

Hepatitis A

Investigative Guidelines

July 2016

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To identify outbreaks and potential sources of ongoing transmission, in order to forestall further transmission.
2. To identify exposed persons and assure timely administration of vaccine or immune globulin or other preventive measures, thus helping to prevent or ameliorate disease and further transmission.
3. To educate cases and their contacts about the importance of good personal hygiene.
4. To educate potentially exposed persons about signs and symptoms of disease, thereby facilitating early diagnosis.

1.2 Laboratory and Physician Reporting Requirements

Laboratories, physicians and others providing health care must report confirmed or suspected cases to the Local Public Health Authority (LPHA) within one working day of identification or diagnosis. Labs must report positive anti-HAV IgM tests within one working day.

1.3 Local Health Department Reporting and Follow-Up Responsibilities

1. Report all confirmed and presumptive (but not suspect) cases (see definitions below) to the Oregon Health Authority (OHA) as soon as possible, and not later than within one working day of initial physician/lab report.
2. Begin follow-up investigation within one working day. Submit all case data electronically.
3. As indicated, complete summary forms for disease outbreaks when the investigation is complete.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Hepatitis A virus (HAV), a picornavirus (positive-strand RNA virus).

2.2 Description of Illness

Onset is usually abrupt with fever, malaise, anorexia, nausea, and abdominal discomfort, followed within a few days by jaundice. Urine may become unusually

dark, and stools quite pale. Infections vary from completely asymptomatic to a disabling illness lasting weeks to several months. Fulminant hepatitis is rare, but can be fatal. As with hepatitis B, the likelihood of being symptomatic increases with age. Children under the age of three are rarely symptomatic, while >80-90% of adults will become sick if infected. Hepatitis A cannot be clinically distinguished from other viral hepatitises with any reliability. There is no chronic carrier state.

Paradoxically, in countries where sanitation is poor, hepatitis A is not a significant health problem for natives. Essentially everyone is infected early in life and has an asymptomatic course followed by lifelong immunity. In countries with good sewage disposal and safe drinking water, exposure is relatively infrequent, so the people who do get infected tend to be older and thus suffer illness. Even in the United States, however, significant numbers of adults (10–40%) are seropositive, indicating past exposure.

2.3 Serological Markers

Serological markers for hepatitis A come in only two flavors: IgM and “Total.” Acute illness can be reliably diagnosed in persons with the onset of clinical illness compatible with hepatitis A and hepatitis A IgM antibody (IgM anti-HAV) in a single serum specimen. IgM antibody usually becomes detectable before onset of clinical symptoms, and persists for approximately 4 – 6 months in most persons—up to 32 months in some individuals. Approximately 3% of HAV infected persons will be IgM negative if blood is drawn on or before the day of onset of jaundice. Suspicious cases with negative IgM results on such early specimens should be retested in 4 – 7 days to rule out the diagnosis. IgM antibodies are detectable in persons with asymptomatic (inapparent, subclinical) as well as symptomatic (apparent, clinical) infections. “Total” Ig (anti-HAV) may contain one or more of the IgA, IgG, or IgM class antibodies.

IgG antibodies (e.g., IgG anti-HAV) are markers of ever having been infected; they typically persist for life after infection. Although useful for identifying persons who are currently immune to HAV infection, they are not specific indicators of recent infection.

2.4 Reservoirs

Acutely infected humans (symptomatic or not).

2.5 Incubation Period

15–50 days; usually around 28–30 days.

2.6 Period of Communicability

HAV is shed in the feces from about two weeks before onset of prodromal symptoms to the time of peak liver enzyme (ALT/SGPT, AST/SGOT) elevations. The concentration of virus in stool (and therefore infectivity) varies over the course of infection; it is highest before onset of symptoms. Practically speaking,

one can assume that communicability ends two weeks after onset of prodromal symptoms or one week after onset of jaundice, whichever comes first.

2.7 Treatment

No specific therapy is available.

3. CASE DEFINITIONS, DIAGNOSIS AND LABORATORY SERVICES

3.1 Confirmed Case Definition

- An individual with: 1) discrete onset of symptoms (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea and abdominal discomfort) and 2) jaundice or elevated serum ALT or AST levels and 3) anti-HAV IgM antibody.
 - OR
- An individual with: 1) discrete onset of symptoms (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea and abdominal discomfort) and 2) jaundice or elevated serum ALT or AST levels and 3) an epidemiologic link with a person who has confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15 – 50 days before the onset of symptoms).

3.2 Suspect Case (*not reportable to Oregon PHD*)

- Anyone with a compatible illness or elevated liver enzymes of unknown etiology and with no epidemiologic association with confirmed cases. Serologic testing for IgM anti-HAV antibodies is indicated.
 - OR
- Anyone with a positive IgM anti-HAV antibody titer without compatible illness or elevated ALT or AST levels.

3.4 Services Available at the Oregon State Public Health Laboratories

The OSPHL typically does IgM anti-HAV and total anti-HAV testing once per week. STAT testing may be available at other times after consultation with Epi and OSPHL staff. IgG (or total) anti-HAV tests are not generally useful for routine epi follow-up. Under special circumstances, such testing might be worthwhile. Consult with ACDP epidemiologists. For example, tests on certain food handlers might be worth doing if knowledge of the results might:

1. Avoid Restaurant Closure

If knowledge of the immune status of key employees exposed to a case of hepatitis A would avoid restaurant closure, testing these employees for IgG anti-HAV might be appropriate

2. Prevent Serial Testing of Food Handlers

If serial testing of high-risk food handlers for IgM anti-HAV is planned, assessing current immunity would obviate the need for further testing among those immune to HAV infection.

3. Result in Specific Food Handling Assignments

If knowledge of immune status of employees will determine assignment of tasks to exposed food handlers, such testing may be indicated.

4. ROUTINE CASE INVESTIGATION

4.1 Determine the Source of the Infection

Interview the case and others who may be able to provide pertinent information. Determining the source of infection may permit identification of other cases, and interruption of transmission from them. Information regarding exposures during the period between 15 and 50 days before onset of illness should be sought.

This should include:

- Name, diagnosis, and telephone number or address of any acquaintance, household member, or sexual contact with an illness compatible with hepatitis A (anyone meeting the presumptive case definition should be reported and investigated in the same manner as a confirmed case);
- Name, date, and location of restaurants where the case has eaten;
- Date, location, and sponsor of social gatherings where case has eaten;
- Association of the case or a household member of the case with a day-care center or other care setting for preschool children as a staff member or attending child;
- Travel outside the United States;
- Illicit drug use;
- Sexual contacts (heterosexual/homosexual)

4.2 Identify Potentially Exposed Persons

Persons with significant opportunity for fecal-oral exposure during the period of communicability should be identified, including:

- Household, drug-sharing, and sexual contacts;
- Persons who have eaten food prepared or handled by the case;
- Day-care contacts (see §7).

The case's potential for exposing others at work should be assessed. Occupations of particular concern are food handlers, day-care center employees, and health care workers such as dentists, physicians, nurses, and nurse's aides. Assess their personal hygiene—a judgment call. Consult with ACDP epidemiologists as necessary.

5. CONTROLLING FURTHER SPREAD

5.1 Education

Instruct patient and family members on measures to prevent fecal-oral transmission. Place special emphasis on thorough hand washing after defecation and diaper changing, and before food handling. Contacts should be knowledgeable of signs and symptoms of hepatitis A in children and adults and understand that persons may be infected and infectious to others without any associated illness.

5.2 Isolation and Work or Day Care Restrictions

1. Rules

Hepatitis A cases should be excluded from schools, day-care, food service facilities, and health care facilities until they are no longer communicable — typically until two weeks after onset of prodromal symptoms or one week after onset of jaundice, whichever comes first. Restrictions can be modified or lifted at the discretion of the local health department (see OAR 333-019-0010)

2. Recommendations

During the period of communicability, cases should be placed under standard precautions or similar measures to assure that other persons, including health facility employees and patients, are not exposed to fecal material.

5.3 Case Follow-up

None is required, except for work and day-care restrictions as described (§5.2, supra).

5.4 Protection of Contacts

For decades, immune globulin (IG) has been recommended for prophylaxis after exposure to HAV: when administered within 2 weeks of last exposure, IG is 80%-90% effective in preventing clinical hepatitis A. Despite limited evidence suggesting that hepatitis A vaccine might be efficacious when administered after exposure, the ACIP continued to recommend IG as the preferred mode of prophylaxis, although vaccine could be given in addition to IG in situations where the exposed person had continuing risk factors for HAV. The results of a recent trial directly comparing vaccine with IG and the recent experiences of other countries where vaccine has been recommended for prophylaxis for more than 5 years has swayed the ACIP to recommend HAV vaccine as the preferred agent for post-exposure prophylaxis in certain groups.

Prophylaxis of contacts

General recommendations: The trial was conducted among otherwise healthy individuals aged 2-40, so the new recommendation only applies to healthy individuals aged 12 months to 40 years, who have recently been exposed to

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HAV and who have not previously received hepatitis A vaccine. These persons should receive a single dose of single-antigen vaccine or as soon as possible after exposure. For persons who do not meet these criteria, who typically have a higher risk of developing fulminant hepatitis A, IG should be administered as soon as possible. These groups include persons over the age of 40, immunocompromised persons, and persons who have been diagnosed with chronic liver disease. Additionally, since vaccine is not licensed for use in persons less than 12 months of age, IG should be given to children under one year of age as well as persons for whom vaccine is contraindicated.

Close contacts: Absent evidence of pre-existing immunity, all household and sexual contacts of hepatitis A cases should receive IG or vaccine (depending on which group they fall into above). Persons who have shared illicit drugs with a confirmed HAV case should receive hepatitis A vaccine, or IG and hepatitis A vaccine simultaneously. Other persons with significant opportunity for fecal-oral exposure to the case should also receive vaccine or IG. These include primarily persons who have repeatedly eaten food that has not been cooked after handling by the case. The case's level of hygiene and practices in food preparation should be considered in determining who should receive vaccine or IG. (If the case is a food handler, see §6.)

Child care centers: When one or more cases are found in employees or children, or cases are found in two or more households of attendees, hepatitis A vaccine or IG should be given to all previously unvaccinated staff members and attendees of child care centers or homes. When an outbreak occurs, consider administering vaccine or IG to household members of children (in diapers) in the center.

Prophylaxis options

IG is a preparation of pooled antibodies that, given soon after exposure, provides protection against illness and infection. The efficacy of IG prophylaxis declines rapidly within days after exposure, however, and is of no use when given more than two weeks later. (In other words, IG given 5 days after exposure is much more effective than IG given 12 days after exposure—do not delay!) Make every effort to give IG, when indicated, within 48 hours.

NOTE: In general, IG does not interfere with the response to inactivated vaccines, or to oral polio or yellow fever. It can, however, diminish the response to other live, attenuated vaccines (e.g., measles, mumps, rubella, varicella) when administered either individually or in combination vaccines (e.g., MMR). Administration of MMR should be delayed for >3 months, and varicella vaccine for >5 months after giving IG for hepatitis A prophylaxis. IG should not be administered within 2 weeks after giving MMR or 3 weeks after varicella vaccine unless the benefits of IG more than outweigh the impairment of the other vaccinations. It is prudent to assume that the patient's response to those earlier vaccines will be aborted or attenuated to an undesirably degree by the IG. Wait 3 months to repeat the MMR; 5 months for the varicella.

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Hepatitis A vaccine is routinely recommended for all children after their first birthday. Two highly effective vaccines against hepatitis A have been licensed since 1995 for use by persons >1 year old: Havrix (SmithKline Beecham) and VAQTA (Merck). Both have the same volume dose and schedule:

- Children 1–18 years old: 2 doses, at least 6 months apart, each 0.5 ml IM.
- Persons >19 years old: 2 doses, at least 6 months apart, each 1.0 ml IM.

Always check the package insert for any updates. Ideally, the second dose should be of the same vaccine formulation as the first, but in a pinch, it is ok to switch horses in mid-stream. Even a single dose of vaccine provides protection for several years in most individuals within 4 weeks of inoculation. For longer protection, a second dose 6 or more months after the first is recommended. The efficacy of vaccine when administered >2 weeks after exposure has not been established, so make every effort to vaccinate contacts as soon as possible.

6. WHEN THE CASE IS A FOOD HANDLER ⁴

6.1 Background

Food handlers are not, in general, at higher risk of getting hepatitis A than any other segment of the population. Roughly 7–8% of the working population are food handlers, and about the same proportion show up as hepatitis A cases. Commercial food handlers do have the unique potential to amplify their hygienic lapses into large outbreaks with surprisingly little effort, which accounts for all the attention this problem gets. Still, keep in mind that restaurant-associated outbreaks have been quite rare in Oregon, with only two or three very small clusters (<8 cases each) identified in the period 1990–2015. Let's keep it that way! And let's not be too complacent; the long incubation period makes such outbreaks difficult to identify.

Vaccine or IG should be administered to other food handlers at the same establishment. When an outbreak occurs, be cognizant of the 2-week window after exposure during which IG and vaccine is known to be effective. Administration of vaccine or IG is not effective after this 2-week period has been exceeded. Since transmission to restaurant patrons is unlikely, hepatitis A vaccine or IG administration is not typically indicated but should be considered if:

1. The food handler, while infectious, both directly handled cooked or uncooked foods and had diarrhea or poor hygiene practices; and
2. Patrons can be identified and treated ≤ 2 weeks after exposure.

The following guidelines are intended to help make a decision about notification of potentially exposed patrons through the news media. They can also be used to inform food handlers and food service facility operators about the decision-making process. These guidelines cannot anticipate every situation. ACDP epidemiologists are always available for consultation.

There are two main reasons to go public:

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1. To provide vaccine or IG to potentially exposed individuals, in order to prevent further cases;
2. To warn persons who may be already incubating the infections (and their physicians) about their exposure, educating them about the signs and symptoms of hepatitis, in order to facilitate rapid diagnosis and prevent a subsequent generation of cases. This is why public announcements can be worthwhile even if it is too late to offer IG to exposed individuals.

Certain public health measures have proven to be effective in limiting the spread of disease when food handlers are identified with a disease that can be transmitted through poor hygienic practices. The measures include removing infected persons from the food handling setting, evaluating and correcting inappropriate food handling procedures and, in certain situations, investigating the health of those who ate food prepared by ill food handlers. Public health follow-up with consumers is appropriate under some circumstances to determine whether the disease has spread, to advise consumers to take precautionary measures such as receiving prophylaxis and treatment and to monitor medical status and educate consumers about activities that may place others at risk.

These measures can be readily applied in a setting with an easily located clientele, such as a school, senior center, day-care center or private home. Identification and follow-up of consumers aren't as easy in other food service settings such as restaurants and convenience stores. In these situations, it sometimes becomes necessary to notify those at risk via the news media.

Both food service facility operators and public health authorities should recognize their responsibility to protect the public's health. We recommend the following guidelines to LPHAs for deciding whether to notify potentially exposed patrons through the news media when an infected food handler is found to have hepatitis A in a facility with patrons who cannot be readily notified by any other means.

In applying these criteria and judging the risk of further spread of infection, LPHA personnel should:

- Make every possible effort to obtain accurate information;
- Exercise considerable judgment about the accuracy of information received, especially the consistency of hygiene information received from different sources;
- Consider the record of the facility's sanitation inspections while under its current management;
- Determine whether the manager has had food safety training and applies it through employee training, supervision and sanitation control systems at the facility (see below).

ACDP epidemiologists are always available to discuss the need for public notification. The local health administrator must make the final decision, however, because local public health personnel, having conducted interviews, inspections, and evaluations, are in the best position to make the necessary judgments when the situation is ambiguous.

6.2 Definitions

Approved Food Safety Training: During the last three years, the manager or responsible operator has received manager level food safety training equivalent to food protection manager certification whether it is corporate training or agency-approved. At a minimum, the training would conform to national standards as identified within the “demonstration of knowledge” OAR 333-150-000 Chapter 2-102.11. Training would include information about foodborne diseases, food protection, food handler hygiene, cleaning, and managing a safe food service operation.

Approved Sanitation Standard Operating Procedures (SSOPs): An approved program for food protection and foodborne disease prevention includes, but is not limited to, the following elements:

- Food handlers have received OHA food handler training offered by the LPHA;
- Management supervises and inspects food protection and food handling practices of all shifts on a routine basis as described in OAR 333-150-000 Chapter 2-102.11 and 2-103.11;
- Training addresses personal hygiene and supervision of food handler hand washing practices as described in OAR 333-150-000 Chapter parts 2-3, 2-4;
- Management has established a routine means of evaluating employee performance such as watching that all food handlers wash their hands upon entering a food preparation area in addition to restroom hand washing as described in OAR 333-150-000 Chapter 2-102.11 and 2-103.11;
- Hand washing facilities are checked frequently each day for adequate supplies and operation as described in OAR 333-150-000 Chapter 5-203.11;
- High risk food handling tasks are designed so that direct handling of food and cross-contamination are minimized;
- An effective employee illness policy informing employees to report to the manager information about their health and activities as they relate to diseases that are transmissible through food as described in OAR 333-150-000 Chapter 2-201.12

High Risk Food: Food that is handled and not subsequently cooked before consumption (e.g., salad fixings, cake icing, and sliced fruit).

6.3 General Principles for Decision-Making

Generally, infected food handler situations fall into one of three categories. The decision-making process is unique for each of them. In all cases, other food handlers at the establishment in question should be evaluated to determine whether any have, or recently have had, hepatitis A. If other food handlers are found to be infected, the risk to patrons should be reevaluated. Health officials and food service managers should monitor other food handlers at risk for

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hepatitis A for one incubation period (50 days) after their last exposure to the index case. The three options are:

1. Food handler has not handled any high risk food: Notification of potentially exposed patrons is rarely necessary.
2. Food handler handles high risk foods, but the facility manager has received approved food safety training and uses approved SSOPs: If the case always uses gloves or utensils appropriately, then public notification generally is not necessary. Glove use per se is no panacea, however, and at worst can create a false sense of security. The potential for breaks in proper practices should be carefully evaluated. If the food handler has handled high risk foods with bare hands, but the facility manager can document receipt of approved training and implementation of an approved SSOP, public notification is usually not indicated—if the following conditions are met:
 - No transmission within the facility to co-workers or patrons has been documented;
 - The record of inspections of the facility under present management indicates that the personal hygiene of food handlers and the facilities for food handlers to wash their hands have met inspection standards;
 - Inspection of the facility after identification of the case reveals that hand washing facilities for employees are adequate;
 - Information obtained from the infected food handler, supervisor, and other reliable sources indicates that the infected food handler followed proper hand washing practices;
 - The infected employee, while potentially infectious, did not handle high risk foods on days when experiencing diarrhea.
3. The food handler handles high risk foods, and the manager has not received approved training or does not have an SSOP: If the food handler has handled high risk foods and the facility manager has not received approved food safety training within the last three years or does not use an approved SSOP, notification of potentially exposed patrons through the news media should be considered. We recommend going public given one or more of the following criteria:
 - Transmission within the facility to co-workers or patrons has already been documented;
 - Inspection of the facility after identification of the case reveals that hand washing facilities for employees in the food preparation area or the employees' restroom are inadequate (e.g., no soap, no towels, no warm running water);
 - One or more food handlers are not conforming to good hygienic practices (e.g., not washing their hands on arrival at work or after using the restroom);
 - The record of inspections of the facility under the present management indicates that personal hygiene of food handlers or facilities for food handlers to wash their hands have been a problem two or more times during the previous two years;

- The infected employee, while potentially infectious, handles high risk foods on days when experiencing diarrhea;
- Information obtained from the infected food handler, supervisor, or other reliable source indicates that the infected food handler did not follow good hand washing practices or failed to use gloves or utensils appropriately (e.g., didn't change gloves when food preparation was interrupted for a non-food preparation task, such as mopping floors or using the toilet);
- The infected food handler in the facility handled high risk foods with bare hands (e.g., failed to use gloves or utensils).

6.4 Going Public

Consult with ACDP staff before going public. They will help you draft your press release and can assist with contacting media representatives who are outside your local area (e.g., Portland TV stations, the Oregonian), as well as public health officials in other counties and neighboring states.

7. MANAGING OTHER SPECIAL SITUATIONS

7.1 Day Care Association

Because most HAV infections in young children are asymptomatic, illness among adult staff members or household contacts is often the first (and only) indication of childcare facility outbreaks.

1. Case attends or works at a daycare facility that serves diapered children: IG or vaccine should be administered to staff and classmates if:
 - a) Any cases are identified among children or staff; or
 - b) Cases are recognized in at least 2 households of kids attending childcare.

Except under exceptional circumstances, it is not worth testing for susceptibility; give IG or vaccine to everyone without a history of previous infection or immunization. In centers that do not provide care to diapered kids, IG or vaccine should go only to same-classroom contacts. When an outbreak occurs (i.e., cases in >2 households), IG or vaccine should also be considered for all household members of diapered kids and possibly household members of other children, depending on an epidemiological risk assessment. Vaccine can be given at the same time as IG but in a different anatomic site to persons >1 year old.

In order to identify new infections quickly, the LPHA should institute surveillance for hepatitis-like illness among households connected to the facility for 50 days after onset of the last case. All such households should be provided with basic information about hepatitis A, and instructed to contact the health department immediately should suspicious symptoms develop.

The critical role of good personal hygiene (especially handwashing) should be reviewed with daycare staff.

Affected facilities should be discouraged from accepting new children for 50 days after onset of the last case, unless IG is given prior to admission or the child has been vaccinated. Transferring children to other facilities should be discouraged during this period.

2. Case is a household contact of a childcare attendee: We recommend that any childcare attendees in such households be tested for IgM anti-HAV, in order to rule out asymptomatic infections. Positive test results obviously put you in the situation described above. Discreet interviews with childcare operators can also be conducted to identify any suspect cases among staff or attendees, and it is a good opportunity to review relevant operations at the facility. Institute surveillance for suspect cases among staff and attendees for a period of 50 days. Absent plausible alternative hypotheses, two or more cases reported from different households linked to the same facility constitute prima facie evidence of day-care-associated transmission, and should be investigated as such

7.2 Other Potentially Foodborne or Waterborne Outbreaks

Consult with ACDP epidemiologists. The Shellfish Program experts in the Oregon Department of Agriculture's Food Safety Division will assist when shellfish is implicated.

8. GLOSSARY OF TERMS

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.

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.

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.

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 the chronic carrier state.

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 (a change known as seroconversion) 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

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carriers can be positive for either HBeAg or anti-HBe, but are less infectious when anti-HBe is present.

HBV 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.

HCV genotype: HCV can be divided into at least 6 different genotypes. Genotype 1 is the most common in the US, accounting for 70%-75% of infections.

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

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

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. **This test is no longer available.**

PCR (i.e., Nucleic Acid Test [NAT]): 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.

Signal-cutoff ratio: 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 signal-cutoff ratio 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. Due to the increase in hepatitis C assays available on the market, CDC is unable to validate each test to determine the s/co ratio predictive of a true positive. **As of January 1, 2016, the s/co ratio will no longer be used in the acute or chronic hepatitis C case definitions**

UPDATE LOG

July 2016 – Applied new Word formatting. Updated EH section; added specific OARs for reference (Poissant)

January 2015 – Corrected numbering and reformatting (Poissant).

January 2012 – Updated case definition to reflect CDC/CSTE guidance. Presumptive case classification has been eliminated (Poissant).

March 2008 – Updated prophylaxis recommendations to reflect current ACIP recommendations. Vaccine is preferred for healthy persons aged 1 – 40.

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Persons >40 should receive vaccine or IG, unless vaccine is contraindicated by health status. Immunocompromised persons should also receive IG (Poissant).

May 2007 – Updated case definition to reflect current CDC/CSTE case definition. Confirmed cases must have discrete onset of symptoms; elevated LFTs or jaundice; IgM anti-HAV positive. Eliminated asymptomatic case definition (Poissant).