

# **Guidelines for the Prevention and Treatment of Hepatitis A**

**Federal Bureau of Prisons  
Clinical Practice Guidelines**

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## What's New in this Document?

The following changes have been made since the BOP guidelines on viral hepatitis were published in October 2005:

- The comprehensive BOP viral hepatitis guidelines will now be divided into three separate guidelines—one each for hepatitis A, hepatitis B, and hepatitis C.
- The infectious period (time period when a case of hepatitis A is considered to be infectious) is defined as *two weeks before hepatitis symptom onset until two weeks after symptom onset*.
- The guidelines for post-exposure prophylaxis are updated. Until recently, an injection of immune globulin (IG) was the only recommended way to protect people after they had been exposed to the hepatitis A virus. The revised guideline recommends the use of hepatitis A vaccine to prevent infection post-exposure, particularly in exposed persons who are healthy and age 40 or younger (page 4).
- A chart is provided for interpreting anti-HAV laboratory results (page 2).
- Hepatitis A vaccination is no longer routinely recommended for inmates who have:
  - a history of abusing illegal, *non-injection* drugs
  - chronic hepatitis B or C infections *without* evidence of liver disease
- An overview on hepatitis A vaccination is provided for health care professionals, in a “frequently asked questions” format ([Appendix 1](#)).
- The *Contact Investigation Checklist* is revised and expanded ([Appendix 2A](#)).
- The guidelines are clarified regarding recommended screening of food handlers after a case of hepatitis A is identified (page 4).
- References are updated (page 7).

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## Purpose

The Federal Bureau of Prisons (BOP) Clinical Practice Guidelines for the Prevention and Treatment of Hepatitis A provide recommendations for the medical management of federal inmates with hepatitis A virus (HAV) infection, and for prevention for those who are at risk of infection.

## Transmission

HAV is transmitted fecal-orally and is acquired either by person-to-person contact or by the ingestion of contaminated food or water. Individuals at increased risk of acquiring HAV infection include the following groups.

<b>Risk Factors for Hepatitis A Infection</b>
<ul style="list-style-type: none"><li>• persons consuming contaminated food or water</li><li>• men who have sex with other men</li><li>• persons who inject illegal drugs</li><li>• persons with clotting disorders who require clotting-factor concentrates</li><li>• individuals who are close personal contacts of infected persons</li></ul>

Those persons who are newly infected with HAV are most contagious during the two weeks prior to the onset of jaundice. The presence of diarrhea increases contagiousness. Transmission can readily occur through close personal contact such as sexual exposure or by sharing contaminated communal surfaces, such as toilets. HAV remains viable in the environment for weeks to months.

<b>Hepatitis A Infectious Period</b>
The infectious period for acute hepatitis A extends from <i>two weeks before hepatitis symptom onset until two weeks after symptom onset</i> .

The prevalence of previously acquired HAV infection among inmate populations is estimated at 22–39% and is largely associated with either the inmate’s community of origin or the inmate’s high-risk behaviors. American Indians, Alaskan Natives, and many persons from Latin America, Africa, the Middle East, China, and Southeast Asia come from communities with endemic HAV infection, where infection by early adulthood is commonplace.

In the United States, the incidence of new HAV infections is at an historic low, but clusters of hepatitis A cases continue to occur via community-based outbreaks. The highest rates of new HAV infections occur in the Western United States, and in large urban areas among men who have sex with men. Institutional outbreaks of hepatitis A are primarily limited to settings with children and have generally not involved correctional facilities.

## Natural History

The incubation period is the period of time from infection with HAV until the onset of hepatitis symptoms.

<b>Hepatitis A Incubation Period</b>
The average incubation period for hepatitis A is 28 days (ranging from 15—50 days).

Initial, prodromal symptoms include fatigue, malaise, nausea, vomiting, anorexia, fever, and right upper quadrant pain. After 3–7 days, patients develop dark urine, light-colored stools, jaundice, and pruritus. The prodromal symptoms usually subside with the onset of jaundice, which typically peaks within 2 weeks. In symptomatic patients, laboratory findings are notable for significant elevations of serum direct bilirubin, total bilirubin, and serum aminotransferases (usually >1000 IU/dL).

HAV infection usually leads to an acute, self-limited illness and only rarely to fulminant hepatic failure. HAV generally is not associated with relapsing or cholestatic clinical illness. The risk of fulminant hepatic failure is significantly increased for those with underlying liver disease, particularly for those with chronic hepatitis C infection. Of those with acute hepatitis A, approximately 85% have a full clinical and biochemical recovery within 3 months; nearly all have a complete recovery in 6 months. Natural lifelong immunity develops following resolution of acute hepatitis A.

## Diagnosis

Individuals who present with symptoms of hepatitis should be tested for IgM anti-HAV, HBsAg, IgM anti-HBc, and anti-HCV. Two serologic tests for hepatitis A are commercially available.

<b>Serologic Tests for Hepatitis A</b>	
<b>Test</b>	<b>Use/Results</b>
<b>IgM anti-HAV*</b>	<ul style="list-style-type: none"> <li>• Used to test for recent, acute, or subclinical hepatitis A infection</li> <li>• Detectable within 10–15 days after symptom onset</li> <li>• Persists up to 6 months after infection</li> </ul>
<b>Total anti-HAV</b> (IgM anti-HAV and IgG anti-HAV)	<ul style="list-style-type: none"> <li>• Used to determine whether a person with an indication for preventive vaccination is already immune</li> <li>• Positive test indicates immunity</li> </ul>
<p>* False positive IgM anti-HAV test results have been reported among persons with no recent history of acute hepatitis. Therefore, positive IgM anti-HAV test results in inmates <i>without</i> clinical or laboratory evidence of acute hepatitis should be considered non-diagnostic.</p>	

## Treatment

No effective antiviral therapies are available for acute hepatitis A. Therefore, treatment efforts are largely supportive. Fulminant, acute hepatitis A may be complicated by protracted nausea and vomiting, dehydration, high fever, impaired consciousness, and liver failure (the latter requiring intensive care hospitalization). Any inmate with acute HAV infection should be evaluated *daily* by a health care provider for signs and symptoms of liver failure, i.e., changes in mental status, vomiting, and dehydration.

## Prevention

Hepatitis A vaccine should be considered for certain high-risk inmates at the first preventive health visit. [Appendix 1](#) provides an overview of hepatitis A vaccination, including a list of inmate risk factors that should prompt offering hepatitis A vaccination to the inmate; it also provides guidance regarding dosing and administration. Hepatitis A vaccine is *not* routinely indicated for inmate workers who are plumbers or food service workers.

## Infection Control

### Reporting

Each institution should have a surveillance system for notifiable infectious diseases in accordance with BOP policy. All cases of acute hepatitis A should be reported to state health authorities, as required by all the states and the Commonwealth of Puerto Rico. Acute cases of hepatitis A should also be reported to the Central Office Health Services Division (HSD) in accordance with BOP policy.

### Containment

An inmate diagnosed with acute hepatitis A should be considered contagious and be isolated until the end of the infectious period—*two weeks after the onset of their hepatitis symptoms*. Inmates diagnosed with acute hepatitis A should be managed in accordance with the following guidelines.

Hepatitis A Infection Control Guidelines
<ul style="list-style-type: none"><li>• Isolate the inmate in a single cell with a separate sink and toilet (e.g., a single cell in segregation) until two weeks after the onset of symptoms and until clinically improving without diarrhea.</li><li>• Immediately remove the inmate from any assigned duties as a food handler.</li><li>• Counsel the inmate regarding the importance of strict hand washing and other practical infection control measures.</li><li>• Utilize standard precautions to prevent fecal-oral transmission to others entering the inmate's cell. This includes using gloves, gowns, and other personal protective equipment if contact with the inmate's body fluids is anticipated, e.g., changing soiled linens, cleaning toilets, etc.</li></ul>

## Contact Investigations

A BOP contact investigation, in consultation with local or state public health authorities, is required for any inmate with acute hepatitis A who was incarcerated during the infectious period. For acute hepatitis A, the index case should be assumed to have been communicable for the time period extending from two weeks before symptom onset until two weeks after symptom onset. The purpose of the contact investigation is to identify close contacts of the index case during the infectious period and, if indicated, to provide prophylaxis. Close contacts are defined as: cellmate(s), sexual contacts, persons routinely sharing toilet facilities, those sharing injection drugs, and those who have shared eating utensils, and (if the index case was a food handler) co-worker food handlers.

*Food handlers in the facility should be evaluated to determine if they could have been the source of the hepatitis A infection.* Every food handler (employees and inmates) should be interviewed to determine if they are currently ill with hepatitis symptoms (fever, malaise, anorexia, nausea, abdominal discomfort, or jaundice), or if they have had hepatitis symptoms during the 15–50 days preceding the onset of symptoms in the index case. An IgM anti-HAV should be obtained from any food service worker reporting a history of hepatitis symptoms. The facility’s local health department should be directly involved in any potential food-borne outbreak to help determine the need for broad-based immunoprophylaxis.

Detailed steps for conducting a hepatitis A contact investigation are delineated in [Appendix 2a](#). A sample contact line-list for hepatitis A is provided in [Appendix 2b](#).

## Post-Exposure Management

- **Indications:** The following susceptible contacts of an index case of hepatitis A are candidates for post-exposure prophylaxis.

Candidates for Hepatitis A Post-Exposure Prophylaxis
<ul style="list-style-type: none"><li>• Cellmate(s)</li><li>• Sexual contacts</li><li>• Persons routinely sharing toilet facilities</li><li>• Persons who shared injection drugs</li><li>• Very close contacts (such as those who have shared eating utensils)</li><li>• Co-worker food handlers (if the index case is a food handler)</li></ul>

More broad-based immunoprophylaxis of inmates and correctional staff may be indicated if the index case was a food handler (in consultation with local and state public health authorities and the Central Office).

- **Post-exposure prophylaxis guidelines:** Until recently, an injection of immune globulin (IG) was the only recommended way to protect people after they had been exposed to the hepatitis A virus. The BOP guidelines have been revised to recommend hepatitis A vaccine as an alternative to prevent infection after HAV exposure, particularly for healthy persons who are age 40 or younger.

Persons who are eligible for post-exposure prophylaxis are those who have been exposed to HAV, and who have neither been vaccinated previously nor had a history of hepatitis A.

Prophylaxis should be administered as soon as possible, and within the two weeks following the exposure. The effectiveness of prophylaxis (either IG or vaccine), administered more than two weeks following an exposure, is unknown.

The guidelines for use of vaccine versus IG vary both by age and by health status as outlined below. Administer either a dose of single-antigen hepatitis A vaccine or a dose of IG (0.02 mL/kg)

<b>Post Exposure Prophylaxis Guidelines by Age and Health Status</b>	
<b>Healthy inmates who are age 40 and under</b>	<b><i>Single-antigen hepatitis A vaccine is preferred over IG</i></b> because of the advantages of the vaccine—long-term protection, ease of administration, increased availability, and equivalent efficacy to IG. For persons who receive the vaccine, the second vaccine dose should be administered to complete the series according to the licensed schedule (see <i>Appendix 1</i> ).
<b>Inmates older than age 40, or immunocompromised, or diagnosed with chronic liver disease</b>	<b><i>IG is preferred over vaccine</i></b> because in these groups there is both inadequate data on vaccine efficacy and greater potential for development of severe hepatitis. However, it is acceptable to use vaccine in the event that IG cannot be obtained.



## Definitions

**Hepatitis A** is an acute viral hepatitis caused by a highly infectious RNA virus, and transmitted primarily by the fecal-oral route and close personal contact. Acute hepatitis A has a mild to fulminant clinical presentation that resolves without progression to chronic infection or chronic hepatitis.

**HAV** is the hepatitis A virus.

**IgG anti-HAV** are antibodies to HAV that confer immunity.

**IgM anti-HAV** is the antibody subclass to HAV that develops with acute symptomatic and subclinical infection. False positive IgM anti-HAV serologies can occur.

**Incubation period** is the period of time between infection and the onset of symptoms. For acute hepatitis A, the average incubation period is 28 days (range: 15–50 days).

**Index case** is the first case of a contagious disease in a group or population that serves to call attention to the presence of the disease.

**Infectious Period** is the period of time when infection can be transmitted. For acute hepatitis A, individuals should be assumed to have been communicable starting two weeks before symptom onset, and continuing to be communicable until two weeks after symptom onset.

**Standard precautions** are protective measures to be used for all patient/inmate contacts and situations in which infections can be transmitted by contaminated blood and body fluids.

Precautions include:

- (1) the wearing of gloves and other personal protective equipment that provide an impervious barrier when soiling is likely;
- (2) procedures for protective handling (i.e., using puncture-resistant devices and leak-proof protection) of contaminated materials and equipment; and
- (3) routine cleaning of all contaminated surfaces and equipment.

**Total anti-HAV** are total antibodies to HAV, including both the IgG and the IgM antibody subclasses.

## References

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## Appendix 1. Hepatitis A Vaccine Overview

### Which inmates are candidates for hepatitis A vaccination in the BOP?

- Liver disease or cirrhosis
- Persons with clotting-factor disorders who are administered clotting-factor concentrates (especially solvent-detergent-treated preparations)
- Users of illegal, injection drugs
- Men who have sex with men
- Identified at-risk inmates in the context of a hepatitis A outbreak

### When is hepatitis A vaccine contraindicated?

Hepatitis A vaccine should not be administered to persons with hypersensitivity to alum or other components of the vaccine.

### Which hepatitis A vaccines are licensed for use in the United States?

- HAVRIX® single antigen hepatitis A vaccine (formulated with a preservative)
- VAQTA® single antigen hepatitis A vaccine (formulated without a preservative)
- TWINRIX® combined hepatitis A vaccine (HAVRIX®) and hepatitis B vaccine (ENGERIX-B®)

### What are the doses and schedules for hepatitis A vaccine for adults?

Hepatitis A vaccine is an inactivated, highly immunogenic vaccine that is administered intramuscularly in the deltoid or gluteal (upper outer quadrant) muscle.

Product	Dose (U.) <sup>1</sup>	Volume (mL)	No. of Doses	Schedule <sup>3</sup>
HAVRIX®	1440	1	2	0, then at 6–12 months
VAQTA®	50	1	2	0, then at 6–18 months
TWINRIX® <sup>2</sup>	720	1	3	0, 1 month, then 6 months

<sup>1</sup> Enzyme-linked immunosorbent assay units

<sup>2</sup> TWINRIX is a combined hepatitis A and hepatitis B vaccine (inactivated). The hepatitis A portion of TWINRIX is provided in three doses (compared to in two doses for single-antigen hepatitis A vaccine).  
Note: All three TWINRIX doses are required to obtain adequate coverage for hepatitis A.

<sup>3</sup> The interval between vaccine doses should NOT be shortened beyond the recommended time interval.  
Note: Only VAQTA and HAVRIX are interchangeable between doses.

### Can hepatitis A vaccine be administered concurrently with other vaccines?

Yes. Hepatitis B, diphtheria, poliovirus (oral and inactivated), tetanus, and immune globulin can be administered concurrently with hepatitis A vaccine.

### What should be done if the second (last) dose of hepatitis A vaccine is delayed?

The delayed subsequent dose(s) should be administered as soon as possible. The first dose does not need to be re-administered.

*(continued on next page)*

## **Appendix 1. Hepatitis A Vaccine Overview** *(continued)*

### **Can a patient receive the first dose of hepatitis A vaccine from one manufacturer and the next dose(s) from another manufacturer?**

Yes. There is no reason to believe that using single-antigen vaccine from different manufacturers would be a problem. However, TWINRIX (hepatitis A and hepatitis B combined vaccine) cannot be substituted once a single-antigen Hepatitis A vaccine series has been started.

### **Can hepatitis A vaccine be given during pregnancy?**

Safety during pregnancy has not been determined. However, since it is a vaccine made from inactivated HAV, the theoretical risk to the fetus is low. In an exposure situation, the risk associated with vaccination should be weighed against the risk for hepatitis A.

### **Can hepatitis A vaccine be given to immunocompromised persons (e.g., persons on hemodialysis or persons with AIDS)?**

Yes. Because hepatitis A vaccine is inactivated, no special precautions need to be taken when vaccinating immunocompromised persons.

### **Is it harmful to administer extra doses of hepatitis A or hepatitis B vaccine, or to repeat the entire vaccine series, i.e., if documentation of vaccination history is unavailable?**

No. If necessary, the inadvertent administration of extra doses of hepatitis A or hepatitis B vaccine is not harmful.

### **Should prevaccination testing be performed before administering hepatitis A vaccine?**

Prevaccination testing is recommended only in specific circumstances, as a way to reduce the costs of vaccinating people who may already be immune to hepatitis A, including the following groups:

- Persons who were born in geographic areas with high or intermediate prevalence of HAV infection
- Persons in certain population groups (i.e., American Indians, Alaska Natives, and Hispanics)
- Adults in groups with a high prevalence of infection (e.g., injection drug users)

Prevaccination testing might also be warranted for older adults, based on these factors:

- The expected prevalence of immunity
- The cost of vaccination, compared with the cost of serologic testing

### **Should postvaccination testing be performed?**

No. Because of the high rate of vaccine response, post-vaccination testing is not indicated.

**Adapted from:** CDC (web site). *FAQs for Health Professionals (Hepatitis A)*. Available from: <http://www.cdc.gov/hepatitis/HAV/HAVfaq.htm#general>. Accessed September 8, 2008.

## Appendix 2a. Hepatitis A Contact Investigation Checklist

Listed below are steps for conducting a contact investigation related to a case of hepatitis A. The steps may overlap in time and in order of implementation.		
Any inmate identified with suspected hepatitis A should be isolated immediately.		
√	Date	Task
		<p><b>1. Clinically assess the inmate with possible hepatitis A to confirm the diagnosis.</b> Assess for signs and symptoms of hepatitis A. (Symptoms often include: fever, malaise, anorexia, nausea, and abdominal discomfort, followed within a few days by jaundice)</p> <p>Symptoms: _____ Date of symptom onset: ___/___/___</p> <p>Lab confirmation: IgM anti-HAV: _____ (detectable 10–15 days after symptom onset)</p>
		<p><b>2 a) Establish the need for a hepatitis A contact investigation.</b></p> <p>First, determine when the inmate with hepatitis A was infectious. The infectious period was from ___/___/___ to ___/___/___ <i>(Infectious period = 2 weeks before the onset of hepatitis symptoms until 2 weeks after the onset of symptoms)</i></p> <p>Was the person in a BOP facility during the infectious period?  <input type="checkbox"/> Yes (then a BOP investigation is necessary)  <input type="checkbox"/> No (then the investigation is the responsibility of the health department)</p>
		<p><b>2 b) Attempt to identify the source of the inmate's hepatitis A infection.</b></p> <p>First, determine the time period when the inmate could have been infected. The incubation period was from ___/___/___ to ___/___/___ <i>(Incubation period = 50 days before onset of hepatitis symptoms until 15 days before symptom onset)</i></p> <p>Identify possible ways the inmate with hepatitis A (index case) may have become infected during the incubation period.</p> <p><input type="checkbox"/> Had close contact with a person with confirmed or suspected acute hepatitis A?  <input type="checkbox"/> No    <input type="checkbox"/> Yes: The contact was a: <input type="checkbox"/>sexual partner    <input type="checkbox"/>cell-mate    <input type="checkbox"/>dorm-mate</p> <p><input type="checkbox"/> Shared injection drugs? <input type="checkbox"/>Yes    <input type="checkbox"/>No</p> <p><input type="checkbox"/> Had sexual partners? <input type="checkbox"/>Yes (#____)    <input type="checkbox"/>No</p> <p><input type="checkbox"/> Had the following work assignments: _____</p>
		<p><b>3. Communicate with appropriate officials.</b></p> <p>a) Notify the administration about need to conduct a hepatitis A contact investigation.</p> <p>b) Report the hepatitis A case to local health authorities per state law.</p> <p>c) Report the hepatitis A case to the Regional Office &amp; Central Office HSD.</p>
		<p><b>4. Convene a team to conduct the hepatitis A contact investigation.</b> The team should consist of health services and correctional staff, as well as health department representation. Identify a team leader and roles and responsibilities of the team members. Develop investigational priorities. Plan for the isolation of the case(s), the clinical management of the case(s), and for identification and follow-up of exposed contacts.</p>

## Appendix 2a. Hepatitis A Contact Investigation Checklist (continued)

✓	Date	Task
		<p><b>5. Investigate the possibility of a food-borne outbreak.</b></p> <p><b>a) Was the inmate diagnosed with hepatitis A employed in food services?</b>  <input type="checkbox"/> Yes <input type="checkbox"/> No                      (If yes, consult the local health department regarding the need for a food-borne outbreak investigation.)</p> <p><b>b) Was the inmate part of a recognized food-borne outbreak?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>c) Interview food handlers (employees and inmates) regarding their history of hepatitis symptoms</b> (both currently and during the index case incubation period: 15—50 days preceding symptom onset for the hepatitis A case).                      Hepatitis symptoms include fever, malaise, anorexia, nausea, abdominal discomfort, or jaundice.</p> <p><b>d) Obtain IgM-anti-HAV for any food-handlers who report hepatitis symptoms.</b></p> <p><b>e) If food-borne transmission of hepatitis A is suspected, then immediately involve the local health department in planning the investigation.</b></p>
		<p><b>6. Identify contacts which were exposed to the person with hepatitis A during the infectious period.</b> ("Contacts" include: cellmates, close personal contacts, injection drug use contacts and sexual contacts.)</p> <p><b>a) Obtain case traffic history</b> (housing, work &amp; school locations during infectious period).</p> <p><b>b) Start and maintain a line list of contacts</b> (see <i>Appendix 2b</i>).</p> <p><b>c) Tour exposure sites</b> (where hepatitis A (index) case was housed, worked or went to school—during the infectious period).</p> <p><i>Determine the number of inmates that were housed together, characterize the housing arrangements and the toilet facilities for the likelihood of transmission, and determine the availability of data regarding the inmates who were in contact with the hepatitis A case.</i></p>
		<p><b>7. Evaluate contacts for their need for post-exposure prophylaxis.</b></p> <p>Identified close contacts, which have neither been vaccinated previously nor have a history of hepatitis A, are eligible for post-exposure prophylaxis. They should be administered either a dose of single-antigen hepatitis A vaccine or a dose of immune globulin (IG) (0.02 mL/kg). Post-exposure prophylaxis should be administered as soon as possible and within two weeks after the exposure.</p> <p>The selection of vaccine versus IG should be based on age and health status:</p> <ul style="list-style-type: none"> <li>• <b>For healthy inmates up to age 40 years:</b> Single-antigen hepatitis A vaccine is preferred over IG. (See <i>Appendix 1</i> for vaccine overview.)</li> <li>• <b>For inmates older than age 40, or immunocompromised, or with chronic liver disease:</b> IG is preferred. However, if IG is unavailable, vaccine can be used.</li> </ul>
		<p><b>8. Determine if case was preventable.</b></p> <p>Was patient a contact of a person with acute hepatitis A? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

