Hepatitis C

Types	• ***Acute**: surveillance is for symptomatic initial infection* • **Chronic:** surveillance is for first diagnosis • **Perinatal:** surveillance is for confirmed perinatal transmission (> 12 months of age) Spread by person to person transmission of virus, typically bloodborne; also sexual, perinatal
Signs and Symptoms	• **Acute**: often asymptomatic; about 20–30% of newly infected persons meet the acute surveillance case definition with fatigue, abdominal pain, poor appetite or jaundice • **Chronic**: typically asymptomatic, often diagnosed due to screening or liver damage • **Perinatal**: usually asymptomatic; must be tested > 12 months due to maternal antibody
Incubation	Typically 4-12 weeks (range 2 weeks – 6 months)
Clinical findings / Laboratory	**Lab:** No test currently distinguishes acute from chronic infection • Screening tests for antibody to HCV (anti-HCV) • Qualitative tests to detect presence or absence of virus and amount (HCV RNA polymerase chain reaction [PCR]), genotype • Anti-HCV enzyme immunoassays (EIA) and qualitative PCR are the more sensitive tests
Differential diagnosis (guidance)	Hepatitis A or B (laboratory testing), chemical hepatitis (e.g., alcoholism, certain medications, natural remedies, specialty teas), autoimmune hepatitis, biliary disease (cholangitis, gallstones), malignancy (liver, pancreas), metabolic disease (e.g., Wilson's)
Treatment	Antiviral protocols change periodically, and new treatments have become available, so case should consult GI specialist for evaluation and recommendations
Response	If **positive laboratory report only**: ☐ Determine if reported previously. ☐ Ask provider if the case is acute or chronic (sample fax form available). Prioritize cases likely to be acute (e.g., age ≤ 30 or ≥ 70 years) or new diagnosis (e.g., blood bank report). ☐ Interview case if no provider information is available (e.g., blood bank report) If **report is consistent with Acute hepatitis C or Perinatal hepatitis C**: ☐ Perinatal does not need exposure interview except maternal HCV status ☐ Interview case for exposures including potential bloodborne and health care exposures ☐ If suspected health care-associated case **report to DOH Office of Communicable Disease Epidemiology (OCDE) at 206-418-5500 or 877-539-4344**. - Facilitate collection and transport of patient specimen if health care exposure suspected (serum immediately spun and refrigerated) ☐ Educate acute case to avoid alcohol, obtain hepatitis A and B vaccines if needed, get evaluated for hepatitis C treatment, avoid transmission to others by: using barrier methods during sex, not share needles, syringes, blood testing equipment, razor, toothbrush, or nail clippers. ☐ Enter cases into PHIMS as Acute hepatitis C. If **report is consistent with Chronic hepatitis C**: ☐ Get information from laboratory and provider if routine surveillance (provider fax form) ☐ Do interview if informed by DOH that the case was sampled for enhanced surveillance ☐ If suspected health care-associated case see steps under Acute hepatitis C ☐ Educate case as for Acute hepatitis C ☐ Enter **all** chronic cases into PHIMS Hepatitis C, Chronic – Enhanced Surveillance form *Infection Control:* If HCV RNA-positive, standard precautions in healthcare settings

Hepatitis C

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify sources of infection and to prevent further transmission from such sources.
2. To identify new groups at risk and reduce further cases.
3. To inform cases about treatment options.
4. To educate cases and contacts about transmission of hepatitis C virus and how to reduce the risk of transmission.
5. To better understand the epidemiology of hepatitis C virus infection and the burden of morbidity from chronic infection.

B. Legal Reporting Requirements

1. Acute Hepatitis C (initial diagnosis only)

a. Health care providers: notifiable to local health jurisdiction within 3 business days

b. Health care facilities: notifiable to local health jurisdiction within 3 business days

c. Laboratories: hepatitis C virus (detection of viral antigen, antibody or nucleic acid) notifiable monthly. Specimen submission is on request only in outbreak settings

d. Local health jurisdictions: Acute cases notifiable to the Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (OCDE) within 7 days of case investigation completion or summary information within 21 days

2. Chronic Hepatitis C (initial diagnosis only)

a. Health care providers: notifiable to local health jurisdiction within one month

b. Health care facilities: notifiable to local health jurisdiction within one month

c. Laboratories: Hepatitis C virus (detection of viral antigen, antibody or nucleic acid) notifiable to local health jurisdiction of patient residence (or ordering health care provider, if patient residence is unknown) on a monthly basis.

d. Local health jurisdictions: Chronic cases notifiable to DOH Office of Infectious Disease (ID) within 7 days of case investigation completion, or summary information required within 21 days of initial notification to local health authorities

3. Perinatal Hepatitis C (initial diagnosis only)

a. Health care providers: notifiable to local health jurisdiction within one month

b. Health care facilities: notifiable to local health jurisdiction within one month

c. Laboratories: Hepatitis C virus (detection of viral antigen, antibody or nucleic acid) notifiable on a monthly basis

d. Local health jurisdictions: Perinatal cases notifiable to OCDE within 7 days of case investigation completion or summary information within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

1. Laboratory report only: determine if the case is acute, chronic or perinatal hepatitis C (Section 5).
2. Case identified as Acute hepatitis C
   a. Determine if the reported patient was previously reported as an acute hepatitis C case in Public Health Issue Management System (PHIMS) and update as needed.
   b. Begin follow-up investigation for a new acute hepatitis C case within 3 work days.
   c. Complete the acute hepatitis C report form: http://www.doh.wa.gov/Portals/1/Documents/5100/210-032-ReportForm-HepC-Acute.pdf) and enter the data into PHIMS as an acute hepatitis C case.
   d. Inform the case of treatment options and ways to minimize disease progression.
   e. Educate the case about hepatitis C and how to reduce the risk of transmission.
3. Case identified as chronic hepatitis C
   a. Determine if the reported patient was previously reported as a chronic hepatitis C case in PHIMS and update as needed.
   b. Begin follow-up investigation for a new chronic hepatitis case within 5 work days. The level of investigation for chronic hepatitis cases may vary (see Section 5).
   c. Complete the "Hepatitis C, Chronic, Enhanced Surveillance" form even if only limited information is available and enter the data into PHIMS as a chronic hepatitis C case on the **enhanced form** to capture any known risk factors, skipping any information not available.
   d. Inform the case of treatment options and ways to minimize disease progression.
   e. Educate the case about hepatitis C and how to reduce the risk of transmission.
4. Case identified as Perinatal hepatitis C: complete the first page of the acute hepatitis C report form (skipping exposure except for maternal hepatitis C status and public health issues/actions sections).

Note: Additional information for completing routine and enhanced surveillance investigations for hepatitis C cases can be found in Section 5.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Hepatitis C virus (HCV) is an RNA virus in the Flavivirus family and unrelated to viruses that cause the diseases hepatitis A, hepatitis B, hepatitis D, and hepatitis E. There are at least six hepatitis C virus genotypes (and over 50 subtypes): in this country genotype 1 is the most common. Concurrent infections with more than one genotype are rare but occur.

B. Clinical Manifestations

Most persons with newly acquired hepatitis C virus infections are either asymptomatic or experience mild symptoms unlikely to prompt a health care visit. About 20–30% of newly infected persons experience fatigue, abdominal pain, poor appetite or jaundice.

Additional symptoms can include fever, dark urine, pale stools, nausea, vomiting, and joint pain. The clinical presentation is indistinguishable from other viral liver infections such as hepatitis A or hepatitis B. Fulminant hepatitis C infection is rare, but can be fatal. The most characteristic feature of acute hepatitis C is an elevation in serum alanine aminotransferase (ALT) levels. ALT levels fluctuate in persons with chronic hepatitis C.

Between 75% and 85% of acute hepatitis C infections become chronic with long-term complications including chronic liver disease, hepatocellular carcinoma and cirrhosis. The risk of these sequelae increases for dual infections with both hepatitis B and hepatitis C viruses. Patients with chronic liver disease due to hepatitis C virus are also at an increased risk of fulminant hepatic failure if they become infected with hepatitis A virus.

C. Hepatitis C in Washington

In Washington, under 100 acute hepatitis C cases are reported annually, likely reflecting low identification of acute infections; rates started increasing in 2011. An average of 5457 new cases of chronic hepatitis C was reported to DOH annually from 2005 to 2014.

D. Reservoir

Human beings with acute or chronic infections are the reservoir. Persons with chronic infections are probably the most important sources of transmission because they are infectious for many years, compared to a few weeks for resolved acute infections.

E. Modes of Transmission See: http://www.cdc.gov/hepatitis/hcv/cfaq.htm

Hepatitis C virus is transmitted primarily through large or repeated percutaneous (i.e., passage through the skin) exposures to infectious blood, such as:

- Injection drug use (currently the most common mode in the United States)
- Receipt of donated blood, blood products, and organs (rare since 1992)
- Needle-stick injuries in healthcare settings
- Birth to a hepatitis C virus-infected mother

Less frequently hepatitis C is transmitted through:

- Sex with an infected person (an inefficient means of transmission)
- Sharing personal items contaminated with infectious blood, such as razors, nail clippers or toothbrushes (also inefficient vectors of transmission)
- Inappropriate infection control during surgery or other invasive healthcare procedures, such as medication injections, use of diagnostic equipment such as endoscopes, dialysis (exposure usually recognized in the context of outbreaks), or diabetes blood testing procedures (e.g., shared lancets for obtaining specimens)

F. Incubation Period

For newly infected persons developing symptoms of acute hepatitis C, the usual time from exposure to symptom onset is 4–12 weeks (range 2 weeks-6 months.)

G. Period of Communicability

Communicability begins at least one week before symptom onset (2-10 weeks after exposure if asymptomatic) and persists indefinitely if chronic infection develops. Transplacental transmission primarily occurs for women with high viral titers.

H. Treatment

Protocols change periodically so obtain expert advice for treating acute or chronic hepatitis C, particularly for infants who may spontaneously clear the virus. Success rates are improving and additional therapeutics continue to be developed: http://www.fda.gov/forpatients/illness/hepatitisbc/ucm408658.htm and http://hcvguidelines.org/ as well as: http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm

3. CASE DEFINITIONS

A. Acute Hepatitis C (2016)

1. Clinical criteria:

   An illness with discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, or abdominal pain,) **AND**

   - Jaundice, **OR**
   - Peak elevated serum alanine aminotransferase (ALT) level >200 IU/L during the acute illness

2. Laboratory criteria for diagnosis:

   A positive test for antibodies to hepatitis C virus (anti-HCV) **OR**

   Hepatitis C virus detection test:

   - Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative or genotype testing), **OR**
   - A positive test indicating presence of hepatitis C viral antigen(s) when available*

   *When and if a test for HCV antigen(s) is approved by the FDA and available

3. Case classification:

   Probable:

   - A case that meets the clinical case definition and has a positive anti-HCV antibody test, but has no report of a positive HCV NAT or positive HCV antigen test **AND**
   - Does not have a documented negative HCV antibody, HCV antigen or NAT laboratory test result followed within 12 months by a positive results of any of these tests (test conversion) or has no report of test conversion.

   Confirmed:

   - A case that meets the clinical case definition and has a positive hepatitis C virus detection test (HCV NAT or HCV antigen) **OR**
   - A case with a documented negative HCV antibody, HCV antigen or NAT laboratory test result followed within 12 months by a positive result of any of these tests (test conversion).

B. Chronic Hepatitis C (2016)

1. Clinical criteria:

   No available evidence of clinical and relevant laboratory information indicative of acute infection. Most hepatitis C virus (HCV)-infected persons are asymptomatic; however many have chronic liver disease, which can range from mild to severe.

2. Laboratory Criteria for Diagnosis:

   A positive test for antibodies to hepatitis C virus (anti-HCV) **OR**

   Hepatitis C virus detection test:

   - Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative or genotype testing), **OR**
   - A positive test indicating presence of hepatitis C viral antigen(s)*

*When and if a test for HCV antigen(s) is approved by the FDA and available

3. Case Classification:

   Probable:

   - A case that does not meet the clinical criteria or has no report of clinical criteria

     AND

   - Does <u>not</u> have a documented negative HCV antibody, HCV antigen or NAT laboratory test result followed within 12 months by a positive result of any of these tests (test conversion) or has no report of test conversion **AND**
   - Has a positive anti-HCV antibody test, but no report of a positive HCV NAT or positive HCV antigen test

   Confirmed:

   - A case that does not meet the clinical criteria or has no report of clinical criteria

     AND

   - Does not have a documented negative HCV antibody, HCV antigen or NAT laboratory test result followed within 12 months by a positive result of any of these tests (test conversion) or has not report of test conversion **AND**
   - Has a positive HCV NAT or HCV antigen test (may have any anti-HCV antibody test result).

Note: A confirmed acute case may not be reported as a probable chronic case. A case meeting the chronic case definition is reported regardless of whether viral clearance is identified after the initial report. In addition, a person previously reported as an acute hepatitis C case in Washington State can subsequently be reported only as a confirmed chronic hepatitis case and must have evidence of virus detection a year or longer from the acute diagnosis. Report acute cases by date of diagnosis and chronic cases by year of diagnosis.

B. Perinatal Hepatitis C (DOH)

1. Clinical case definition

   Perinatal hepatitis C in a newborn or infant is typically asymptomatic. Note the infection can be diagnosed only at a year of age or older due to persisting maternal antibody.

2. Laboratory criteria for diagnosis (at a year of age or older)

   - A positive test for antibodies to hepatitis C virus (anti-HCV) **OR**
   - Hepatitis C virus detection test:
     - Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative or genotype testing) **OR**
     - A positive test indicating presence of hepatitis C viral antigen(s) (HCV antigen)*

     *When and if a test for HCV antigen(s) is approved by the FDA and available

3. Case classification

   Confirmed:

   An infant who is laboratory confirmed at **> 12 months of age** who was born in the United States or in U.S. territories to an HCV RNA-positive mother and who does not meet the clinical case definition for acute hepatitis C

   Note: Report perinatal hepatitis C cases by date of diagnosis (for the infant).

4. DIAGNOSIS AND LABORATORY SERVICES

A. Laboratory Diagnosis

Tests used to diagnose hepatitis C virus (HCV) infection include:

- Screening tests for antibody to HCV (anti-HCV) by enzyme immunoassay (EIA) or enhanced chemiluminescence immunoassay (CIA)
- Qualitative tests to detect presence or absence of virus and qualitative tests to detect amount (titer) of virus (HCV RNA polymerase chain reaction [PCR])
- Genotyping
- Test for HCV viral antigen (none currently FDA-approved)

Anti-HCV generally can be detected 4–10 weeks after infection, but may be delayed up to 6 months or may never be detected in an immunocompromised patient. Anti-HCV enzyme immunoassays (EIA) and qualitative PCR are more sensitive tests; EIA may be more prone to false positives in low prevalence populations. Maternal antibody may persist, so antibody testing should be interpreted with caution in infants under one year.

Appendix B is a glossary of hepatitis test terms. For information about interpreting laboratory tests for HCV, see table below and: http://www.cdc.gov/hepatitis/HCV/PDFs/hcv_graph.pdf

Interpretation of Results for Tests of Hepatitis C Virus (HCV)	Discrete onset of at least one symptom (headache, malaise, fever, anorexia, vomiting, diarrhea, abdominal pain) AND either jaundice or ALT > 200 IU/L	
	Absent	**Present**
Any HCV nucleic acid test positive OR HCV antigen or genotype positive OR test conversion in past year	Confirmed, Chronic	Confirmed, Acute
HCV antibody positive only	Probable, Chronic	Probable, Acute

B. Tests Available at the Washington State Public Health Laboratories (PHL)

Tests for hepatitis C are widely available at commercial laboratories. In certain situations where health care exposure is suspected, Office of Communicable Disease Epidemiology (OCDE) may request a specimen from a case for molecular sequencing at the Centers for Disease Control and Prevention and will provide instructions for specimen collection.

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

C. Specimen Collection

If part of an outbreak investigation, follow OCDE instructions to obtain a serum or EDTA tube, spin promptly, separate the serum into a shipping tube, and promptly ship cold with PHL Virology form: http://www.doh.wa.gov/Portals/1/Documents/5230/302-017-SerVirHIV.pdf. If unable to ship promptly, store at -70° C and then ship on dry ice.

5. ROUTINE CASE INVESTIGATION

A. Evaluate the Diagnosis

Review available clinical information for each reported hepatitis C case to distinguish between acute and chronic infections. If status as acute or chronic hepatitis C is unknown for a report of a positive laboratory test, the "Hepatitis C – Positive Laboratory Report" form (Appendix A) can be faxed to the ordering healthcare provider for determination if the case is acute or chronic hepatitis C.

If staff time constraints prevent contacting all providers, prioritize cases likely to be acute based on age (such as ≤ 30 or ≥ 70 years) or likely to be newly diagnosed (e.g., reported by a blood bank). Refer to the appropriate section below if a provider returns a diagnosis of acute or chronic hepatitis C. If a provider cannot determine if case is acute or chronic, enter the case as chronic hepatitis C. If the case does not have a provider (e.g. positive report from a blood bank) then it is likely an initial diagnosis and the case should be interviewed.

1. Cases determined to be **acute hepatitis C:**
   a. Determine if the patient was previously reported in PHIMS. For previously reported cases, update any newly available descriptive (e.g., demographics, address), clinical, or laboratory data. Determine if classification has changed (e.g., *Probable* to *Confirmed* acute hepatitis C).

b. For newly reported cases, attempt to obtain information from the healthcare provider, medical record, hospital infection control staff, or patient in order to confirm the acute hepatitis C diagnosis. If the person has symptoms consistent with acute hepatitis, determine if hepatitis A and B were ruled out since these infections are clinically indistinguishable from hepatitis C.

c. Report all *confirmed* and *probable* acute hepatitis C cases to Office of Communicable Disease Epidemiology by completing the acute hepatitis report form (http://www.doh.wa.gov/Portals/1/Documents/5100/210-032-ReportForm-HepC-Acute.pdf) and entering the data into the Public Health Issues Management System PHIMS as an acute hepatitis C case.

d. Attempt to determine the source of infection, particularly medical or dental exposures, including outpatient procedures and diabetes blood testing in residence facilities. Refer to section B below for additional information regarding identifying source of infection.

e. Educate the case about hepatitis C and how to reduce the risk of transmission.

f. Educate the case as for acute hepatitis C: avoid further damage to the liver (avoid alcohol and hepatotoxic medications; obtain hepatitis A and hepatitis B vaccines if susceptible); avoid transmission (use barrier methods during sex, do not share needles, syringes, blood testing equipment, razors, toothbrush, or nail clippers);

Inform the case of treatment options and refer to a healthcare provider as appropriate for specialist evaluation for treatment, which may prevent chronic infection.

2. Cases determined to be **chronic hepatitis C:**

a. For all chronic hepatitis C reports received, determine if the patient was previously reported as an acute or chronic hepatitis C case in PHIMS. Contact the Office of Infectious Disease (360-236-3502) if a case is suspected of being reported previously as a chronic hepatitis case, but not found in PHIMS.

b. If previously reported as acute hepatitis C, verify that case now meets the case definition as a new separate report of chronic hepatitis C with virus detected at least a year from acute onset. Rarely, the report may represent a person's second hepatitis C infection with a different genotype and represents a new case report.

c. If previously reported as a chronic case, attempt to obtain missing descriptive (e.g., address), clinical, or laboratory data. Contact the Office of Infectious Disease (360-236-3502) to update cases previously reported in Washington State, but not found in PHIMS.

3. Local health Jurisdiction (LHJ) responsibilities will vary in the extent investigation is conducted for routine **chronic hepatitis C** cases and cases sampled for enhanced surveillance:

a. **Routine surveillance**: Begin follow-up investigation for routine chronic hepatitis cases within 5 business days of initial notification. At a minimum, attempt to obtain case information specified on the "Hepatitis C – Positive Laboratory Report" form (Appendix A) for each routine case investigation. Enter *confirmed* and *probable* chronic hepatitis C cases on the "Hepatitis C Chronic, Enhanced Surveillance" form

in PHIMS within 7 days of case investigation completion, or provide summary information within 21 days of initial notification.

Local health jurisdictions should prioritize conducting routine chronic hepatitis case investigations for women of child-bearing age, as well as all persons less than 21 years. Follow-up of women of child bearing age, particularly if pregnant, offers an important opportunity for education and improving access to care that may lead to viral clearance and thus some reduction in risk of vertical transmission to newborns. Investigation of cases where recent transmission is likely to have occurred offers an opportunity for patient education with greatest potential for impact and for collecting data most representative of current epidemiology. Follow-up on cases among persons under 21 years – in which injection drug use may be suspected as a key risk – offers the opportunity for education that may reduce ongoing transmission while fostering access of care for management of hepatitis and promotion of overall health.

b. **Enhanced surveillance**: DOH will randomly select a sample of cases for enhanced surveillance each month. For newly-reported cases sampled for enhanced surveillance investigation, DOH will assign a unique identification number to each case, initiate an enhanced case report in PHIMS, and notify the local health jurisdiction of each selected case.

   Upon receiving notification of a case selected for enhanced surveillance, local health jurisdictions should attempt to contact the healthcare provider and collect case data specified on the "Hepatitis C – Positive Laboratory Report" form (Appendix A). Accessing electronic medical records (EMR) to obtain clinical information may be an acceptable alternative to faxing the form to the provider. Successful provider contact should be followed by patient contact and case interview, when appropriate. Enter information obtained during the enhanced investigation on the "Hepatitis C Chronic, Enhanced Surveillance," form in PHIMS within 7 days of completing enhanced surveillance investigations on sampled cases. For current enhanced surveillance protocols, please contact the Office of Infectious Disease (360-236-3502).

   Note: Local health jurisdictions seeking to collect a broader scope of data on cases not otherwise sampled for enhanced surveillance may elect to conduct enhanced surveillance investigations on any of their unsampled cases, using procedures and forms detailed above. However, enhanced surveillance data collected on unsampled cases may not be suitable for use in generating some population estimates.

c. Whenever possible, provide all persons with chronic hepatitis C infection with information about how to protect and promote liver health as well as overall health, and to prevent transmission to others. Key messages include: avoiding liver toxins (particularly alcohol but also some over the counter medications); the importance of both hepatitis-related and routine primary care; hepatitis B and HIV screening as necessary; and vaccination to prevent hepatitis A and hepatitis B as needed. Provide or direct cases to resources including the Hepatitis Education Project (http://hepeducation.org/) and CDC (CDC DVH - Hepatitis C - Patient Education Resources). See Section 6 for messaging details.

4. Cases determined to be **perinatal hepatitis C cases**:

   Report all *confirmed* **perinatal hepatitis C** cases (see Section 3) using the first page of the acute hepatitis C report form (skipping exposure and public health issues/actions sections except for the exposure question about birth mother's hepatitis C status): http://www.doh.wa.gov/Portals/1/Documents/5100/210-032-ReportForm-HepC-Acute.pdf) and enter the data into PHIMS as an acute hepatitis C case. Note that discrete onset of symptoms is **not** required for perinatal acute hepatitis C cases.

B. Identify the Source of Infection

For acute infections and any infection suspected to have been infected through a medical, dental or commercial (e.g., tattoo) procedure, collect details about possible exposures, including high risk behaviors. For acute cases, collect exposure and risk information during the 14 – 180 days before the onset of illness with particular emphasis on the 6 months before onset. However, detailed investigation of earlier exposures may be appropriate for a person with documented negative hepatitis status prior to a specific event such as a medical procedure between the negative and positive results.

Exposure information should include:

- Parenteral drug use.
- Occupational or other needlestick injuries.
- Receipt of blood transfusion, other blood products, organs, or tissues.
- Potential medical or dental exposures including dialysis, dental or surgical (in-patient or out-patient) care, or diabetes blood testing in a healthcare or long term care setting. See: http://www.cdc.gov/hepatitis/outbreaks/healthcareinvestigationguide.htm
  1) List date of all healthcare encounters during the likely exposure period.
  2) Determine the types of procedures performed during each healthcare encounter, especially those involving percutaneous exposures (e.g., injections, infusions, skin puncture with a needle/lancet)
  3) Review regulatory/medical board reports/complaints to determine if the healthcare facility and/or providers have been under investigation
  4) Contact the healthcare facility to tell them of the investigation and determine if they were aware of the current case(s) under investigation or any additional infections.
- Other potential blood exposures within the 6 months prior to onset of current illness, including tattooing, piercing, or acupuncture.
- Accidental exposure of skin, eyes, mucous membranes, or a wound to blood of another person.
- High-risk sexual contact (multiple partners, history of other STDs, anal sex, etc.)

Identifying a specific source of infection for recently identified chronically infected persons may be difficult. Possible sources should be pursued if there is a good chance of identifying additional chronic hepatitis C infections or a preventable source. For example, if the newly diagnosed case is a child, it would be reasonable to screen parents and other household members for evidence of infection.

C. Identify Potentially Exposed Persons

1. Determine if case has donated blood or plasma in the 6 months prior to onset or any time thereafter. If so, notify the blood bank or plasma center with particulars (date, etc.)
2. If the case is a dentist, surgeon, or other health care worker, evaluate the potential for exposure to patients (see Section 6A).
3. Identify sexual or needle-sharing contacts and others who have had direct (percutaneous or mucosal) exposure to blood.

   Passive immunization with immune globulin is **not** effective against HCV.

   Long-term sexual contacts and persons who had direct (percutaneous or mucosal) exposure to blood (e.g., needle-sharing partners) should be educated about transmission of HCV and tested for infection. Contacts positive for HCV RNA should be evaluated as new cases. Periodic HCV testing is recommended for injection drug users, as well as HIV-seropositive men engaging in unprotected sex with multiple male partners. Otherwise, routine screening is not recommended for household (nonsexual) contacts of HCV-infected persons. Active injection drug users should be directed to needle exchange programs and drug rehabilitation services. Contacts who are susceptible and at risk for hepatitis A or hepatitis B should be vaccinated to prevent dual infections.

   Labor & Industries rules apply for occupational exposures. Also see Section 6.

D. Environmental Evaluation

Usually none, unless transmission occurs in a dialysis center or health care facility. Chronically infected persons should ensure that surfaces and objects contaminated with blood are properly cleaned using appropriate disinfectant solutions.

E. Controlling Further Spread

1. All health care providers with risk for blood exposure should complete the hepatitis B vaccine series to prevent dual infections and follow infection control protocols.
2. Hospitalized patients with hepatitis C virus (HCV) infection should be cared for using standard precautions.
3. Work, Residential or Child Care Restrictions: No occupational, school, or child care restrictions are necessary for HCV-infected individuals. Personal items that could be contaminated with blood or saliva should not be shared and contaminated objects or surfaces should be cleaned and disinfected as soon as possible.
4. Persons who are HCV RNA-positive should be instructed that their blood and other body fluids (particularly semen or vaginal secretions) are infectious to others. They should be educated about ways to reduce the spread of their infection to others.
   - Susceptible household and sexual contacts should be advised to obtain a full hepatitis B vaccination series to prevent dual infection.
   - Surfaces contaminated by saliva or blood should be cleaned and properly disinfected.
   - Cuts and skin lesions should be kept covered.

- Infected persons should not share items potentially contaminated with blood (e.g., blood testing equipment, razors, toothbrushes, or nail clippers).
- Active injection drug users should be directed to needle exchange programs and chemical dependency services. Harm Reduction Coalition provides a list of sites offering services in Washington State (http://harmreduction.org/connect-locally/washington/). People infected with HCV should not share needles, syringes, or drug works with other people. Information for persons who inject drugs (PWID) without access to sterile needles and syringes may be found at the following link http://www.cdc.gov/hiv/risk/idu.html.
- The risk of sexual transmission is low but not absent. HCV-infected persons should use barriers methods correctly every time they have sex.
- Infected persons should not donate blood, plasma, tissues, organs or semen.
- HCV RNA-positive persons who seek medical or dental care should notify involved personnel of their hepatitis C status.

5. Persons with acute hepatitis C should seek guidance on treatment options and linkage to care. Cases should have a repeat test for HCV RNA six months after the first. Those who continue to be HCV RNA-positive are considered to have confirmed chronic infections, and should be counseled accordingly. Maternal antibody may persist in a newborn so antibody testing should be interpreted with caution in infants for at least a year.
6. Educate persons with chronic HCV infections to protect their livers from further harm:
   - Seek a provider who has experience managing chronic HCV infections and is able to assist with establishing linkage to care.
   - Ask their provider about use of over-the-counter drugs (e.g., acetaminophen) that can damage the liver.
   - Stop behaviors that could result in transmission of hepatitis C virus.
   - Avoid alcohol.
   - Get vaccinated against hepatitis A and hepatitis B if susceptible.

6. MANAGING SPECIAL SITUATIONS

A. Needlesticks and Similar Exposures

The risk of hepatitis C virus (HCV) transmission following unintentional parenteral exposure is real (approximately 2%) but there is no preventive therapy available. Current CDC guidelines recommend an antibody test for HCV and an ALT level at both baseline and at 6 months for potential seroconversion. PCR testing for HCV may be done at 4–6 weeks. Risk for HIV and hepatitis B virus should also be assessed using current CDC guidelines. Department of Labor & Industry rules apply for occupational exposures.

Centers for Disease Control and Prevention. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001;50(RR-11):1–52. Available on the web at: http://www.cdc.gov/mmwr/PDF/RR/RR5011.pdf

B. Case is a Health Care Worker

If the case is a dentist, physician, nurse, or other health care worker with potential for exposing patients by blood or other body fluids:

1. The person should be discouraged from working until the acute clinical illness has resolved.
2. Upon return to work, special precautions should be practiced until the worker is no longer infectious, including:
   - Wearing gloves for all procedures during which the hands will be in contact with patients' mucosal membranes or broken skin;
   - Avoiding situations involving sharps that could lead to exposures of susceptible persons to blood or objects contaminated with infected blood;
   - Careful and frequent hand washing.
3. Chronically infected health care workers should be encouraged to voluntarily seek confidential counseling from employee health services regarding risk reduction strategies; evaluation would include a review of their practice by an expert panel.

C. Case is a Suspected Iatrogenic Infection

If two or more possible iatrogenic cases occur in the same dental or healthcare provider or long-term care setting, and the cases have no other identified plausible source of infection or other circumstances suggesting the possibility of iatrogenic infection, notify the Office of Communicable Disease Epidemiology (206-418-5500). If available, hold frozen serum or EDTA tube (at -70^{o} C) on the cases for potential future stain typing if an outbreak is identified. Centers for Disease Control and Prevention (CDC) have a patient notification toolkit: http://www.cdc.gov/injectionsafety/pntoolkit/index.html

If one case underwent a medical or dental procedure or has diabetes testing in a long term setting and has no other identified plausible exposure source, contact the dental or healthcare provider and review infection control procedures. Consider storing a serum or EDTA tube (if available) at -70^{o} C for genotyping in the event an additional case is identified with a potential shared exposure. Contact the Office of Communicable Disease Epidemiology for instructions. There are CDC resources available to investigate a single case of suspected iatrogenic infection:

http://www.cdc.gov/hepatitis/Outbreaks/HealthcareInvestigationGuide.htm
http://www.cdc.gov/hepatitis/Outbreaks/HealthcareInvestigationCheckList.htm
http://www.cdc.gov/hepatitis/Outbreaks/index.htm (main page)

D. Case Is a Recent Blood Donor or Recipient

The blood bank should be notified so that any unused product can be recalled and other persons be tested as appropriate (e.g., other recipient or donor for case).

E. Case Is Pregnant

Inform the pregnant woman that the transmission risk to a fetus during a pregnancy and delivery is about 5%. Recommend prompt hepatitis A and hepatitis B vaccines for the

pregnant woman if susceptible, for the newborn (hepatitis B vaccine series starting at birth and the hepatitis A series starting at age 1 year), for sexual contacts and for household members.

F. Case Is a Perinatal Case

Inform the birth mother that the transmission risk during a future pregnancy and delivery is about 5%. Recommend hepatitis A and hepatitis B vaccines for the pregnant woman and the infant if still susceptible (i.e., did not receive the hepatitis B vaccine series starting at birth and the hepatitis A series starting at age 1 year) and for all future babies. Perinatal hepatitis C cannot be diagnosed until the child is at least 12 months of age.

7. ROUTINE PREVENTION

A. Immunization Recommendations: none

B. Routine Prevention (Source: http://www.cdc.gov/hepatitis/HCV/index.htm)

Provide the following information to persons at risk of infection:

- There is no vaccine to prevent hepatitis C
- If you are injecting drugs, access chemical dependency services; if you can't stop, never share needles, syringes, water, cleaning material, or “works”
- Get vaccinated against hepatitis A and hepatitis B if susceptible
- Don’t share personal care items that might get blood on them (e.g., razor, toothbrush)
- If you are a health care or public safety worker, always follow routine barrier precautions and safely handle needles and other sharps
- Consider the risks if you are thinking about getting a tattoo or body piercing. Make sure the shop follows proper infection control protocols.
- Hepatitis C can be spread by sex, but this is rare. Use latex barriers correctly and every time to prevent the spread of sexually transmitted diseases.
- If you are hepatitis C positive, do not donate blood, organs, or tissue

C. Identifying and Testing Persons at Risk for Chronic Infection

Many persons with chronic hepatitis C infection are unaware of their infection and thus will not receive education about the disease. Advise hepatitis C testing (test once unless there are ongoing risk factors) for persons who:

- Were born from 1945 through 1965
- Currently inject illegal drugs or ever injected illegal drugs, including those who injected once or a few times many years ago
- Received a blood transfusion or organ transplant before July 1992, or were notified that they received blood or an organ from a person who later tested positive; does not apply to tissue or body fluid transplant (e.g., cornea, skin, sperm, ova)
- Received clotting factor concentrates produced before 1987
- Were ever on long-term hemodialysis

- Have HIV infection
- Were born to a hepatitis C-infected women
- Are a health care, emergency medical, or public safety workers who had exposure to HCV through needle sticks, sharps, or mucosal membranes
- Have evidence of chronic liver disease including abnormal liver function tests

Those testing positive for chronic hepatitis C should receive counseling and referral for medical follow-up: http://www.cdc.gov/hepatitis/HCV/Management.htm

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

UPDATES

February 2010: CDC/CSTE case definition replaced the condition name “Hepatitis C Virus Infection (Past or Present) with “Hepatitis C, Chronic”

January 2011:
The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision. Acute case definition updated to include dark urine as clinical criterion and genotype as laboratory criterion. Criteria were specified for prioritizing investigations of cases likely to be new diagnoses (Section 5).

February 2012: In Section 3 case definition updated with laboratory criteria including any hepatitis C virus nucleic acid testing including genotype. Documented asymptomatic seroconversion is a confirmed case.

June 2013: In Section 6 CDC resources listed for single case investigation .

May 2014: Chronic hepatitis investigations transitioned to sampling framework.

March 2016: Case definitions updated for 2016 with addition of Probable acute and Probable chronic hepatitis C. Section 6 (Controlling Further Spread) merged into Section 5.

Appendix A: SAMPLE FAX FOR POSITIVE LABORATORY REPORT

A two-page fax form can be sent to the healthcare provider who requested the hepatitis C test which was reported as positive. The form is used for new cases. Request a Word version of the form from Office of Communicable Disease Epidemiology (206-418-5500) if a customized version is wanted for the jurisdiction (e.g., to include the jurisdiction's logo and fax number).

If needed, write the return fax number for the local health jurisdiction above the patient information block. Using the positive laboratory report, fill in the patient name, age or birthdate if known, and test result and date. Fax the form to the healthcare provider indicated on the laboratory report.

Included on the front of the form are questions about reasons for testing that will indicate if the case is acute (acute symptoms and jaundice OR acute symptoms and ALT > 200 OR documented test conversion in past year) or chronic as well as the healthcare provider's assessment of acute or chronic status. An interview will be needed for an acute hepatitis C case or for the chronic hepatitis long form.

The back of the form is optional and reviews the case definitions for hepatitis C.

The text for a cover letter to the healthcare provider can be customized for the local health jurisdiction.

LHJ LOGO

To healthcare providers:

We received a positive laboratory report of a positive test for hepatitis C. Both acute and chronic hepatitis are notifiable conditions in Washington State.

Please call our office at ###-###-#### if the case was already reported.

If the case has not been previously reported, please complete the form provided and fax it to our office at ###-###-####. Be sure to indicate if the case is acute, chronic, or uncertain.

A person newly diagnosed with hepatitis C should be educated:

- Do not drink alcohol and check with a healthcare provider about all medications including non-prescription medication
- Avoid transmission by cleaning up blood-contaminated material
- Cover cuts and skin lesions
- Do not share blood testing equipment, razors, toothbrushes, or nail clippers
- Do not share needles, syringes, or drug works. Active drug users should be directed to needle exchange programs and drug rehabilitation services
- Use barriers methods correctly every time they have sex
- Do not donate blood, plasma, tissues, organs or semen
- Notify healthcare and dental care personnel of their hepatitis C status
- Get a hepatitis A and hepatitis B vaccine if susceptible
- Advise susceptible close contact to get hepatitis B vaccine

Thank you.

Washington State Department of Health

Hepatitis C – Positive Laboratory Report

County:

LHJ Use ID _____ ☐ **Reported to DOH Date** ___/___/___
LHJ Classification ☐ **Confirmed** ☐ **Probable**
By: ☐ **Lab** ☐ **Clinical** ☐ **Epi Link:** _____
LHJ notification date: _____ **Eval/Web ID:** _____

The patient in the attached laboratory report had a positive test for hepatitis C. If the case has not been previously reported from your office, please complete the form below and fax to: _____

PATIENT INFORMATION

Name (last, first) _____
Address _____ ☐ Homeless
City/State/Zip _____
Phone(s)/Email _____
Alt. contact ☐ Parent/guardian ☐ Spouse ☐ Other Name: _____
Zip code (school or occupation): _____ Phone: _____
Occupation/grade _____
Employer/worksite _____ School/child care name _____

Birth date ___/___/___ Age _____
Gender ☐ F ☐ M ☐ Other ☐ Unk
Ethnicity ☐ Hispanic or Latino
☐ Not Hispanic or Latino ☐ Unk
Race (check all that apply)
☐ Amer Ind/AK Native ☐ Asian
☐ Native HI/other PI ☐ Black/Afr Amer
☐ White ☐ Other ☐ Unk

CLINICAL INFORMATION

This report is: ☐ **Acute** hepatitis C ☐ **Chronic** hepatitis C ☐ Cannot determine if acute or chronic hepatitis C

Reason for current testing (check all that apply): ☐ Acute hepatitis symptoms: vomiting, diarrhea, abd. pain, anorexia, nausea, fever
☐ Jaundice ☐ Asymptomatic with risk factor ☐ Prenatal ☐ Asymptomatic, no risk ☐ Elevated liver enzymes
☐ Follow-up for previous test ☐ Born 1945-1965 ☐ Blood/organ donor ☐ Unk ☐ Other: _____

Onset date: ___/___/___ ☐ Onset date is estimated Diagnosis date: ___/___/___ Illness duration: _____ days

Y	N	DK	NA	
☐	☐	☐	☐	Pregnant **If yes,** EDD: __/__/__, Hospital: _____
☐	☐	☐	☐	Diabetes **If yes,** diagnosis date: __/__/__
☐	☐	☐	☐	Ever had liver biopsy
☐	☐	☐	☐	Healthcare provider-diagnosed cirrhosis
☐	☐	☐	☐	Ever diagnosed with liver cancer
☐	☐	☐	☐	Patient has health insurance If **Y** check all that apply: ☐ Medicare ☐ Medicaid ☐ VA / Military ☐ Employer ☐ Individual
☐	☐	☐	☐	Recommended to receive treatment for hepatitis C
☐	☐	☐	☐	Received treatment ☐ Discontinued ☐ Completed

Known risk factors [**Acute**: within 6 months; **Chronic: lifetime**]

Y	N	DK	NA	
☐	☐	☐	☐	Clotting factor (year: _____)
☐	☐	☐	☐	Blood products (year: _____)
☐	☐	☐	☐	Organ transplant (year: _____)
☐	☐	☐	☐	Hemodialysis
☐	☐	☐	☐	In job with potential blood or body fluid exposure
☐	☐	☐	☐	Tattoo
☐	☐	☐	☐	Body piercing (except ears)
☐	☐	☐	☐	Acupuncture
☐	☐	☐	☐	New or risk sexual partner
☐	☐	☐	☐	Perinatal transmission
☐	☐	☐	☐	Close contact
☐	☐	☐	☐	Injection drug use
☐	☐	☐	☐	Incarceration
☐	☐	☐	☐	Other: _____
☐	☐	☐	☐	No risk factors

Laboratory

P = Positive O = Other
N = Negative NT = Not Tested
I = Indeterminate

P	N	I	O	NT	
☐	☐	☐	☐	☐	**Reactive anti-HCV screen** (mo/yr) ___/_____ Signal to cut-off ratio (if known) _____
☐	☐	☐	☐	☐	**HCV RNA qualitative** (mo/yr) ___/_____
☐	☐	☐	☐	☐	**HCV RNA quantitative** (mo/yr) ___/_____ Value: _____/ml ☐ I.U. ☐ RNA copies

If no confirmatory test, primary reason why not:
☐ Lost to follow-up ☐ Patient declined
☐ Treatment not medically indicated
☐ Limited life expectancy ☐ Other: _____

☐ ☐ ☐ ☐ ☐ **HCV genotyping**
Results: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ Other _____ ☐ Unk

☐ ☐ ☐ ☐ ☐ **Documented negative antibody, NAT or antigen result within prior 12 months (test conversion in past year)**

Liver function tests
(If >1 LFT in past 3 months, report peak; else give most recent).

☐ ☐ ☐ ☐ ☐ **Serum aminotransferase (SCOT [AST] or SGPT [ALT] elevated above normal for lab**
ALT (SGPT) Actual value: _____ date __/__/__
AST (SGOT) Actual value: _____ date __/__/__

***Note: May be acute infection if AST or ALT > 7 times normal**

Where did exposure probably occur? ☐ In WA (County: _____) ☐ US but not WA ☐ Not in US ☐ Unk

Investigator _____ **Phone/email:** _____

Investigation complete date ___/___/___
Record complete date ___/___/___

Appendix B: GLOSSARY OF TERMS

Liver Function Testing

ALT/AST: liver enzymes classified as serum aminotransferases or transaminases and are useful indicators of liver damage. Alanine aminotransferase or ALT (SGOT) and is particularly sensitive for assessing liver damage secondary to HCV compared to aspartate aminotransferase or AST (SGPT). An elevation in either one is required to meet the case definition for acute hepatitis A or B, while the hepatitis C case definition requires an ALT level over 200 IU/L.

Hepatitis A Virus (HAV) Testing

IgM anti-HAV: IgM antibody to HAV. Indicates acute infection with HAV.

Anti-HAV total: combined antibodies to HAV including IgM (acute) and IgG (long term).

Hepatitis B Virus (HBV) Testing

HBsAg: hepatitis B surface antigen, a marker of replicating virus. It occurs in acute and chronic but not resolved infections. Its presence indicates that the patient is considered to be infectious.

Anti-HBs: hepatitis B surface antibody. It shows immunity through infection or vaccination.

IgM Anti-HBc: IgM antibody to hepatitis B core antigen, indicative of recent HBV infection.

Anti-HBc: total antibody to hepatitis B core antigen. Becomes positive at the onset of illness and persists for life so does not distinguish among recent, past, or chronic infection.

HBeAg: hepatitis B e antigen, a core protein from infected liver cells and marker of high infectivity. Similar to HBsAg, it occurs in acute infection and may persist in chronic infections.

HBeAb: hepatitis B e antibody is produced during acute HBV infection and may persist in chronic infections. Conversion from e antigen to e antibody predicts long-term clearance of HBV in patients receiving antiviral therapy and indicates lower levels of HBV. Chronic HBsAg cases can be positive for either HBeAg or anti-HBe, but are less infectious if anti-HBe is present.

Hepatitis B virus DNA: signifies active replication of the virus and infectivity. It is usually done to test for chronic infection, and viral load may be used to decide whether treatment is warranted.

Hepatitis C Virus (HCV) Testing

Anti-HCV EIA: enzyme immunoassay for HCV antibody. Indicates presence of antibody only, not distinguishing acute and chronic infections.

HCV Rapid Antibody Test (anti-HCV): OraQuick® HCV Rapid Antibody Test allows point-of-care testing for HCV antibody using fingerstick or venipuncture whole blood, with test performance comparable to other FDA-approved, lab-conducted antibody assays.

PCR: polymerase chain reaction, measures HCV RNA and indicates active viral replication. The qualitative PCR is more sensitive and is preferred for initial testing. Quantitative PCR is often used to guide treatment decisions and to follow progress of treatment.

HCV genotype: HCV has at least 6 different genotypes. Genotype 1 is the most common in the United States (70–75% of infections). A positive genotype indicates the presence of HCV RNA.