

Hepatitis C

(Previously known as Non-A, Non-B Hepatitis and HCV Infection)

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description:

Symptoms - Acute

Initial hepatitis C infection is often asymptomatic (~80% of cases) or mild; therefore, it is uncommon for people to be diagnosed with HCV infection in the acute stage. If clinical illness does occur, symptoms begin about 7 weeks after infection and can include: jaundice, fatigue, dark urine, abdominal pain, loss of appetite, and nausea. About 15–25% of HCV-infected individuals recover spontaneously (reasons for this are still unknown); the rest develop chronic infection. Hepatitis C is a disease with varying rates of progression. In general, however, its course is slowly progressive.

Symptoms – Chronic

Most people are asymptomatic during the first decade or two of chronic HCV infection. Some patients will experience a range of symptoms including fatigue, headache, joint aches, muscle aches, nausea, jaundice, loss of appetite, and/or abdominal pain.

For many with chronic hepatitis C, signs and symptoms appear only when liver disease is advanced. Almost 70% of those with chronic HCV infection develop chronic liver disease, a situation in which the virus damages the liver. The damage may progress to severe disease, including cirrhosis, liver cancer, and liver failure.

Severe disease or cirrhosis symptoms include fatigue, muscle weakness, poor appetite, nausea, weight loss, itching, dark urine, fluid retention, and abdominal swelling.

Causative Agent:

HCV is a spherical, enveloped, single-stranded RNA virus belonging to the Flaviviridae family and Flavivirus genus. HCV is closely related to hepatitis G, dengue, and yellow fever viruses. HCV can produce at least 10 trillion new viral particles each day. Six major HCV genotypes and numerous subtypes have been identified.

Genotypes

- The major HCV genotype worldwide is genotype 1, which accounts for 40-80% of all isolates.
- Genotypes 1a and 1b are prevalent in the United States.
- Genotypes 2 and 3 are also found globally and account for a significant minority of infections.

- HCV genotype 1, particularly 1b, does not respond to therapy as well as genotypes 2 and 3.
- Genotype 1 also may be associated with more severe liver disease.

Hepatitis G virus (also known as GB Virus Type C) is a closely related virus. Currently, it is not known if this virus causes illness. Approximately 2-5% of people in the U.S. carry antibodies against this virus.

Differential Diagnosis:

The major conditions that can be confused clinically with acute hepatitis C include:

- acute hepatitis A and B
- drug induced hepatitis
- alcoholic hepatitis
- autoimmune disorders

The major conditions that can be confused clinically with chronic hepatitis C include:

- autoimmune hepatitis
- chronic hepatitis B and D
- alcoholic hepatitis
- nonalcoholic steatohepatitis (fatty liver)
- sclerosing cholangitis
- Wilson's disease
- alpha-1-antitrypsin-deficiency-related liver disease
- drug-induced liver disease

Laboratory identification (see Attachment A and B):

The following tests are available to diagnose Hepatitis C:

- Anti-HCV screening test (may have signal to cut-off ratio predictive of a true positive)
- HCV RIBA
- NAT or HCV RNA
- Six major HCV genotypes and numerous subtypes have been identified (1a, 1b, 1c, 2a, 2b, 3a, 4, 5a, 6)\
- Elevated liver enzymes (90% of acute hepatitis C cases had ALT levels >400 IU/L, only 1% of chronically infected persons had ALT levels that high).

Most patients with chronic hepatitis C have levels of HCV RNA (viral load) between 100,000 (1×10^5) and 10,000,000 (1×10^7) copies per mL. Expressed as IU, these averages are 50,000 to 5 million IU.

Viral levels as measured by HCV RNA do not correlate with the severity of the hepatitis or with a poor prognosis (as in HIV infection); but viral load inversely correlates with the likelihood of a response to antiviral therapy (e.g. cases with low initial viral load levels have a better therapeutic outcome than cases with high initial viral load levels.)

UPHL: UPHL has the ability to perform anti-HCV testing on patients.

Treatment:

The FDA has approved three antiviral therapies for treatment of chronic hepatitis C in persons 18 years and older:

- 1) Alpha Interferon,
 - 2) Pegylated Interferon
 - 3) Alpha or Pegylated Interferon in combination with Ribavirin.
- Treatment can last up to 52 weeks and varies with genotype.
 - At present, this therapy is difficult and is effective in less than half of people treated.
 - Among persons with HCV genotype 1, the response rate to either of the interferons given alone is 20% or less,
 - Response rate to the combination of alpha interferon and ribavirin is 30%-40%
 - Response rate to pegylated interferon and ribavirin 40%-50%.

Case fatality:

Each year, 8,000 to 10,000 people die from the complications of liver disease caused by hepatitis C

Reservoir:

Humans are the only known reservoir of this virus.

Transmission:

HCV is a bloodborne pathogen that is predominantly spread via exposure to contaminated blood or blood products. Currently, the most prevalent mode of transmission is sharing needles or syringes to inject drugs. Blood transfusions pose an extremely limited risk now, but for patients who received a blood transfusion prior to June 1992, the risk of infection was approximately 1.5% per transfusion recipient. Sexual transmission of HCV does occur, and does not appear to be efficient, although newer studies indicate that persons with multiple partners have higher incidence transmission.) Other potential risks for transmission include long-term hemodialysis, sharing straws for intranasal cocaine use, vertical (mother to infant) transmission, occupational blood exposure, various medical procedures (including dental), and tattooing or body piercing with non-sterile equipment. HCV is not spread through casual contact, kissing, sneezing, hugging, sharing glasses or utensils, or breast milk.

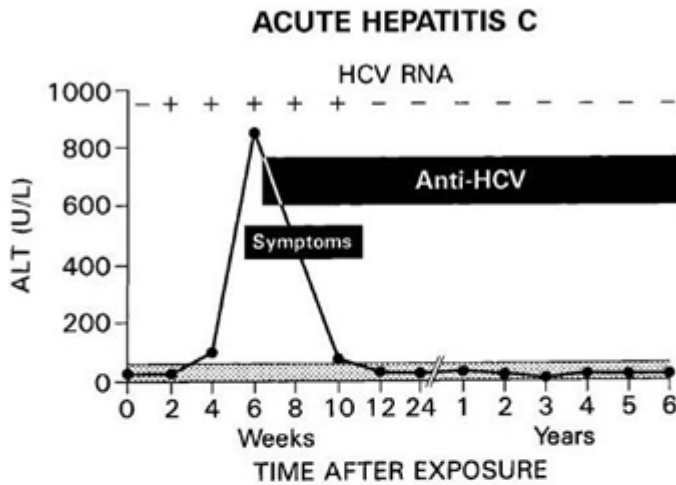
Susceptibility:

HCV infection occurs among persons of all ages, with the highest incidence of acute HCV infection (new cases) occurring among persons aged 20–39 years. Cases may be infected by more than one genotype (rare). Patients can be treated for one genotype, and be re-infected via another genotype.

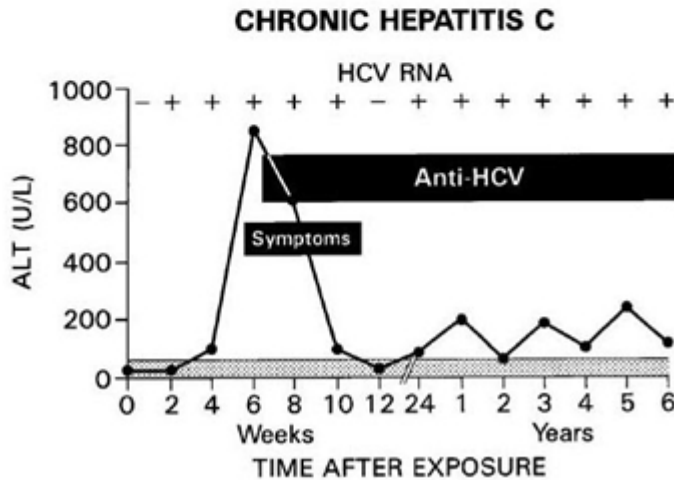
Incubation period:

The incubation period for HCV ranges from 2 weeks to 6 months, with an average incubation period of 6–7 weeks.

A)



B)



Period of communicability:

Infectiousness with HCV is variable; anyone with a positive test for HCV antibody should be considered infectious. The virus can usually be detected by the presence of viral RNA in an infected person’s blood within 1–3 weeks after the initial exposure. The degree of correlation between quantity of circulating virus and infectiousness is not clearly established.

Epidemiology:

HCV has a worldwide distribution. In the U.S., an estimated 4 million people are infected with HCV; it is thought that there are currently about 30,000 new cases of HCV infection each year. Prevalence is highest among groups with specific risk factors, especially injection drug users, patients with hemophilia or on long-term hemodialysis, prison inmates, and people who received blood or organ products prior to June 1992. The risk of occupational exposure for health care workers has been estimated to be 1.8% per incident of hollow-bore needlestick exposure to HCV-infected blood. The risk of perinatal transmission is estimated to be about 5%, although if the mother is co-infected with HIV, the risk may be approximately 15–25%.

Most of these newly reported cases are not people with new (acute) disease but those with chronic infection who have been newly diagnosed. There remains a large population of undiagnosed people who were infected in the past.

✓ PUBLIC HEALTH CONTROL MEASURES

Public health responsibility:

- To provide information to HCV-infected persons on how to prevent exposing others.
- To identify HCV-infected patients to ensure that they are educated on why medical evaluation is needed and how to reduce disease progression, and to provide referrals to medical or support services.
- To determine the prevalence of HCV in specific populations and geographic locations to help inform HCV prevention and service activities.
- To identify clusters of cases or outbreaks, in particular, those that appear to involve health care-associated transmission.
- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention.
- Identify sources of exposure and prevent further transmission.

Prevention:

The goals of hepatitis C prevention and control efforts are:

- 1) to reduce the incidence of new infections by reducing HCV transmission
- 2) to reduce the risk of chronic liver disease in HCV-infected individuals through appropriate medical management and counseling.
- 3) Educate infected persons on how to care for themselves and how to avoid spreading infection to others

Prevention and education includes providing information on how the disease is transmitted, how to avoid transmitting it, and how patients can protect themselves from other potential sources of liver damage. Offer the information and support below to newly identified cases:

- Provide basic instruction on transmission of HCV and emphasize the need for ongoing medical evaluation. Treatment is available and the case should be referred to his/her health care provider for a discussion of treatment options.
- If the patient is a current injection drug user, provide referrals to drug treatment and needle exchange programs if the case needs or wants support to stop using. This will help prevent the spread to other individuals.
- Educate the case on the need to abstain from alcohol to help protect the liver. If a case needs or wants support to stop drinking, provide referrals to appropriate treatment or support services.
- Discuss medications that should be avoided (e.g., acetaminophen) as high doses can damage the liver. All cases should discuss medications (including over-the-counter medications), and dietary supplements and herbs, with a health care provider to be certain that they will not damage their livers.
- Determine if case is at risk for either hepatitis A or B. If so, provide information on hepatitis A and hepatitis B immunization. (Refer to the *Hepatitis A* and *Hepatitis B* disease plans for more information.)
- Discuss sexual transmission of HCV. Indicate that HCV may be transmitted during sex. All contact with blood during sex should be avoided. Emphasize latex barrier protection as a way to prevent the spread of HCV as well as a way to prevent exposure to and transmission of other pathogens.
- Discuss household transmission of HCV. Household transmission is rare, but to ensure that it does not happen, the case should not share razors, toothbrushes, nail clippers, or any other item that could be contaminated with blood.
- Inform the case that he/she should not be restricted from working, preparing food, or taking part in his/her daily activities unless he/she has specific symptoms that make it difficult to do so. There are no recommendations suggesting that HCV-infected persons should change their exercise routines or have any dietary restrictions.

Chemoprophylaxis:

Currently no vaccine and no post-exposure prophylaxis exist for hepatitis C, although treatment exists.

Vaccine:

Currently no vaccine exists for hepatitis C.

Isolation and quarantine requirements:

Isolation: None

Hospital: Body substance precautions.

Quarantine: None

No restrictions except for exclusion from organ and blood donation and counseling to modify activities in order to prevent transmission.

There are no specific regulations regarding HCV infection in daycare, school, or community residential programs. HCV is not spread via casual contact or through food or water. As long as standard precautions are maintained, HCV will not be spread to others in these settings. No one who is HCV-infected should be excluded from attending or working in any of these settings on the basis of his/her HCV infection.

✓ CASE INVESTIGATION

Reporting:

Acute Cases

- Acute cases of HCV infection are reportable to the LHD. The UDOH requests that health care providers report to the LHD in the community where the case is diagnosed, all confirmed acute cases of HCV infection.
- Investigate all cases with elevated ALT (> 400), or other symptoms of acute hepatitis: jaundice, nausea, RUQ pain, etc. If time permits, investigate all cases under 30 (determine if patient is new case or chronic/resolved), as majority of new cases are under 30 years of age.

Note: If a health care provider is reporting an acute case, ask the provider to inform the patient that someone from the LHD will be contacting him/her for follow-up.

Chronic/Non-acute cases

- Chronic and non-acute cases of HCV infection are reportable. Health care providers diagnosing HCV infection (past or present) are required to complete a morbidity form and to submit it to UDOH. The UDOH will provide case information to the LHD on a regular basis.
- Laboratories performing examinations on any specimens derived from Utah residents that yield evidence of HCV infection shall report such evidence of infection directly to the UDOH within 3 days.

Case definition:

Hepatitis C (2007):

Clinical Description

- **Acute Definition:** An acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., anorexia, abdominal

discomfort, nausea, vomiting), and either a) jaundice, or b) serum alanine aminotransferase (ALT) levels >400 IU/L.

- **NOTE:** 90% of acute hepatitis C cases had ALT levels >400 IU/L, only 1% of chronically infected persons had ALT levels that high.

Laboratory Criteria

- **Acute Diagnosis:**

Meets one or more of the following three criteria:

- 1) Antibodies to hepatitis C virus (anti-HCV) screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC. (URL for the signal to cut-off ratios: http://www.cdc.gov/ncidod/diseases/hepatitis/c/sc_ratios.htm), OR
- 2) Hepatitis C Virus Recombinant Immunoblot Assay (HCV RIBA) positive, OR
- 3) Nucleic Acid Test (NAT) for HCV RNA positive

AND, meets the following two criteria:

- 1) IgM antibody to hepatitis A virus (IgM anti-HAV) negative, AND
- 2) IgM antibody to hepatitis B core antigen (IgM anti-HBc) negative

Note: Diagnosis of acute disease can be problematic because anti-HCV is not always present when the patient develops symptoms and sees the physician.

In 30 to 40 percent of patients, anti-HCV is not detected until 2 to 8 weeks after onset of symptoms. In this situation, testing for HCV RNA is helpful, as this marker is present even before the onset of symptoms and lasts through the acute illness.

Another approach to diagnosis of acute hepatitis C is to repeat the anti-HCV testing a month after onset of illness.

- **Chronic Diagnosis:**

Hepatitis C Virus Infection, Past or Present (2005 Case Definition):

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 for HCV RNA positive,

OR

Report of HCV genotype

OR

Anti-HCV screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay (e.g., ≥ 3.8 for the enzyme immunoassays) as determined and posted by CDC.

Note: Chronic hepatitis C is diagnosed when anti-HCV is present and serum aminotransferase levels remain elevated for more than 6 months.

Testing for HCV RNA (by PCR) confirms the diagnosis and documents that viremia is present; almost all patients with chronic infection will have the viral genome detectable in serum by PCR.

Most patients with chronic hepatitis C have levels of HCV RNA (viral load) between 100,000 (10^5) and 10,000,000 (10^7) copies per mL. Expressed as IU, these averages are 50,000 to 5 million IU.

Case Classification

- ***Acute Confirmed:*** a case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis C.
- ***Chronic Probable:*** a case that 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 signal to cutoff ratio is unknown.
- ***Chronic Confirmed:*** a case that is laboratory confirmed and that does not meet the case definition for acute hepatitis C.

Nosocomial:

Nosocomial outbreaks are uncommon with hepatitis C, but could occur with lack of infection control. Contact UDOH for assistance in any (suspect or confirmed) nosocomial hepatitis C outbreaks or occurrences.

Case Investigation Process:

1. Please see the *LHD Action Steps* checklist below for assistance with investigation of acute HCV cases. It suggests a sequence for investigation, recommended elements of investigation, and information that should be reviewed with each case. This checklist is for LHD use only. It is not required and does not need to be submitted with the case report form. The LHD may wish to keep it on file to document the investigation.
2. Use the following guidelines to assist in completing the UDOH *Hepatitis C Case Report Form*:

- a. Begin the investigation by contacting the diagnosing health care provider to verify the diagnosis. This will ensure that the health care provider has an opportunity to provide the test results to the case before you contact him/her.
- b. If the health care provider cannot be reached, leave a message indicating that the LHD will be contacting the case, and the case should be informed of the diagnosis or test results. A minimum of one week should be allowed for the health care provider to get in touch with the patient. If the report came from a laboratory and the health care provider is not known, contact the laboratory prior to contacting the patient in order to identify which specific tests were used for the diagnosis.
- c. Accurately record all demographic information indicated on the form.
- d. Be sure to accurately record the date of diagnosis, whether this is a new diagnosis, which related laboratory work was performed, demographic information, and risk-related information (e.g., the ways in which the case may have been exposed to HCV). If possible, document when the person may have been infected (e.g., indicate if the original exposure occurred recently or years ago).
- e. Record all available clinical information, including diagnosis and onset dates, symptoms, and clinician contact information.
- g. Record the patient's risk history. Some questions on the case report form are quite personal and should be asked in a sensitive manner. Ask questions about sexual behavior and drug use to determine potential sources of transmission. Ask about alcohol use to identify if health education is needed and to assess for other possible causes of liver damage.
- h. Reassure the patient that all information is kept strictly confidential. For all of the risk-related questions on the case report form, it is essential that no assumptions be made about the case's risk. Get the information concretely from the individual or from the health care provider(s), or indicate that the risk is unknown for that case. LHD responsibility in working with the individual or health care provider extends only to obtaining the information, where possible, and providing related health education.
- i. Educate the patient about preventing transmission and ways to protect her/his liver. Encourage him/her to speak to people who may have been exposed to his/her blood since the time he/she is estimated to have been exposed, infected, or seroconverted.
- j. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have

gathered. Please note on the form the reason(s) why it could not be filled out completely (i.e – “could not locate patient”, “lost to follow-up”, etc.

Outbreaks:

An outbreak will be defined as: 3 or more acute cases with similar risk exposures.

Identification of case contacts:

Identification of case contacts made during an outbreak situation only. Otherwise, encourage case to speak to people who may have been exposed to his/her blood since the time he/she is estimated to have been exposed, infected, or seroconverted.

Special Situation - Case contact management:

- **Percutaneous and Mucosal Exposure to HCV Infection**

Perform testing for anti-HCV and ALT 4-6 months after exposure. Perform HCV-RNA testing at 4-6 weeks if earlier diagnosis of HCV is desired. Confirm repeatedly reactive anti-HCV test with supplemental test if necessary (if signal-to-cut-off test not used).

- **Infants born to anti-HCV mother**

The American Academy of Pediatrics recommends screening infants born to mothers who are HCV infected. The diagnosis of HCV is based on detection of IgG antibody and/or HCV RNA by PCR. In infants the persistence of passively acquired maternal antibodies can last up to 12 months. Therefore, testing for anti-HCV antibodies should be performed after 12 months of life. However, a supplemental confirmatory test should be performed, such as the recombinant immunoblot assay (RIBA) or nucleic acid test (NAT), if a signal to cut-off ratio antibody test was not performed.

PCR can be used initially for early diagnosis. In several studies, high maternal viremia and positive HCV-RNA are predictors for vertical transmission rate, as well as maternal co-infection with HIV. Co-infection with HIV both accelerates the clinical progression of hepatitis C and increases the risk of perinatal HCV transmission from 5% (range, 3-8%) to 17% (range, 7-36%).

Due to higher costs of PCR essays, it may be preferable to test high-risk infants after 1 month of age, at the time of well-baby checkup. A negative HCV-RNA result strongly suggests that the infant is not infected, although a confirmatory retest after 18 months is advised. A positive HCV-RNA test increases the post-test probability that the infant is infected with HCV. The time until the repeat test is unclear, but at least 3-4 months apart.

Breastfeeding is not contraindicated if mother is HCV positive, as HCV does not transmit via breastmilk to infant. However, HCV is spread by infected blood. Therefore, if the HCV-positive mother's nipples and/or surrounding

areola are cracked and bleeding, she should stop nursing temporarily. Instead, she should consider expressing and discarding her breast milk until her nipples are healed. Once her breasts are no longer cracked or bleeding, the HCV-positive mother may fully resume breastfeeding.

Hepatitis C - LHD Action Steps

This part of the plan is for LHD use and is meant as a quick-reference guide to hepatitis C case investigation activities. It suggests a sequence of investigation, recommended elements, and the information that should be reviewed with each case. For more information on background and rationale, please refer to the preceding information on HCV.

Upon receiving a report of acute HCV infection from a UDOH, a laboratory or a health care provider, please follow the process detailed below:

1. Contacting the Case's Health Care Provider (Do This First)

- Attempt to contact the health care provider by phone first.
- If no response after three attempts, send a form via fax or a letter.
- If a letter needs to be sent, it should include the following:
 - Case's name;
 - Description of your responsibility to notify and educate the case;
 - Indication that you have been trying to reach the provider;
 - Timeline of when you intend to contact the case (unless the provider selects an alternate time);
 - That it is strongly preferred that the provider inform the case of her/his diagnosis; and
 - Information on how the provider can contact you.
- You may include a copy of the UDOH *Hepatitis C Case Report Form* with the fax or letter, and indicate the sections that the provider should fill out or submit a Confidential Morbidity form.
- Include a self-addressed, stamped envelope in which the case report may be returned.

2. Once You Have Contacted the Case's Health Care Provider

- Explain that the information obtained is strictly confidential, and discuss purpose of surveillance, as necessary.
- Confirm the report and diagnosis.
- Obtain copies of any additional related laboratory reports, including:
 - EIA – HCV antibody (e.g., ELISA);
 - Immunoblot assay (e.g., RIBA™, SIA);
 - HCV RNA (e.g., RT-PCR, b-DNA); or
 - Liver function tests.
- Obtain as much information for the case report as possible—if the provider refuses to provide risk-related information, attempt to get demographic information and laboratory results (listed above).
- Inform the provider that he/she should discuss this report with the case. The provider should inform the case that someone from the LHD will contact him/her.
- Find out when it will be possible for you to contact the case directly. (How much time does the provider need to contact the case?)

3. Contacting the Case

- Use the method(s) you normally use to contact the case. This might include attempting to contact the case via phone first. If there is no phone number available or if there is no answer after three tries over at least one week, a home visit can be conducted, if feasible. Alternatively, a letter can be sent to the case's address. This letter should be non-specific and should discuss a public health concern that you need to discuss with the case.
- If a letter needs to be sent:
 - Send the letter via certified mail.
 - Ask in the letter what the best way for you to contact the case would be; then follow the rest of the investigation as indicated below.
 - If no contact is made with the case four weeks after having sent the certified letter, please fax or mail all information obtained on the case at that point to UDOH (include a copy of the laboratory results).

4. Once You Have Contacted the Case

- Explain confidentiality and the purpose of obtaining the requested information to the case.
- Inform the case that the information that will be discussed is highly personal, that it is asked of every person with hepatitis C, and that it is important for our understanding of the infection.
- Ask the case if they have any questions about HCV or surveillance; refer the case to UDOH if they have questions and need additional information.
- Determine if a provider is currently treating the case, and what that provider's specialty is.
- If the case is not currently receiving medical care:
 - Suggest that he/she contact a primary care provider for treatment evaluation.
 - As necessary, provide a referral to a primary care provider.
 - Discuss the benefits of ongoing medical care.
 - Discuss the benefits of being assessed by a specialist.
- Review HCV transmission with the case—risks, behaviors, and prevention; use the case report form to guide your discussion.
- If the case is actively injecting drugs, offer a referral to treatment programs and needle exchange programs.
- Discuss the potential for sexual transmission with the case. If the case is concerned about sexual transmission:
 - Recommend using a condom to reduce the likelihood of exposing sexual partners to HCV.
 - Review proper condom use, as necessary.
 - Recommend avoidance of multiple partners.
- Discuss the risks of alcohol consumption with the case.
- Assess whether the case currently drinks alcohol. If they currently drink alcohol:
 - Recommend elimination of any alcohol consumption—refer to alcohol treatment/support, as necessary.

- Recommend that the case discuss any medication use (including alternative/herbal medications) with a provider to ensure that they are not going to damage his/her liver.
- Determine if the case is at risk for either hepatitis A or B. If so, provide referral so that the case may receive vaccines to prevent these infections.
- Fill out the case report form based on your discussion with the case—if there are additional sections for which you require information, query the case directly. Fill in information that was not obtained from the health care provider to the extent possible.
- Provide the case with a fact sheet on HCV and any other relevant materials.
- Provide a phone number for the case to call to get additional information later, if needed.

✓ REFERENCES

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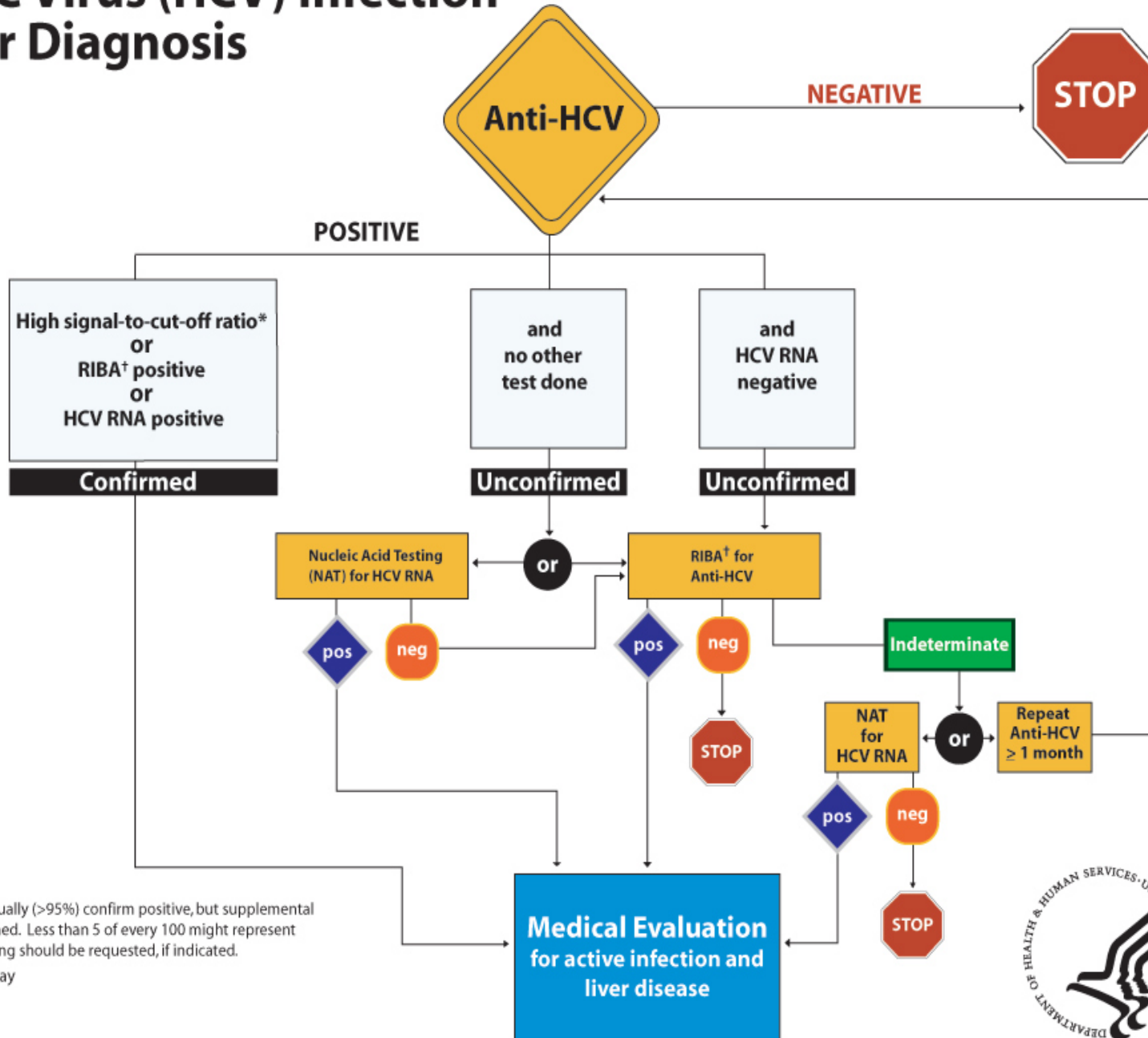
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Hepatitis C Virus (HCV) Infection Testing for Diagnosis



*Samples with high s/co ratios usually (>95%) confirm positive, but supplemental serologic testing was not performed. Less than 5 of every 100 might represent false-positives; more specific testing should be requested, if indicated.

†Recombinant immunoblot assay



Reference for Interpretation of HCV Test Results

If Your HCV Test Result Is:			Interpretation		Action
Anti-HCV Supplemental Test					
Anti-HCV Screening Test*	RIBA†	or HCV RNA	Anti-HCV	HCV Infection	Additional Testing or Evaluation
Negative	Not Needed	Not Needed	Negative	None	No
Positive	Not Done	Not Done	Not Known	Not Known	Supplemental Anti-HCV (RIBA) or HCV RNA
Positive	Not Done	Negative	Not Known	Not Known◆	Supplemental Anti-HCV (RIBA)
Positive (high s/co ratios§)	Not Done	Not Done	Positive	Past/current	Evaluate for chronic infection and liver disease
Positive	Negative	Not Needed	Negative	None	No
Positive	Positive	Not Done	Positive	Past/current	Evaluate for chronic infection and liver disease
Positive	Positive	Negative	Positive	Past/current◆	Repeat HCV RNA
Positive	Positive/ Not Done	Positive	Positive	Current	Evaluate for chronic infection and liver disease
Positive	Indeterminate	Not Done	Indeterminate	Not Known	Test for HCV RNA or repeat Anti-HCV testing
Positive	Indeterminate	Positive	Indeterminate	Current	Evaluate for chronic infection and liver disease
Positive	Indeterminate	Negative	Negative	None	No

* EIA- enzyme immunoassay or CIA- enhanced chemiluminescence immunoassay

† Recombinant immunoblot assay, a more specific anti-HCV assay

◆ Single negative HCV RNA result cannot determine infection status as persons might have intermittent viremia.

§ Samples with high s/co ratios usually (>95%) confirm positive, but supplemental serologic testing was not performed. Less than 5 of every 100 might represent false-positives; more specific testing should be requested, if indicated.

