing, body piercing, acupuncture,
    - work place or non-occupational exposure to HCV.
    - HIV-infected men who have sex with men.
    - Children born to HCV infected mothers

- Assess sexual relationships and high-risk sexual behaviors.
- Ascertain status of co-infection with other STBBIs
- If female, determine pregnancy status.
- Determine if client has donated blood, tissue, or organs.
- Identify household and other intimate contacts for potential blood exposure from the case. Contacts would include:
    - needle and drug-use equipment sharing partners
    - persons who share personal hygiene items e.g., razors, toothbrushes
    - long term and short term sexual partners
    - other persons with an identified exposure to the blood or other body fluids capable of producing HCV infection.

Treatment and Follow-Up

- Initiate correspondence to physician for appropriate follow-up and referral to specialist (gastroenterologist or hepatologist).
- Serological testing for Hepatitis A and B (to determine the need for hepatitis A and B vaccine).
- Immunization with Hepatitis A and/or B vaccine to prevent infection with either of these agents is strongly recommended.
- Test for other blood borne infections, HIV and syphilis.
- Discuss the importance of a healthy lifestyle to minimize liver damage e.g., avoid intake of alcohol and hepatotoxic drugs, eating a well-balanced diet, regular medical checkups, etc.
- Provide educational material that is suitable to the needs of the client where appropriate.
- Initiate linkages when appropriate to support services such as Mental Health & Addiction programs, and other harm reduction strategies aimed at reducing the risk of acquiring HIV infection.

Management of Contacts

Definition of Contact

A person who has shared drug use equipment or has had some relevant exposure to the case including sexual contact.

Notification

- Those persons who are identified as contacts of IDUs should be given priority for follow-up by public health personnel and should be notified of possible exposure to HCV by the case or by public health personnel.

- Sexual contacts should be assessed for risk behaviors and appropriate testing for STIs, hepatitis C and other BBIs should be recommended. They should be notified by the case or by public health personnel.
- Infants born to HCV positive mothers should be followed up by a pediatric infectious disease physician or another medical specialist/expert in HCV infection.

Management of Outbreaks

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

PREVENTION

Education and Preventive Measures

Injection Drug Use (IDU)

- The identification of individuals who participate in injection drug use and sharing of drug use equipment should receive counselling around harm reduction measures. Harm reduction efforts may include participation in needle-exchange programs, participation in addiction programs and/or drug substitution.
- There is a need for HCV prevention strategies targeting new or potential injection drug users. More than half of the new injection drug users become positive for HCV within six to 12 months.

Skin Piercing Procedures

- Persons considering tattoos, body piercings, or acupuncture should be counseled to ensure that it is important that these practices be carried out using sterile equipment, specifically equipment appropriate for one-time-use.

Occupational Exposure

- Health care and emergency response workers should all be trained regarding the risk and prevention of bloodborne infections and should report any percutaneous or permucosal exposures to their respective occupational health and safety (OHS) representative for appropriate management.
- Prevalence of HCV infection among health care workers is about 1% to 2%, which is the same as the general population.

Sexual Activity

- Transmission from partner to partner in a long-term relationship is relatively low, however, the risk of transmission increases with multiple sexual partners, coinfection with HIV, and high-risk sexual behavior (i.e., where blood may be present).
- The infected person should inform sexual partners.
- Testing should be offered to all identified partners.

- Recommend use of condoms in short-term sexual relationships.
- Infected women should avoid unprotected sex during menstruation, as the virus may be present in menstrual blood which may increase the risk for transmission.

Vertical Transmission

- Transmission of HCV from mother to baby can occur at the time of birth.
- In general breastfeeding is recommended because of its proven health benefits and because the risk of HCV transmission by this means is only theoretical.
- Women who do not wish to breastfeed may choose alternative feeding methods. If the nipples are bleeding or cracked, it is recommended that breastfeeding be suspended until they are healed.

Household Exposure

- People with HCV should be advised not to share personal hygiene items such as razors, nail clippers or toothbrushes because of the possibility they may be contaminated with small amounts of blood.
- Cuts and open sores on the skin should be covered
- After a blood spill, removal of organic material must occur followed by cleaning with an appropriate disinfectant (usually 1:10 dilution of household bleach).

Screening for HCV

- Early detection of HCV infection is important so that treatment may be initiated if indicated, and so that infected persons may be given the opportunity to initiate lifestyle changes to reduce other risks that might lead to liver damage.
- Response to treatment may be enhanced in persons with a shorter duration of infection.
- Screening should be provided for persons with identified risks for infection and for individuals who request a test. Consideration of hepatitis C testing as a part of periodic routine medical screening should be discussed.
- Persons with liver dysfunction of unknown etiology or chronic liver disease should also be screened.
- All blood donations are screened by the Canadian Blood Services for HCV.
- All newly diagnosed hepatitis C cases are reported to Canadian Blood Services if they have donated blood.
- All donations of blood, blood products, tissues, organs, and semen are screened for HCV, and people infected with HCV should be counseled to not donate.

Health Care Workers

In any situation in which a health care worker, who is HCV positive, is uncertain about the potential transmission risks of HCV or proper practices to minimize the risk to patients/clients/residents, he or she should consult with employee health or an infection control practitioner or patient safety group responsible for the quality of care for the clients.

Immunization

- Hepatitis A and/or B vaccine are recommended for all Hepatitis C positive individuals.
- Individuals at high risk for hepatitis C should receive hepatitis A and/or hepatitis B vaccine.
- Pneumococcal-23 vaccine is recommended for HCV positive individuals.

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) will report case/s to the attending physician, the Chief Medical Officer of Health (CMOH) and the Medical Officers of Health (MOH).
- The 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 specific region as required for follow-up and case investigation.
- The CDCN will collect case details as required and will enter the case details into the Communicable Disease Surveillance System electronic reporting system and uses the CNPHI tool, if indicated, for alerts and/or outbreak summaries
- CDCN will advise Disease Control Nurse specialist in writing if Canadian Blood Services needs to be notified if case reports having donated blood that may require a trace back.

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), which is also posted on the Public Health website.
- Coordinates the response if an outbreak crosses more than one RHA.

The link for the fact sheet on hepatitis C can be found here:

http://www.phac-aspc.gc.ca/hepc/pubs/getfacts-informezvous/index-eng.php

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5.6 Human Immunodeficiency Virus REPORTABLE

ETIOLOGY

- The human immunodeficiency virus (HIV) is a retrovirus.
- Two types have been identified: *type 1 (HIV-1*) and type 2 *(HIV-2).* These viruses are serologically, geographically and epidemiologically distinct. The transmissibility and pathogenicity of HIV-2 may be lower than HIV-1. This policy addresses HIV-1 only.
- HIV has been shown to be the causative agent of acquired immunodeficiency syndrome (AIDS).

CASE DEFINITIONS

Confirmed case

Adults, Adolescents and Children >18 months:

- detection of HIV antibody with confirmation (e.g. EIA screening with confirmation by Western blot or other confirmatory test)
  OR
- detection of HIV nucleic acid (e.g. DNA PCR or plasma RNA)
  OR
- HIV p24 antigen with confirmation by neutralization assay
  OR
- isolation of HIV in culture

Children < 18 months (on two separate samples collected at different times)

- detection of HIV nucleic acid (e.g. DNA PCR or plasma RNA)
  OR
- HIV p24 antigen with confirmation by neutralization assay
  OR
- isolation of HIV in culture

Pediatric cases only (<15 years old)

- Bacterial infections (multiple or recurrent, excluding recurrent bacterial pneumonia) AND must have laboratory evidence of HIV infection
- Lymphoid interstitial pneumonia and/or pulmonary lymphoid hyperplasia (may be diagnosed presumptively if laboratory evidence of HIV infection is present).

CLINICAL FEATURES

- Infection with HIV results in the progressive destruction of cells (CD4+ T lymphocytes) that are crucial to the normal functioning of the immune system.
- The person with HIV infection may experience several stages:

- Primary or acute HIV infection.
- Chronic asymptomatic HIV infection.
- Chronic symptomatic HIV infection.

- Persons with HIV infection develop immune suppression and consequently are at risk of developing a variety of clinical AIDS-defining conditions, including opportunistic infections and malignancies.

Adults

- Within seven to 10 days of infection with HIV up to 90% of persons develop a non-specific, self-limited illness known as the **acute retroviral phase**.
  - Symptoms may include fever malaise, rash headache, pharyngitis, anorexia, weight loss, lymphadenopathy and fatigue.
  - These symptoms usually resolve within two weeks.
  - This stage is often undiagnosed.
  - During this period of time individuals are to be considered highly infectious.
- Following the primary infection, patients may remain asymptomatic for years. Without treatment the average time to the development of an AIDS-defining illness is 8 to 15 years. With treatment the life expectancy of a HIV positive individual is comparable to a non-HIV positive individual.
- Clinical illness may include opportunistic infections such as Pneumocystis jiroveci pneumonia, disseminated Mycobacterium avium complex, and primary neurologicdisease (e.g. AIDS dementia) and malignancy (e.g. lymphoma, Kaposi sarcoma).
- Effective early treatment reduces the mortality related to HIV and progression to an AIDS diagnosis.

Table 1: Symptoms of HIV infection by stage of disease

Acute HIV Infection	Chronic Symptomatic HIV	AIDS-defining Conditions (requires concurrent positive HIV serology)
• Fever • Arthralgia • Myalgia • Rash • Lymphadenopathy • Sore throat • Fatigue • Headache • Oral ulcers and/or genital ulcers • >5 kg weight loss • Nausea, vomiting or	• Oral hairy leukoplakia • Unexplained fever (>2 weeks) • Fatigue or lethargy • Unexplained weight loss (>10% body weight) • Chronic diarrhea (>3 weeks) • Unexplained lymphadenopathy (usually generalized) • Cervical dysplasia	• Bacterial pneumonia, recurrent • Candidiasis (esophageal, bronchi, trachea or lungs) • Cervical cancer, invasive • Coccidioidomycosis (disseminated or extrapulmonary) • Cryptococcosis (extrapulmonary)

diarrhea	• Dyspnea and dry cough • Loss of vision • Recurrent or chronic mucocutaneous candidiasis (oral, esophageal, vaginal) • Dysphagia (esophageal candidiasis) • Red/purple nodular skin or mucosal lesions (Kaposi sarcoma) • Encephalopathy • Herpes zoster, especially if severe, multidermatomal or disseminated • Increased frequency or severity of mucocutaneous herpes simplex virus infection • Unexplained “anemia of chronic disease”	• Cryptosporidiosis (chronic intestinal) • Cytomegalovirus disease (other than liver, spleen, nodes) • Cytomegalovirus retinitis (with loss of vision) • Encephalopathy, HIV-related (dementia) • Herpes simplex virus (chronic ulcers or bronchitis, pneumonitis or esophagitis) • Isosporiasis, chronic intestinal • Kaposi sarcoma • Lymphoma (Burkitt, immunoblastic, primary in brain) • Mycobacterium avium complex or M. kansasii (disseminated or extrapulmonary) • Mycobacterium of other species (disseminated or extrapulmonary) • Mycobacterium tuberculosis (pulmonary, disseminated or extrapulmonary) • Pneumocystis jiroveci (formerly carinii) pneumonia • Progressive multifocal leukoencephalopathy • Salmonella septicemia, recurrent • Toxoplasmosis of brain • Wasting syndrome due to HIV

Source: Canadian Guidelines on Sexually Transmitted Disease, 2013

Children:

- HIV infection is most often asymptomatic among infants and children. The median time to disease progression of treated peri-natally infected children is believed to be similar to that of adults.
- Ten per cent to 20% of peri-natally infected children who are untreated will present with symptomatic disease within the first year of life. With treatment, disease progression is delayed.
- Prenatal care should include HIV testing to better identify those who are at risk. Mothers who are identified as HIV infected and receive appropriate treatment have an 80% chance of not transmitting the infection to their babies.
- Children and infants who do present with symptoms may have any of the following:
    - irritability, poor weight gain, developmental delay, recurrent respiratory problems, recurrent otitis or sinusitis, persistent rash, persistent thrush, persistent or recurrent lymphadenopathy, diarrhea or fever.

DIAGNOSIS

The diagnosis of HIV infection is based primarily on a positive serologic test.

For confirmation on laboratory specimens, contact the NL Public Health Laboratory at 709-777-6583 or visit their website:

http://publichealthlab.ca/service/hiv-abag-human-immunodeficiency-virus-iii-serology/

Laboratory Tests

Table 2: Testing algorithm for HIV

Reporting Name	Available separately	Always performed
HIV Screen	N/A	N/A
HIV-1/2 Antigen/antibody combo assay	NO	YES
HIV-1 WB (HIV-1 Western Blot)	NO	NO
HIV-2 WB (HIV-2 Western Blot)	NO	NO

Source: NL Public Health Laboratory

Notes:

- Serum/plasma screened for HIV p24 antigen and HIV 1/2 antibodies employing HIV antigen/antibody combo assay.

- Reactive specimens are confirmed by HIV 1 specific Western blot (ie: immunoblot, ImB).

Specimen Collection

Specimen Required

Serology: Suitable specimens are individual samples (human sera or EDTA/heparinized/citrated plasma) obtained by standard laboratory techniques.

Specimen Minimum Volume

0.6ml

Table 4: Transport Temperature

Specimen	Room temperature	Refrigerated	Frozen
Serum/plasma	YES*	YES**	YES***

Source: NL Public Health Laboratory

*The samples should not be stored for more than 3 days at room temperature.

**The samples should be stored for not more than 14 days at 2-8°C.

***For longer delay, freeze at -70°C and transport on dry ice.

Interpretation of Results

Table 3: Interpretation of results

Interpretation

HIV Ag/Ab	HIV Western Blot	Interpretation	Comments
Non-reactive	*N/A*	*Negative*	*If high risk and acute infection is suspected retest in 1 – 2 weeks.*
Reactive	*Non-reactive*	*Negative*	*If high risk or acute infection is suspected retest in 1 – 2 weeks.*

Reactive	*Indeterminate*	*Indeterminate*	*Repeat testing to detect seroconversion*
Reactive	*Reactive*	*Positive*	Confirmed case*

Source: NL Public Health Laboratory

*If a patient is found to be HIV-positive, a repeat blood collection and testing should be ordered to validate results.

Pediatric Considerations

HIV antibody testing cannot establish HIV infection in infants <18 months old due to persistent maternal anti-HIV antibodies in HIV-positive mothers. Confirmation of HIV infection in those <18 months old should be based on two positive virologic tests (HIV RNA/DNA PCR) obtained from separate blood samples. Definitive exclusion of HIV infection (in the absence of breastfeeding) should be based on at least two negative virologic tests (one at >1 month and one at >4 months of age).

EPIDEMIOLOGY

Occurrence

- The epidemic is a complex one as there are different rates of infection in specific at-risk populations.
- Men who have sex with men (MSM) still represent the largest number and proportion of positive HIV test reports. The second largest exposure category is heterosexual transmission followed by injection drug use (IDU).
- Rates of HIV infection in Canadian provincial and federal prisons appear to be much higher than in the general population.
- An estimated 30% of those infected are unaware of their HIV status.
- There has been a marked decline in the number of persons diagnosed with AIDS in Canada. The use of highly active antiretroviral therapy (HARRT) is the major factor responsible for this decline.

Reservoir

- Humans

Incubation

- Usually 1-3 months but can be variable. The time frame from infection to detectable antibodies can range from two to three weeks to six months.

Transmission

- Transmission of HIV is from person to person.

- Common modes include sexual contact and sharing of HIV-contaminated needles, syringes and other equipment for drug injection.
- The HIV virus is most commonly found in and transmitted through blood, body fluids containing blood and other fluids (i.e. semen, vaginal secretions and anal fluids) with a high viral load. The virus has been isolated from urine, salvia, tears, and bronchial secretions; however transmission from these fluids has not been reported.
- Concurrent sexually transmitted infection (STIs) especially ulcerative STI greatly facilitates the transmission and acquisition of HIV.
- Infection may be transmitted vertically from mother to child during pregnancy, delivery or through breastfeeding.
- Transmission of HIV through blood products and organ/tissue transplants is extremely rare in Canada since screening of donors was instituted in 1985.
- The current estimated risk of infection from blood and blood products is exceedingly low in Canada (approximately one per million units of blood).

Communicability

- Epidemiological evidence suggests that transmissibility begins early after the onset of HIV infection and extends throughout life.
- Infectiousness is highest during the initial infection, and rises with increasing immune deficiency.

CONTROL MEASURES

Management of Cases

Investigations

1. Determine the reason for the test (from the case or physician).
2. Assess potential risk factors for infection including:
    - Men having sex with men.
    - Sharing of needles or other drug paraphernalia e.g., straws, spoons for illicit/street drugs, pipes used for inhalation of illicit/street drugs,
    - Incarceration
    - Receipt of blood/tissue/organ between 1978 and 1985.
    - Receipt of blood/tissue/organ at any time in a developing country.
    - Skin piercing procedures e.g., tattooing, body piercing, acupuncture.
    - Workplace exposure.
    - Recent invasive medical or dental procedures.
    - History of medical procedure in an HIV-endemic country.
    - Sex with partners with identified risk factors.
    - Individuals with symptoms and signs of HIV infection.
    - Individuals with illness associated with immunocompromise or a diagnosis of tuberculosis.
3. Assess sexual relationships and high-risk sexual behaviors including:

- Alcohol and non-injection drug use prior to sexual activity.
- Participation in unprotected anal, vaginal and/or oral sex outside of a mutually monogamous relationship.
- Multiple sex partners (including sex trade workers).
- Sex with partners from a HIV-endemic country or with partners with any of the above risk factors.

4. Ascertain status of co-infection with other sexually transmitted infections and bloodborne infections (STBBIs).
5. If female, determine pregnancy status.

Follow up of Cases

- **Recommendations should be made in collaboration with a physician experienced in HIV/AIDS care and treatment.**
- Public health personnel should contact the physician within two working days of receipt of positive test result to determine who will initiate completion of the *HIV/AIDS Case Report* and to make them aware of the need for:
  - public health follow-up including client education
  - follow-up of contacts
  - obtaining additional epidemiological information
  - assessing the risks associated with other STIs, hepatitis B and hepatitis C.
- Positive pregnant women should be advised of evidence regarding antiretroviral drugs in preventing perinatal transmission and should receive antiretroviral therapy prenatally (typically at the start of the second trimester) and during labor and delivery.
- Ensure physician aware of referral process to Provincial HIV/Infectious Diseases Clinic
- Encourage regular follow-up with a physician experienced in HIV/AIDS care and treatment.
- Encourage and support people who are HIV positive to take the medications
- prescribed for them.

Management of Contacts

Definition of Contact

- A person who has had sex, reused injecting equipment or has had some relevant high risk exposure to the case.

Notification

- It is a public health responsibility to ensure that partner notification and follow-up takes place. All HIV-positive individuals are assumed to be infectious and capable of transmitting the virus through exchange of blood and body fluids. They must, therefore, be interviewed to identify and disclose names of their sexual and needle-sharing partners.
- Partner notification and follow-up of drug sharing and sexual partners must be undertaken on all reported cases of HIV infection and AIDS.

- In order to protect the identity of the source, the source identity, the date, and the nature of the exposure should **NOT** be revealed to the contact.
- Tracing of partners should be based on the estimated duration of infection. If the date of seroconversion is known, all partners in the **6 months** prior to the positive testing should be identified.
- Trace-back period for HIV is variable and depends on a number of factors, including time frame when risk behavior began, last known negative test if available, epi link with known case.
- All identifiable partners should be notified within **1 month** of the case disclosing contact information.
- It is recommended to meet with the contact in person. Pre- and post- test counselling should be offered to all contacts.
- Collaboration between the primary care physician, public health personnel and the infectious disease physician is essential.
- Public health personnel should be available to assist physicians with partner notification and help with appropriate referral for clinical evaluation, testing, treatment, and health education.
- Both the physician and public health personnel conducting contact tracing, should always provide partners with information that includes:
    - Modes of transmission.
    - Disease process.
    - How to modify risky behaviors.
    - Contact information of support agencies and testing clinics.
- All partners should be encouraged to be tested for HIV and given specific details on where to be tested, and how it will be reported if positive.
- Pregnant female contacts:
    - Should be given priority for follow-up.
    - Should have additional testing during pregnancy and/or prior to delivery based on continued risk behavior.
    - Should have close follow up. If the woman does not return for retesting, public health personnel and/or the primary care physician should make attempts to contact her and provide additional information and/or support.
    - In addition to standard HIV testing, an HIV specialist should be consulted regarding additional tests (e.g., HIV RNA) and/or further HIV antibody testing. If the contact is found to be HIV positive, immediate referral should be made to a HIV specialist.

Infants

- Children born to HIV-positive women should be referred to a specialist in pediatric infectious diseases for assessment as soon as possible after delivery.
- For infants born to HIV-positive mothers who have not taken antiretroviral prophylaxis, perinatal transmission can still be significantly reduced by starting antiretroviral therapy as soon as possible after birth, preferably within one to four hours following birth.
- A specialist in pediatric infectious diseases should be consulted in all cases.
- HIV-positive mothers should not breastfeed.

Management of Occupational Exposures

- Transmission of HIV infection in the workplace (occupational exposure) is primarily concerned with the potential for transmission from patient to health care personnel.
- Occupational exposure to HIV infection may occur in several instances:
    - Percutaneous injury with a sharp object potentially contaminated with blood or other bodily fluid.
    - Mucous membrane exposure to blood or other bodily fluid.
    - Skin exposure to blood or other bodily fluid.
- The average risk of HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3% (3/1,000), and after a mucous membrane exposure, approximately 0.09% (0.9/1,000).
- The risk for transmission after exposure to fluids or tissues other than HIV-infected blood also has not been quantified, but is probably considerably lower than for blood exposures.
- The decision to initiate post-exposure prophylaxis (PEP) medications for HIV infection is based on clinical judgment and should be a joint decision with the exposed health care worker based on source and exposure factors.
- **If PEP is indicated, it should be initiated as soon as possible, as it may be less effective if initiated more than 72 hours after exposure.**

Management of Clients from Citizenship Immigration Canada (CIC)

A large number of new immigrants to Canada are from regions in the world with rates of HIV infection several times higher than in Canada. HIV infection is not a medical condition for which medical surveillance is imposed on an applicant's visa by Citizen and Immigration Canada (CIC) unlike T.B and syphlis. However since 2004 CIC undertook the initiative to inform provincial /territorial (P/T) public health authorities who had elected to receive the information of all HIV positive cases identified during immigration medical examination process and destined to their province.

As of June 2013 Newfoundland and Labrador will receive nominal information each month following the arrival of these individuals in the province. The purpose of the notification is:

• To allow public health authorities to communicate with the individuals as soon as possible so that early linkage with the provincial medical system is established.

• To ensure that public health activities deemed necessary are undertaken early and appropriately.

The immigration medical exam (IME) is performed by a Designated Medical Practitioner (DMP) and is completed in the country of origin before arrival in Canada. It consists of a:

- Medical History.
- Physical examination.
- Urinalysis for applicants >5 years of age.
- Chest x-ray for applicants 15 years of age and above.

Individuals found to be HIV positive during their immigration medical examination (IME) are informed of their status and are provided with HIV Post-Test Counseling by a CIC Panel Physician before moving to Canada.

The applicant receives a “Health Follow up Handout: HIV infection” from the immigration officers once their visa is approved. This letter provides the individual

with provincial contact information and encourages the individual to contact the 1 800 number provided so that they may obtain information to assist the individual in gaining early access to support, care and treatment. In NL the number on the handout is 1 800 563 1575 (ACNL).

NL reporting process:

1. CIC notifies Department of Health and Community Services (DHCS), Government of Newfoundland and Labrador of all out-of-country immigrants testing positive for HIV monthly if there is a case.

2. DHCS notifies appropriate RHA of immigrants who have tested positive for HIV.

3. The Disease Control Nurse Specialist (DCNS) contacts the Regional Medical Officer of Health (RMOH) and regional Communicable Disease Control Nurse(CDCN).

4. The CDCN makes contact with the individual to offer information on support and services and to encourage the individual to re-test within NL. A referral to the HIV clinic may be determined to be appropriate.

RHA follow up process:

1. The CDCN will attempt contact the individual by registered letter.

Unlike TB and syphilis there is no notice of medical compliance associated with HIV notification.

2. Once a confirmatory lab test is complete immigrants who are positive are reported in the Communicable Disease Surveillance System (CDSS) as HIV infection, previously diagnosed, first time tested in Canada.

3. If unable to contact person due to an out of province move the DCN will be notified by the CDCN, subsequently CIC will be advised of this information.

The second method of identifying immigration–related HIV cases in NL is through routine provincial reporting and public health follow-up. Some individuals settle first within Newfoundland and Labrador and then initiate the immigration proceeding. These individuals undertake their IME within NL and are not reported to Disease Control by CIC if they test positive for HIV. Instead the positive lab report is reported to the Disease Control Division by the public health laboratory services where all confirmatory HIV testing is conducted for the province. Once a positive lab report is received it is entered into the CDSS and the RHA where the client resides completes the follow up.

Management of Outbreaks

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

PREVENTION

Education

- Prevention and public health programs should be offered to reduce HIV transmission through IDU (e.g., needle exchange programs and harm reduction strategies).
- Confidential HIV testing should be made available in facilities where individuals may be at higher risk of contracting HIV (i.e., correctional facilities, drug treatment centers, and STI clinics, establishments that offer services to MSM, homeless shelters, and group homes).
- Health care practitioners should recommend to all STI cases and contacts that they be tested for HIV.
- All pregnant women should be counseled regarding HIV testing and prenatal blood work should include HIV screening unless the woman opts out. Those found to be positive should be advised of the recommendation for antiretroviral medications to prevent vertical transmission.
- Provide public education about the safe handling of blood, body fluids, and sharps disposal.
- Prompt treatment of any STI will reduce the risk of acquiring and transmitting HIV infection.
- Infection Control Routine Practices should be in place in health care facilities to prevent exposure of health care workers to blood and body fluids.
- Health care or public safety worker should follow standard blood/body fluids

precautions and safely handle needles and other sharps.

Risk factors common to HIV infection

- Focus on methods to reduce high risk sexual behaviors that may lead to HIV or STIs (e.g., safer sex education).
- HIV post-exposure prophylaxis *(*PEP) should be considered for non-occupational exposures and sexual assaults in consultation with an infectious disease specialist.
- School health programs should center on basic and accurate information about STIs, safer sex, HIV, and unintended pregnancies.
- Family physicians should be targeted for education to increase and normalize HIV testing, to offer HIV testing as part of routine examinations and to increase awareness about the changing epidemiology of HIV/AIDS.
- Anyone considering tattooing, body piercing, or acupuncture should be counselled to ensure that these practices are carried out with sterile equipment, preferably single use equipment.

DOCUMENTS

1. STI Treatment/Contact Tracing form
2. Confidential Medical Matter letter for clients
3. Physician Letter re: HIV Lab Report and Case Report
4. HIV Lab Report and Case Report: Public Health Agency of Canada

1. STI Treatment and Contact Tracing follow-up Letter

STI TREATMENT & CONTACT TRACING FOLLOW-UP LETTER

To: _____ Clinic: _____

Report attached for: _____ MCP#: _____

Disease reported ( ) Chlamydia ( ) Gonorrhea Lab Confirmed ( ) Yes ( ) No Date Collected:

Please complete the following sections

CLIENT INFORMATION

DOB: or Age:	Address: Phone # (H) (Cell)	
Marital Status ( ) Single ( ) Married or Com Law ( ) Separated/Divorced	Sexual Preference □ Sex with females only □ Sex with males only □ Sex with males & females	Risk Factors (check all that apply) ( ) Sexual contact of confirmed case ( ) High risk partner ( ) ≥ 2 partners in past 6 months ( ) Unprotected sex ( ) Infant born to case ( ) Sexual Assault ( ) Condom failure ( ) Alcohol/drug use ( ) Sex trade ( ) Other:

DISEASE INFORMATION

Date of Onset of Symptoms:	Is case pregnant? ( ) Y ( ) N ( ) N/A
Chlamydia Treatment Prescribed: ( ) Azithromycin 1 gm ( ) Doxycycline 100 mg bid x 7days ( ) Other _____	Gonorrhea Treatment Prescribed: ( ) Ceftriaxone 250 mg IM and Azithromycin 1gm ( ) Cefixime 800mg and Azithromycin 1 gm ( ) Other _____
_____/_____/_____ Date Treated	_____ Signature of Physician or RN Date

PLEASE INDICATE IF YOU WISH COMMUNICABLE DISEASE CONTROL TO FOLLOW UP WITH SEXUAL CONTACTS: ( ) YES ( ) NO ( ) CDC TO FOLLOW UP DIRECTLY WITH CASE ( ) CONTACT INFORMATION UNKNOWN

CONTACT INFORMATION (photocopy this sheet if more than one contact or provide separate list of names & contact information)

Last Name / Alias:	First Name:
Address (street, apt #, community)	Phone # (H) (Cell)
DOB ____/____/____ or Age ____ ( ) Male ( ) Female Place of Employment: _____ or Name of School (if student): _____ Physical Description: _____ Marital Status: ( ) Single ( ) Married or Com Law ( ) Separated/Divorced Living with: ( ) Case ( ) Parents ( ) Other _____ Pregnant: ( ) Yes ( ) No ( ) N/A	
Relationship to case: ( ) Married/Com Law ( ) Casual ( ) Reg. partner ( ) Sex trade	Exposure Dates (1st) ____/____/____ to ____/____/____ ( ) Unprotected sex ( ) Protected sex
Will your clinic follow-up this contact? ( ) Yes ( ) No	Will your patient notify this contact? ( ) Yes ( ) No
Comments:	

Please fax completed form to 752-4873

_____ _____

Communicable Disease Control Nurse Date

2. Confidential Medical Matter letter for clients

Date:

To:

Re: **Confidential Medical Matter**

Please contact me concerning a confidential medical matter.

My office phone number is _____.

Business hours are Monday – Friday 08:30 am – 4:30 pm.

Thanking you in advance.

_____
Communicable Disease Nurse
Eastern Health
Communicable Disease Control Program

3. Physician Letter re: HIV Lab Report and Case Report

MEDICAL CONFIDENTIAL

RE:

MCP:

Dear Dr.;

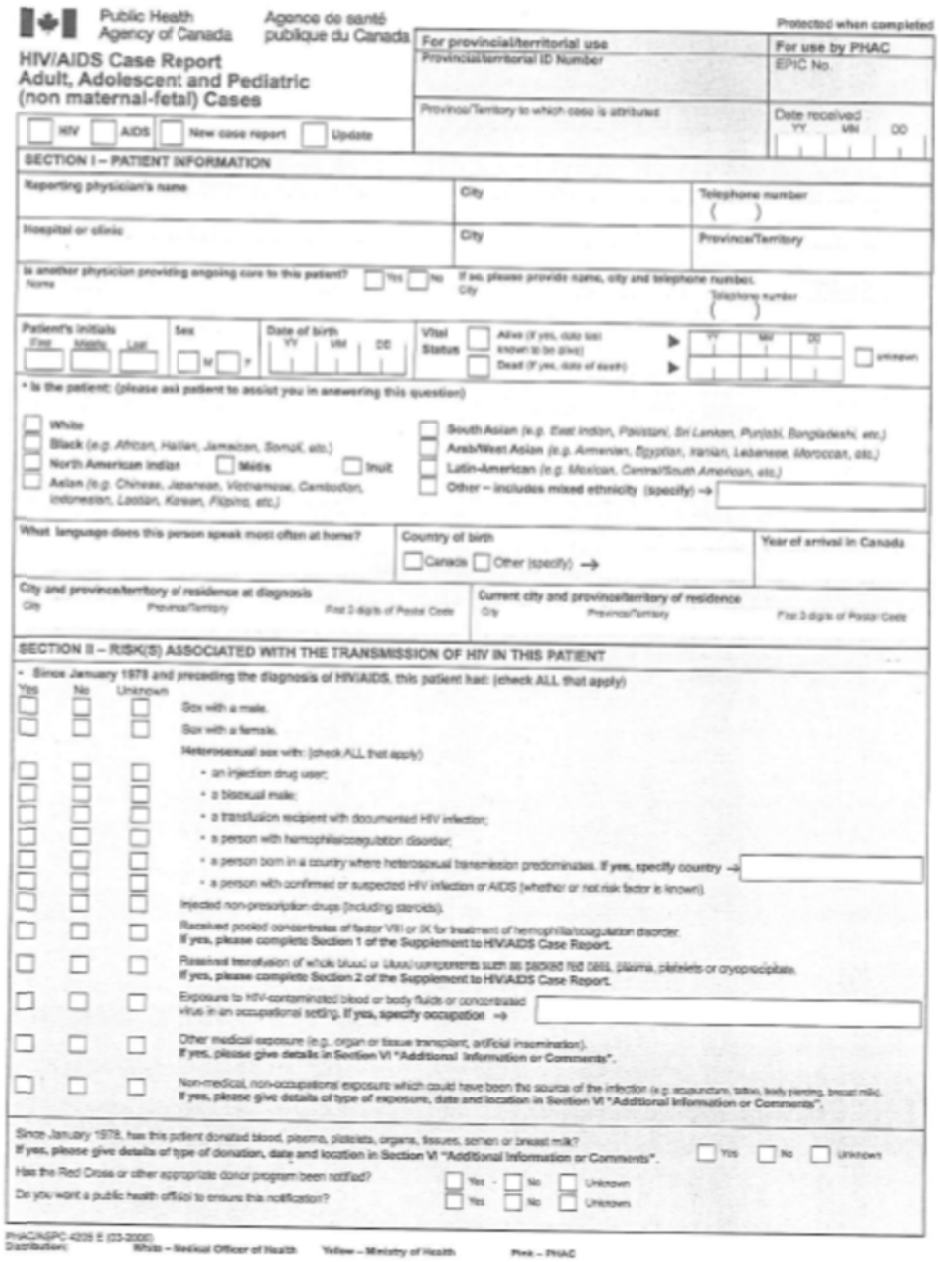
A positive HIV report has been received from the Public Health Laboratory on the above stated patient.

To ensure accurate reporting of this disease, in accordance with the provincial Communicable Disease Act 1998, please complete the attached form and return to the Communicable Disease Control Department.

Thank you for your cooperation in this matter. Feel free to contact me if you have any questions or concerns at _____.

Sincerely,

4. HIV Lab Report and Case Report: Public Health Agency of Canada



Public Health Agency of Canada / Agence de santé publique du Canada

Protected when completed

HIV/AIDS Case Report
Adult, Adolescent and Pediatric
(non maternal-fetal) Cases

For provincial/territorial use
Provincial/territorial ID Number
Province/Territory to which case is attributed

For use by PHAC
EPIC No.
Date received YY MM DD

☐ HIV ☐ AIDS ☐ New case report ☐ Update

SECTION I – PATIENT INFORMATION

Reporting physician's name | City | Telephone number ( )

Hospital or clinic | City | Province/Territory

Is another physician providing ongoing care to this patient? ☐ Yes ☐ No If so, please provide name, city and telephone number.
Name | City | Telephone number ( )

Patient's initials First Middle Last | Sex ☐ M ☐ F | Date of birth YY MM DD | Vital Status ☐ Alive (If yes, date last known to be alive) ▶ YY MM DD ☐ unknown ☐ Dead (If yes, date of death) ▶

* Is the patient: (please ask patient to assist you in answering this question)

☐ White
☐ Black (e.g. African, Haitian, Jamaican, Somali, etc.)
☐ North American Indian ☐ Métis ☐ Inuit
☐ Asian (e.g. Chinese, Japanese, Vietnamese, Cambodian, Indonesian, Laotian, Korean, Filipino, etc.)
☐ South Asian (e.g. East Indian, Pakistani, Sri Lankan, Punjabi, Bangladeshi, etc.)
☐ Arab/West Asian (e.g. Armenian, Egyptian, Iranian, Lebanese, Moroccan, etc.)
☐ Latin-American (e.g. Mexican, Central/South American, etc.)
☐ Other – includes mixed ethnicity (specify) →

What language does this person speak most often at home?

Country of birth ☐ Canada ☐ Other (specify) →

Year of arrival in Canada

City and province/territory of residence at diagnosis
City | Province/Territory | First 3 digits of Postal Code

Current city and province/territory of residence
City | Province/Territory | First 3 digits of Postal Code

SECTION II – RISK(S) ASSOCIATED WITH THE TRANSMISSION OF HIV IN THIS PATIENT

* Since January 1978 and preceding the diagnosis of HIV/AIDS, this patient had: (check ALL that apply)

Yes	No	Unknown	
☐	☐	☐	Sex with a male.
☐	☐	☐	Sex with a female.
			Heterosexual sex with: (check ALL that apply)
☐	☐	☐	• an injection drug user;
☐	☐	☐	• a bisexual male;
☐	☐	☐	• a transfusion recipient with documented HIV infection;
☐	☐	☐	• a person with hemophilia/coagulation disorder;
☐	☐	☐	• a person born in a country where heterosexual transmission predominates. If yes, specify country →
☐	☐	☐	• a person with confirmed or suspected HIV infection or AIDS (whether or not risk factor is known).
☐	☐	☐	Injected non-prescription drugs (including steroids).
☐	☐	☐	Received pooled concentrates of factor VIII or IX for treatment of hemophilia/coagulation disorder. If yes, please complete Section 1 of the Supplement to HIV/AIDS Case Report.
☐	☐	☐	Received transfusion of whole blood or blood components such as packed red cells, plasma, platelets or cryoprecipitate. If yes, please complete Section 2 of the Supplement to HIV/AIDS Case Report.
☐	☐	☐	Exposure to HIV-contaminated blood or body fluids or concentrated virus in an occupational setting. If yes, specify occupation →
☐	☐	☐	Other medical exposure (e.g. organ or tissue transplant, artificial insemination). If yes, please give details in Section VI "Additional Information or Comments".
☐	☐	☐	Non-medical, non-occupational exposure which could have been the source of the infection (e.g. acupuncture, tattoo, body piercing, breast milk). If yes, please give details of type of exposure, date and location in Section VI "Additional Information or Comments".

Since January 1978, has this patient donated blood, plasma, platelets, organs, tissues, semen or breast milk? ☐ Yes ☐ No ☐ Unknown
If yes, please give details of type of donation, date and location in Section VI "Additional Information or Comments".

Has the Red Cross or other appropriate donor program been notified? ☐ Yes ☐ No ☐ Unknown

Do you want a public health official to ensure this notification? ☐ Yes ☐ No ☐ Unknown

PHAC/NSPC 4205 E (03-2000)
Distribution: White – Medical Officer of Health Yellow – Ministry of Health Pink – PHAC

5.7 Lymphogranuloma Venereum **REPORTABLE**

ETIOLOGY

Lymphogranuloma venereum (LGV) is caused by *Chlamydia trachomatis;* serovars L1, L2, and L3. These strains invade and reproduce in regional lymph nodes.

CASE DEFINITIONS

Confirmed Case

Presence of *Chlamydia trachomatis* (*C. trachomatis*) serotype L1, L2, and L3 from genitourinary specimens confirmed by DNA sequencing or Restriction Fragment Length Polymorphism (RFLP)

Probable Case

Positive *C. trachomatis* testing (nucleic acid amplification or serology)
AND
the presence of proctitis **OR** inguinal/femoral lymphadenopathy **OR** a sexual partner with LGV.

CLINICAL FEATURES

There are three distinct stages of infection with LGV; primary, secondary and tertiary.

Primary LGV:

- Occurs 3 to 30 days after contact.
- Begins with a small (1 to 6 mm) painless papule, nodule or lesion at the site of inoculation (penis, vulva, vagina, rectum, oral cavity or cervix)
- Heals quickly and may go unnoticed in up to 50% of cases

Secondary LGV:

- Occurs within 2 to 6 weeks of the primary lesion
- Includes the development of lymphadenopathy and/or anorectal symptoms
- The first symptom of infection is painful enlargement of inguinal/femoral lymph nodes.
- Cervical lymph nodes may also be infected after oral sex.
- This lymphadenopathy is accompanied by significant systemic symptoms (low grade fever, chills, myalgias, arthralgias).
- Sinuses may drain and abscesses may occur in less than one third of cases.
- Involvement of the anorectum results in bloody, purulent or mucous discharge from the anus as well as constipation.

Tertiary LGV:

- Chronic inflammation leads to the destruction of tissue in the involved and contributes to lymphatic obstruction.
- Obstruction may cause genital elephantiasis, genital and rectal strictures and fistulae.
- This occurs in approximately 10 – 20% of untreated cases, and occurs more commonly in females.

Table 1: Clinical Features of LGV

Primary LGV	• Incubation period of 3 to 30 days • Small painless papule • Self-limited
Secondary LGV	• Within 2 to 6 weeks of primary lesion • Significant systemic symptoms • Lymphadenopathy and/or anorectal symptoms
Secondary LGV causing lymphadenopathy	• Buboes o painful inguinal/femoral lymphadenopathy o may be unilateral • Groove sign o inguinal nodes above and femoral nodes below the inguinal ligament (once considered pathognomonic for LGV). • Lymphadenopathy depending on inoculation site
Secondary LGV causing anorectal symptoms	• Acute hemorrhagic proctitis • Bloody, purulent, or mucous discharge from anus • constipation
Tertiary LGV	• 10 to 20% of untreated cases • More common in females • Chronic inflammatory lesions lead to scarring • Possible extensive destruction of genitalia

Source: Canadian Guidelines on Sexually Transmitted Diseases, 2013

DIAGNOSIS

Laboratory Tests

Diagnosis may be difficult even in the presence of symptoms as the signs and symptoms of LGV may overlap with other STIs, infections, and malignancies.

Routine tests for *C. trachomatis* may be positive in patients with LGV, but generally do not include typing to distinguish LGV serovars from non-LGV serovars. Definitive diagnosis of LGV requires serovar-specific (confirmatory) testing using DNA sequencing or restriction fragment length polymorphism (RFLP). Clinicians will therefore need to request that testing be done for LGV specifically, as most laboratories will not automatically perform serovar typing.

Where possible, suspected cases of LGV should have both swab and sera samples submitted for laboratory testing. Serology and confirmatory testing (DNA sequencing and RFLP) are available at the NML.

For confirmation on laboratory specimens, contact the NL Public Health Laboratory at (709) 777-6583 or http://publichealthlab.ca/service/chlamydia-trachomatis-neisseria-gonorrhoeae-ctng-dna/

Specimen Collection

<u>Female: Endocervical swab and vaginal swab</u>

Container/Tube: Cobas® PCR Female Swab Collection Kit

Collection Instructions:

9. 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.
10. Insert second medium swab into endocervix, rotate swab for 15 to 30 seconds to ensure adequate sampling.
11. Withdraw swab.
12. 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:

5. Patient should not have urinated for at least 1 hour prior to specimen collection.
6. 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

EPIDEMIOLOGY

Occurrence

- LGV is a relatively rare infection in industrialized countries.
- Typically acquired in endemic areas such as Africa, Asia, South America and the Caribbean where it accounts for an estimated 2–10% of genital ulcer disease.
- Since 2003, there have been cases reported among MSM populations in Belgium, France, Germany, Sweden, the United Kingdom, the United States and Canada.
- LGV is not nationally notifiable and is still considered uncommon.
- It is reportable in NL but to date there has been no reported case.

Reservoir

The only known reservoir is humans.

Incubation

The period of communicability is variable with a range of 3-30 days for a primary lesion; if a bubo lesion is the first manifestation the period of communicability is 10 to 30 days to several months.

Transmission

- LGV may enhance the transmission and acquisition of HIV, other STIs and blood-borne pathogens.
- Direct contact with open lesions of infected people during vaginal, anal or oral sexual activity.

Communicability

The period of communicability is variable from weeks to years during presence of active lesions and relapses are known to occur.

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.
- If there is a history of the client performing unprotected fellatio or being the receptive partner in unprotected sex, the rectum and pharyngeal area should be tested (i.e. swabbed).
- 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 for follow up.

Consideration for other STIs

- Obtain specimen(s) to test for HIV, syphilis, gonorrhea, HSV, and hepatitis B and C.
- Consider testing for chancroid and granuloma inguinale, if there is a history of travel to endemic regions
- Immunization against hepatitis B is recommended in non-immune individuals
- Discuss HPV vaccine with women and men

Treatment

- Antibiotics are indicated and suggested regimens are listed in Table 2.
- Incision and drainage or excision of nodes is not helpful and may delay healing
- Cases should be interviewed for history of exposure, risk assessment and sexual partner(s) identification.
- Testing for chancroid and granuloma inguinale should also be considered in individuals with lesions; that have traveled; or have a sexual partner(s) from areas endemic for these infections.
- All cases should be educated regarding infection transmission.
- Patients should be counseled about the importance of abstaining from sex until appropriate diagnosis and treatment is completed.

Table 2: Antibiotic Treatment of LGV

First Line	**Doxycycline** 100mg PO bid for 21 days
Alternative	**Erythromycin** 500mg PO qid for 21 days
Possible	**Azithromycin** 1g PO once a week for 3 weeks

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

Pediatric Cases

- Perinatal transmission is rare.
- In the event the case is in an infant, the mother and her sexual partner(s) should be examined and tested.
- Beyond the neonatal period sexual abuse must be considered and reported to CYFS as per the Children and Youth Care and Protection Act.

Management of Contacts

Definition of a Contact

- A person who has had sex and /or has had significant exposure to the case.
- All contacts during the past six months should be screened and treated.

Notification

- Partner notification will identify those at risk, reduce disease transmission/reinfection and ultimately prevent disease sequelae.
- All sexual contacts during the last 60 days, regardless of signs or symptoms, must be located, examined, tested and treated empirically.
    - Empiric treatment regimens are presented below in **Treatment of Contacts** section.
    - If tests confirm an LGV infection, re-treat as recommended for cases above.

    - Contacts should abstain from unprotected intercourse until the treatment of the case is complete.
- Notification of partners and contacts is done in a confidential manner that protects the identity of the index case, is done in collaboration with the case or may be done by the index case or by the HCP. (See guidelines around contact tracing)
- All contacts should be screened for HIV and other STIs as detailed in the **Consideration of Other STIs** section above.
- All contacts should be educated regarding 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 STIs.
- Follow-up is required for all out of province/country referrals for cases and partner(s).

Treatment of Contacts

- Sexual partners from the last 60 days prior to symptom onset or date of diagnosis if asymptomatic should be contacted, tested and treated empirically (regardless of whether signs/symptoms are present) as follows:

    - **Azithromycin** 1g PO in a single dose
      OR
    - **Doxycycline** 100 mg PO bid for 7 days

Management of Outbreaks

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

PREVENTION

Follow-up Testing

- Patients should be followed until chlamydial tests are negative (test of cure) and the patient has clinically recovered. Serology should not be used to monitor treatment response, as the duration of antibody response has not been defined.
- Test of cure should be performed at 3–4 weeks after the completion of effective treatment to avoid false-positive results due to the presence of non-viable organisms (especially if using NAAT).
- Surgery may be required to repair genital/rectal damage of tertiary LGV.

Education and Preventive Measures

- Ensure appropriate treatment of LGV for cases.
- Make STI services culturally appropriate, readily accessible acceptable, regardless of economic status
- Educate the case, sexual partners, and the public on methods of personal protective measures, in particular the correct and consistent use of condoms.
- Discuss safer sex options which include:
    - delaying onset of sexual activity,
    - developing mutually monogamous relationships,
    - reducing the numbers of sexual partners,
    - minimize anonymous or casual sexual activity,
    - sound decision making,
    - transmission and prevention of infection
    - provide information about the risk of STIs when travelling.

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) will report case/s to the attending physician, the Chief Medical Officer of Health(CMOH) and the Regional Medical Officers of Health (RMOH).
- The RMOH 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 case investigation and contact tracing.
- CDCN will collect case details in collaboration with the ICP (if necessary).
- CDCN enters the case details into the CDSS electronic reporting system and uses the CNPHI tool (if indicated) for alerts and/or outbreak summaries.

Provincial Disease Control

- Reports the aggregate case data to Public Health Agency of Canada (PHAC)
- Provides an analysis of the case/s with reports in the Quarterly Communicable
- Disease Report (CDR), which is also posted on the provincial public health website.
- Coordinates the response in cases where outbreaks across RHAs

DOCUMENTS

5.8 SYPHILIS REPORTABLE

ETIOLOGY

Syphilis is caused by the infectious agent *Treponema pallidum,* a gram-negative Spirochete.

CASE DEFINITIONS

Confirmed Case - Primary Syphilis

Laboratory confirmation of infection:

- Identification of *T. pallidum* from a chancre or a regional lymph node.
  OR
- Presence of one or more typical lesions (chancres), and reactive treponemal serology, regardless of non-treponemal test reactivity, in individuals with no previous history of syphilis.
  OR
- Presence of one or more typical lesions (chancres) and at least a 4-fold (e.g. 1:8 to1:32) increase in the titre over the last known non-treponemal test in individuals with a past history of syphilis treatment.

Confirmed Case - Secondary Syphilis

Laboratory evidence of infection:

- Identification of *T. pallidum* from a mucocutaneous lesions, condylomata lata and reactive serology (nontreponemal and treponemal).
  OR
- Presence of typical mucocutaneous lesions, alopecia, loss of eyelashes and lateral third of eyebrows, iritis, generalized lymphadenopathy, fever, malaise or splenomegaly AND
  - either a reactive serology (non-treponemal and treponemal)
    OR
  - at least a 4-fold (e.g.1:8 to 1:32) increase in titre over the last known non-treponemal test.

Confirmed Case - Early Latent Syphilis

Laboratory confirmation of infection:

- An asymptomatic patient with reactive serology (non-treponemal and treponemal) who, within the past 12 months, had one of the following:
  - Non-reactive serology
    OR
  - Symptoms suggestive of primary or secondary syphilis
    OR
  - Exposure to a sexual partner with primary, secondary or early latent syphilis.

Confirmed Case – Late Latent Syphilis

- > 1 year after infection or of unknown duration
  Laboratory confirmation of infection:
- An asymptomatic patient with persistently reactive treponemal serology (regardless of non-treponemal serology reactivity) who does not meet the criteria for early latent disease and who has not been previously treated for syphilis

Confirmed Case –Neurosyphilis

Laboratory confirmation of infection:

- reactive treponemal serology (regardless of non-treponemal serology reactivity) AND **one** of the following:
  - reactive CSF-VDRL (Venereal Disease Research Laboratory) in non-bloody cerebrospinal fluid (CSF);
  - clinical evidence of neurosyphilis AND either
    - elevated CSF leukocytes
      OR
    - elevated CSF protein in the absence of other known causes.

Confirmed Case –Tertiary Syphilis other than Neurosyphilis

Laboratory confirmation of infection:

- reactive treponemal serology (regardless of non-treponemal test reactivity)
  AND
- characteristic abnormalities of the cardiovascular system, bone, skin or other structures, in the absence of other known causes of these abnormalities)
  AND
- no clinical or laboratory evidence of neurosyphilis

Confirmed Case-Early Congenital Syphilis (within 2 years of birth)

Laboratory confirmation of infection:

- identification of *T. pallidum* from nasal discharges, skin lesions, placenta, umbilical cord or autopsy material of a neonate (up to 4 weeks of age)
  OR
- reactive serology (non-treponemal and treponemal) from venous blood (not cord blood) in an infant/child with clinical, laboratory or radiographic evidence of congenital syphilis, whose mother is without documented evidence of adequate treatment
  OR
- detection of *T. pallidum* DNA in an appropriate clinical specimen

CLINICAL FEATURES

After initial invasion, *T. pallidum* multiplies rapidly and disseminates widely through the lymphatic and systemic circulation before the clinical development of the primary lesion, called a chancre. The chancre persists through the primary and secondary stages. If untreated it is a lifelong infection.

There are three possible clinical stages of disease and latency periods can vary:

- **Primary** syphilis
- **Secondary** syphilis
- Early latent (asymptomatic) syphilis
- Late latent syphilis
- **Tertiary** syphilis
- Neurosyphilis
- Congenital syphilis

Primary Syphilis

- Primary syphilis classically presents as a single, indurated painless ulcer known as a chancre 3 weeks after exposure to an infectious lesion.
- The chancre marks the point of entry of *T. pallidum* and exudes a clear fluid containing numerous spirochetes.
- Primary syphilis may also be co-infected with herpes simplex virus.
- Painless regional lymphadenopathy is frequently present.
- Up to 30% of primary infections are asymptomatic.
- Without treatment, symptoms resolve in about in 4 – 6 weeks.
- Concurrent HIV infection may alter the appearance of lesions.

Secondary Syphilis

- There may be no clear demarcation between primary and secondary syphilis.
- A chancre is still present in as many as 1/3 patients with secondary syphilis.
- Clinical signs of secondary syphilis appear on average between 2 – 12 weeks and up to 6 months after an untreated primary stage.
- Clinical signs of secondary syphilis resolve without treatment between 2 weeks and 12 months.
- This is considered the most bacteremic stage of infection**.**
- Presentation may include a skin rash, low-grade fever, malaise, pharyngitis, alopecia, weight loss, arthralgia and painless lymphadenopathy. Enlargement of the epitrochlear lymph nodes is a unique finding in secondary syphilis.
- The rash is a symmetric maculopapular eruption present on the trunk, palms and soles but may be so faint as to go unnoticed. The rash will disappear with or without treatment.
- Mucous patches (glistening white to red patches) are seen in the mouth and other mucous membranes.
- Condyloma lata are smooth white papules or papules found on the genitals.

- All untreated cases will progress to latent syphilis.
- About 1/3 of untreated cases will progress to tertiary syphilis.
- Concurrent HIV infection may alter the appearance of lesions.

Early Latent Syphilis

- Early latent syphilis is disease that has been acquired **within the preceding year.**
- There are no signs or symptoms but without treatment the person remains infectious due to a 25% chance of relapse to the secondary stage in untreated cases in the first year after infection.
- Central nervous system (CNS) disease is most often asymptomatic but syphilitic meningitis with cranial nerve palsies and deafness may occur.

Late Latent Syphilis

- Late latent syphilis is syphilis acquired more than 1 year ago.
- Cases are asymptomatic but will have reactive treponemal serology.
- Relapse to the secondary stage is very unlikely.
- Most untreated patients remain in the latent stage for life and do not progress to tertiary syphilis.

Tertiary Syphilis other than Neurosyphilis

- Occurs 5-25 years after infection in some untreated patients
- Characterized by
    - Gummas of the skin, viscera, or musculoskeletal system
    - Cardiovascular complications

Neurosyphilis

- Occurs when there is evidence of central nervous system infection.
- Can occur at any stage of infection.
- CSF abnormalities must be present.

Congenital Syphilis

- The risk of congenital syphilis is 50% for babies born to mothers with untreated primary, secondary or early latent syphilis.
- There may be no symptoms in 2/3 of these cases.
- Some of the manifestations: that may occur are low birth weight babies, rhinitis, hepatosplenomegaly, rash, anemia, metaphyseal dystrophy, and stillbirth.
- The symptoms of early syphilis may present in the first 2 years of life.
- Initial screening should ideally be performed in the first trimester. The screening test should be repeated at 28-32 weeks and again at delivery in women at high risk of acquiring syphilis.

Table 1: Stages and clinical features of syphilis

Stage	Clinical Features	Incubation Period
Primary	Chancre, lymphadenopathy	3 weeks (3-90 days)
Secondary	Rash, fever, malaise, lymphadenopathy, mucus lesions, condyloma lata, patchy or diffuse alopecia, meningitis, headaches, uveitis, retinitis	2-12 weeks (2 weeks-6 months)
Latent	Asymptomatic	Early: <1 year Late: ≥1 year
Tertiary		
Cardiovascular	Aortic aneurysm, aortic regurgitation, coronary artery ostial stenosis	10-30 years
Neurosyphilis	Ranges from asymptomatic to symptomatic with headaches, vertigo, personality changes, dementia, ataxia, presence of Argyll Robertson pupil	< 2 years-20 years
Gumma	Tissue destruction of any organ; manifestations depend on site involved	1-46 years (most cases 15 years)
Congenital		
Early	2/3 may be asymptomatic Fulminant disseminated infection, mucocutaneous lesions, osteochondritis, anemia, neurosyphilis, hepatosplenomegaly	Onset <2 years
Late	Interstitial keratitis, lymphadenopathy, hepatosplenomegaly, bone involvement, anemia, Hutchinson's teeth, neurosyphilis	Persistence >2 years after birth

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

DIAGNOSIS

- A diagnosis is made by identifying the spirochete from fluid taken from ulcers in primary and secondary syphilis and/or by serologic testing.
- For confirmation on laboratory specimens go to the public health laboratory website www.publichealthlab.ca or call (709)-777-6583.
- The interpretation of syphilis serology should be made in conjunction with a colleague experienced in this area.
- Every attempt should be made to obtain and document prior history of treatment for syphilis and prior serologic results in order to avoid unnecessary re-treatment.

Laboratory Tests

A detailed explanation of the laboratory tests for the screening and diagnosis of previous or current infection with *T. pallidum* can found on the NL Public Health website:

http://publichealthlab.ca/service/syphilis-serology/

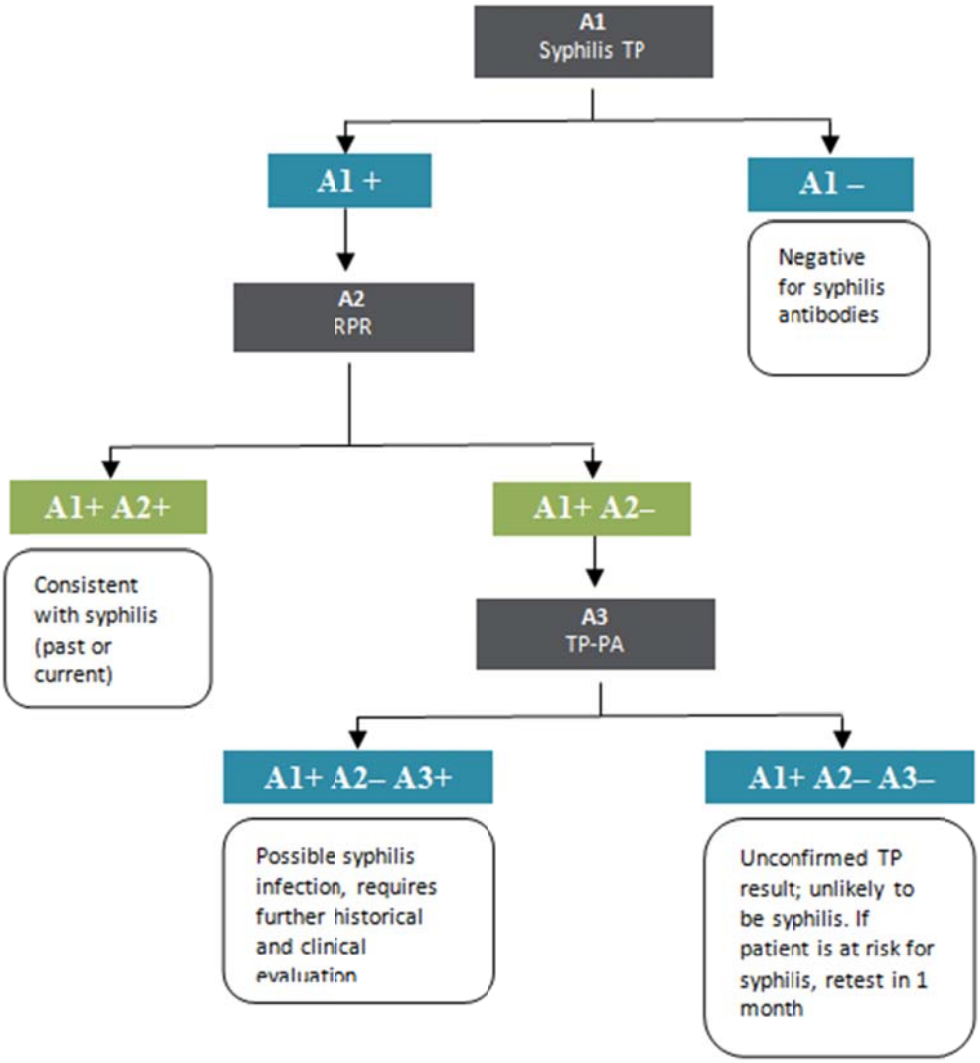
A recommended approach for the laboratory diagnosis of congenital syphilis can be found on the NL Public Health website:

http://publichealthlab.ca/wp-content/uploads/2012/10/Congenital-Syphilis-July-2012.pdf

Table 2: Serological diagnosis of syphilis

Test Type	Name	Indications	Measures
Treponemal	**Syphilis TP**: *T. pallidum*-specific antibodies	Initial screening test	• *T. pallidum*-specific antibodies • Often persist lifelong despite effective treatment
	TP-PA:*Treponema pallidum* particle agglutination	Confirmatory test	
Non-Treponemal	**RPR**: Rapid plasma reagin	Determining the stage of infection and to monitor treatment success	• Detect reagin-based antibodies produced in response to treponemal infection • Can measure titres
	VDRL: Venereal disease research laboratory		

Figure 1: Syphilis screening algorithm (source: NL Public Health Lab)



Specimen Collection

- Serology
  - Suitable specimens are individual human serum samples obtained by standard laboratory techniques.
- Blood
  - Container/Tube: Serum separator (SST)
  - Specimen Volume: 5 mL of whole blood
  - Separate serum within 6 hours and store at 2-8°C and transport on ice packs within 7 days.
  - Specimen Minimum Volume= 0.3 mL

Table 3: Transport Temperature

Specimen	Room temperature	Refrigerated	Frozen
Serum	NO	YES. The samples should be stored for not more than 7 days at 2-8°C.	YES. For longer delay, freeze at -70°C or below and transport on dry ice.

Source: NL Public Health Laboratory

Interpretation of Results

Table 4: Interpretation of results

Syphilis TP	RPR	TP-PA	Interpretation
NONREACTIVE	NP	NP	**NEGATIVE**. No syphilis or incubating syphilis.
REACTIVE	REACTIVE (any titre)	NP	Confirmed **POSITIVE**. Syphilis, yaws, or pinta, OR Lyme disease.
REACTIVE	NONREACTIVE	REACTIVE	Confirmed **POSITIVE**. Primary or latent syphilis; previously treated or untreated syphilis; yaws or pinta, or Lyme disease
REACTIVE	NONREACTIVE	NONREACTIVE	**NEGATIVE**. Biological false+ve TP result, or Lyme disease.

			Serology typically repeated 2-4 weeks after initial test.

Source: NL Public Health Laboratory

EPIDEMIOLOGY

Occurrence

- This disease is found worldwide. Co-infection with other STI, including HIV is common.
- Infectious syphilis (primary, secondary and early latent stages) is the least common of the nationally reportable bacterial STIs.
- Syphilis was rare in the nineties but started to increase in the early 2000's. Since that time there have been outbreaks across Canada, mainly affecting the men who have sex with men (MSM) population.
- Eastern Health declared a syphilis outbreak in October 2014.
- From January 2014 to December 31, 2015, there were 56 infectious syphilis cases (including 5 neurosyphilis cases) and 7 non-infectious cases.
- 91% of infectious cases are men who have sex with men.

Reservoir

- Humans

Incubation

- 10 days to 3 months in primary syphilis, but usually 3 weeks.

Transmission

- Approximately 90% of all syphilis is sexually transmitted. Exposure mainly occurs during oral, anal, or vaginal intercourse.
- Transmission of syphilis occurs by direct contact with infectious exudates from moist lesions of the skin and/or mucous membranes of those who are infected.
- Transmission may also occur from the following routes:
    - Trans-placental infection of the fetus during pregnancy
    - Blood transfusions if the donor is in the early stages of disease
    - Through lesions on the hands of health care workers
    - Touching children with early congenital disease
- Previous infection with syphilis does not induce long–term immunity; reinfection is possible.

Communicability

- The period of communicability for syphilis is variable and can depend on the stage of the infection.
- Syphilis is infectious while the moist lesions of primary and secondary disease are present. It is also infectious during the early latent stage, and also in muco-cutaneous recurrences.
- Congenital transmission is most likely during primary and secondary maternal syphilis.

CONTROL MEASURES

Management of Cases

Investigations

- The diagnosis of syphilis depends on a combination of epidemiologic history, signs and symptoms and past history of syphilis and/or treatment for syphilis.
- The interpretation of serology should be made in conjunction with the MOH and or a specialist experienced in this field.
- All case files should be reviewed to ensure accurate staging and treatment
    - Testing for syphilis should not occur in isolation, offer other STI screening (chlamydia, gonorrhea, HIV, hepatitis).
    - 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

- Treatment is dependent on the stage of the disease and if person is HIV positive.
- Persons known to be infected with syphilis (especially infectious cases) should receive appropriate treatment as quickly as possible.
- Antibiotic treatment is recommended according to the physician/MOH. See Table 5 below.
- Cases and their sexual partners should be counseled in the importance of abstaining from sex while clinical disease is present and until adequate treatment has been administered.
- Repeat testing: see **Follow-up Testing** below.

Treatment of Special Populations

HIV Co-Infection

- Due to the complexity of treatment, patients with HIV co-infection should be co-managed with an ID specialist.

Pediatric Cases

- Neonates should be co-managed with an ID specialist
- Neonates born to untreated, infected mothers must be tested and treated.
- If the case is an infant, the mother and her sexual partner(s) should be located, examined and tested.
- Congenital syphilis can result in significant health problems for the infant.
- If case is < 14 years of age sexual abuse must be considered and reported to Child Youth and Family Services as per the Children and Youth Care and Protection Act.

Pregnant Women

- All pregnant patients with infectious syphilis should be managed in conjunction with an ID specialist.
- For pregnant women with reactive syphilis serology and infants born to mothers with reactive serology, follow up will depend on maternal and neonatal history; advice should be sought from ID specialist.
- With documentation of adequate treatment in the past, patients need not be retreated, unless there is clinical or serological evidence of re-infection or treatment failure.
- Previously treated cases should be retested in pregnancy to rule out relapse or treatment failure.
- If the mother is > 20 weeks gestation, a detailed fetal ultrasound should be performed and she should be managed together with a maternal-fetal medicine specialist.
- Antibiotic treatment is recommended according to ID specialist recommendations.
- Treatment of infectious syphilis in pregnancy may precipitate a Jarisch Herxheimer reaction which may cause fetal distress or premature labour; all patients > 20 weeks gestation should undergo fetal monitoring for 12 – 24 hours after administration of benzathine penicillin.

Table 5: Treatment of syphilis in adults

Stage	Preferred Treatment	Alternative Treatment
All **non-pregnant** adults • Primary • Secondary • Early latent	**Benzathine penicillin G** 2.4 million units IM as a single dose*	**Doxycycline** 100 mg PO bid for 14 days
All **non-pregnant** adults • Late latent syphilis • Latent syphilis of unknown duration • Tertiary syphilis not involving the central nervous system	**Benzathine penicillin G** 2.4 million units IM weekly for 3 doses	Consider penicillin desensitization **Doxycycline** 100 mg PO bid for 28 days
All adults Neurosyphilis	**Penicillin G** 3-4 million units IV q 4 h (16-24 million units/day) for 10 -14 days	Strongly consider penicillin desensitization followed by penicillin treatment **Ceftriaxone** 2 g IV/IM daily x 10-14 days
Treatment of sexual contacts in the preceding 90 days to primary, secondary and early latent syphilis	**Benzathine penicillin G** 2.4 million units IM as a single dose	N/A
Pregnant women • Primary • Secondary • Early latent (< 1 year duration)	**Benzathine penicillin G** 2.4 million units IM weekly for 1-2 doses	There is no satisfactory alternative to penicillin for the treatment of syphilis in pregnancy Strongly consider penicillin desensitization followed by penicillin treatment
Pregnant women • Late latent syphilis • Latent syphilis of unknown duration • Cardiovascular syphilis and other tertiary syphilis not involving the central	**Benzathine penicillin G** 2.4 million units IM weekly for 3 doses	There is no satisfactory alternative to penicillin for the treatment of syphilis in pregnancy Strongly consider penicillin desensitization followed by treatment with penicillin

nervous system		

* Some experts recommend 3 weekly doses (total of 7.2 million units) of benzathine penicillin G in HIV-infected individuals.

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

Follow-up Testing

Table 6: Follow-up testing for non-pregnant adult syphilis cases

Primary, secondary, early latent	1, 3, 6, 12 months after treatment
Late latent, tertiary (EXCEPT NEUROSYPHILIS)	12 and 24 months after treatment
Neurosyphilis	6, 12 and 24 months after treatment. Patients with CSF abnormalities require follow up CSF at 6 monthly intervals until normalization of CSF parameters. Other clinical follow up may be indicated on a case by case basis.
HIV-infected (any stage)	1, 3, 6, 12 and 24 months after treatment and yearly thereafter

Source: Canadian Guidelines on Sexually Transmitted Infections, 2013

Follow-up testing

- For infectious syphilis (primary, secondary and early latent), repeat syphilis serology (RPR) should be obtained at 1, 3, 6, and 12 months following treatment.
- For HIV co-infection, syphilis serology should be repeated at 1, 3, 6, 12, and 24 months post-treatment.
- For late latent syphilis, syphilis serology (RPR) need not be repeated until 12 months post therapy.

- Repeat testing is not required if the baseline or follow-up NTT (RPR) is non-reactive or becomes non-reactive during follow up, but may be considered in HIV-infected individuals or in recent exposures to syphilis (e.g., early primary syphilis).
- Repeat HIV testing should be done in all primary syphilis cases since syphilis increases the risk of acquisition of HIV. HIV testing should be done at 1 and 3 months.

Management of Contacts

Definition of contact

- A person who has had sex, or has had some relevant exposure to the case.

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. Is done in collaboration with the case, may be done by the index case or by the attending HCP.
- 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 to develop 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 done in collaboration with provincial office.

Primary Syphilis

- All contacts in the last three months, regardless of symptoms or signs, must be located, examined, tested and treated. It may be necessary to extend this time period until a sexual contact is identified.
- Named contacts should be treated prophylactically.
- If the contact refuses treatment, repeat serology monthly until three months has elapsed since last sexual contact with infected individual.
- Sexual partners must be treated at the same time to prevent re-infection.

Secondary and Early Latent Syphilis

- All contacts of secondary syphilis in the last six months and early latent syphilis in the last 12 months regardless of symptoms or signs, must be located, examined, tested and treated if applicable.
- It may be necessary to extend the traceback period until a sexual contact is identified.
- All individuals with contact within the preceding three months should be treated prophylactically.
- If the contact refuses treatment repeat serology monthly until three months has elapsed since last sexual contact with infected individual.

Late Latent Syphilis

- When appropriate, a serologic test for syphilis should be performed on long-term sexual partners.
- Children born to females with late latent syphilis should be tested, regardless

of current age of child, based in estimated duration of infection in mother.

Presumptive

- Persons who are treated as contacts to confirmed infectious syphilis should not be interviewed for contacts until it has been confirmed that they also have infectious syphilis.

Management of Outbreaks

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

PREVENTION

Screening

In the following circumstances, consider testing the following individuals with risk factors for syphilis:

- Sexual contact with syphilis infected person(s)
- MSM
- 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).
- All sexually active persons under 25 years of age.
- All pregnant women (at first prenatal visit; re-screen all who are positive at first screen and those at high risk in third trimester).
- Any women delivering a stillborn infant at ≥ 20 weeks gestation should be screened for syphilis.
- No newborn should be discharged from hospital prior to confirmation that either the mother or newborn has had syphilis serology undertaken during pregnancy or at the time of labor or delivery.
- Infants presenting with signs or symptoms compatible with early congenital syphilis should be tested for syphilis.
- Survivors of sexual assault.

Education

- Ensure appropriate treatment of syphilis for cases.
- Interview case, identify and ensure appropriate treatment of syphilis for sexual partner(s).
- Include information about risk for STI during pre-travel health counseling.
- Educate the case, sexual partners and the public about symptoms, transmission and prevention of infection including:

- Personal protective measures, in particular the correct and consistent use of condoms,
- delaying onset of sexual activity,
- developing mutually monogamous relationships,
- reducing the numbers of sexual partners,
- minimize anonymous or casual sexual activity,
- sound decision making,
- provide STI services that are culturally appropriate, accessible and acceptable,
- provide information about risk of STIs when traveling.

REPORTING

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 (ICPs), 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).
- Coordinates the response, if an outbreak occurs across RHAs.

DOCUMENTS

1. Checklist for syphilis case management by CDCN
2. Checklist for management of syphilis contact by CDCN
3. STI treatment/contact tracing form
4. Syphilis case report form
5. Algorithm for laboratory diagnosis of congenital syphilis. http://publichealthlab.ca/wp-content/uploads/2012/10/Congenital-Syphilis-July-2012.pdf
6. NL Public Health Laboratory requisition for STI testing

Reference:

Canadian Guidelines on Sexually Transmitted Infections. Section 5 - Management and Treatment of Specific Infections: Syphilis. http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/section-5-10-eng.php#table-2

Checklist for Management of New Syphilis Cases by CDCN

1. Scan and email a copy of laboratory report to the CDCN responsible for syphilis to initiate follow-up.
2. Confirm contact information for the case.
3. Enter the case in to the CDC system or update the CDC system.
4. Contact the MOH to discuss treatment requirements.
5. Contact the ordering physician to discuss the following:
    a. If there was a prior diagnosis of syphilis.
    b. The date and province where a prior diagnosis was made.
    c. The specific medications that were prescribed in the past.
    d. Treatment can be arranged through CDC free of charge.
    e. A signed Medical Order for Treatment must be faxed to the CDCN.
    f. Once the physician has contacted the patient, notify the CDCN.
    g. That the physician will receive a letter indicating when treatment was completed and when repeat serology is recommended.
6. The CDCN will contact the client to discuss:
    a. An appointment time for treatment
    b. The contact tracing interview will be conducted at the same appointment.
7. At the clinic visit:
    a. Use the syphilis case report form to obtain information on the case and contacts
    b. Offer testing for other STBBIs
        i. Chlamydia/gonorrhea
        ii. HIV
        iii. Hepatitis B
        iv. Hepatitis C
    c. Offer hepatitis A/B vaccination as appropriate (outlined in NL Immunization manual).
    d. Discuss treatment for syphilis
        i. Specific medication (s)
        ii. Side effects
    e. Discuss follow up appointments for:
        i. Repeat serology at 1, 3, 6, 12 months post treatment
        ii. Plus an additional visit at 24 months if HIV +

    f. Interview case about contacts
        i. Consult with MOH regarding how far back in time to trace
8. Referral to ID (in consultation with MOH)
9. For any identified contacts residing out of province, provide the name and information to the DHCS CDC Nurse Specialist for follow up.

Checklist for management of syphilis contact by CDCN

1. Once the contact list is generated, review each contact to determine if prior testing or treatment for syphilis was undertaken.
2. Arrange testing of contacts via family doctor, community NP or sexual health clinic.
3. At the clinic visit:
    a. Use the Syphilis Case Report form.
    b. Screen for syphilis
    c. Rebook the client for one week to review results.
4. Discuss with MOH regarding need for empiric treatment.
5. At the one week follow up visit, discuss results and need for retesting in 3 months if initial result negative.
6. If unable to connect with contact after three phone attempts, send a registered letter if street address is known. If still unable to connect, close the case as “lost to follow up.”
7. Once all contacts have been followed up, close the file by changing status in CDC case log from “in progress” to “completed” or “completed-treated.” File hard copy information.