

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 (Acute and Chronic [initial diagnosis only])

1. Acute Hepatitis C

- 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 on a monthly basis
- d. Local health jurisdictions: Acute cases notifiable to the Washington State Department of Health (DOH) Communicable Disease Epidemiology (CDE) within 7 days of case investigation completion or summary information required 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 on a monthly basis
- d. Local health jurisdictions: Chronic cases (initial diagnosis only) notifiable to DOH Infectious Disease and Reproductive Health (IDRH) within 7 days of case investigation completion or summary information required within 21 days.

3. Perinatal Hepatitis C

- a. Health care providers: notifiable to local health jurisdiction within one month (as chronic hepatitis C)
- b. Health care facilities: notifiable to local health jurisdiction within one month (as chronic hepatitis C)
- c. Laboratories: Hepatitis C virus (detection of viral antigen, antibody or nucleic acid) notifiable on a monthly basis (as detection of viral antigen, antibody or nucleic acid)

- d. Local health jurisdictions: Perinatal cases (initial diagnosis only) notifiable to CDE within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

Determine if the reported patient has been previously reported as an acute or chronic case of hepatitis C.

1. Acute hepatitis C
 - a. Begin follow-up investigation for acute hepatitis C within three work days.
 - b. Attempt to determine the source of infection.
 - c. Inform the case of treatment options.
 - d. Educate the case about hepatitis C and how to reduce the risk of transmission.
 - e. Educate the case about minimizing disease progression, focusing on the importance of vaccination for hepatitis A and hepatitis B and the need to avoid alcohol. If applicable, recommend measures to prevent possible future infection with hepatitis B such as not sharing injection drug equipment
 - f. Report all *confirmed* acute hepatitis C cases to CDE. Complete the acute hepatitis C report form (<http://www.doh.wa.gov/notify/forms/hepc.pdf>) and enter the data into the Public Health Issues Management System (PHIMS) as an acute hepatitis C case.
2. Chronic hepatitis C
 - a. Report all *confirmed* and *probable* chronic hepatitis C cases to IDRH. Complete as much of the chronic hepatitis C report form as is possible (<http://www.doh.wa.gov/notify/forms/hepbccchronic.pdf>) and enter the data into the PHIMS as a chronic hepatitis C case, or report through any other accepted procedure.
 - b. CDC recommends educating all persons with chronic hepatitis C regarding disease transmission (<http://www.cdc.gov/hepatitis/HCV/Strategy/NatHepCPrevStrategy.htm>). If a local health jurisdiction does not have resources to investigate all persons with chronic infection, efforts should focus on women of child bearing age who might be pregnant and persons most likely to have a new diagnosis based on age or suspected risk factor (see Section 5).
3. Perinatal hepatitis C cases

Report all *confirmed* perinatal hepatitis C cases (see definitions below) to CDE. Complete the first page of the acute hepatitis C report form (skipping exposure and public health issues/actions sections: <http://www.doh.wa.gov/notify/forms/hepc.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.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Hepatitis C virus is an RNA virus in the Flavivirus family and unrelated to viruses that cause hepatitis A, B, D, and E. There are at least 6 hepatitis C virus genotypes: genotype 1 is the most common one in the United States. Concurrent infections with more than one genotype are possible.

B. Clinical Manifestations

Most persons with newly acquired infections are either asymptomatic or experience mild symptoms unlikely to prompt a visit to a health care provider. Approximately 20–30% of newly infected persons experience fatigue, abdominal pain, poor appetite or jaundice. Additional symptoms can include fever, dark urine, clay-colored stool, nausea, vomiting, and joint pain. This clinical presentation is indistinguishable from other viral liver infections such as hepatitis A and 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 infected individuals develop chronic infection. Long-term complications of chronic infection can include chronic liver disease, cirrhosis and hepatocellular carcinoma. The risk of these sequelae increases for patients chronically infected with both hepatitis B virus and hepatitis C virus. Patients with signs of chronic liver disease due to hepatitis C virus are also at an increased risk of fulminant hepatic failure should they acquire hepatitis A virus infection.

C. Hepatitis C in Washington

In Washington, fewer than 30 acute hepatitis C cases are reported annually, likely reflecting low identification of acute infections. DOH receives over 5000 chronic hepatitis C reports each year.

D. Reservoir

Human beings with acute or chronic infections are the reservoir. While relatively few infected persons develop chronic infections, they are probably the most important sources of hepatitis C virus transmission because they are infectious for many years, compared to the few weeks that people with resolved acute hepatitis C are infectious.

E. Modes of Transmission (<http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm#section1>)

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 means of HCV transmission in the United States)
- Receipt of donated blood, blood products, and organs (once a common means of transmission but now rare in the United States since blood screening became available in 1992)
- Needlestick injuries in healthcare settings
- Birth to an HCV-infected mother

HCV can also be spread less frequently through

- Sex with an HCV-infected person (an inefficient means of transmission)
- Sharing personal items contaminated with infectious blood, such as razors or toothbrushes (also inefficient vectors of transmission)
- Inappropriate infection control during surgery or other invasive healthcare procedures, such as medication injections (usually recognized in the context of outbreaks) or dialysis

F. Incubation Period

For the approximately 20% of newly infected persons who develop symptoms of acute hepatitis C, the time period from exposure to onset of symptoms is generally 4–12 weeks with a range of 2 weeks to 6 months.

G. Period of Communicability

Communicability begins one or more weeks before onset of symptoms and persists indefinitely if chronic infection develops, as occurs in most persons. It is not clear if communicability waxes and wanes, and if so, under what circumstances. Trans-placental transmission occurs primarily for women with high viral titers.

H. Treatment

Most persons acutely infected with hepatitis C are asymptomatic or only mildly symptomatic, so are rarely identified and treated. There is consistent evidence that treatment of acute infections reduces the risk that a chronic infection will evolve. Combination antiviral therapy with pegylated interferon and ribavirin were commonly used to treat chronic hepatitis C. Response varied by genotype, with lower response rates in genotype 1, and higher response rates in genotypes 2 and 3. Most infections in the United States are genotype 1. Therapeutic options first available in 2011 have improved treatment success rates.

Expert advice should be obtained regarding treatment of both acute and chronic hepatitis C, particularly as therapeutic options change. Infants may spontaneously clear the virus, so treatment decisions should be made for each case after appropriate consultation.

For additional information regarding treatment, see:

<http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm>

3. CASE DEFINITIONS

A. Acute Hepatitis C (2012)

1. Clinical case definition

An acute illness with a discrete onset of any sign or symptom* consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), and either a) jaundice/dark urine, or b) elevated serum alanine aminotransferase (ALT) levels >400IU/L.

*A documented negative HCV antibody laboratory test result followed within 6 months by a positive test (as described in the laboratory criteria for diagnosis) result does not require an acute clinical presentation to meet the surveillance case definition.

2. Laboratory criteria for diagnosis

One or more of the following three criteria:

- Antibody to hepatitis C virus (anti-HCV) screening test-positive with a signal to cut-off ratio (S/CO) predictive of a true positive as determined for the particular assay as defined by CDC. (URL for S/CO of screening tests: <http://www.cdc.gov/hepatitis/HCV/LabTesting.htm>), **OR**
- Hepatitis C virus recombinant immunoblot assay (HCV RIBA) positive, **OR**
- Nucleic acid test (NAT) for HCV RNA positive (including including qualitative, quantitative or genotype testing)

AND, if done meets the following two criteria:

- Absence of IgM antibody to hepatitis A virus (IgM anti-HAV) **AND**
- Absence of IgM antibody to hepatitis B core antigen (IgM anti-HBc)

3. Case classification

Confirmed:

a case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis C, **OR**

a case with documented seroconversion regardless of symptoms

B. Chronic Hepatitis C (2011)

1. Clinical case definition

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

- Antibodies to hepatitis C virus (anti-HCV) screening-test positive with a signal to cut-off ratio (S/CO) predictive of a true positive as determined for the particular assay as defined by CDC. (URL for S/CO of screening tests: <http://www.cdc.gov/hepatitis/HCV/LabTesting.htm>), **OR**
- Hepatitis C virus RIBA (recombinant immunoblot assay) positive, **OR**
- Nucleic acid amplification test (NAT) for HCV RNA positive (including genotype), **OR**

3. Case classification

Probable: a case that does not meet the case definition for acute hepatitis C, is anti-HCV positive (repeat reactive) by EIA and has alanine aminotransferase (ALT or SGPT) values above the upper limit of normal, but the anti-HCV EIA result has not been verified by an additional more specific assay or the S/CO is unknown.

Confirmed: a case that is laboratory confirmed and that does not meet the case definition for acute hepatitis C.

C. Perinatal Hepatitis C (DOH)

1. Clinical case definition: Perinatal hepatitis C in the newborn or infant is typically asymptomatic. Note the infection can be diagnosed only at a year of age or older.
2. Laboratory criteria for diagnosis
 - Anti-HCV positive (repeat reactive) by EIA, verified by an additional more specific assay (e.g. RIBA for anti-HCV or nucleic acid testing for HCV RNA), **OR**
 - HCV RIBA positive, **OR**
 - Nucleic acid test (NAT) for HCV RNA positive (including including qualitative, quantitative or genotype testing), **OR**
 - Anti-HCV screening test-positive with a S/CO predictive of a true positive as determined for the specific assay as defined by CDC. (URL for S/CO of several tests: <http://www.cdc.gov/hepatitis/HCV/LabTesting.htm>)

3. Case classification

Confirmed: an infant who is laboratory confirmed at > **12 months of age** and who does not meet the case definition for acute hepatitis C.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Laboratory Diagnosis

Two types of tests are used to diagnose hepatitis C virus (HCV) infection; immunoglobulin G (IgG) antibody assays for anti-HCV (e.g., EIA, CIA, RIBA) and nucleic acid amplification tests (i.e., PCR). Anti-HCV generally can be detected 4–10 weeks after infection, but detection may be delayed up to 6 months or may never be detected in an immunocompromised patient. Maternal antibody may persist in a newborn so antibody testing should be interpreted with caution in infants aged less than one year.

Anti-HCV Enzyme Immunoassays (EIA): Anti-HCV EIAs are highly *sensitive* tests generally used for screening purposes. This test indicates the presence of antibody only and cannot be used to distinguish recent and past infection. When the prevalence of hepatitis C in a population decreases, the positive predictive value of the test will decrease (i.e., more false positive results will occur). Additional testing is required to determine if the individual is chronically infected.

The signal to cut-off ratio (S/CO) can help to determine the likelihood that a positive anti-HCV EIA represents a true positive. S/CO is calculated by dividing the optical density (OD) value of the sample being tested (i.e., the client's test result) by the OD value of the assay cut-off for that run. Each test kit or assay has a signal-to-cut-off ratio above which the client has a 95% probability of being HCV-positive regardless of the prevalence of HCV in the population being tested.

For additional information regarding S/CO and S/COs predictive of a true positive, see: <http://www.cdc.gov/hepatitis/HCV/LabTesting.htm>

Recombinant immunoblot assay (RIBA): RIBA is a more *specific* test for anti-HCV antibody (i.e., the test is good for ruling out false positives). It is not as *sensitive* as the

anti-HCV EIA and should not be used as an initial screening test, but it is useful for ruling out false-positive EIA tests.

Qualitative and qualitative tests to detect viral nucleic acids (HCV RNA PCR):

Polymerase chain reaction (PCR) is used to measure HCV RNA and indicates active replication of the virus (e.g., the chronic carrier state). The qualitative PCR is more *sensitive* than the quantitative assay and is preferred for the initial test. The quantitative PCR is often used to guide initial treatment decisions and to follow the progress of individuals undergoing treatment.

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

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

PHL does not perform tests for hepatitis C, which are widely available at commercial laboratories. In certain circumstances, Communicable Disease Epidemiology may request a specimen from a case for molecular sequencing at the Centers for Disease Control and Prevention.

C. Specimen Collection

Serum can be collected from patients from the onset of symptoms.

5. ROUTINE CASE INVESTIGATION

A. Evaluate the Diagnosis

Review laboratory tests to distinguish between acute cases of hepatitis C and chronic infections. Check PHIMS and follow up a newly diagnosed case of acute or chronic infection.

1. Health Care Provider and Health Care Facility Report of Acute Case:

- Obtain information from the health care provider, hospital infection control staff, or patient to determine if the patient meets the acute hepatitis C case definition.
- If the patient has symptoms consistent with acute hepatitis, determine if hepatitis A and hepatitis B have been ruled out since these infections are clinically indistinguishable from hepatitis C.
- If the patient meets the acute hepatitis C case definition, proceed to Section 5B.
- Local health jurisdictions are encouraged to provide education (see Section 6) to patients who meet the chronic hepatitis C case definition, focusing efforts on those likely to have a new diagnosis.

2. Laboratory Reports Only (including reports from hospital laboratories):

- If the patient was previously reported as a confirmed chronic case, no further investigation is needed. If the patient was previously reported as only a probable chronic case and the new laboratory evidence indicated confirmed infection, update the case. If the patient was previously reported as an acute hepatitis C case and is now a chronic infection, report the case as a probable or confirmed chronic infection as appropriate.

- If the patient was not previously reported, complete as much of the chronic hepatitis C form as is possible for a chronic hepatitis C case, either confirmed or probable, and enter the information into PHIMS, or report through any other accepted procedure.
 - Resource permitting, local health jurisdictions are encouraged to contact the provider or laboratory to determine if the patient meets the acute hepatitis C case definition and/or is newly diagnosed. Persons who meet the acute hepatitis C case definition should be investigated as described below (5B) and the condition changed to acute hepatitis C. If a local health jurisdiction does not have resources to investigate all persons with chronic infection, efforts should focus on women of child bearing age who might be pregnant and persons most likely to have a new diagnosis based on age < 30 years for males and age < 45 years for females. Also investigate any case likely to be associated with a healthcare facility or medical device. These cases may be determined by faxing a one-page data collection form to the health care provider (Appendix B).
 - Resource permitting, local health jurisdictions are encouraged to provide education (see Section 6) to persons who meet the chronic hepatitis C case definition, focusing efforts on those likely to have a new diagnosis.
3. Laboratory Evidence of Probable Chronic Infection: (i.e., anti-HCV positive by EIA and elevated alanine aminotranferase, but the anti-HCV EIA result not been verified)
- If the patient was previously reported as an acute hepatitis C infection and now meets the probable chronic hepatitis C case definition, enter the case into PHIMS.
 - Resource permitting, local health jurisdictions are encouraged to provide education (see Section 6) to persons who meet the chronic hepatitis C case definition, focusing efforts on those likely to have a new diagnosis. If a local health jurisdiction does not have adequate resources, efforts should focus on women of child bearing age who might be pregnant and persons most likely to have a new diagnosis based on age < 30 years for males, age < 45 years for females, or association with a healthcare facility or medical device (e.g., dialysis, blood glucose testing in a long term care facility).
 - If the patient was not previously reported, complete as much of the chronic hepatitis C form as is possible and enter the information into PHIMS as a probable chronic hepatitis C case, or report through any other accepted procedure.

B. Identify the Source of Infection

For acute infections and those suspected to have been infected through medical, dental or commercial procedures, collect information about possible exposures, including high risk behaviors, during the period 14–180 days before the onset of illness. Particular emphasis should be placed 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 with subsequent positive test.

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 within the 6 months prior to onset of current illness, including organ or tissue transplant, dialysis, dental or surgical care.
- Other parenteral 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, if not impossible. 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 carrier is a child, it would be reasonable to screen parents and other household members for evidence of infection. Likely health or dental care associated exposures should also be investigated.

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. Identify sexual or needle-sharing contacts and others who have had direct (percutaneous or mucosal) exposure to blood.
3. If the case is a dentist, surgeon, or other health care worker, evaluate the potential for exposing patients (see Section 7A).

D. Environmental Evaluation

Usually none, unless transmission occurs in a dialysis center or health care facility.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations / Case Management

1. Hospitalized patients should be cared for using standard precautions. All health care providers with risk for blood exposure should complete the hepatitis B vaccine series to prevent dual infections.
2. Work, Residential or Child Care Restrictions: No occupational, school, or child care restrictions are necessary for hepatitis C virus (HCV)-infected individuals. The risk of transmission is lower than for hepatitis B virus. The risk can be reduced through sound infection control procedures and environmental cleanliness. Personal items that could be contaminated with blood or saliva should not be shared. Contaminated objects or surfaces should be cleaned and disinfected as soon as possible.
3. Persons who are HCV RNA positive should be instructed that their blood and other body fluids (particularly semen and 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 with saliva and 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., needles, syringes, drug works, blood testing equipment, razors, toothbrushes).
 - Infected persons should not share hypodermic needles, syringes, or drug works with other people. Disposable needles should be used only once. As a last resort, undiluted household bleach can be used to clean syringes and needles. Active injection drug users should be directed to needle exchange programs and drug rehabilitation services.
 - Infected persons should understand the risk of sexual transmission is low but not absent. HCV-infected persons with one long-term steady sex partner should discuss the risk of transmission with their partner. HCV-infected persons engaged in high-risk sexual activities should be counseled to use latex barriers 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.
4. Persons with acute hepatitis C should have a repeat test for HCV RNA six months after the first to determine the clearance or continued presence of viremia. Those who continue to be HCV RNA-positive are considered 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.
5. Persons with chronic hepatitis C virus infection should be educated to protect their liver from further harm. They should:
- See a provider with experience managing chronic hepatitis C infections and treatment.
 - 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.
 - Not drink alcohol.
 - Get vaccinated against hepatitis A and hepatitis B if susceptible.

B. Contact Management

1. Passive Immunization

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

2. Contacts of Persons with Chronic Hepatitis C

- Long-term sexual contacts and persons who have 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 cases. Routine screening is not recommended for household (nonsexual) contacts of HCV-infected patients.

- 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 and hepatitis B should be vaccinated against these viruses to prevent dual infections.

C. Environmental Measures

Ensure that surfaces and objects contaminated with blood are properly disinfected using gloves and appropriate disinfectant solutions.

7. 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. Current CDC guidelines recommend an antibody test for HCV and an ALT level, both at baseline and at 6 months to capture the full seroconversion time-window. PCR testing for HCV may be performed at 4–6 weeks. Risk for HIV and hepatitis B virus should also be assessed using current CDC guidelines.

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 Suspected Iatrogenic Infection

If two or more possible iatrogenic cases occur in patients of the same dental or health care provider, and the cases have no other identified plausible source of infection, or other circumstances suggesting the possibility of iatrogenic infection, notify Communicable Disease Epidemiology.

If one case underwent a medical or dental procedure and has no other identified plausible source of infection, contact the dental or health care provider and review infection control procedures. Consider storing a blood specimen (if available) for genotyping in the event an additional case is identified with a potential shared exposure. Contact Communicable Disease Epidemiology for instructions.

C. Case Is a Recent Blood Donor or Recipient

The blood bank should be notified so that any unused product can be recalled.

D. Case Is Pregnant

Inform the pregnant woman that the transmission risk to a child during a pregnancy and delivery is about 5%. Recommend prompt hepatitis A and hepatitis B vaccines for the pregnant woman if susceptible and for the newborn (hepatitis B vaccine series starting at birth and the hepatitis A series starting at age 1 year).

E. Case Is a Perinatal Case

Inform the birth mother that the transmission risk to a child during a future pregnancy and delivery is about 5%. Recommend hepatitis A and hepatitis B vaccines for 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).

8. ROUTINE PREVENTION

A. Immunization Recommendations

Currently there is no vaccine for hepatitis C virus (HCV).

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

Provide the following information to persons at risk of infection:

- There is no vaccine to prevent hepatitis C.
- Do not shoot drugs; if you shoot drugs, stop and get into a treatment program; if you can't stop, never share needles, syringes, water, cleaning material, or "works", and get vaccinated against hepatitis A and B.
- Do not share personal care items that might have blood on them (razor, toothbrush).
- If you are a health care or public safety worker, always follow routine barrier precautions and safely handle needles and other sharps; if susceptible, get vaccinated against hepatitis B.
- Consider the risks if you are thinking about getting a tattoo or body piercing. You might get infected if the tools have someone else's blood on them or if the artist or piercer does not follow good infection control practices.
- HCV can be spread by sex, but this is rare. If you are having sex with more than one steady sex partner, use latex barriers correctly and every time to prevent the spread of sexually transmitted diseases. You should also get vaccinated against hepatitis A and B, if susceptible.
- If you are HCV positive, do not donate blood, organs, or tissue.

C. Identifying and Testing Persons at Risk for Chronic Infection

Many persons with chronic HCV infection are unaware of their infection and therefore will not receive education for routine prevention. HCV testing should be offered to:

- Persons who ever injected illegal drugs, including those who injected once or a few times many years ago.
- Persons who received a blood transfusion or organ transplant before July 1992.
- Persons who received clotting factor concentrates before 1987.
- Persons who were ever on long-term dialysis.
- Children born to HCV-infected women.
- Health care, emergency medical, and public safety workers after needlesticks, sharps, or mucosal exposures to HCV-positive blood.

- Persons with evidence of chronic liver disease.

Those testing positive for chronic hepatitis C should receive counseling and referral for medical follow-up. For testing recommendations see:

<http://www.cdc.gov/hepatitis/HCV/Strategy/NatHepCPrevStrategy.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.

Appendix A: GLOSSARY OF TERMS**Liver Function Testing**

ALT/AST: these are both liver enzymes classified as serum aminotransferases or transaminases and are useful indicators of liver damage. Alanine aminotransferase is usually abbreviated as ALT (or SGOT) and is particularly sensitive for assessing liver damage secondary to HCV. Aspartate aminotransferase is referred to as AST (or SGPT). In acute hepatitis A or B, an elevation in either one is required to meet the case definition, while the hepatitis C case definition requires an elevation in the ALT to over 400 IU/L.

Hepatitis A Testing

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

Anti-HAV total: combined antibody to HAV including IgM with acute infection and IgG with long term protection.

Hepatitis B Testing

HBsAg: hepatitis B surface antigen, a marker of replicating virus. It occurs as part of acute infection and persists in chronic infection. Its presence indicates that the patient is considered to be infectious.

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

IgM Anti-HBc: IgM antibody to hepatitis B core antigen, indicative of recent infection with hepatitis B virus. Antibody to core antigen only occurs following infection, not immunization.

Anti-HBc: total antibody to hepatitis B core antigen. This marker becomes positive at the onset of symptoms in acute hepatitis B then persists for life. Therefore, it does not distinguish between recent, past, or chronic infection.

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

HBeAb: hepatitis B e antibody is produced by the immune system temporarily during acute HBV infection and may persist in chronic infections. Spontaneous conversion from e antigen to e antibody is a predictor of long-term clearance of HBV in patients undergoing antiviral therapy and indicates lower levels of HBV. Chronic hepatitis B surface antigen carriers can be positive for either HBeAg or anti-HBe, but are less infectious when anti-HBe is present.

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

Hepatitis C Testing

Anti-HCV EIA: enzyme immunoassay to measure HCV antibody. Indicates presence of antibody only and cannot be used to distinguish between recent and past infection. Additional testing is required to determine if the individual is chronically infected.

Signal-cutoff ratio (S/CO): can be used to help determine the likelihood that a positive anti-HCV EIA represents a true positive. Each assay has a cut-off value that is considered a “positive” result; the S/CO can be calculated by dividing the optical density (OD) value of the sample being tested (e.g., the client’s test result) by that particular assay’s cut-off value. Each test kit or assay has a S/CO ratio above which the client has a 95% probability of being HCV-positive and should be reported as a case.

RIBA: recombinant immunoblot assay, a more *specific* test for anti-HCV antibody (in other words, it’s good for ruling out false positives). It is not as *sensitive* as the anti-HCV EIA and should not be used as an initial screening test, but it is useful for ruling out false-positive EIA tests.

PCR: polymerase chain reaction, used to measure HCV RNA and indicates active replication of the virus (e.g., the chronic carrier state). The qualitative PCR is more sensitive than the quantitative assay and is preferred for the initial test. The quantitative PCR is often used to guide initial treatment decisions and to follow the progress of individuals undergoing treatment.

HCV genotype: HCV can be divided into at least 6 different genotypes. Genotype 1 is the most common in the United States, accounting for 70–75% of infections. A positive genotype indicates the presence of HCV RNA.

Appendix B: Sample Hepatitis C Data Collection Form for Healthcare Providers

The data collection form that follows can be edited and faxed to health care providers to obtain the core information for reporting a case of acute or chronic hepatitis C. The local health jurisdiction should provide its own contact information as indicated.

Fax to: **[Local health Jurisdiction Name]** at **[fax number]**

HEPATITIS C DATA COLLECTION

We have received a positive Hepatitis C laboratory report for the following patient. Please complete the demographic and risk information below for the confidential mandatory case report.

CLIENT _____ BIRTHDATE ___/___/___ LAB REPORT DATE ___/___/___

ADDRESS _____ PROVIDER _____

GENDER: Male Female (if female: Pregnant/due date: _____ Not pregnant Unk)

ETHNICITY: Hispanic Non-Hispanic Hispanic Unk

RACE: American Indian/Alaskan Native Asian Native Hawaiian Islander/Other Pacific Islander
 Black African American White Other Unk

CLINICAL

When was the patient first diagnosed with hepatitis C? ___/___/___

Why was the patient recently tested for hepatitis C? _____

Y N DK NA (Y=yes, N=No, DK=patient doesn't know, NA=patient not asked)

Did the patient experience a discrete onset of symptoms? If yes, onset ___/___/___

Is the patient jaundiced?

LABORATORY (P=positive, N=negative, I=indeterminate, O=other, NT=not tested)

P N I O NT

Anti-HCV screen (EIA) with signal to cut-off ratio > lab reference value (mon/yr: ___/___)

HCV RIBA (mon/yr: ___/___)

HCV RNA quantitative (mon/yr: ___/___)

HCV qualitative or HCV genotyping (mon/yr: ___/___)

Hepatitis A IgM anti-HAV

Hepatitis B core antigen IgM (anti-HBc)

Hepatitis B surface antigen

Serum aminotransferase (AST [SGOT] or ALT [SGPT]) elevated above normal

AST (SGOT) Actual Value: _____

ALT (SGPT) Actual Value: _____

LIFETIME EXPOSURE HISTORY (Please complete as much as possible.)

Y N DK NA (Y=yes, N=No, DK=patient doesn't know, NA=patient not asked)

Contact with a confirmed or suspect hepatitis C case If **Yes**, type of contact:
 Household Sexual Needle share Birth mother Other: _____

Factor concentrates before 1987

Blood products or solid organ transplant (If yes, date of receipt: ___/___/___)

Employed in job with potential for exposure to human blood or body fluids

Injection street drug use

Chronic hemodialysis

Potential medical/dental procedure transmission (e.g., surgery, medication injection, finger stick test)

Patient Education Plan (Select all that apply)

- Provider has informed client about the diagnosis.
- Provider has informed client about treatment options.
- Provider has evaluated client need for hepatitis A vaccine and hepatitis B vaccine.
- Provider has offered client information/education on hepatitis C.
- Provider would like **[local health jurisdiction]** to educate client on hepatitis C.

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