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***Unless otherwise stated the content of this guideline has been adapted from
BCCDC Communicable Disease Control Management of Specific Diseases: Hepatitis C July 2013***

1.0 AUTHORITY

Yukon Public Health and Safety Act (2009). Available at http://www.hss.gov.yk.ca/ifo_professionals.php.

2.0 GOALS

To provide Yukon health care providers with information to assist them to:

- Prevent transmission of hepatitis C (HCV) infection
- Prevent newly identified HCV cases from acquiring co-infections (e.g. HIV)
- Provide education and counselling to individuals infected with HCV and their contacts
- Reduce harms associated with illicit drug use by connecting individuals with HCV who inject, snort or inhale drugs with harm reduction, prevention and support resources (e.g. distribution sites for harm reduction supplies, detoxification, methadone treatment, mental health and substance use services, outreach programs)
- Reduce the risk of co-infection with hepatitis A/B through immunization of eligible clients.
- Increase engagement in care and access to HCV treatment
- Identify cases of HCV vertical transmission in infants born to mothers who have hepatitis C infection

3.0 CLINICAL DESCRIPTION

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. Types 1a and 1b are the most common in North America. Although the predominant genotype in Canada is 1, all types have been reported. Genotypes vary in pathogenicity and in how they respond to antiviral therapy (Alberta Health, 2013).

Most people with acute hepatitis C infection feel well and are asymptomatic. Others (5%-15%) may have a brief illness with flu-like symptoms 6 to 12 weeks after becoming infected with the virus. In acute infections, symptoms may include fever, tiredness, vague abdominal discomfort, loss of appetite and nausea. Jaundice and dark-coloured urine occur in about 10%. Cases with acute illness may also have elevated serum ALT.

Approximately 75% of cases become chronic. Many people will continue to be asymptomatic while others may experience long-term health concerns that are non-specific such as tiredness, lethargy or digestive problems. Over the span of 20 years, 10%-20% will develop cirrhosis. HCV is a leading cause of cirrhosis and end stage liver disease, an important cause of hepatocellular carcinoma, and is the most common reason for liver transplantation. Cirrhosis is a condition that results from permanent damage or scarring of the liver. It is the end stage of many different forms of liver disease and can cause a number of other health problems, including variceal bleeding, ascites and hepatic encephalopathy. Approximately 1%-5% of patients with cirrhosis will develop hepatocellular carcinoma within two decades.

Factors that accelerate severe liver disease include alcohol consumption (>2-3 drinks per day), older age at the time of infection (> 40 years old), male gender, obesity, co-infection with HIV or HBV and superinfection with HAV (Vento et al., 1998; Alberti, Chemello, & Benvegna, 1999).

Individuals who are chronically infected with HCV have an increased risk of developing fulminant hepatitis if they acquire hepatitis A. Fulminant hepatitis is a severe and rapidly progressive form of acute hepatitis accompanied by hepatocellular death and hepatic failure. The condition is life-threatening.

4.0 EPIDEMIOLOGY

After the discovery of hepatitis A in 1973 (Feinstone, Kapikian, & Purcell, 1973) and hepatitis B in 1963 (Blumber, Alter & Visnich, 1965), it became clear that many cases of hepatitis that occurred following blood transfusions were due to neither hepatitis A nor hepatitis B. By the mid-1970's, the term "non-A, non-B hepatitis" was used to refer to the virus presumed responsible for these infections. In 1989 the virus was identified and renamed hepatitis C (Choo et al., 1989; Kuo et al., 1989). As a result of this discovery and subsequent work to detect infection, Canadian Blood Services implemented anti-HCV screening of all blood donors in 1990 and NAAT (nucleic acid amplification testing) in October 1999 (Canadian Blood Services).

The World Health Organization (WHO) estimates that 2%-3% of the world's population is infected with the hepatitis C virus (HCV). North America and Western Europe have the lowest HCV prevalence, while Africa and Eastern Europe have the highest, mainly due to hospital-associated transmission (Hepatitis C in Canada: 2005-2010 Surveillance Report).

In Canada, an estimated 242,500 Canadians have been infected with hepatitis C as of December 2007 (approximately 0.7% of the Canadian population), with an estimated 7,900 individuals newly infected in 2007, mostly through injection drug use. Injection drug use is the major source of new infections and is likely responsible for most prevalent infections (Remis, 2007). Prevention strategies need to be targeted at people who are just beginning to inject drugs or contemplating injection. Research has shown that more than half of those new injection drug users become positive for HCV within 6 to 12 months (NIH, 1997).

Yukon has one of the highest rates of HCV in Canada, with incidence rates more than twice the national average. Yukon's incidence of HCV between 2006 and 2011 was on average 2.7 times higher than Canada's; 91.5 cases per 100,000 population, compared to 33.7 cases per 100,000 population nationally for the same time period. However, Yukon's incidence of HCV has decreased by 62.8% between 2006 and 2013. Importantly, all cases of HCV reported in Yukon between 2006 and 2013 were chronic HCV infections; there were no acute HCV cases during this time. The majority of new HCV diagnoses are occurring in those 40-59 years of age, with males disproportionately represented. The main risk factor is injection drug use (IDU), but for many newly diagnosed individuals this infection and the related risk behaviour occurred in the distant past. Therefore, it is important for clinicians to identify individuals currently engaging in IDU as well as those ever engaging in this behaviour in the past (YCDC, 2014).

There is no vaccine to prevent HCV infection. Current treatment for HCV can cure infection in up to 90% of

cases (40-90%). Efficacy is dependent on the HCV genotype, with persons responding best to current treatment in the following order: 1>2 > 3 > 4, with efficacy in genotypes 5 & 6 not yet known. Treatment uptake is expected to increase as new, more effective & easier to tolerate treatments with higher cure rates become available (verbal communication, Dr B Romanowski, May 10, 2016).

HIV has a significant impact on HCV infection. Co-infected individuals with a high degree of immunosuppression have a greater risk of fibrosis and death compared to those with a lower degree of immunosuppression. Co-infected individuals with cirrhosis also progress to hepatocellular carcinoma quicker and at a much younger age than HCV mono-infected individuals (Jones, Dunning, & Nelson, 2005).

5.0 TRANSMISSION

Hepatitis C virus is mainly spread by parenteral exposure to HCV-infected blood (Thomas, Ray, & Lemon, 2007). Estimates suggest that 54% to 70% of HCV infections in Canada are related to injection drug use (Remis, 2007). Sharing equipment for snorting and smoking illicit drugs (e.g. crack pipes, straws, etc.) has also been associated with HCV transmission (PHAC, 2008). Transmission of HCV may also occur with other activities involving percutaneous exposure such as tattooing, piercing, electrolysis and acupuncture in unsterile and/or unregulated premises (Canadian AIDS Society, 2004; Jafari, Copes, Baharlou, Etminan, & Buxton, 2010).

See [Appendix A](#) for a summary of activities and associated level of transmission risk.

Some other general principles are outlined below.

Sexual transmission is uncommon in long-term monogamous relationships (Vandelli et al., 2004)). Sexual transmission risks increase with high-risk sexual behavior and co-infection with HIV and other STIs that cause sores or lesions (e.g. herpes, LGV). Having multiple sexual partners and engaging in traumatic or rough sex that may cause mucosal tearing (e.g. anal intercourse, sex toys and fisting), increases the risk of acquiring HCV. Unprotected vaginal sex during menstruation carries a theoretical transmission risk.

The risk of vertical transmission is about 6% for infants born to HCV positive mothers (Zanetti et al., 1998; Granovsky et al., 1998). There is limited understanding of the mechanisms of HCV vertical transmission and it may occur intrauterine, peri-partum and/or post-partum. Risk factors associated with vertical transmission (from chronic HCV-infected mothers to their infants) include:

- high maternal HCV RNA titres (i.e. 10^6 copies/mL or higher)
- mother has clinical symptoms and/or signs of acute hepatitis
- mother is co-infected with HIV; the risk increases approximately 3 fold with HIV co-infection

There is a theoretical but unproven risk of HCV transmission to an infant via breastfeeding. Unless mothers are co-infected with HIV, a HCV infected mother should be advised to breastfeed (Boucher & Gruslin, 2000; Canadian Paediatric Society, 2006 & 2008; Mohrbacher & Stock, 2003). If the nipples become cracked or bleed, mothers should abstain from breastfeeding until they are healed (expert

recommendation, 2015 02 25).

Transmission through household exposure has been reported through sharing personal hygiene equipment such as toothbrushes, nail scissors and clippers, and razors (Canadian AIDS Society, 2004).

HCV is not transmitted efficiently through occupational exposures to blood. The average incidence of HCV sero-conversion after percutaneous exposure from an HCV positive source is 1.8% (range is 0 to 7%) (CDC, 2001).

There is no evidence that HCV is spread by coughing, sneezing, hugging, kissing, using the same dishes or cutlery, swimming in a chlorinated pool when a case has cuts or scrapes or when menstruating, being bitten or stung by an insect which then bites or stings someone else or skin contact by others with the body fluids of a case that are not exposed to blood (such as saliva, urine, feces or vomit) (NIH, 2002).

6.0 RECOMMENDATIONS FOR SCREENING

It is recommended that the consideration and discussion of hepatitis C virus testing be made a component of routine medical care.

The incubation period of HCV infection (reactive anti-HCV) ranges from 14 days to 6 months, commonly 6-9 weeks. Current laboratory testing, anti-HCV can be detected in 80% of patients 15 weeks after exposure and more than 97% of patients 6 months after exposure. It is important to note that if there are ongoing risks, there is no need to test more frequently than intervals of 3-6 months after their last potential exposure and this should be coupled with HIV screening. Encouragement, support, and community referrals to modify risk behavior should be provided as appropriate (Alberta Health, 2013).

Screening should be offered to:

Highest priority

- current or past injection drug use, with or without sharing of equipment.

Medium priority

- snorting cocaine, with or without sharing of equipment, or other intranasal (snorting) and inhalation drug use
- sharing sharp instruments/personal hygiene equipment with an HCV positive person
 - razors, scissors, nail clippers, toothbrush
- higher risk sexual behavior (e.g., infection with HIV, history of or current infection with hepatitis B and /or other sexually transmitted infections, sexual practices that may traumatize the mucosa, and multiple sex partners)
- having received a blood transfusion, blood products, or organ transplant before 1992

Other priority groups

- tattooing or body piercing, where basic infection control practices are not used

- as a part of an incident where blood and body fluid exposure has occurred, including a needlestick injury
- having received medical or dental care where basic infection control practices were not followed
- having resided or received health services in countries where HCV is common (>3%: Central, East and South Asia; Australasia and Oceania; Eastern Europe; Sub-Saharan Africa; and North Africa/Middle East)
- having ever been on chronic (long-term) hemodialysis
- being born to a mother who was HCV positive (rare)

Outreach to specific at risk populations including homeless and incarcerated are recommended to assess for the presence of behavior that place these individuals at risk for HCV infection. Inclusion in one of these groups is not a risk factor in and of itself however it represents a subgroup who may be engaging or have engaged in higher risk behaviours where HCV infection may have occurred, e.g., receiving a tattoo in a prison settings or sharing drug paraphernalia in the homeless population.

7.0 CASE DEFINITIONS

Note: There is no serological marker for acute infection. The terms acute, chronic and resolved HCV are defined within the limits of laboratory testing results.

Hepatitis C Case Definitions

Acute Case (Adults, adolescents, and children > 18 months)

Case Definition ¹		Reportable to YCDC
Confirmed Case	Documented seroconversion within the past 12 months (i.e. Detection of hepatitis C virus antibodies (anti-HCV) in a person with a documented anti-HCV negative test within the preceding 12 months) OR Detection of 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) greater than 2.5 times the upper normal limit	Yes

Chronic or Resolved (Adults, adolescents, and children > 18 months)

Case Definition ¹		Reportable to YCDC
Confirmed Case	Anti-HCV reactivity but cannot ascertain when seroconversion occurred. Detection of hepatitis C virus antibodies (anti-HCV) OR Detection of hepatitis C virus RNA (HCV RNA)	Yes

Chronic or Resolved (Infants 6 weeks - 18 months of age)

Case Definition ¹		Reportable to YCDC
Confirmed Case	Detection of HCV RNA at ≥ 6 weeks of age OR Detection of anti-HCV at 18 months of age	Yes

¹Public Health Association of Canada. Hepatitis C Case Definitions for Communicable Diseases Under National Surveillance – approved August 2011 but still awaiting approval to be published online. Verbal discussion with PHAC May 2015.

8.0 DEFINITIONS

8.1 Contact

A contact includes any individual who has had a percutaneous or permucosal exposure to the blood or blood products of an HCV-infected person.

For the infective potential of various body fluids, refer to Yukon Blood and Body Fluid Exposure Management, available online at http://www.hss.gov.yk.ca/health_professionals_guidelines.php

8.2 Types of Exposure

Per mucosal Exposure

Contact of the mucous membrane lining body cavities of eyes, nose, mouth, vagina, rectum or urethra with blood or body fluids of a HCV- infected person.

Percutaneous Exposure

Contact through the skin with blood of a HCV-infected person, for example, through needlestick or other sharps injury, tattooing, body piercing, electrolysis, or acupuncture

Non-intact skin exposure: blood or body fluid of a HCV-infected person comes in contact with a wound <3 days old, or with skin having compromised integrity (e.g., dermatitis, abrasions, fresh cutaneous scratches, burns, or other lesions)

Perinatal Exposure

Infection of an infant at birth from a HCV-infected mother. The likelihood of transmission of infection to the infant is dependent on the viral load of the mother; the risk increases if the viral load is greater than 10^6 genome copies/mL as determined by a quantitative HCV RNA test. Co-infection with HIV in the mother may increase the odds of transmission to the infant by approximately 3 fold (Polis, Shah, Johnson, & Gupta, 2007).

8.3 Period of Communicability

All persons who are anti-HCV reactive are considered infectious unless resolved infection has been documented.

8.4 Resolved Infection

HCV infections may resolve either spontaneously (usually within 6 months of infection) or following a course of antiviral therapy resulting in a sustained virologic response (SVR) indicating the patient has cleared the virus.

A sustained virologic response (SVR) to treatment is defined as having no detectable HCV RNA in plasma or serum three to four months after completion of treatment.

Individuals with resolved infection (either spontaneous or following treatment) remain anti-HCV reactive but no longer have detectable HCV RNA. Resolved infection is confirmed after 2 consecutive negative HCV RNA tests (to rule out a false negative).

8.5 Seroconversion

An immune response characterized by a change from the absence of HCV antibodies (anti-HCV non-reactive) to the presence of HCV antibodies (anti-HCV reactive) at any time.

9.0 LABORATORY INFORMATION

In Yukon, samples for HCV serology are submitted to WGH Laboratory for shipping to Public Health Microbiology & Reference Laboratory (PHSA) BC Centre for Disease Control for processing. PHSA Laboratories Serology Screening Requisition form needs to accompany any blood samples for Hepatitis C screening. PHSA Virology Requisition is needed for HCV RNA. Ensure all information required on the form is complete including the pertinent history and specific serological panel.

9.1 Significance of Serological Markers

Anti-HCV (Hepatitis C virus antibody test) determines if anti-HCV is present in serum. HCV antibodies are produced when an individual is exposed to HCV and usually remains present for life. Anti-HCV becomes detectable 14 days to 6 months after exposure, commonly 6-9 weeks. The anti-HCV test confirms the individual has been infected at some time. Nucleic Acid Amplification Testing (NAAT) is required to confirm if the infection is active.

HCV RNA, also known as a qualitative PCR, is a NAAT (also known as nucleic acid testing NAT), used to determine active infection by detecting hepatitis C RNA (i.e. the virus' genetic material). HCV RNA becomes detectable at 1-3 weeks post exposure.

Quantitative HCV, also known as viral load testing, is a NAAT that measures the amount of HCV RNA in the blood and is ordered to assess client response to HCV treatment. This test does not determine the severity of liver damage.

Note: When a HCV RNA (PCR) is ordered, the PHSA BCCDC Laboratory automatically gives a quantitative HCV result.

HCV Genotype can be determined by genetic sequencing of the viral RNA. Six major genotypes have been identified. Genotype 1 is the most common in Canada (present in approximately 2/3 of cases). Genotypes 2 and 3 make up the majority of the remaining infections. Knowing the individual's genotype mandates the nature and duration of treatment.

9.2 Laboratory Testing

HCV Testing

All persons who are anti-HCV reactive are considered infectious unless there is documented evidence of a resolved infection. While approximately 25% of HCV infected individuals resolve their infection without treatment, most HCV infections become chronic. To distinguish active from resolved infection, individuals who test anti-HCV reactive require HCV RNA testing. The PHSA Laboratory uses a quantitative HCV RNA test for diagnosis which has a lower limit of detection of 15 IU/ml.

HCV genotyping is routinely performed when treatment is considered.

Reflex Testing

The PHSA Laboratory may perform hepatitis A and B immune status testing on the first reactive (or weakly reactive) anti-HCV result (if not previously performed). Sera are tested for anti-HAV Total and anti-

HBs. Further testing for HBsAg and anti-HBc (total) is performed for sera non-reactive for anti-HBs. Based on the results, recommendations can be made on the appropriate vaccines to administer.

If HAV and HBV results are not available on a laboratory report for a reactive (or weakly reactive) anti-HCV result, then a health care provider can call the laboratory and request HAV and HBV testing within 7 days of the laboratory receiving the HCV sample. PHSA Client Services: 1-877-747-2522.

9.3 Interpretation of Test Results HCV Antibody Test Results

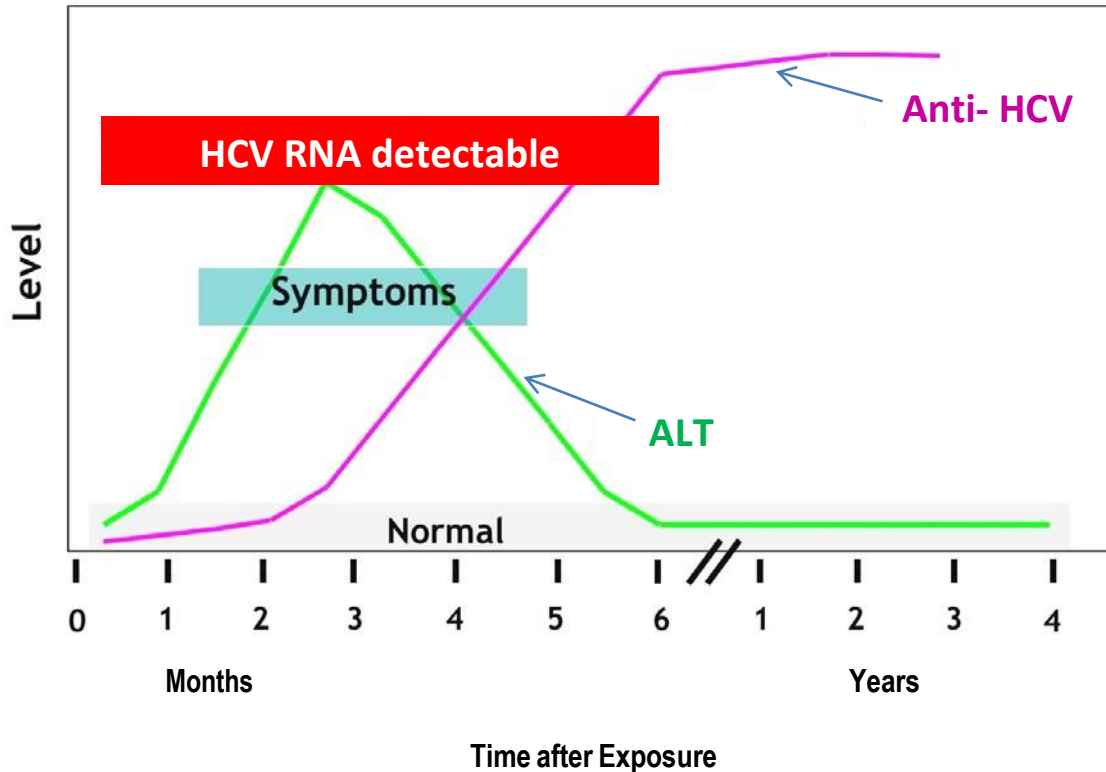
Test Name	Primary HCV Antibody Assay	Confirmatory HCV Antibody Assay	Interpretation
Anti-HCV Reactive	EIA test is reactive	EIA test is reactive	<ul style="list-style-type: none"> Person has antibodies to HCV and therefore has been exposed to hepatitis C at some point in their life Reactive result does not indicate active infection or immunity Antibodies usually persist for life
Anti-HCV Non-reactive	EIA test is negative	N/A	<ul style="list-style-type: none"> HCV infection is ruled out in most immunocompetent persons. No further testing is required. It is possible the test was performed before this marker became detectable. If the person has high risk behaviours, consider a repeat anti-HCV test in 1-2 months or 6 months post exposure (if known). In an immunocompromised person, the anti-HCV response may be blunted and confirmatory HCV RNA testing may still be required.
Anti-HCV Equivocal	EIA test is reactive	EIA test is non-reactive	<ul style="list-style-type: none"> Equivocal results require follow up testing after several weeks and usually require a HCV RNA test to determine if active infection exists. Equivocal results usually indicate a false positive although this is uncommon.
Anti-HCV Weakly Reactive	Either of the EIA tests are below the threshold of reactivity but in the grey zone above non-reactivity		<ul style="list-style-type: none"> Similar to equivocal results, weakly reactive results require follow up testing after several weeks and usually require a HCV RNA test to determine if active infection exists.

HCV RNA Test Results (Also known as qualitative/quantitative PCR, RNA)

HCV RNA Test Result	Interpretation
HCV RNA is detected	<ul style="list-style-type: none"> Indicates active infection with HCV (i.e., the virus is actively replicating).
HCV RNA not detected	<ul style="list-style-type: none"> No evidence of active infection. The infection has resolved either spontaneously or as a result of therapy. Re-infection can occur if the client has on-going risk factors.

9.4 HCV Testing Window

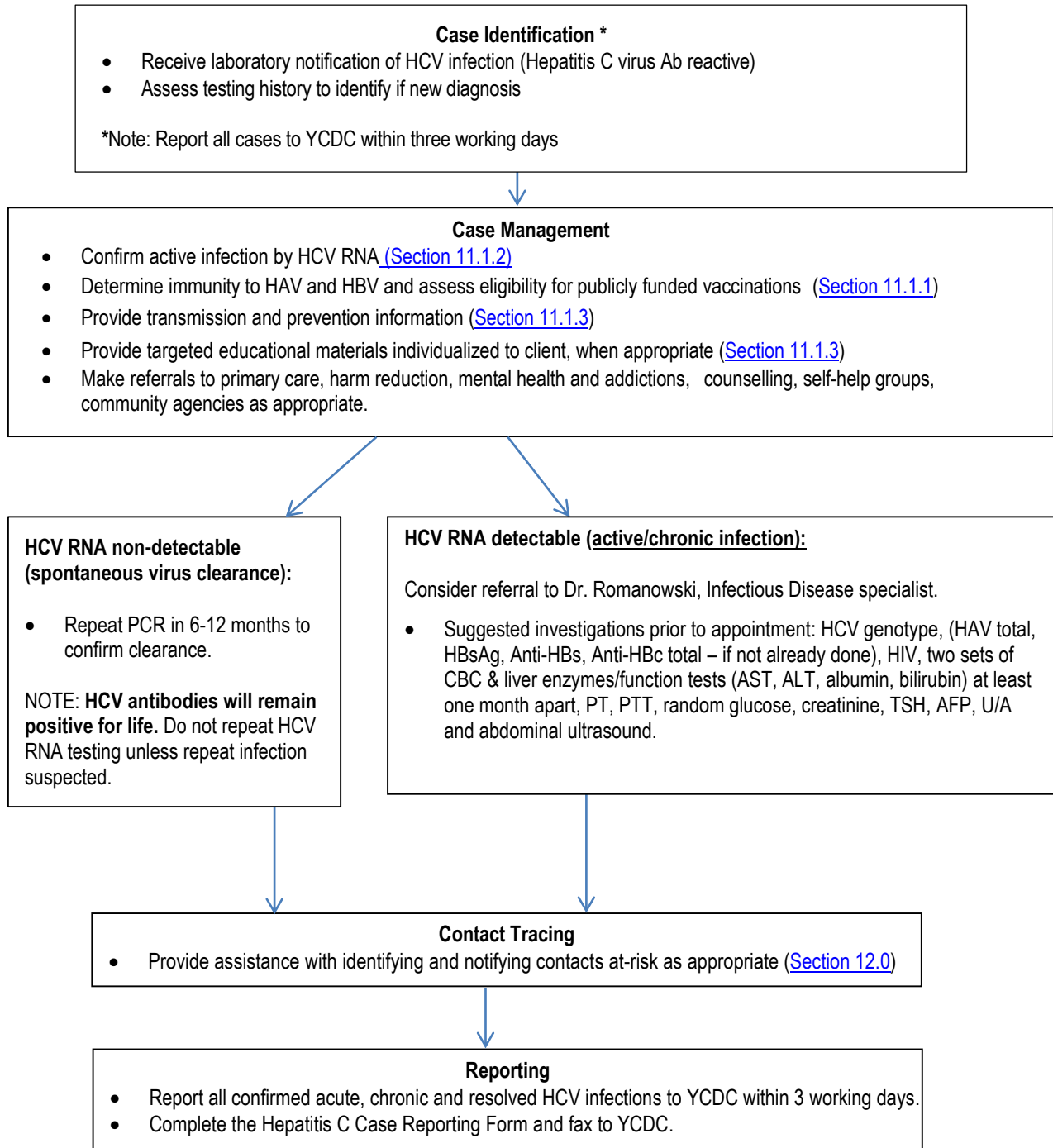
Figure 1. Acute HCV Infection with Recovery



- The incubation period ranges from 2 weeks to 6 months (average: 6 to 9 weeks).
- Antibodies to HCV can be detectable in 80% of persons within 15 weeks after exposure, and more than 97% within 6 months after exposure and persist.
- HCV RNA becomes detectable by NAAT within 1-3 weeks of infection.
- ALT levels are markedly elevated in acute cases but can fluctuate widely in chronic cases.

10.0 HCV FLOWCHART

The flow chart describes a suggested practice for follow-up of identified HCV cases.



11.0 CASE MANAGEMENT

11.1 Management of Adults

Investigate all clinically identified and laboratory reports of Hepatitis C. Cases of Hepatitis C should be reported to YCDC within three working days.

If the health care provider is unsure whether it is a new case, contact YCDC to see if there is any previous result.

When a new case of HCV is identified YCDC will provide the reporting provider the HCV Case Report Form to be completed and returned to YCDC, with additional documents to assist the provider and the client. See [Appendix D](#) for list of documents that will be received from YCDC.

As 75% of cases will have active infection, all persons with a reactive anti-HCV should be counselled as infectious until active HCV infection is ruled out by HCV-RNA testing.

11.1.1 Immunization

All persons anti-HCV reactive are eligible to receive the immunizations listed below, as per Yukon Immunization Program Manual, without cost to the client:

- hepatitis A vaccine series if susceptible
- hepatitis B vaccine series if susceptible
- pneumococcal vaccine (PPV23) and a once only revaccination
- annual influenza vaccine

The health care provider should refer clients to their local health centre or YCDC for immunization delivery.

For more information on vaccines recommended for persons with chronic liver disease, refer to Yukon Immunization Program Manual, Section 5, Immunization of Special Populations: http://www.hss.gov.yk.ca/pdf/im_manual_section5.pdf and Section 8, Biological Products: http://www.hss.gov.yk.ca/pdf/im_manual_section8.pdf

11.1.2 Additional Lab Work

All clients who are anti-HCV positive should have confirmatory HCV RNA testing to confirm active infection.

Recommend tests for other blood-borne pathogens like HIV, if applicable.

Consider referral to Dr. Romanowski, Infectious Disease specialist if active infection is confirmed (HCV RNA detectable) for ongoing medical management and treatment options.

11.1.3 Patient Education

Provide patient education and counselling tailored to the needs of the client to include education on modes of transmission, reducing the risk of transmission, reducing the risk of liver damage, medication use by patients with liver disease, strategies for living well with HCV and support agencies. The Hepatitis C Support Document for Counselling can be used as a tool for counselling (see [Appendix F](#)).

YCDC provides health care providers with patient education material related to a new HCV diagnosis. Depending on the needs of the client and their literacy additional resources may be more appropriate. Refer to [Appendix B](#) for links to information.

Discussions on self-care should include: limiting or avoiding alcohol, avoiding hepatotoxic drugs and eating a well-balanced diet as part of a healthy lifestyle and to minimize liver damage. Cases should consult with their primary care provider before using over-the-counter medications and herbal or traditional remedies.

11.1.3.1 Health Teaching to Prevent Transmission of HCV

Advise infected cases on how to prevent transmission and recommend the following since there is no preventative HCV vaccine:

- Inform HCP's (e.g., dentist, physician, nurse) and other providers of personal services involved in piercing of the skin (e.g., acupuncturist, tattoo artist) of HCV infection.
- Do not share drug injection, snorting or smoking equipment such as needles, syringes, straws and pipes.
- Do not share needles and ink used for tattooing; do not share needles used for body piercing.
- Do not share toothbrushes, dental floss, razors, earrings or manicure equipment (articles that might have traces of blood).
- Do not donate blood, semen, breast milk, body organs or tissues.
- Keep all open cuts and sores covered until healed.
- Put articles with blood on them (e.g. tampons, pads, tissue, dental floss and bandages) in a separate plastic bag before disposing of them into household garbage.
- Dispose of bloody sharp items (e.g. razor blades, needles, etc) into a hard-sided container, taped shut.
- Clean blood spills by using absorbent materials first, such as paper towels, while wearing clean, disposable gloves. The area should then be cleaned more thoroughly with soap and water, and finally disinfected with household bleach. A fresh solution of bleach should be used and can be prepared by mixing 1-part bleach to 9 parts water. This solution should be left sitting on the spill for 10 minutes before wiping off.
- Recommend use of condoms in short-term relationships. Sexual transmission in

a long-term relationship is relatively low, however the risk of transmission increases with multiple sexual partners, co-infection with HIV or other STI's, and high-risk sexual behavior (i.e., where blood is present) (Alberta Health, 2013).

- If considering pregnancy discuss the risk of vertical transmission (from mother to infant).
- Recommend breastfeeding to new mothers who are infected with HCV. If the nipples become cracked or bleed, mothers should abstain from breastfeeding until they are healed. To prevent cessation of milk supply, mothers may consider expressing and discarding breast milk until their nipples are healed. Breastfeeding is not recommended for mothers co-infected with HIV.
- For additional information on reducing the risk of transmission from blood and body fluids, refer to the HealthLink BC File #97, Contact with Blood or Body Fluids: Protecting Against Infection:
<http://www.healthlinkbc.ca/servicesresources/healthlinkbcfiles/index.html>

11.2 Special Consideration Groups

11.2.1. Management of Pregnant Women

Prompt collection of confirmatory HCV RNA testing, to confirm active infection, is particularly important for pregnant women who are anti-HCV positive. If active infection is confirmed in a pregnant woman, liver enzymes and liver function tests are also recommended promptly to identify those with compromised liver function who may require specialist referral. Pregnant women who require an infectious disease consult can be referred to Dr. Romanowski at YCDC.

For more information on the reproductive care of women infected with HCV, refer to:
http://www.sogc.org/guidelines/public/9_6E-CPG-October2000.pdf

11.2.2 Management of Infants and Children

Follow up of the infant, including ordering of blood work is done by the family doctor, or if there is no family doctor, the delivering doctor usually facilitates. If the infant is from the community the delivering doctor would communicate the need for follow up testing or directly arrange.

HCV antibody testing is not appropriate for infants less than 18 months of age since maternal antibodies can cross the placenta and yield a false positive result. In 95% of cases maternal antibody will no longer be detectable by 12 months of age. In the remaining 5%, maternal antibody will no longer be detectable by 15 to 18 months of age. The PHSA BCCDC Laboratory will not process requests for antibody testing on infants less than 18 months of age. If requested, these samples will be automatically processed using NAAT when possible (i.e. when the serum sample does not have to be diluted).

11.2.3 Management of Neonates to Determine Vertical Transmission

The recommended approach for management of neonates to determine vertical transmission and HCV testing for infants born to an anti-HCV positive mothers recommended by the Canadian Pediatric Society position statement (2008, reaffirmed 2016) is as follows:

1. If mother is HCV RNA negative, the risk of transmission is negligible (see Section 11.2.1).
2. If mother is HCV RNA positive, perform HCV antibody testing of the infant at 18 months.

Note: If there is a risk of the newborn being lost to follow-up or if the parents are very anxious you may consider undertaking HCV RNA at 2 months. However, testing this early may represent passive transfer from the mother and the newborn can still clear the virus, so that this approach may create unnecessary anxiety. Specialist advice is recommended in these cases prior to testing.

- a. If HCV antibody is negative at 18 months, there is no evidence of neonatal infection and further testing is not required.
- b. If HCV antibody is reactive:
 - i. Test for HCV RNA to confirm status. Note: two consecutive HCV RNA tests are required to confirm status.

If HCV RNA Positive:

Inform parents of diagnosis, explain reportability and offer vaccines as per Yukon Immunization Program Manual for routine pediatric schedule and vaccines recommended for those with HCV. Refer to paediatric infectious disease specialist/hepatologist to follow and monitor.

If HCV RNA is negative:

Consider follow up antibody testing to check for waning antibody, however this scenario is considered to be rare.

11.3 Treatment

While no vaccine exists, antiviral medications are available to treat people with HCV.

- The decision to undergo treatment is complex and requires specialty consultation with Dr. Romanowski, Infectious Disease Specialist. More information on consultation and clinics are available from YCDC.
- The type and duration of antiviral therapy is determined on an individual basis. Treatment duration varies depending on multiple factors such as HCV genotype, antiviral agent, co-morbidities, and degree of fibrosis.
- Treatment can result in a sustained virologic response (SVR), defined as having no detectable HCV RNA in plasma or serum 3-4 months after treatment completion. This is synonymous with cure but patients can be re-infected if they have on-going risk exposures (Aronsohn & Reau,

- 2009; Alberti, 2011).
- Antiviral therapies will continue to change as new and more effective drugs become available.

12.0 CONTACT MANAGEMENT

There is no effective post-exposure prophylaxis for hepatitis C.

Contacts to be considered at risk include, but are not limited to, the following:

- Those with whom drug equipment (needles, pipes, cookers, etc) has been shared
- Short term sexual contacts should be assessed for risk behaviors and appropriate testing recommended.
- Most long-term sexual partners of HCV positive persons test anti-HCV negative. However, they may elect to be tested.
- Infants born to HCV positive mothers (i.e. anti-HCV reactive).

If the case is comfortable they can notify contacts themselves, otherwise YCDC or the health care provider can help notify contacts that may need testing and counselling. Although HCV RNA is required to transmit HCV (versus only detectable anti-HCV), it is difficult to accurately assess when a case may have been infectious. Therefore if the HCV RNA is negative discuss contact tracing with client recognizing that contacts may be from long time ago and contact tracing may not be warranted.

13.0 ADDITIONAL REPORTING REQUIREMENTS

When a case of HCV is identified YCDC will provide the reporting provider the Hepatitis C Case Reporting Form to be completed and returned to YCDC.

If risk factors indicate the possibility of a transfusion-transmissible infection (where client has been donor or recipient), notify YCDC, who will then provide the appropriate forms to the health care provider for reporting to Canadian Blood Services.

14.0 HEPATITIS C POST-EXPOSURE MANAGEMENT

For complete information on Hepatitis C post exposure management refer to Yukon Blood and Body Fluid Exposure Management, 2013 available online at http://www.hss.gov.yk.ca/health_professionals_guidelines.php

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16.0 CONTACT INFORMATION

Yukon Communicable Disease Control
Hours: Monday- Friday (08:30 to 16:30)
#4 Hospital Road, Whitehorse, YT Y1A 3H8
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Local: (867) 667-8323
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17.0 APPENDICES

APPENDIX A: Summary of Transmission Risk and Advice

Category	Activity	Comments & Client Education
High risk: IDU	<ul style="list-style-type: none"> People who currently use or have ever used injection drugs or shared drug equipment (i.e. needles, syringes, swabs, filters, spoons, tourniquets, and water) have the greatest risk of acquiring HCV infection 	<ul style="list-style-type: none"> Offer access to appropriate harm reduction support services. Counselling and referral to detox and addiction treatment facilities should be based on the client's readiness to engage in behaviour change. Harm reduction activities should be discussed and supported including: <ul style="list-style-type: none"> Do not reuse or share needles, syringes, water or drug preparation equipment or any drug paraphernalia (pipes, spoons, snorting equipment, etc.) Use syringes obtained from a reliable source and safely dispose after one use. Ensure a new, sterile syringe and needle is used for each injection, not just each session Use sterile water to prepare drugs; otherwise use clean water from a reliable source Prior to injection, clean the site with a new alcohol swab Save one vein for medical use
High risk: Incarceration	<ul style="list-style-type: none"> Inmates report a high level of needle sharing. In 2007, approximately 44% of male inmates who inject drugs reported sharing needles while incarcerated. The risk of transmission from unsterile tattooing practices in prisons has been reported and carries a high risk of HCV transmission. 	<ul style="list-style-type: none"> Same harm reduction advice/messaging as above for IDU Advise clients that single-use needles and ink containers should be used to prevent infection
High risk: tainted blood products	<ul style="list-style-type: none"> Received a blood transfusion or blood product before May 1992 in Canada Received blood-derived coagulation products before July 1988, or intravenous immunoglobulin products before 1997 in Canada Received an organ or tissue transplant before 1990 in Canada Received blood or blood products in countries where the blood supply is not tested or where medical equipment is not cleaned 	<ul style="list-style-type: none"> If risk factors indicate the possibility of a transfusion transmissible infection, where the client has been a donor or recipient, follow the reporting process as outlined in Section

Category	Activity	Comments & Client Education
Moderate to low risk: non-IDU drug-use	<ul style="list-style-type: none"> Transmission can occur through sharing crack pipes when users have superficial burns on the lip. Cocaine snorting causes irritation and ulceration of the nasal mucosa with bleeding. This can contaminate straws used for snoring cocaine. 	<ul style="list-style-type: none"> Offer access to appropriate harm reduction support services. Counselling and referral to detox and addiction treatment facilities should be based on the client's readiness to engage in behaviour change. Advise clients to not share crack pipes and snorting straws.
Moderate to low risk: sexual contact	<ul style="list-style-type: none"> Having multiple sexual partners and engaging in traumatic or rough sex that may cause mucosal tearing (e.g. anal intercourse, sex toys and fisting), increases the risk of acquiring HCV Co-infection with HIV, HBV and other STIs that cause sores or lesions (e.g. herpes, LGV, etc) also increases the risk of transmission Unprotected vaginal sex during menstruation carries a theoretical transmission risk 	<ul style="list-style-type: none"> Advise clients to engage in safe sex practices including condom use for all sexual encounters
Moderate to low risk: Tattoos and Piercings	<ul style="list-style-type: none"> Tattoos and piercings acquired in unregulated premises with unsterile needles and re-usable ink containers carry a risk of transmitting HCV. 	<ul style="list-style-type: none"> Single-use needles and ink containers should be used to prevent infection
Low risk: sexual contact	<ul style="list-style-type: none"> In long-term, monogamous relationships the risk of acquiring HCV by sexual contact is low. 	<ul style="list-style-type: none"> Once disclosed and discussed, the use of condoms is a personal choice of the couple.
Low risk: vertical transmission	<ul style="list-style-type: none"> The risk of vertical transmission is about 6% for infants born to anti-HCV positive mothers. Transmission risks increase when the mother has high RNA titres, has clinical symptoms of acute hepatitis or is co-infected with HIV (3 fold ↑ risk with co-infection) 	<ul style="list-style-type: none"> Breastfeeding is not contraindicated for anti-HCV sero-positive, HIV sero-negative mothers The follow-up of infants and children with proven hepatitis C infection is complex. Consultation with a paediatric infectious disease specialist or hepatologist is recommended.
Low risk: household contacts	<ul style="list-style-type: none"> Sharing personal hygiene items such as toothbrushes, dental floss, razors, nail files, or other items which could have tiny amounts of blood on them carries a low but real risk of transmission 	<ul style="list-style-type: none"> Advise clients to not share toothbrushes, dental floss, razors, nail files etc. Open cuts and sores should be kept bandaged until healed. Place articles stained with blood in a separate plastic bag before disposing into household garbage (e.g. tampons, razors, tissues, bandages, etc)
Low risk: accidental needle stick injury	<ul style="list-style-type: none"> The average incidence of anti-HCV sero-conversion after percutaneous exposure from a HCV positive source is 1.8%. 	<ul style="list-style-type: none"> Needle stick accidents should be reported and documented

APPENDIX B: Resources for Clients

1) GENERAL INFORMATION ABOUT HCV

- a) Canadian AIDS Treatment Information Exchange (CATIE): www.hepcinfo.ca
 - Hepatitis C: The Basic Facts
 - Hepatitis C: Newly Diagnosed
 - Hepatitis C: Treatment Options
 - Universal Precautions
- b) Canadian Liver Foundation: www.liver.ca
 - Hepatitis C: A Liver Disease – October, 2006 (2pp)
 - Health Living With Hepatitis C – September, 2007 (36pp)
 - Hep C “don’t share”
 - Alcohol and the Liver – September, 2006
 - Hep C Nutrition
- c) Dieticians of Canada: www.dietitians.ca
- d) Health Link BC: <http://www.healthlinkbc.ca>
 - Number 40a Hepatitis C Virus Infection
 - Number 40b Living Well with Hepatitis C Virus Infection
 - Number 40c Healthy Eating for Chronic Hepatitis
- e) Organization To Achieve Solutions In Substance-Abuse (O.A.S.I.S):
www.oasisclinic.org
 - Hepatitis C: Get the Facts Workbook
- f) Canadian Hemophilia Society: www.hemophilia.ca
 - Hepatitis C: An Information Booklet for People Infected with Hepatitis C Virus, and Their Families and Friends
- g) British Liver Trust: <http://www.britishlivertrust.org.uk> (video on alcohol and Hep C)

2. ADVOCACY TOOLS

- a) BCCDC Hepatitis Education Resources: <http://www.bccdc.ca/health-info/diseases-conditions/hepatitis-c>
 - Advocacy Skills Workshop Slides
 - Hep C Youth Education Project
 - Negotiating for Hepatitis Care and Support

- Speaking Up for Hepatitis Care and Support (Français) Intervenir pour les soins de l'hépatite et obtenir le support nécessaire : Guide pour le renforcement des capacités
- Speaking Up for Hepatitis Care and Support: A Skills Building Workbook
- Stigma and Hepatitis C – A Question and Answer Resource for People Living with Hepatitis C

3. YUKON SUPPORT GROUPS

- a) Blood Ties Four Directions: <http://bloodties.ca/>
- b) Alcohol and Drug Services: <http://www.hss.gov.yk.ca/ads.php/>

4. HCV DISCLOSURE

- a) HCV Advocate Guide to Disclosure:
http://hcvadvocate.org/hepatitis/factsheets_pdf/Disclosure_Guide.pdf
- b) Information on the impact and consequences of disclosing HCV infection:
http://www.bccdc.ca/search?k=hepatitis_disclosure.pdf

5. DRUG INTERACTIONS

- a) HCV Advocate: http://hcvadvocate.org/hepatitis/factsheets_pdf/Acetaminophen.pdf
- b) Canadian Liver Foundation:
http://www.liver.ca/files/LIVERight/pdf/livertips_takingdrugs.pdf
- c) Health Canada:
<http://www.hc-sc.gc.ca/dhp-mps/prodnatur/about-apos/cons-eng.php>

APPENDIX C: Resources for Health Care Providers

1. Primary Care Management
 - a) Professional Desk Reference on the Primary Care Management of Chronic Hepatitis C (2009), PHAC, http://www.phac-aspc.gc.ca/hepc/pubs/pdf/hepc_guide-eng.pdf
 - b) An Update on the Management of Chronic Hepatitis C: 2015 Consensus Guidelines from the Canadian Association for the Study of the Liver, Canadian Journal of Gastroenterol Hepatol 2015;29(1):19-34
https://www.pulsus.com/journals/pdf_frameset.jsp?jnlKy=2&atlKy=13233&isArt=t&jnlAdvert=Gastro&adverifHCtp=&sTitle=An%20update%20on%20the%20management%20of%20chronic%20hepatitis%20C%3A%202015%20Consensus%20guidelines%20from%20the%20Canadian%20Association%20for%20the%20Study%20of%20the%20Liver%2C%20Pulsus%20Group%20Inc&VisitorType
2. HCV in pregnancy
 - a) The Reproductive Care of Women Living With Hepatitis C Infection, SOGC Clinical Practice Guidelines, <http://sogc.org/wp-content/uploads/2013/01/qui96ECPG0010wDisclaimer.pdf>
3. Harm reduction
 - a) Harm Reduction Training Manual for Frontline staff, BC Harm Reduction Strategies and Services, <http://www.bccdc.ca/NR/rdonlyres/C8829750-9DEC-4AE9-8D00-84DCD0DF0716/0/CompleteHRTRAININGMANUALJanuary282011.pdf>
4. Contact tracing
 - a) Partner disclosure, A Guide to HCV Disclosure, HCV Advocate, http://hcvadvocate.org/hepatitis/factsheets_pdf/Disclosure_Guide.pdf
5. HCV surveillance in Canada
 - a) Hepatitis C in Canada: 2005-2010 Surveillance Report, PHAC, http://publications.gc.ca/collections/collection_2012/aspc-phac/HP40-70-2012-eng.pdf
 - b) Hepatitis C surveillance in Canada, Canada Communicable Disease Report, Volume 40-19, December 18, 2014, <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/14vol40/dr-rm40-19/surveillance-a-eng.php>

APPENDIX D: List of Documents that the testing Health Care Provider will receive from YCDC

1. Hepatitis C Case Reporting Form
2. New Diagnosis Letter for Health Care Provider – ([Appendix E](#))
3. Hepatitis C Support Document for Counselling – ([Appendix F](#))
4. HCV Flow Chart – ([Section 10.0](#))
5. Patient Education Pamphlet: Hep C: Making sense of your diagnosis
<http://librarypdf.catie.ca/pdf/ATI-70000s/70012.pdf>
6. New Diagnosis Letter for Client

APPENDIX E: New Diagnosis Sample Letter to Health Care Provider



Health and Social Services
Yukon Communicable Disease Control
#4 Hospital Road
Whitehorse, YT Y1A 3H8
Telephone 867-667-8323
Fax 867-667-8349

DATE:

TO:

RE:

DOB:

YHIS:

We have received a positive **Hepatitis C** antibody (anti-HCV) laboratory report on the above client. It is recommended that active hepatitis C infection be confirmed by the presence of HCV RNA (PCR).

Please complete the attached **Case Report Form** to be returned to Yukon Communicable Disease Control (YCDC) (**Fax: 867-667-8349**) within the next two weeks.

As this is a reportable disease, please inform your client that a nurse from YCDC may be contacting them for follow up purposes.

Additional documents are included to assist you and the patient.

The following territorial funded vaccines are recommended for clients who are **Hep C +**:

- Hepatitis A vaccine (if not immune)
- Hepatitis B vaccine (if not immune)
- Influenza vaccine (annually in the fall)
- Pneumococcal vaccine (a one time booster in five years may be considered for patients with chronic hepatitis disease or liver damage)

The vaccines are available at the local health centre or YCDC.

Should you have any questions or require further information please feel free to contact YCDC.

Thank you,

Infectious Disease Nurse
Yukon Communicable Disease Control
Ph: 867-667-8323
Fax: 867-667-8349

APPENDIX F: Hepatitis C Support Document for Counselling

This is a guide for client counselling and getting information for case report form. **Do not** return this form to YCDC- only return the case report form

Client Name _____ YHIS# _____ DOB _____

Hepatitis C is a blood borne pathogen

Active infection HCV RNA PCR testing discussed and ordered (25% will clear the infection)

Pos= active disease; Neg= spontaneous clearance (repeat test in 6 mos).

Symptoms Asymptomatic Symptoms _____

Transmission "How do you think you got infected?"

DRUG USE Yes No **Sharing drug paraphernalia** Yes No

IDU (Injection Drug use) Yes No Drug used _____

Current Yes No **History** Yes No Started using: _____ Last used: _____

Snorting Yes No Drug used _____

Current Yes No **History** Yes No Started using: _____ Last used: _____

Smoking (drug pipe) Yes No Drug used _____

Current Yes No **History** Yes No Started using: _____ Last used: _____

OTHER

Household contacts (blood to blood contact) Yes No **Tattoos/Piercings** Yes No Last _____

Sexual partner Hep C+ (unlikely transmission unless blood involved) Yes No

Victim of needle stick Injury Yes No **Mother HCV +** (perinatal transmission) Yes No

Received blood transfusion before 1992 No Yes When & where _____

Blood donation since 1980 No Yes When & where _____

(If yes to blood donation or transfusion, contact YCDC for **Canadian Blood Services Form**)

Other _____ **Unknown**

Additional information (ticked box indicates discussion completed)

Needs a GP *Treatment available/assessment by specialist

Protecting the liver from further harm

Medical care Regular blood work f/u Harm reduction Alcohol use Nutrition Smoking

Caution with "over the counter" meds

Hepatitis A vaccine discussed

Has immunity Yes No Don't know Immunized today Referred

Hepatitis B vaccine discussed

Has immunity Yes No Don't know Immunized today Referred

Pneumo-23 vaccine discussed Immunized today Referred

Health care provider's signature _____ Date _____

Hepatitis C Support Document for Counselling

This is a guide for client counselling and getting information for case report form. **Do not return this form to YCDC– only return the case report form**

Client Name _____ YHIS# _____ DOB _____

Reducing Risk of Transmission to Others

- Disclosure:* Health Care Workers Drug partners Household members Sexual partners
Precautions explained (*blood*)
Do not donate blood (*includes organs, semen*) Cover open wounds–cuts
Do not share personal items that may have blood on: *i.e: toothbrush, razor*
Do not share any drug paraphernalia *i.e: straws, dollar bill*

Client Resources

Blood Ties Four Directions, Whitehorse, Yukon 867–332–8268 counsellor/ 867–633–2437 (admin assistant)

Appendix B: Resources for Clients – Yukon Hepatitis C Guideline
Canadian Liver Foundation (1–800–563–5483) <http://www.liver.ca>

Info package given to client (Patient letter and CATIE info)

Health care provider's signature _____ Date _____

** For further information contact YCDC nurse 667–8323 or refer to the Hep C Health Care Provider Resources: Appendix C in Yukon Hepatitis C Guideline*