Hepatitis A
Table of Contents

Hepatitis A, acute

Overview[1, 2, 3]

Hepatitis A virus (HAV) infection is caused by a nonenveloped RNA virus that is classified as a picornavirus that can be prevented by vaccination. Humans are the only natural host, although several nonhuman primates have been infected in laboratory conditions. HAV infection is acquired primarily by the fecal-oral route by either person-to-person contact or ingestion of contaminated food or water. Infected persons are most likely to transmit HAV one to two weeks before the onset of illness, when HAV concentration in stool is highest. The risk then decreases and is minimal the week after the onset of jaundice. Because the virus is present in blood during the illness prodrome, HAV has been transmitted on rare occasions by transfusion. Although HAV may be present in saliva, transmission by saliva has not been demonstrated.

The incubation period of hepatitis A is approximately 28 days (range 15–50 days). The clinical course of acute hepatitis A is indistinguishable from that of other types of acute viral hepatitis. The illness typically has an abrupt onset of fever, malaise, anorexia, nausea, abdominal discomfort, dark urine, and jaundice. Clinical illness usually does not last longer than 2 months, although 10%–15% of persons have prolonged or relapsing signs and symptoms for up to 6 months, but chronic infection is not known to occur. Virus may be excreted during a relapse. The likelihood of symptomatic illness from HAV infection is directly related to age. In children younger than 6 years of age, most (70%) of infections do not exhibit symptoms. In older children and adults, infection is usually symptomatic, with jaundice occurring in more than 70% of patients. Although children younger than 6 years of age may have mild or no symptoms, these children can still spread the disease to others. Young children are therefore an important reservoir of HAV. HAV infection occasionally produces fulminant hepatitis A and death.

Waterborne outbreaks are infrequent and are usually associated with sewage-contaminated or inadequately treated water. Depending on conditions, HAV can be stable in the environment for months. The virus is relatively stable at low pH levels and moderate temperatures but can be inactivated by high temperature (185°F or higher), formalin, and chlorine. Hepatitis A occurs throughout the world. It is highly endemic in some areas, particularly Central and South America, Africa, the Middle East, Asia, and the Western Pacific.

There is no specific treatment for hepatitis A virus infection. Disease is usually self-limiting and treatment and management of HAV infection are supportive; HAV infection does not result in chronic infection or chronic liver disease. However, HAV infection can complicate chronic liver disease (CLD) among persons infected with hepatitis C virus; thus, susceptible persons should be vaccinated.

For a more complete description of hepatitis A, refer to the following texts:

- *Control of Communicable Diseases Manual*. (CCDM), American Public Health Association. 19th ed. 2008.

- American Academy of Pediatrics. *Red Book: 2012 Report of the Committee on Infectious Diseases.* 29th ed. 2012.
- Centers for Disease Control and Prevention, *Chapter 3: Hepatitis A. Manual for the Surveillance of Vaccine-Preventable Diseases* (5th Edition, 2012)

2012 Case Definition – Hepatitis A, acute[4] - (11/13)

Clinical Description

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, or b) elevated serum alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels.

Laboratory Criteria for Diagnosis

Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive.

Case Classification

Confirmed

- A case that meets the clinical case definition and is laboratory confirmed, **OR**
- A case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

NOTE: *The Missouri Department of Health and Senior Services (MDHSS) has established the following probable case classifications to be used for case entry into WebSurv: Probable:*

- *A case that meets laboratory criteria for diagnosis has discrete onset of symptoms compatible with hepatitis in the absence of jaundice, and liver enzyme testing was not done or results are unavailable.* ***OR***
- *A case in a child younger than 6 years of age that is ant-HAV-IgM positive, and is epi-linked to a "confirmed" or "probable" HAV case, and the anti-HAV-IgM positive specimen was collected 15-50 days after exposure to the epi-linked case.*

COMMENT: *The Centers for Disease Control and Prevention (CDC) does not request or accept reports of probable cases so this category is not used for national reporting purposes.*

Information Needed for Investigation[2]

Verify the diagnosis. Obtain demographic, clinical and laboratory information on the case from the attending physician, hospital, and/or laboratory. Obtain the other epidemiological information necessary to complete the Disease Case Report (CD-1), and the Viral Hepatitis Case Report from the patient or a knowledgeable family member. ***NOTE****: Rapid identification and prompt reporting of cases of hepatitis A are important because measures can be taken to prevent transmission to other persons, if contacts can be effectively identified and vaccinated post-exposure within two weeks after exposure.*[2]

Establish the extent of illness. Going back two weeks before the onset of symptoms, identify all household, sexual (heterosexual and homosexual), drug use, child care, hospital, nursing home, and other intimate contacts. Identify other close friends, playmates, persons with whom the case shared food or beverages. Ask if the case prepared food for anyone outside the household. Ask if the case lived or spent significant time in another household. If the case is a child, interview the parent/guardian carefully regarding child care; remember many children may not go to one specific care center. ***NOTE**: Children may be cared for by a variety of family members, friends, and neighbors.*

Identifying the source of infection. The Information obtained from the Viral Hepatitis Case Report is used to help identify the source. Ask about illnesses among household, child care, hospital, long-term care, and other close contacts. Areas of particular interest are:

- Does the case or a member of the cases' household attend a child care center or nursery school?
- Have there been other cases linked by time, place, or person?
- Has the case traveled out of the country to an endemic area?
- Has the case had personal or household contact with a newly arriving international adoptee?
- Has the case ingested untreated water?
- Has the case ingested raw or undercooked mollusks?
- Has the case used illegal drugs?
- Does the case engage in sexual practices that might place the person or others at increased risk (e.g. men who have sex with men {MSM})?

NOTE: *In the United States, almost half of all persons with hepatitis A report having no risk factors for the disease. Among adults with identified risk factors, most cases occur among international travelers, household or sexual contacts, nonhousehold contacts (e.g., those encountered through play and daycare), and injection-drug users (IDUs).*

Provide information about hepatitis A to persons at risk for infection, health care providers, and the general public. Educate the person(s) on proper sanitation and personal hygiene with special emphasis on careful handwashing. The case while infectious should not prepare food or drink for persons at risk of infection. ***NOTE**: Persons are infectious the two weeks before the onset of illness through the first two weeks of illness (or the week after the onset of jaundice).* Information on HAV prevention can be found on CDC's website at: http://www.cdc.gov/hepatitis/A/PDFs/HepAGeneralFactSheet.pdf and http://www.cdc.gov/hepatitis/A/aFAQ.htm#transmission. Efforts should be made to promote awareness among physicians and infection control practitioners of the importance of reporting suspected cases of HAV promptly. A common risk factor for persons with acute infection is contact with a previously identified case-patient. Aggressive case investigations of persons with acute disease provide the best opportunity to administer postexposure prophylaxis to contacts of case-patients and have the potential to significantly reduce missed opportunities to prevent disease.

Hepatitis A surveillance. Review surveillance data to determine whether there have been other cases in the same geographic area or institution. When cases are related by person, place, or

time, efforts should be made to identify a common source**.** Information obtained through the Viral Hepatitis Case Report is helpful in identifying a possible source of infection and to characterize persons or geographic areas in which additional efforts are needed to raise awareness and reduce disease incidence. ***NOTE****: When investigating a suspected outbreak of gastrointestinal illness of unknown etiology, see the Outbreak Investigation section of the CDIRM.*

Notification

- Contact the District Communicable Disease Coordinator, the Senior Epidemiology Specialist for the District, or the Missouri Department of Health and Senior Services (MDHSS) - BCDCP, phone (573) 751-6113, Fax (573) 526-0235, or for afterhours notification contact the MDHSS/ERC at (800) 392-0272 (24/7) immediately if an outbreak* of hepatitis A is suspected.
- If a case(s) is associated with a childcare center, BCDCP or the LPHA will contact the BEHS, phone (573) 751-6095, Fax (573) 526-7377 and the Section for Child Care Regulation, phone (573) 751-2450, Fax (573) 526-5345.
- If a case(s) is associated with a food handler, BCDCP or the LPHA will contact BEHS, phone (573) 751-6095, Fax (573) 526-7377.
- If a case(s) is associated with a long-term care facility, BCDCP or the LPHA will contact the Section for Long Term Care Regulation, phone (573) 526-8524, Fax (573) 751-8493.
- If a case is associated with a hospital, hospital-based long-term care facility, or ambulatory surgical center BCDCP or the LPHA will contact the Bureau of Health Services Regulation phone (573) 751-6303, Fax (573) 526-3621.
- Contact the Department of Natural Resources, Public Drinking Water Branch, at (573) 751-1187, Fax (573) 751-3110 if cases are associated with a public water supply, or BEHS, phone (573) 751-6095, Fax (573) 526-7377, if cases are associated with a private water supply.

*Outbreak is defined as the occurrence in a community or region, illness(es) similar in nature, clearly in excess of normal expectancy and derived from a common or a propagated source.

Control Measures

- **Pre-exposure Vaccination.**[3, 9]
  Persons in the following groups should be offered hepatitis A vaccine: **1)** international travelers; **2)** close contact with an international adoptee from a country of high or intermediate endemicity; **3)** MSM; **4)** illegal drug users (of both injection and noninjection drugs); **5)** persons who have clotting factor disorders; **6)** persons with occupational exposure; and **7)** persons with CLD, including persons with chronic HBV and HCV infection who have evidence of CLD. For additional information on the vaccination schedule and use; or the contraindications and precautions to vaccination see: Centers for Disease Control and Prevention, *Epidemiology and Prevention of Vaccine-Preventable Diseases*.

General Postexposure Recommendations:

Hepatitis A vaccine or IG should be administered to all previously unvaccinated household and sexual contacts of persons with serologically confirmed hepatitis A. In addition, persons who have shared illicit drugs with a person who has serologically confirmed hepatitis A should receive hepatitis A vaccine, or IG and hepatitis A vaccine simultaneously. Consideration also should be given to providing IG or hepatitis A vaccine to persons with other types of ongoing, close personal contact (e.g., regular babysitting) with a person with hepatitis A.

Provide education to HAV infected persons and their caregivers about the importance of good handwashing with soap and water after defecation or handling diapers or feces, and before handling food or caring for children or patients.

If a case occurs in a food handler or child care attendee or staff member, contact the District Communicable Disease Coordinator immediately.

If there are multiple cases, search intensively for the specific mode of transmission (food, water, person-to-person), evaluate potential for ongoing person-to-person transmission, and develop specific control measures based on epidemiologic investigation.

- **Postexposure Prophylaxis.**[2, 3, 9]
  Persons who recently have been exposed to HAV and who previously have not received hepatitis A vaccine should be administered a single dose of single-antigen vaccine or IG (0.02 mL/kg) as soon as possible. Information about the relative efficacy of vaccine compared with IG postexposure is limited, and no data are available for persons aged >40 years or those with underlying medical conditions. Therefore, decisions to use vaccine or IG should take into account patient characteristics associated with more severe manifestations of hepatitis A, including older age and CLD.

  For healthy persons aged 12 months to 40 years, single-antigen hepatitis A vaccine at the age-appropriate dose is preferred over IG because of vaccine advantages, including long-term protection and ease of administration. ***COMMENT**: HAV vaccines are licensed for people 12 months of age and older.* For persons aged >40 years, IG is preferred because of the absence of information regarding vaccine performance and the more severe manifestations of hepatitis A in this age group; ***vaccine can be used if IG cannot be obtained.***[9] The magnitude of the risk for HAV transmission from the exposure should be considered in decisions to use IG or vaccine. IG should be used for children aged <12 months, immunocompromised persons, persons who have had diagnosed CLD, and persons for whom vaccine is contraindicated.

  If IG is administered to persons for whom hepatitis A vaccine also is recommended, a dose of vaccine should be provided simultaneously with IG. The second vaccine dose should be administered according to the licensed schedule to complete the series. The efficacy of IG or vaccine when administered >2 weeks after exposure has **not** been established.

  For additional information regarding the use of IG, see the package insert or the Immune Globulin section of CDC, Morbidity and Mortality Weekly Report, 55 (RR-7); 1-23.

- **Postvaccination Serologic Testing.**[9]
  Postvaccination serologic testing is not indicated because most persons respond to the vaccine. In addition, the commercially available serologic test is not sensitive enough to detect the low, but protective levels of antibody produced by vaccination.

Postexposure Control Measures:

Household and sexual contacts.[2, 13] All previously unimmunized people with close personal contact with a person with serologically confirmed HAV infection, such as household and sexual contacts, should receive vaccine or IG within 2 weeks after the most recent exposure. Serologic testing of contacts is not recommended, because testing adds unnecessary cost and may delay administration of postexposure prophylaxis.

Common-source exposure.[2, 13] Postexposure prophylaxis usually is not recommended, because these outbreaks commonly are recognized too late for prophylaxis to be effective in preventing HAV infection in exposed people. HAV vaccine or IG can be considered if it can be administered to exposed people within 2 weeks of an exposure.

Child care center staff, employees, and children and their household contacts.[2, 13] Since infections in children usually are mild or asymptomatic; outbreaks often are identified only when adult contacts become ill. Serologic testing to confirm HAV infection in suspected cases is indicated. HAV vaccine or IG should be administered to all previously unimmunized staff members and attendees of child care centers or homes if (1) one or more cases of hepatitis A are recognized in children or staff members; or (2) cases are recognized in 2 or more households of center attendees. In centers that provide care only to children who do not wear diapers, vaccine or IG need be given only to classroom contacts of an index-case patient. When an outbreak occurs (i.e., hepatitis A cases in 2 or more families[2]), vaccine or IG also should be considered for members of households that have children (center attendees) in diapers. Children and adults with hepatitis A should be excluded from the center until 2 weeks after onset of illness, until the postexposure prophylaxis program has been completed in the center, or until directed by the health department. For additional information on this subject see "Postexposure Control Measures for Child Care Centers."

Exposure to an infected food handler.[2, 3, 7, 13] If a food handler is diagnosed with hepatitis A, HAV vaccine or IG should be provided to other food handlers at the same establishment. Food handlers with acute HAV infection should be excluded for 7 days after onset of jaundice. In the absence of jaundice, exclude the infected food handler from work for 14 days after onset of symptoms. Because common-source transmission to patrons is unlikely, postexposure prophylaxis with HAV vaccine or IG typically is not indicated but may be considered if the food handler directly handled food during the time when the food handler likely was infectious and had diarrhea or poor hygiene practices and if prophylaxis can be provided within 2 weeks of exposure. Routine HAV immunization of food handlers is not recommended. For additional information on this subject see "Postexposure Control Measures for an Infected Food Handler."

Schools.[2, 13] Schoolroom exposures generally does not pose an appreciable risk of infection and postexposure prophylaxis is not indicated when a single case occurs and the source of infection

are outside the school. However, HAV vaccine or IG could be used for unimmunized people who have close contact with the index patient if transmission within the school setting is documented.

Hospitals.[2, 13] Usually, health care-associated HAV in hospital personnel has occurred through spread from patients with acute HAV infection in whom the diagnosis was not recognized. Careful hygienic practices should be emphasized when a patient with jaundice or known or suspected hepatitis A is admitted to the hospital. Staff members should not routinely be administered hepatitis A postexposure prophylaxis; instead, careful hygienic practices should be emphasized. Hepatitis A vaccine or IG should be administered to persons who have close contact with index patients if an epidemiologic investigation indicates HAV transmission has occurred among patients or between patients and staff members in a hospital. When outbreaks occur, HAV vaccine or IG is recommended for people in close contact with infected patients. There is no recommendation for routine pre-exposure use of HAV vaccine for hospital personnel.

Postexposure Control Measures for an Infected Food Handler:

1. If a food handler is diagnosed with hepatitis A, HAV vaccine or IG should be provided to all of the other food handlers at the same establishment. If an employee has received at least one dose of hepatitis A vaccine and it has been at least one month since the injection, the employee should continue the hepatitis A vaccine series on schedule. ***COMMENT****: If a food handler refuses postexposure prophylaxis, exclude him/her from work until 50 days after their last possible exposure*.
2. Food handlers with acute HAV infection should be excluded for 7 days after onset of jaundice. In the absence of jaundice, exclude the infected food handler from work for 14 days after onset of symptoms.[3, 7]
3. All food handlers, including cases, and those persons suspected of having HAV should be educated on proper sanitation, proper food handling, and personal hygiene with special emphasis on careful handwashing, especially after defecation.
4. Inspection of the restaurant by public health officials, focusing on handwashing and good sanitation of facilities. Deficiencies and education of employees should be discussed in detail with the management. Inspections should include emphasis on the items listed in "Food Establishment Inspection Related to Food Handler with Hepatitis A" (CD-9) and "Food Establishment Precautions to Prevent Spread of Hepatitis A" (CD-10). ***NOTE***: *The CD-9 and CD-10 forms are* ***not*** *intended to replace the routine Food Establishment Inspection Form. The CD-9 is a check-list used to assist with the evaluation of the facility*.
5. Obtain specific information about the employee's symptoms; including whether diarrhea was present; define the dates and times worked as accurately as possible (check timesheets).
6. Obtain the patient's exact work duties and schedule during the infectious period.
7. Destroy all remaining high risk foods prepared by the infected employee.
8. Other employees who are symptomatic should be excluded from all food handling duties until they receive anti-HAV-IgM testing (See Laboratory Procedures). ***COMMENT****: If a food handler, child care or patient care worker has symptoms consistent with hepatitis, but*

the initial anti-HAV-IgM test is negative; it may be advisable to request liver enzyme testing of the employee and review the test results before allowing them to return to work. If liver enzyme test results are elevated, continue to exclude from work and re-test for anti-HAV-IgM in seven days. (Liver enzymes rise before IgM is detectable.)

9. Because common-source transmission of HAV to patrons is unlikely, postexposure prophylaxis with HAV vaccine or IG is typically not indicated, but may be considered when **all three** of the following criteria are met:
   i. **The infected person, without the use of gloves or utensils, is directly involved in handling uncooked foods or foods after cooking.** Examples of high-risk foods include but are not limited to:
      - Lettuce, tomatoes, and garnishes on sandwiches or for salads.
      - Salads, vegetables, and fruits at salad bars.
      - Sliced cooked foods, such as ham, which can be contaminated during slicing.
      - Cold cuts.
      - Cake/donut frostings.
      - Ice that is scooped by hand or a contaminated scoop/glass.
      - Condiments for drinks (such as cherries, olives, lemon/lime twists).

   ii. **The hygienic practices of the infected person are deficient or the infected person has had diarrhea while working.**
      - Deficient hygienic practices mean obviously dirty hands and fingernails and/or the inability to wash hands appropriately in the work place due to lack of soap, paper towels, water and/or a sink.
      - Deficient hygienic practices may also be judged subjectively by evaluating:
        - Personal cleanliness of the food handler.
        - Personal history of handwashing after a bowel movement and/or before handling/serving food.
        - Cleanliness of the food establishment and the case's home.
        - Observed hygienic and food handling habits/practices of workers at the time of investigation.
        - Critical deficiencies of the facility that would facilitate transmission of the virus to patrons.

   iii. **Patrons can be identified and treated within 14 days of exposure**.
   ***NOTE**: Situations where repeated exposures may have occurred, such as institutional cafeterias, may warrant stronger consideration of postexposure prophylaxis use. Routine HAV immunization of food handlers is **not** recommended.*

10. Postexposure prophylaxis may not be recommended because common-source outbreaks can be recognized too late for prophylaxis to be effective in preventing HAV infection in exposed people. However, when a case of hepatitis A occurs in a food service worker who worked during their infectious period, a determination may need to be made; whether there is sufficient risk of hepatitis A transmission to the public to warrant patron notification.

NOTE: *This determination should be made in consultation with the District Communicable Disease Coordinator and the Bureau of Communicable Disease Control and Prevention.*

Postexposure Control Measures for Child Care Centers:

1. Child care operators and staff should be aware of the potential danger of an outbreak of hepatitis A in their centers and should adopt preventive measures. Prevention should focus on good hygiene at the center, with emphasis on handwashing by employees and by children of all ages. Appropriate facilities and precautions should be used in diaper changing areas where feces may be handled directly. Clothing should be worn over diapers to reduce fecal contamination of the environment.[11]
2. Staff should wash their hands immediately after changing diapers or training pants or assisting children in using the toilet. Disposable diapers should be thrown away promptly in a covered, plastic-lined container and the diaper-changing table washed and disinfected after use. (Depending on conditions, HAV can be stable in the environment for months.[5])
3. HAV vaccine or IG should be administered to all previously unimmunized staff members and attendees of child care centers or homes if: **1)** one or more cases of hepatitis A are recognized in children or staff members; or **2)** cases are recognized in 2 or more households of center attendees. In centers that provide care only to children who do not wear diapers, vaccine or IG need be given only to classroom contacts of an index-case patient. When an outbreak occurs (i.e., hepatitis A cases in 2 or more families[2]), vaccine or IG also should be considered for members of households that have children (center attendees) in diapers. If persons have received at least one dose of hepatitis A vaccine, and it has been at least one month since the injection; the person should continue the hepatitis A vaccine series on schedule.
4. Request the Bureau of Environmental Health Services at (573) 751-6095 to do an inspection of the center. Inspections should include emphasis on the items listed in "Child Care Establishment Inspection Related to Enteric Infection" (CD-8). ***NOTE***: *The CD-8 form is* ***not*** *intended to replace the routine Child Care Establishment Inspection Form. The CD-8 is a check-list used to assist with the evaluation of the facility*.
5. Affected child care facilities should not close down, since this would permit infected children to return to their homes and neighborhoods without their illness being recognized. Closing one center may result in spread to other centers. Cooperation between public health agencies and child care operators is essential for successful outbreak control.
6. The CDC hepatitis A fact sheet and forms relating to child care centers may be duplicated and used.

Response to reports of positive HAV IgM test results in persons with no recent history of acute hepatitis:[14] *Providing immune globulin is not recommended for contacts of IgM anti-HAV positive persons when the date that these persons might have been infectious is unknown (because no defined symptom onset is known), even for those patients who repeatedly test IgM anti-HAV positive.* Clinicians and public health officials who receive reports of persons who are IgM anti-HAV positive in the absence of symptoms of viral hepatitis or history of recent contact with a hepatitis A patient should consider seeking additional information when making decisions about the need for postexposure immunoprophylaxis among contacts. Acute HAV infection is

unlikely in persons who have received 1 or more doses of hepatitis A vaccine >1 month before symptom onset. Testing the patient for total anti-HAV and retesting for IgM anti-HAV might be helpful. Persons with acute HAV infection will test total anti-HAV positive; if the total anti-HAV test is negative, acute HAV infection is unlikely. Retesting the same or another serum specimen, preferably by using a different test format, might indicate that the person is IgM anti-HAV negative.

Testing of persons with no clinical symptoms of acute viral hepatitis, and among populations with a low prevalence of acute HAV infection lowers the predictive value of the IgM anti-HAV test. Diagnostic tests for viral hepatitis, including licensed IgM anti-HAV tests, are highly sensitive and specific when used on specimens from persons with acute hepatitis. However, their use among persons without symptoms of hepatitis A can lead to IgM anti-HAV test results that are falsely positive for acute HAV infection or of no clinical importance. This might be occurring with use of laboratory test panels that include routine testing for IgM anti-HAV without requiring a specific order for the test (i.e., "reflex testing") among persons who are not being evaluated for possible acute hepatitis (e.g., persons with liver function test abnormalities or persons being screened for hepatitis C).

Additional Information on IG.

New Boxed Warning Highlights Thrombosis Risk from Human Immune Globulin[8]

The U.S. Food and Drug Administration (FDA) is requiring manufacturers to add information on thrombosis to the current boxed warning in the labels of all intravenous human immune globulin products and to add a boxed warning to the labels of all subcutaneous and intramuscular human immune globulin products to highlight the risk of thrombosis and to add information on its mitigation.

Although all human immune globulin products already contain some information related to the risk of thrombosis in the current WARNINGS and PRECAUTIONS sections of their labels, FDA recognizes that the communication of this risk and its mitigation are not standardized. FDA proposes that for thrombosis a more prominent placement of risk information and a uniform approach for communicating the risk and its possible mitigation will help to reduce the occurrence of these serious adverse events.

NOTES:[16] There is a recommended interval of 3 months before measles or varicella-containing vaccine administration following IG usage. The recommended minimum interval between receiving MMR or varicella vaccine and then receiving IG is 2 weeks. For additional information see the following MMWR; (ACIP) *General Recommendations on Immunization*, 2011, (Table 4) and (Table 5) at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm.

Laboratory Procedures

Serologic testing is required to distinguish hepatitis A from other types of viral hepatitis, since clinical or epidemiologic features overlap. Virtually all patients with acute hepatitis A have detectable IgM anti-HAV. Acute HAV infection is confirmed during the acute or early convalescent phase of infection by the presence of IgM anti-HAV in serum. IgM generally becomes detectable 5–10 days before the onset of symptoms and can persist for up to 6 months.

IgG anti-HAV appears in the convalescent phase of infection, remains present in serum for the lifetime of the person, and confers enduring protection against disease.

The antibody test for total anti-HAV measures both IgG anti-HAV and IgM anti-HAV. Persons who are total anti-HAV positive and IgM anti-HAV negative are considered immune, whether from past infection or vaccination history.

The Missouri State Public Health Laboratory (SPHL) performs the anti-HAV-IgM test. HAV testing to be performed by the MSPHL should go through the Virology Unit, phone (573) 751-3334 before submission. Information on the collection or shipment of specimens for HAV testing by the MSPHL may be viewed at: http://health.mo.gov/lab/viralhepatitis.php. ***NOTE:*** *Extreme heat or cold can hemolyze whole blood, making it unsuitable for testing. The SPHL does not perform liver enzyme testing, but this testing is available through private diagnostic laboratories for a fee.*

Reporting Requirements

Hepatitis A is a Category 2 (A) disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services within one (1) calendar day of first knowledge or suspicion; for afterhours notification contact the MDHSS/ERC at (800) 392-0272 (24/7).

As a Nationally Notifiable Condition, **confirmed** cases of acute hepatitis A are a **STANDARD** report to the Centers of Disease Control and Prevention (CDC). **STANDARD** reporting requires the Missouri Department of Health and Senior Services (MDHSS) to report to CDC by electronic transmission via WebSurv within the next normal reporting cycle.

1. For all cases, complete a "Disease Case Report" (CD-1).
2. For confirmed and probable cases, complete the "Viral Hepatitis Case Report".
3. MDHSS will submit weekly electronic reports to CDC.
4. Complete the "Immunization Consent and History" (ImmP-8M) form for each person receiving IG and/or hepatitis A vaccine.
5. Complete the "Missouri Immunization Record" (IMMP-1) "Other" area for each person receiving IG.
6. If hepatitis A vaccine is administered, provide the hepatitis A "Vaccine Information Statement" to each person receiving vaccine.
7. Complete the "Missouri Immunization Record" (IMMP-1) "Hepatitis A" area for each person receiving vaccine.
8. Each person (adult or child) receiving hepatitis A vaccine should be entered into the electronic "Immunization Registry" (ShowMeVax).
9. Entry of the complete CD-1 and Viral Hepatitis Case Report into the WebSurv negates the need for the paper forms to be forwarded to the District Health Office.

10. All outbreaks or suspected outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the District Communicable Disease Coordinator. This can be accomplished by completing the "Missouri Outbreak Surveillance Report" (CD-51).
11. If an outbreak is associated with food, a CDC 52.13 form (National Outbreak Reporting System – Foodborne Disease Transmission) is to be completed and submitted to the District Communicable Disease Coordinator at the conclusion of the outbreak.
12. If an outbreak is associated with the consumption or use of water for drinking, or with ingestion, contact, or inhalation of recreational water, a CDC 52.12 form (National Outbreak Reporting System - Waterborne Disease Transmission) is to be completed and submitted to the District Communicable Disease Coordinator at the conclusion of the outbreak.
13. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

References

1. American Public Health Association. *Viral hepatitis A*. In: Heymann D Ed. *Control of Communicable Diseases Manual* 19th ed. Washington, DC: American Public Health Association; 2008: pp. 278-284
2. American Academy of Pediatrics. *Hepatitis A*. In Pickering LK, Baker CJ, Kimberlin DW, Long SS eds. *Red Book: 2012 Report of the Committee on Infectious Diseases* 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012: pp. 361-369.
3. Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, Hepatitis A. Atkinson W, Hamborsky J, Wolfe S, eds. 12th ed., second printing. Washington DC: Public Health Foundation, 2012. pp 101-114.
4. CDC's National Notifiable Diseases Surveillance System (NNDSS) and Case Definitions. http://wwwn.cdc.gov/nndss/ (11/13)
5. Centers for Disease Control and Prevention, *Chapter 3: Hepatitis A. Manual for the Surveillance of Vaccine-Preventable Diseases* (5th Edition, 2012) http://www.cdc.gov/vaccines/pubs/surv-manual/chpt03-hepa.html (11/13)
6. Wasley, Annemarie, Feinstone, S.M. & Bell, B.P. *Hepatitis A Virus*. In Gerald L. Mandell, John E. Bennett, & Raphael Dolin, Eds. *Principles and Practice of Infectious Diseases*, 7th ed., Pennsylvania: Churchill Livingstone Elsevier, 2010: pp. 2367-2387.
7. United States Department of Health and Human Services, Public Health Service, Food and Drug Administration. 2009 Food Code. http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/UCM2019396.htm (11/13)
8. US Food and Drug Administration, *FDA Safety Communication: New boxed warning for thrombosis related to human immune globulin products*, June 10, 2013.
9. Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines, 2010. *Morbidity and Mortality Weekly Report*. Recommendations and Reports December 17, 2010 / 59(RR12); 1-110. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5912a1.htm?s_cid=rr5912a1_e (11/13)

10. Centers for Disease Control and Prevention. (2006, May). Prevention of Hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report, 55 (RR-7)*, 1-23. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5507a1.htm (11/13)
11. Townsend, T.R. (1999). Hepatitis A. In: L.G. Donowitz (Ed.), *Infection Control in the Child Care Center and Preschool. (*4th ed., pp. 156-158). Baltimore: Williams.
12. Margolis, H.S., Alter, M.J. & Hadler, S, C. (1998). Viral Hepatitis. In: A.S. Evans & R. A. Kaslow (Eds.), *Viral Infections of Humans Epidemiology and Control*. (4th ed., pp. 363-375). New York: Plenum.
13. Centers for Disease Control and Prevention. "Update: Prevention of Hepatitis A after Exposure to Hepatitis A Virus and in International Travelers. Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP)". MMWR 2007; 56:1080-1084. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm (11/13)
14. Centers for Disease Control and Prevention. "Positive Test Results for Acute Hepatitis A Virus Infection among Persons With No Recent History of Acute Hepatitis --- United States, 2002—2004". MMWR 2005; 55: 453-456. http://www.cdc.gov/mmwR/preview/mmwrhtml/mm5418a1.htm (11/13)
15. Centers for Disease Control and Prevention. Recommendations of the Advisory Committee on Immunization Practices (ACIP): Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence. MMWR 1993; 42(No. RR-4). http://www.cdc.gov/mmwr/preview/mmwrhtml/00023141.htm (11/13)
16. Centers for Disease Control and Prevention. Recommendations of the Advisory Committee on Immunization Practices (ACIP): General Recommendations on Immunization. MMWR; *Recommendations and Reports*; January 28, 2011 / 60(RR02); 1-60. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm. (11/13)

Other Sources of Information

1. Centers for Disease Control and Prevention. Hepatitis A Information for the Public. Hepatitis A FAQs for the Public. http://www.cdc.gov/hepatitis/A/aFAQ.htm (11/13)
2. Centers for Disease Control and Prevention. Hepatitis A Information for Health Professionals. http://www.cdc.gov/hepatitis/HAV/index.htm (11/13)
3. Gilroy, R. & Mukherjee, S. (Updated August, 2012). Hepatitis A. *eMedicine Journal*. http://emedicine.medscape.com/article/177484 (11/13)
4. Centers for Disease Control and Prevention. Vaccines and preventable diseases: Hepatitis A Vaccination. http://www.cdc.gov/vaccines/vpd-vac/hepa/default.htm (11/13)