
	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 1 of 11

Hepatitis A Table of Contents

- [Case Definition](#)
- [Overview](#)
- [Quick References / Factsheets](#)
- [Forms](#)
- [Notifications](#)
- [Reporting Requirements](#)
- [Laboratory Testing and Diagnosis](#)
- [Conducting the Investigation](#)
- [Control Measures \(General Setting\)](#)
- [Control Measures \(Hepatitis A Case in a Food Handler:\)](#)
- [Control Measures \(Hepatitis A Case in a Child Care Center\)](#)
- [Resources](#)


	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 2 of 11

Hepatitis A

Case Definition - [Hepatitis A, Acute - 2019 Case Definition](#)

Overview

- **Agent** - Hepatitis A virus (HAV)
- **Reservoir** – Humans are the only natural host, although several nonhuman primates have been infected in laboratory conditions.
- **Environment** – 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.
- **Occurrence** – HAV 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.
- **Risk Factors** – Persons with direct contact with persons who have HAV; travelers to countries with high or intermediate endemicity of HAV infection; men who have sex with men; users of injection and non-injection drugs; persons who are homeless; persons with clotting factor disorders; persons working with nonhuman primates; household members and other close personal contacts of adopted children newly arriving from countries with high or intermediate HAV endemicity.
- **Mode of Transmission** – Primarily by the fecal-oral route by either person-to-person contact or ingestion of contaminated food or water. Because the virus is present in blood during the illness prodrome, HAV has been transmitted on rare occasions by transfusion. 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.
- **Period of Communicability** – 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.
- **Incubation Period** – Approximately 28 days (range 15–50 days).
- **Clinical Illness** – Typically an abrupt onset of fever, malaise, anorexia, nausea, abdominal discomfort, dark urine, and jaundice. Most (70%) of children less than 6 years will not have symptoms; over (70%) of older children and adults will develop symptoms that include 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. HAV infection occasionally produces fulminant HAV and death.
- **Laboratory Testing** – Testing for acute HAV infection includes testing for the presence of IgM anti-HAV in serum. IgG anti-HAV appears in the convalescent phase of infection. Polymerase chain reaction (PCR)-based assays can be used to amplify and sequence viral genomes. These assays are helpful to investigate common-source outbreaks of hepatitis A.
- **Treatment** – There is no specific treatment for HAV virus infection. Disease is usually self-limiting and treatment and management of HAV infection are supportive.

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 3 of 11

- **Priority** – Prompt investigation and implementation of control measures are required.

Quick References / Factsheets

- Public - [Hepatitis A Questions and Answers for the Public \(CDC\)](#)
- Health Professionals - [Hepatitis A Questions and Answers for Health Professionals \(CDC\)](#)

Forms


- Disease Case Report (CD-1) [PDF format](#) [Word format](#)
- [Viral Hepatitis Case Report \(CDC\)](#)
- [Missouri Outbreak Report Form \(MORE\)](#)
- [Child Care Establishment Inspection Related to Enteric Infection \(CD-8\)](#)
- [Food Establishment Inspection Related to Food Handler with Hepatitis A \(CD-9\)](#)
- [Food Establishment Precautions to Prevent Spread of Hepatitis A \(CD-10\)](#)
- [Missouri Immunization Record \(IMMP-1\)](#)
- [Immunization Consent and History Form \(ImmP-8M\)](#)

Notifications

- 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, or for afterhours notification contact the MDHSS/ERC at (800) 392-0272 (24/7) immediately if a case of HAV is identified in a foodservice worker or other high-risk setting, or if an outbreak of HAV 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) 751-1300, 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.

Reporting Requirements

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


	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 4 of 11

- HAV is a nationally notifiable condition in the standard reporting category. The MDHSS reports confirmed HAV cases to the CDC by routine electronic transmission.
- HAV reporting includes the following:
 1. For all cases, complete a “[Disease Case Report](#)” (CD-1).
 2. For confirmed and probable cases, complete the “[Viral Hepatitis Case Report](#)”, enter information into WebSurv, and attach the completed Viral Hepatitis Case Report form to the record in Websurv.
 3. Complete the “[Immunization Consent and History](#)” (ImmP-8M) form for each person receiving post-exposure prophylaxis with IG and/or HAV vaccine.
 4. Complete the “[Missouri Immunization Record](#)” (IMMP-1) “Other” area for each person receiving IG.
 5. Complete the “[Missouri Immunization Record](#)” (IMMP-1) “Hepatitis A” area for each person receiving vaccine.
 6. Each person (adult or child) receiving HAV vaccine should be entered into the electronic “Immunization Registry” ([ShowMeVax](#)).
 7. All outbreaks or suspected outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the District Communicable Disease Coordinator.
 8. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the [District Communicable Disease Coordinator](#).

Laboratory Testing and Diagnosis

Hepatitis A cannot be distinguished from other types of viral hepatitis on the basis of clinical or epidemiologic features alone. Serologic testing is required to confirm the diagnosis. A brief, three minute CDC training video [Viral Hepatitis Surveillance Testing](#) is available. Tests for HAV include:


- ***IgM anti-HAV (IgM)***: Virtually all patients with acute HAV have detectible IgM anti-HAV. IgM is generally detectable 5-10 days before onset of symptoms and up to 6 months after. 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 HAV can lead to IgM anti-HAV test results that are falsely positive and of no clinical importance. IgM tests for anti-HAV should be interpreted in conjunction with clinical presentation and other results such as elevation in liver enzymes alanine transaminase (ALT) and aspartate transaminase (AST). Retesting the same or another serum specimen, preferably by using a different test format, might indicate that the person is IgM anti-HAV negative.
- ***Total anti-HAV (Total)***: Measures both IgG anti-HAV and IgM anti-HAV. IgG anti-HAV appears during infection or following vaccination and remains positive. Persons with acute HAV infection will test total anti-HAV positive; if the total anti-HAV test is negative, acute HAV infection is unlikely.
- ***Polymerase chain reaction (PCR)***: Can be used to amplify and sequence viral genomes. These assays are helpful to investigate common-source outbreaks of HAV.

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 5 of 11

The Missouri State Public Health Laboratory (MSPHL) performs the anti-HAV (IgM) test. Testing HAV at MSPHL should be coordinated through the Virology Unit (573) 751-3334 before specimen submission <http://health.mo.gov/lab/viralhepatitis.php>.

Conducting the Investigation

1. **Verify the diagnosis.** Contact physician, hospital and/or laboratory as needed to obtain the demographic, clinical and laboratory information needed to verify diagnosis and confirm the current case definition is met.
2. **Identify potential sources of exposure.** Contact the case and ask about potential exposures 15-50 days before onset of illness, including:
 - Close contact (e.g., household member, sex partner, shared a meal or drugs) with any person having an illness compatible with HAV. Any person with compatible illness should be reported and investigated in the same manner as the index case. Obtain each person's name and contact information.
 - Illicit drug use, both injection and non-injection drugs.
 - Travel outside the United States or Canada or contact with a recent arrival (e.g., international adoptee).
 - Any restaurant or other food service meals.
 - Any social gathering or other group setting where the case ate a meal.
 - Contact with diapered children, with children in child care or other settings for preschool children, or with staff of these facilities.
 - Exposure to untreated water.
 - Consumed any raw or undercooked shellfish.
3. **Review surveillance data.** 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.
4. **Provide information regarding the prevention of HAV to the case.** 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. The case should not prepare food for persons at risk for infection while infectious (two weeks before the onset of symptoms until about one week after onset of jaundice, or two weeks after onset of illness in the absence of jaundice).
5. **Identify exposed close contacts and potential settings for transmission.** Ask the case to verify specifics of illness and identify persons with significant opportunity for fecal-oral exposure during the entire period of communicability (two weeks before the onset of symptoms until about one week after onset of jaundice, or two weeks after onset of illness in the absence of jaundice), including:
 - Household and sexual (heterosexual and homosexual) contacts;
 - Persons who have eaten food prepared or handled by the case;
 - Persons who have shared illicit drugs with the case (both injection and non-injection drugs);

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 6 of 11


- Child care contacts;
 - Close friends or others with ongoing close personal contact with the case;
 - Identify any links to high risk settings: food service workers, child and/or employee of child care facility or the care of a child.
 - Close contacts to a confirmed case with symptoms compatible with HAV should be referred to a health care provider and investigated as a confirmed case.
6. **Determine susceptibility of exposed contacts.** Persons are considered immune to HAV if they have received at least one dose of HAV vaccine at least 28 days prior to the exposure, or if they have a history of laboratory confirmed HAV. Serologic testing of contacts to determine immunity is generally not indicated.
7. **Post-exposure prophylaxis of susceptible, possibly exposed contacts.** Refer to the (*Post-Exposure Prophylaxis information in the Control Measures*) section of this document for guidance.

Control Measures (General Setting)

Pre-exposure Vaccination. HAV vaccines are licensed for people 12 months of age and older. For additional information on the vaccination schedule and use; or the contraindications and precautions to vaccination visit CDC’s [Epidemiology and Prevention of Vaccine-Preventable Diseases](#) and HAV [Vaccine Information Statement](#). Persons in the following groups should be offered HAV vaccine:

- International travelers
- Close contact with an international adoptee from a country of high or intermediate endemicity
- Men who have sex with men (MSM)
- Users of injection and non-injection illicit drugs
- Persons who have clotting factor disorders
- Persons with occupational exposure
- Persons with chronic liver disease (CLD), including persons with chronic HBV and HCV infection who have evidence of CLD
- Persons with unstable housing or experiencing homelessness.

Note: ACIP recommends that HAV vaccine be administered to infants aged 6–11 months traveling outside the United States when protection against HAV is recommended. The travel-related dose for infants aged 6–11 months should not be counted toward the routine 2-dose series. MMR vaccine is also recommended for all infants aged 6–11 months traveling internationally from the United States. IG cannot be administered simultaneously with MMR vaccine. For international travelers <6 months of age IG is recommended.

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 7 of 11

Post-exposure Prophylaxis (PEP). Persons who recently have been exposed to HAV and who previously have not received HAV vaccine should be administered one dose of single-antigen HAV vaccine or immune globulin (IG) as soon as possible and within **2 weeks** of most recent exposure. The guidelines regarding the use of vaccine and/or IG vary by age and health status.

The following [ACIP recommendations](#) are for persons exposed to HAV within the prior **14 days** and who have **not** completed the 2-dose HAV vaccine series:

- **Healthy persons aged ≥12 months:** should receive a single dose of HAV vaccine as soon as possible. In addition to HAV vaccine, IG (0.1 mL/kg) may be administered to persons aged >40 years depending on the providers' risk assessment. [MMWR Supplement 1](#).
- **Persons aged ≥12 months who are immunocompromised and persons with chronic liver disease:** should receive both IG (0.1 mL/kg) and HAV vaccine simultaneously in a different anatomical site as soon as possible after exposure. A list of persons with increased risk of complications if infected with HAV is available at [CDC. Hepatitis A Questions and Answers for Health Professionals](#).
- **For infants aged <12 months and persons for whom vaccine is contraindicated (who are allergic to a vaccine component):** should receive IG (0.1 mL/kg) instead of vaccine as soon as possible.

Note: For long-term immunity, the HAV vaccine series should be completed with a second dose at least 6 months after the first dose; the second dose is not necessary for PEP.


Note: GamaSTAN S/D is the only IG product approved by the Food and Drug Administration for HAV prophylaxis.

Note: The dosing guidelines for GamaSTAN S/D for PEP following exposure to HAV changed in 2017. For updated dosing guidelines visit [MMWR September 15, 2017 / 66\(36\):959–960](#).

Note: 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 for the timing and spacing of IG and other vaccines see ACIP [General Best Practice Guidelines for Immunization](#).

Consider the following in determining who should receive PEP for HAV. For additional information on determining who should receive PEP or additional guidance on PEP following exposures in the settings noted below visit [MMWR Supplement 1](#).

- ***Close personal contact.*** PEP should be administered to all previously unvaccinated persons who have been exposed or are at risk of exposure due to close personal contact with a person who has serologically confirmed hepatitis A infection (e.g., household and sexual contacts; persons using injection or non-injection drugs with the case; and caretakers not using appropriate personal protective equipment).
- ***Restaurants and childcare facilities.*** (See *Hepatitis A Case in a Food Handler* and *Hepatitis A Case in a Child Care Center* sections of this document).

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 8 of 11

- Settings providing services to children and adults. PEP is not routinely indicated when a single case occurs in an elementary or secondary school or an office or other work setting, and the source of infection is outside of the setting. PEP should be administered to persons who have close contact with index patients if an epidemiologic investigation indicates HAV transmission has occurred among students in a school.
- Healthcare facilities. Healthcare personnel do not have increased prevalence of HAV infection and healthcare-associated outbreaks of HAV are rare. Therefore, HAV vaccination is not routinely recommended for health care personnel in the United States. If a healthcare provider receives a diagnosis of hepatitis A infection, PEP should be administered to other healthcare personnel at the same facility.
- Correctional facility, homeless shelter, psychiatric facility, group home or residential facility for the disabled. PEP should be considered for all previously unvaccinated residents and employees when a confirmed hepatitis A case occurs. In a setting containing multiple enclosed units or sections (e.g., prison ward), PEP administration should be limited only to persons in the area where there is exposure risk.

Note: PEP is not recommended for contacts of IgM anti-HAV positive persons in absence of clinical symptoms when the date that these persons might have been infectious is unknown. 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 exposure to HAV should consider seeking additional information when making decisions about the need for PEP of contacts.


Note: When a person who has HAV infection is admitted to a hospital, appropriate infection control practices should be emphasized, i.e., [standard and contact precautions](#) for diapered or incontinent patients.

Control Measures (Special Settings)

Hepatitis A Case in a Food Handler:

Food handlers are not at increased risk for HAV because of their occupation. Most food handlers with HAV infection do not transmit HAV to exposed patrons. However, they are noteworthy because of their critical role in common-source foodborne HAV transmission.

1. Obtain specific information about the infected food handler including, but not limited to:
 - Symptoms and onset dates including if the case had diarrhea and if so, onset date, while at work, etc.
 - Obtain the patient's exact work duties and schedule during the infectious period. Define the dates and times case worked as accurately as possible (check timesheets).
2. Destroy all remaining high risk foods prepared by the infected employee.
3. 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.
4. 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 HAV vaccine and it has been at least one month since the injection, the employee should continue the HAV vaccine

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 9 of 11


series on schedule. If a food handler refuses PEP, exclude him/her from work until 50 days after their last possible exposure.

5. Other employees who are symptomatic should be excluded from all food handling duties until they receive anti-HAV-IgM testing. If a food handler has symptoms consistent with hepatitis, but the initial anti-HAV-IgM test is negative; it may be advisable to request liver enzyme (ALT and AST) and total bilirubin levels 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 7 days.
6. All the food handlers should be educated on proper sanitation, proper food handling, and personal hygiene with special emphasis on careful handwashing, especially after defecation.
7. 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). 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.
8. Because common-source transmission of HAV to patrons is unlikely, PEP with HAV vaccine or IG is typically not indicated. However, it may be considered if:
 - i. During the time when the food handler was likely to be infectious, the food handler both directly handled uncooked foods or foods after cooking and had diarrhea or poor hygienic practices;
AND
 - ii. Patrons can be identified and treated within 14 days of exposure. Situations where repeated exposures may have occurred, such as institutional cafeterias, may warrant stronger consideration of post-exposure prophylaxis use.

Note: In settings in which repeated exposures to HAV might have occurred (e.g., institutional cafeterias), consideration of PEP use is warranted. PEP in this scenario should generally consist of vaccination for all age groups, though IG may be considered for exposed persons (patrons during the time the food handler was symptomatic and worked) who are immunocompromised or have chronic liver disease.

9. PEP 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 HAV 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 HAV 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.

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 10 of 11

Hepatitis A Case in a Child Care Center:

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. Since infections in children are usually mild or asymptomatic; outbreaks often are identified only when adult contacts become ill. Serologic testing to confirm HAV infection in suspected cases is indicated.

1. Child care operators and staff should be aware of the potential danger of an outbreak of HAV 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.
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.
3. Children and adults with HAV should be excluded from the center until 1 week after onset of jaundice or 2 weeks after onset of symptoms in the absence of jaundice, until the post-exposure prophylaxis program has been completed in the center, or until directed by the health department.
4. Asymptomatic children and adults that receive PEP can return to the child care center immediately after receiving the HAV vaccine or IG.
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. Routine immunization of staff at child care centers is not recommended. Post-exposure prophylaxis following a case in childcare a facility include the following:
 - 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 HAV are recognized in children; or 2) cases are recognized in two or more households of center attendees.
 - If one or more cases of HAV occurs among employees, vaccine or IG should be considered based on the duties, hygienic practices and presence of symptoms at work.
 - 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.
 - When an outbreak occurs (i.e., HAV cases in two or more families), vaccine or IG also should be considered for members of households that have children (center attendees) in diapers.

	Division of Community and Public Health	
	Section: 4.0 Diseases or Conditions	4/2019
	Subsection: Hepatitis A	Page 11 of 11

- 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). 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.

Resources

- American Academy of Pediatrics. *Hepatitis A*. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*. 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:392-400.
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