Hepatitis A

PROTOCOL CHECKLIST

- ☐ Enter available information into Merlin upon receipt of initial report
- ☐ Review background on disease (see section 2), case definition, and laboratory testing (see section 4)
- ☐ Contact provider (see section 5)
- ☐ Interview patient(s) or guardian (see section 5)
  - ☐ Review disease facts
    - ☐ Modes of transmission
    - ☐ Incubation period
    - ☐ Symptoms
  - ☐ Ask about vaccination history
  - ☐ Ask about exposure to relevant risk factors (see section 5)
    - ☐ Contact with ill persons
    - ☐ Consumption of raw foods
    - ☐ Restaurant meals
    - ☐ Food at public gatherings
    - ☐ Contact with diapered children with diarrhea
    - ☐ Travel
    - ☐ Occupation
    - ☐ Living arrangements
    - ☐ Incarceration
    - ☐ Drug use
    - ☐ Sexual contacts
  - ☐ Identify contacts (see section 5)
    - ☐ Refer symptomatic contacts to a health care provider
    - ☐ Investigate symptomatic contacts as potential cases
    - ☐ Provide post-exposure prophylaxis for all susceptible contacts (see section 6)
  - ☐ Determine whether case and symptomatic contacts are in sensitive situations (see section 7)
  - ☐ Determine whether patient is part of an outbreak
    - ☐ Exclude cases or symptomatic contacts (see section 7)
  - ☐ Provide education on how to prevent further transmission (see section 6)
    - ☐ Practice proper hygiene
    - ☐ Vaccine and immune globulin prophylaxis
    - ☐ Discuss potential for relapse of infection and possibility of prolonged shedding
  - ☐ Address patient's questions or concerns
- ☐ Follow up on special situations, including outbreaks or cases in sensitive situations
- ☐ Enter additional data obtained from interview into Merlin

TECHNICAL APPENDIX

A. Hepatitis A Prevention, Investigation, and Control in Jails (see pages 18-23)

Hepatitis A

1. DISEASE REPORTING

A. Purpose of reporting and surveillance

1. To assess the risk of the patient transmitting infection to others and to prevent such transmission.
2. To determine if there is a source of infection of public health concern and to stop transmission from such a source.
3. To identify outbreaks and other undiagnosed cases.

B. Legal reporting requirements

Laboratories, hospitals, and physicians are required to immediately report infection with hepatitis A to the county health department (CHD) without delay 24/7 by phone upon laboratory confirmation or physician diagnosis.

C. County health department investigation and intervention responsibilities

1. Begin investigation within one business day of receiving report from a provider or laboratory.
2. Implement appropriate control measures to minimize further spread.
3. Report all confirmed cases in Merlin.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic agent

The hepatitis A virus (HAV) is a picornavirus (positive-strand ribonucleic acid [RNA] virus). HAV was first isolated in 1979 and has only one serotype.

B. Description of illness

Hepatitis A infection is an acute, self-limiting illness. Symptom onset is usually abrupt with fever, malaise, anorexia, nausea, and abdominal pain. Jaundice, dark-colored urine, or light-colored stools might be present at onset or might follow constitutional symptoms within a few days. Clinical illness usually does not last longer than two months, although 10–15% of persons have prolonged or relapsing signs and symptoms for up to six months.[3] Infection in children less than six years of age is likely to be asymptomatic, with symptoms only occurring in approximately 30%[1] and jaundice in <10%.[5] Among older children and adults, infection usually is symptomatic and typically lasts several weeks, with jaundice occurring in 70% or more.[1] The clinical course of infection varies in severity from mild to fulminant illness. Fulminant hepatitis is rare but people with underlying liver disease have an increased risk of death. Reported case fatality is normally low but can reach 1.8% among persons aged ≥ 50 years.[2] Chronic infection does not occur. Infection results in lifelong immunity, which can be demonstrated by detecting immunoglobulin G (IgG) antibody to HAV (anti-HAV) in serum.

Hepatitis A virus is endemic in many developing countries. Levels of endemicity are related to hygienic and sanitary conditions.

C. Reservoirs

Acutely infected humans are the only reservoir.

D. Modes of transmission

Transmission is most often person-to-person by the fecal-oral route, but may rarely occur percutaneously as well. Most infections result from close personal contact with an infected household member or sexual partner. Common source outbreaks and sporadic cases have also been related to food or water contaminated with feces, either directly by a food handler or through sewage contamination. Contaminated foods can transmit HAV if uncooked, cooked at inadequate temperatures to kill the virus, or contaminated after cooking. Waterborne outbreaks are infrequent in developed countries with well-maintained sanitation and water supplies. In the pre-vaccine era, HAV circulated widely among young children, especially in child care centers, with occasional secondary infections occurring in older children and adults. Persons at an increased risk of hepatitis A include men who have sex with men (MSM), persons who use both injection or non-injection drugs, persons with chronic liver disease, persons with clotting-factor disorders, household members and other close contacts of adopted children newly arriving from countries with high or intermediate hepatitis A endemicity, persons who travel to or work in countries with high or intermediate endemicity of hepatitis A, and persons with direct contact to a person with hepatitis A infection.

Virus can remain infectious for at least one month at room temperature on environmental surfaces and, transfer on fomites is important in some settings (e.g., the flush handle of a toilet).

E. Incubation period

15–50 days with an average of 28 days.

F. Period of communicability

Peak infectivity occurs during the two-week period that precedes the onset of jaundice and declines during the week after jaundice appears. In persons without jaundice, peak infectivity occurs as serum alanine aminotransferase (ALT) concentrations increase. Children may excrete the virus for longer periods than adults and, if asymptomatic, may not be recognized as having an infection. Although rare, virus may be excreted during a relapse of symptoms.[3]

G. Treatment

No specific therapy is available. Illness is best addressed through supportive treatment.

H. Prophylaxis

For healthy persons aged 12 months and older, single-antigen hepatitis A vaccine at the age-appropriate dose is recommended due to advantages that include long-term protection and ease of administration. For persons aged >40 years, Immune Globulin Intramuscular (IGIM), a sterile preparation of concentrated antibodies, may be considered in addition to the vaccine depending on the risk assessment of a health care provider. IGIM should be used for children aged <12 months, immunocompromised persons, persons who have chronic liver disease, or persons for whom vaccine is contraindicated. Contraindications for the vaccine can be found at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

Persons administered IGIM for whom hepatitis A vaccine also is recommended should receive a dose of vaccine simultaneously with IGIM. Vaccine and IGIM should

be administered in different anatomical sites. For persons who receive vaccine, the second dose should be administered according to the licensed schedule to complete the series. The efficacy of IGIM or vaccine when administered >2 weeks after exposure has not been established.

I. Hepatitis A in Florida

Following the introduction of hepatitis A vaccine in 1995, the general incidence of hepatitis A infection in the United States has declined dramatically. In 2010, 178 cases of acute hepatitis A infection were reported to the Florida Department of Health (DOH) as compared to 612 cases reported in 2000. This represents an incidence rate of 1.0 case per 100,000 persons, which is a 16.5% decrease from the previous five-year (2005–2009) average incidence. However, in 2017, 247 cases were reported corresponding to an incidence of 1.33 cases per 100,000 population. Similar to national trends, there was a shift away from food and waterborne and travel-associated cases and an increase in locally-acquired cases associated with direct person-to-person risk factors including MSM, injection drug use (IDU), and persons experiencing homelessness.

3. CASE DEFINITION

A. Background

Hepatitis A is a vaccine-preventable, communicable disease of the liver caused by the hepatitis A virus (HAV). Symptoms most commonly include fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain, or dark urine followed in a few days by jaundice.

B. Clinical criteria for case classification

All of the following:

- Discrete onset of any sign or symptom consistent with acute viral hepatitis;
- **And** any of the following:
  - Jaundice, **or**
  - Bilirubin level ≥3.0 mg/dL, **or**
    Serum alanine aminotransferase (ALT) level >200 IU/L;
- **And** the absence of a more likely diagnosis.

C. Laboratory criteria for case classification

Confirmatory:

Positive nucleic acid amplification test (NAAT) for HAV RNA (e.g., polymerase chain reaction [PCR] or genotyping) in the absence of a negative IgM antibody to HAV (IgM anti-HAV) or NAAT result from a public health laboratory.

Presumptive:

Positive IgM anti-HAV.

D. Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed hepatitis A case (i.e., household or sexual contact with an infected person during the 15–50 days before the onset of symptoms).

E. Case classification

Confirmed:

One of the following:

- A person with confirmatory laboratory evidence, or
- A person with clinical criteria and presumptive laboratory evidence, or
- A person with clinical criteria and epidemiological criteria.

F. Criteria to distinguish a new case from previous reports

Hepatitis A is usually self-limiting and does not result in chronic infection. However, up to 10% of people infected with HAV may experience a relapse during the 6 months after acute illnesses. Do not create a new Merlin case for positive HAV results received within 6 months of an existing case.

G. Comment

A hepatitis A case should not be created in Merlin if there is an alternate more likely diagnosis.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

4. LABORATORY TESTING

A. Criteria for diagnosis

Demonstration of IgM anti-HAV in the serum of a person with an acute illness compatible with hepatitis A establishes the diagnosis. In most infected people, serum IgM anti-HAV becomes detectable 5 to 10 days before onset of symptoms and declines to undetectable concentrations less than 6 months after infection. However, people who test positive for IgM anti-HAV more than 1 year after infection have been reported. Anti-HAV IgM has also been detected 2–3 weeks after administration of one dose of vaccine in 8–20% of adults.[7]

Presence of IgG anti-HAV provides evidence of immunity and is detectable shortly after the appearance of IgM. A positive total anti-HAV (i.e., IgM and IgG combined) test result alone is **not** considered confirmatory for acute illness since it may represent immunity from past infection or vaccination.

HAV RNA can be detected in blood and stool of most persons during acute infection through nucleic acid amplification methods (e.g., PCR, genotyping), but these are not generally available for diagnostic purposes.

B. Services available at the Bureau of Public Health Laboratories (BPHL)

Tests for hepatitis A IgM and IgG are widely available at commercial laboratories.

BPHL-Tampa performs hepatitis A sequencing to determine the genotype and subtype of HAV for persons who are IgM positive and meet the clinical case definition.

C. Testing requests

1. Submitting specimens to BPHL
   a. All submissions should be accompanied by a Clinical Laboratory Submission Form found at the link below:

www.FloridaHealth.gov/programs-and-services/public-health-laboratories/forms-publications/_documents/DH1847--rev-5-13.pdf

   b. On the Clinical Laboratory Submission Form DH 1847, write "hepatitis A sequencing" in the comments section.
   c. Including symptom onset and specimen collection date is important for laboratory testing.
2. Packaging and shipping
   a. Specimens can be sent to BPHL-Tampa for testing.
   b. At least 1mL of serum is required for sequencing. Serum should be shipped in an insulated cooler with frozen-gel ice packs. Hold serum in a refrigerator until shipped and do not freeze. Unseparated whole blood is an unsatisfactory specimen and should not be shipped to the laboratory.
   c. Follow packaging and shipping guidelines for diagnostic specimens (Biological Substance, Category B, UN3373). All suspect diagnostic specimens must be shipped and packaged according to International Air Transport Association (IATA) and Department of Transportation (DOT) Packaging Instructions 650 for Biological Substance, Category B agents. Per these regulations anyone who handles, offers for transport, or transports specimens must be trained and certified to do so. Specifications state specimens must be packed in a basic triple packaging system consisting of a primary watertight container wrapped with absorbent material, secondary watertight container, and an outer shipping package. Enclose an itemized list of contents between the secondary packaging and the outer packaging.
   d. Contact BPHL for packaging and shipping training dates. BPHL conducts approximately 20 face-to-face trainings per year all over Florida, free of charge. DOH employees must register for the classes in the DOH online training system, TRAIN. For shipping guidance, contact BPHL. Additional shipping trainings are also available commercially through vendors.
3. Contact BPHL-Tampa with questions: www.FloridaHealth.gov/programs-and-services/public-health-laboratories/locations/index.html.

D. Interpretation of results

False positive anti-HAV IgM results can occur, especially in older persons without clinically compatible symptoms. The Sentinel Counties Study, conducted by CDC in six U.S. counties, found that out of 140 persons with a positive IgM anti-HAV test result during 2003, 87 (62%) did not have actual illness that met the case definition for hepatitis A or any other type of hepatitis. Those persons were significantly older (mean age 58, median age 65, range 2–91 years) than the remaining 53 persons (38%) who did have illness consistent with the case definition (mean age 40, median age 38, range 6–82 years).[6] **IgM testing should only be requested when evaluating a patient with an acute illness suggestive of hepatitis A infection. The use of IgM anti-HAV as a screening tool or as part of testing panels used in the workup of non-acute liver function abnormalities should be discouraged**. Testing of persons with no clinical symptoms of acute viral hepatitis or among populations with a low prevalence of acute HAV infection lowers the predictive value of the IgM anti-HAV test and can lead to test results that are false positive or of no clinical relevance.

5. CASE INVESTIGATION

A. Contact the physician or hospital

1. Confirm acute hepatitis A infection has been diagnosed in the reported patient(s) and symptoms are consistent with an acute infection of hepatitis A virus. False positive IgM results are common, particularly in older people and those without acute illness.
2. Obtain as much information as possible about the case, such as:
   a. Contact information
   b. Demographic information (e.g. date of birth (DOB), gender, race, ethnicity)
   c. Date of onset
   d. Signs and symptoms
   e. Laboratory tests performed
   f. Treatments already prescribed for the case and for contacts
   g. Vaccine and immune globulin history
3. Ask what information has been given to the patient, including whether the patient knows about the diagnosis.
4. Notify the physician that you will be contacting the case as DOH follows up on all cases of hepatitis A infection to assess risk factors to better characterize the occurrence of hepatitis A infection in Florida and to take necessary steps to prevent additional cases. Also review infection control recommendations with the health care facility and address any concerns in regards to the CHD contacting the case.

B. Interview the case

1. Contact the case for an interview as soon as possible after the case is reported to optimize recall.
   a. Make at least three phone call attempts to reach the case. Calls should be made at different times of the day with at least one call being made in the evening.
   b. If phone calls are unsuccessful, mail a letter to the patient requesting that they contact the CHD and conduct a home visit or leave a letter for the patient.
   c. All attempts to reach the patient should be documented in Merlin.
   d. During outbreaks or high priority case investigations, home or hospital visits are recommended to complete interviews.
2. Once contact is made, an interview should be conducted to obtain any information not already gathered from the provider or hospital. The extended data questions in Merlin can be used to help guide the interview.
   a. If the patient is unable to provide information (e.g. too ill or too young), interview a proxy, such as a spouse or a parent to obtain further information.
3. Pertinent items to cover during the interview include:
   a. Education on transmission, symptoms, and prevention of hepatitis A (see section 6)
   b. Demographic information (e.g., date of birth, gender, race, ethnicity)
   c. Close contact (e.g., household member, sex partner, shared a meal) with any person who had an illness compatible with hepatitis A. Obtain the name

and contact information for each ill contact**. Any person with compatible illness should be investigated in the same manner as the index case.**

d. Identify all close personal contacts with opportunity for fecal-oral exposure during the period of communicability (2 weeks before the onset of symptoms until 7 days after jaundice or symptom onset). These contacts can include:
   - Household contacts
   - Sexual contacts
   - Persons who have eaten food prepared or handled by the patient
   - Child care contacts
   - Persons who have shared illicit drugs with the case
   - Others with ongoing close personal contact with the patient (e.g., family, friends, coworkers, patients, etc.)
   - See section 6 for management of contacts for post-exposure prophylaxis.

e. Identify possible exposures and risks during the exposure period of 2–6 weeks before onset of illness:
   - Consumption of any raw or partially cooked shellfish in the 2–6 weeks before symptom onset (obtain dates and names of sources)
   - Any food sources such as restaurants, other food services, or social gatherings/group settings where the patient ate a meal in the 2–6 weeks before symptom onset (obtain names, dates, and locations)
   - Contact with diapered children, with children in child care, other settings for preschool children, or with staff of these facilities
   - Travel outside the United States in the 2–6 weeks before symptom onset (obtain travel dates, trip locations, and food history)
   - Occupational history
   - Living arrangements: Determine if the case is homeless or lives in a group setting other than a private residence, such as a shelter or rehab facility
   - Incarceration
   - Injection or non-injection drug use
   - Sexual partners: All cases should be asked about male and female sexual partners, regardless of the case's gender identity

f. Identify if the patient was in a sensitive situation while infectious. Also include the dates that the patient was present in the sensitive situation.
   - Food handler
   - Child care worker
   - Child care attendee
   - Health care worker

g. Identify if the patient had hepatitis A vaccine.
   - Dates
   - Number of doses

C. Environmental assessment

An environmental assessment is indicated if a food service facility, child care center, or public water supply is either implicated as the source of infection or if the patient was present during their infectious period. Always contact the appropriate regulatory

agency prior to conducting the assessment to ensure they are aware of the incident and can coordinate the visit with DOH, if feasible.

D. Merlin data entry

Create a case in Merlin under **Hepatitis A (Merlin disease code=07010)** upon receipt of initial report. Enter the data collected into Merlin, being sure to include all required fields on the Basic Data screen, complete the Case Symptoms screen, the Extended Data screen, and Control Measures screen, and attach all relevant lab results and medical records. Please note that liver function test results should be entered as a lab result.

6. CONTROLLING FURTHER SPREAD

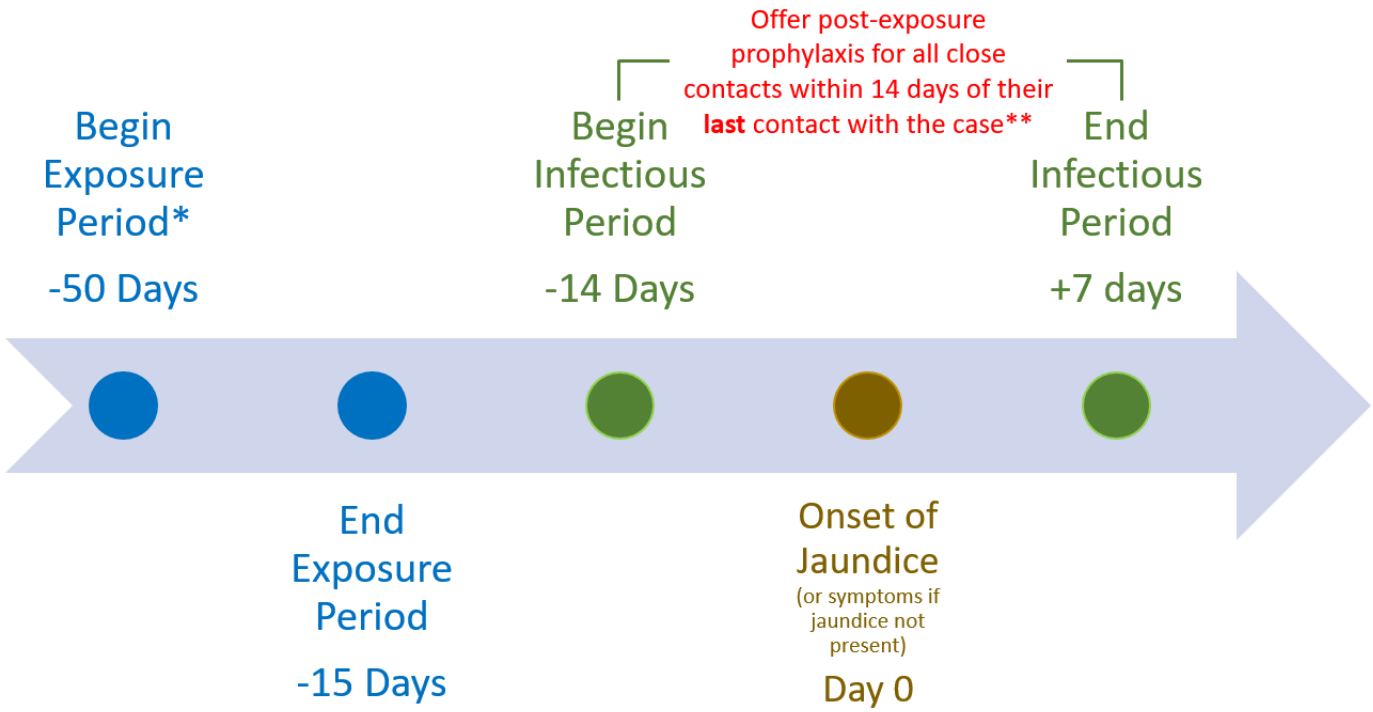
A. Patient/household education on prevention recommendations

1. Hepatitis A epidemiology and clinical manifestations
    a. Modes of transmission
    b. Incubation period
    c. Symptoms (noting that persons may be infectious without being ill)
2. Personal hygiene
    a. Patients should wash hands frequently, especially after bathroom visits and touching any soiled item. Caregivers of cases should wash hands frequently, especially after changing diapers or touching any soiled item. Handwashing should be performed for at least 20 seconds using soap and running water. Lather and rinse the palms, backs of hands, between fingers, under fingernails, and around wrists. The ability for alcohol-based hand rubs to kill hepatitis A virus or other non-lipophilic viruses depends on the alcohol concentration, the amount of time hands are exposed to the alcohol, and viral variant.
    b. Ensure sanitary disposal of all wastes.
3. Isolation
    a. Patients should avoid close contact with others for one week after onset of symptoms or jaundice. In a neonatal intensive care setting outbreak, prolonged precautions must be considered.[2]
    b. Patients should not prepare food for others until one week after onset of illness.
    c. Patients should avoid child care centers until one week after onset of illness.
4. General prevention
    a. Vaccination of all susceptible contacts with the full, two-dose series of hepatitis A vaccine for long-term protection. Immune globulin may be an option against hepatitis A virus for short-term protection.
    b. Frequent handwashing or use of hand sanitizer especially after using the bathroom, changing diapers, play time, handling of pets or soil, touching any soiled item, and before food preparation and eating.
    c. Clean and disinfect bathrooms, diaper changing areas, and soiled toys on a routine basis.
    d. Drink only treated or bottled water. Avoid drinking water that is untreated or contaminated with sewage.
    e. Always wash raw fruits and vegetables prior to eating.

B. Management of contacts

1. Identify all close personal contacts with opportunity for fecal-oral exposure during the period of communicability (2 weeks before the onset of jaundice or symptoms until 1 week after). Obtain as much information about the contacts as possible, including their name, address, and telephone number. **Any person with compatible illness should be investigated in the same manner as the index case.**
2. Determine whether all identified contacts of the infected patient are immune or susceptible to hepatitis A virus. Persons are considered immune to hepatitis A virus if they have received at least one dose of hepatitis A vaccine at least 28 days prior to the exposure or if they have a history of laboratory confirmed hepatitis A infection. Serologic testing of contacts to determine immune status is not recommended.
3. All contacts who are susceptible to hepatitis A should be offered prophylaxis as soon as possible. Prophylaxis is not recommended for persons who have had only brief or casual contact with the patient. The efficacy of prophylaxis given more than two weeks after the most recent exposure has not been established.
4. Symptomatic contacts of a confirmed case should be referred to a health care provider and tested for hepatitis A infection.

Figure 1. Hepatitis A Timeline of Exposure Period and Infectious Period



*The exposure period is the 15- to 50-day period prior to the onset of jaundice or symptoms during which a case was exposed to the hepatitis A virus.
** PEP is only recommended for persons with close contact to the case during the infectious period.

C. Post-exposure prophylaxis

1. Vaccine
   a. Active immunization should be given as soon as possible, but no later than two weeks after exposure. Completion of the hepatitis A vaccine series according to the licensed schedule is necessary for long-term protection against hepatitis A.
2. Immune Globulin (IG)
   a. Passive immunization with IG (0.1 mL/kg) should be given as soon as possible, but no more than two weeks after exposure. IG can provide short-term protection against HAV. When given within two weeks of exposure to HAV, IG is greater than 85% effective in preventing symptomatic infection.[1] People who are given IG for post-exposure prophylaxis and for whom hepatitis A vaccine is also recommended should receive a dose of vaccine simultaneously with IG.

Table 1. Recommended Doses and Schedules for Inactivated Hepatitis A Virus (Hep A) Vaccines[a]

Age	Vaccine	Hepatitis A Antigen Dose	Volume per Dose, mL	No. of Doses	Schedule
12 mo through 18 y	Havrix	720 ELU	0.5	2	Initial and 6–12 mo later
12 mo through 18 y	Vaqta	25U[b]	0.5	2	Initial and 6–12 mo later
19 y or older	Havrix	1440 ELU	1.0	2	Initial and 6–12 mo later
19 y or older	Vaqta	50 U[b]	1.0	2	Initial and 6–12 mo later
18 y or older	Twinrix	720 ELU	1.0	3 or 4	Initial, 1 mo, and 6 mo later **OR** Initial, 7 days, and 21–30 days, followed by a dose at 12 mo

ELU indicates enzyme-linked immunosorbent assay units.
[a]Havrix and Twinrix are manufactured by GlaxoSmithKline Biologicals (Research Triangle Park, NC); Vaqta is manufactured and distributed by Merck & Co Inc (Whitehouse Station, NJ).
[b]Antigen units (each unit is equivalent to approximately 1 µg of viral protein).
[c]A combination of hepatitis B (Energix-B, 20 µg) and hepatitis A (Havrix, 720 ELU) vaccine (Twinrix) is licensed for use in people 18 years and older in 3-dose and 4-dose schedules.

3. Vaccine vs. IG for Susceptible Persons

Table 2. Recommendations for Post-exposure Immunoprophylaxis of Hepatitis A Virus (HAV)

Time Since Exposure	Age of Patient	Recommended Prophylaxis
2 weeks or less	Younger than 12 months	IGIM, 0.1 mL/kg[a]
	12 months through 40 y	Hep A vaccine[b]
	41 years or older	Hep A vaccine[b] IGIM, 0.1 mL/kg[a], may be administered depending on provider's risk assessment.
	People of any age who are immunocompromised, have chronic liver disease, or contraindication to vaccine	Hep A vaccine[b] IGIM, 0.1 mL/kg[a]
More than 2 weeks	Younger than 12 months	No prophylaxis
	12 months or older	No prophylaxis but Hep A vaccine may be indicated for ongoing exposure

IGIM indicates Immune Globulin Intramuscular; HepA, hepatitis A vaccine.
[a]IGIM should be administered deep into a large muscle mass. Ordinarily, no more than 5 mL should be administered in one site in an adult or large child; lesser amounts (maximum 3 mL in one site) should be administered to small children and infants.
[b]Dosage and schedule of hepatitis A vaccine as recommended according to age in the table 2. Only monovalent hepatitis A vaccine (Havrix or Vaqta) should be used for post-exposure prophylaxis.

If vaccine and IGIM are given at the same time, they should be administered in different anatomical sites.

No post-exposure prophylaxis is recommended when the time since exposure exceeds two weeks. However, for those 12 months of age or older, hepatitis A vaccine may be indicated at the age-appropriate dose for ongoing exposure.

D. Infection control recommendations

1. Hospitalized cases should be treated using contact precautions. In addition, standard precautions should be used for diapered or incontinent persons for at least one week after onset of symptoms.[1] These contact precautions should be maintained in infants and children less than three years of age for the duration of the hospitalization, for children 3–14 years of age for two weeks after onset of symptoms, and for those older than 14 years of age for one week after onset of symptoms.[11]
2. Environmental cleaning of contaminated surfaces: HAV is inactivated by high temperature (85 ^{o}C or >185^{o}F) and by some disinfectants, including a 1:100 dilution of household bleach in water or cleaning solutions containing quaternary ammonium and/or HCl.[10]

E. Environmental measures

1. Food handlers (see section 7)
2. Child care facilities (see section 7)

3. If a contaminated public or private water supply is implicated as the source of infection, notify the CHD Environmental Health Program and request assistance.
4. If the patient's home is served by a failing sewage system, notify the CHD Environmental Health Program for assistance in preventing exposure of others to the sewage effluent.

7. MANAGING SENSITIVE SITUATIONS

A. Determining a sensitive situation

As defined by Florida Administrative Code, Rule 64D-3.028, a sensitive situation is a setting in which the presence of a case would increase significantly the probability of spread of the diagnosed or suspected disease or condition and would therefore constitute a public health hazard. Examples of such settings are schools, child care facilities, hospitals and other patient care facilities, food storage, and food processing establishments or food outlets.

B. Food handlers

If hepatitis A infection is diagnosed in a food handler, the following actions should be taken:

1. Exclude the patient from the food service facility for seven days after onset of jaundice or 14 days after symptom onset for individuals who do not experience jaundice.[14]
2. Notify the CHD Environmental Health Program and Regional Environmental Epidemiologist for assistance.
3. Notify appropriate regulatory agency and request joint assessment.
4. Notify the facility employer and/or manager and provide education regarding the epidemiology of hepatitis A virus and the importance of routine hand hygiene and glove use.
5. Conduct a joint site visit with epidemiology staff, environmental health staff, the Regional Environmental Epidemiologist, and the appropriate regulatory agency.
    a. Provide education to food handling staff as needed.
    b. Evaluate the need for post-exposure prophylaxis.
    c. Evaluate all food handlers for current or recent hepatitis A infection.
    d. Ensure ill staff are excluded from work.
    e. Ensure personal hygiene measures are in place, such as hand washing.
    f. Ensure environmental control measures such as glove use and no bare hand contact with prepared foods are in place.
6. Administer hepatitis A vaccine or immune globulin to other susceptible food handlers at the same food service facility within two weeks of exposure.[1]
7. Ask the facility employer and/or manager or other designee to monitor all food handlers at risk for hepatitis A infection for one incubation period (50 days) after the last exposure to the case.
8. Common-source transmission to patrons is unlikely, but post-exposure prophylaxis of people who ate food at the establishment may be considered if:
    a. The food handler directly handled uncooked food or food after cooking during the infectious period and had diarrhea or poor hygiene practices.

    AND

    b. Prophylaxis can be administered to patrons within two weeks of the exposure.

C. Child care settings

Most HAV infections in young children are asymptomatic. Therefore, illness among adult staff members or household contacts is often the first and only indication of an outbreak in a child care facility. For hepatitis A, an outbreak in a child care setting is defined as one or more cases in a child care worker or attendee, or cases in two or more households of child care attendees. If an outbreak occurs, the following actions should be taken:

1. Exclude all persons with confirmed hepatitis A infection or clinically compatible illness without laboratory results (staff or attendees) from the facility for one week after onset of symptoms[1]. A child who develops symptoms of hepatitis A while at the facility should be isolated from other children until the parent or guardian removes the child from the facility.
2. Notify the CHD Environmental Health Program for assistance.
3. Notify the appropriate regulatory agency and request a joint assessment.
4. Notify the child care center director and provide education regarding the epidemiology of hepatitis A infection and the importance of hand hygiene, environmental cleaning, and keeping the food preparation area separate from the diapering area. Employees who change diapers should not prepare foods. Water for formula or juices should not come from the bathroom or hand washing faucet.
5. Within 24 hours of detecting the outbreak, the child care facility should notify parents and staff in writing about the outbreak. The letter should include the suspected or confirmed cause, prevention measures being taken, exclusion criteria, instructions to contact the facility and a health care provider if their child becomes ill, and a contact number for the CHD. Facilities should work with CHD staff to develop the notification.
6. Notify the local Department of Children and Families (DCF) child care licensing office if they were not notified by the facility within 24 hours of detecting the outbreak.
7. Visit the child care facility.
    a. Provide education to child care workers and parents/guardians as needed.
    b. Evaluate the need for post-exposure prophylaxis.
    c. Ensure sick staff and child exclusions.
    d. Refer to the Guidelines for Control of Outbreaks of Enteric Disease in Child Care Settings document to ensure all personal control measures and environmental control measures are in place: www.FloridaHealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/surveillance-and-investigation-guidance/_documents/guidelines-for-control-of-outbreaks-of-enteric-disease-in-child-care-settings.pdf
8. Facilitate administration of hepatitis A vaccine or immune globulin to all susceptible staff and attendees if 1) one or more cases of hepatitis A are recognized in attendees or staff members; or 2) cases are recognized in two or more households of center attendees.[1]
    a. Post-exposure prophylaxis needs to be recommended only to susceptible contacts in the same classroom as the case if the center does not provide care to diapered children.
    b. When an outbreak occurs, post-exposure prophylaxis should also be considered for susceptible household members of all attendees in diapers.[1]
9. Ask the facility director or other designee to monitor all staff and attendees at risk for hepatitis A infection for one incubation period (50 days) after the last

exposure to the case. All new illnesses detected should be reported to the CHD the same business day.

10. To identify infections quickly, surveillance should be conducted by the CHD for any hepatitis among households connected to the facility for one incubation period (50 days) after onset of the last case. All households of attendees should be provided with basic information about hepatitis A virus and hygiene and instructed to contact the CHD immediately if anyone develops signs and symptoms of hepatitis.

D. Hospitals and health care settings

Usually, health care-associated hepatitis A infection occurs in hospital personnel through spread from patients with acute HAV infection in whom the diagnosis was not recognized. Transmission-based precautions should be emphasized when a patient with jaundice or known or suspected hepatitis A infection is admitted into the health care facility. When outbreaks occur, hepatitis A vaccine or IG is recommended for people in close contact with infected patients.[1]

If a health care worker is diagnosed with hepatitis A, post-exposure prophylaxis should be administered to other health care personnel at the facility. If the facility has multiple enclosed sections or units, such as in a hospital or psychiatric facility, then administration can be limited to only health care personnel in the area where there is an exposure risk (i.e., the cardiology ward, intensive care unit, etc.). Post-exposure prophylaxis administration to patients can be considered if, during the time of patient care, the infected health care worker was likely to be infectious, did not use gloves when appropriate, and had diarrhea or poor hygienic practices.

9. ROUTINE PREVENTION

The major methods of prevention for hepatitis A infections are improved sanitation (e.g., in food preparation and of water sources), personal hygiene (e.g., hand hygiene after using the bathroom and diaper changes in child care settings), and the administration of either the hepatitis A vaccine or IG.[1]

A. Hepatitis A immunization

Hepatitis A vaccine is preferred unless contraindicated. Completion of the hepatitis A vaccine series according to the licensed schedule is necessary for long-term protection against hepatitis A infection.

The hepatitis A vaccines currently licensed in the United States include HAVRIX®, VAQTA®, and the combination vaccine TWINRIX®, which contains both hepatitis A and hepatitis B viral antigens. HAVRIX® and VAQTA® are licensed for persons 12 months of age and older and have pediatric and adult formulations that are administered in a two-dose schedule and given as a series separated by 6–12 months and 6–18 months respectively. TWINRIX® is licensed for persons 18 years of age or older and can be administered in a three-dose schedule or an accelerated four-dose schedule. All hepatitis A-containing vaccines are administered intramuscularly.

Vaccination with hepatitis A vaccine is recommended for the following (if susceptible):

- All children at age one year (12–23 months) of age. Children who are not vaccinated by two years of age can be vaccinated at subsequent visits.
- Persons six months of age and older traveling to or working in countries with high or intermediate prevalence of hepatitis A infections, such as those located in Central or South America, Mexico, Asia (except Japan), Africa, and eastern Europe. Note that IG can be given prior to departure for immediate, temporary protection but vaccination is preferred. For children 6-11 months old, the travel-related hepatitis A vaccine dose should not be counted toward the routine 2-dose series.
- MSM
- Persons who use street drugs.
- Persons experiencing homelessness.
- Persons with chronic liver disease.
- Persons with clotting factor disorders who are treated with clotting factor concentrates.
- Persons who have occupational risk for infection such as working with HAV-infected primates or working with HAV in research laboratories.
- Persons who anticipate close personal contact (e.g., household contact or regular babysitting) with an international adoptee from a country of high or intermediate endemicity during the first 60 days following arrival of the adoptee in the country. Ideally, the first dose should be administered two or more weeks before arrival of the adoptee.

For the most recent Advisory Committee on Immunization Practices (ACIP) recommendations for Hepatitis A vaccine, consult the CDC ACIP at www.cdc.gov/vaccines/acip/recs/index.html.

B. Pre-exposure prophylaxis

Hepatitis A immunization is recommended routinely for children 12 through 23 months of age, for people who are at increased risk of infection, for people who are at increased risk of severe manifestations of hepatitis A if infected, and for any person who wants to obtain immunity.

When evaluating the need for pre-exposure prophylaxis, determine whether persons are immune or susceptible to hepatitis A infection. Persons are considered immune to hepatitis A virus if they have received at least one dose of hepatitis A vaccine at least 28 days prior to the exposure or if they have a history of laboratory confirmed hepatitis A infection.

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10. TECHNICAL APPENDIX

A. Hepatitis A Prevention, Investigation, and Control in Jails (see pages 18–23)

Technical Appendix A: Hepatitis A Prevention, Investigation, and Control in Jails

This document expands upon on the steps detailed in the Hepatitis A chapter of the Guide to Surveillance and Investigations to provide specific guidance on preventing and responding to hepatitis A cases and outbreaks in jail settings.

Across the United States, several outbreaks of hepatitis A have occurred among persons who are homeless or use drugs. Persons with these risk factors often move between the community and jails. This increases the chances of repeated introduction of hepatitis A into jails. Additionally, the high density close quarter living conditions combined with poor personal hygiene may increase the risk of hepatitis A transmission and outbreaks in this setting. Furthermore, during community outbreaks among these risk groups (i.e., drug users, persons experiencing homelessness), hepatitis A vaccination efforts at jails may be an efficient method to target hard-to-reach at-risk persons before they return to the community.

Hepatitis A Vaccination

The Advisory Committee on Immunization Practices (ACIP) recommends hepatitis A vaccination for the following persons that may be present in jails:

- People who are experiencing homelessness
- Men who have sexual encounters with other men
- Users of recreational drugs, whether injected or not
- People with chronic or long-term liver disease, including hepatitis B or hepatitis C
- People with direct contact with others who have hepatitis A
- Any person wishing to obtain immunity (protection)

During community outbreaks of hepatitis A affecting these risk groups, it is recommended that county health departments consider partnering with jails to increase hepatitis A immunity in at-risk persons. As prioritized by the County Health Officer and DOH Immunization Program, this effort may include providing publicly funded hepatitis A vaccine and DOH staff to administer and/or document the vaccines. The scope and scale of such efforts will be variable depending on available funding, staffing, vaccine supply, and other vaccine outreach activities that are being taken. However, in certain circumstances, vaccine outreach at jails may be an efficient and effective means to reach at-risk individuals.

Document all vaccine administered at the jails in Florida SHOTS.

Routine Prevention Measures

Personal Hygiene:

Soap and running water should be available to all inmates for personal hygiene (showering, handwashing).

Inmate bathrooms should have standard soap approved for personal handwashing (and not manual warewashing, such as for dishware, cookware, and utensils).

Environmental Cleaning and Disinfection:

The jail should have written guidance and standard operating procedures for proper formulation of cleaning products prepared from concentrate to ensure adequate concentration, per manufacturer's label. This includes contact times, proper dilution, and safe handling.

Recommend using products in inmate living areas that are registered EPA disinfectants effective against hepatitis A or norovirus or feline calicivirus.

Have documented/written cleaning procedures for the dorms, and have inmates formally trained on such procedures by jail personnel (rather than by other inmates).

- Clean from high to low (meaning from spatially high to low; i.e., walls before floors) and from clean to dirty (toilet last).
- Ensure that towels for cleaning are used for separate surfaces; for example, one towel for sink and a different towel for the toilet.
- Follow all package label instructions regarding glove use for chemical contacts.

Laundry Process:

Recommend routine centralized laundering of clothes.

- All inmate clothing should be required to be collected and laundered at least weekly and immediately if clothing is soiled, especially by body fluids.
- Laundry should be done in a laundering facility with soap and a machine. Discourage laundering of garments in cell sink because of potential cross contamination of fecal matter in sink for handwashing and drinking water.

Food Safety

The Food Safety and Sanitation Program is responsible for the regulation of food service standards in detention facilities. Chapter 64E-11, Florida Administrative Code, and Section 381.0072, Florida Statutes, provide the rules and codes.

Ensure all kitchen workers understand the Food Codes and Statutes and Standard Operating Procedures for safe food handling and hand hygiene including:

- Clean and sanitize all food contact surfaces
- Proper handwashing guidance and facilities
- Proper food staff personal hygiene
- Proper cooking times and temperatures
- Proper cold and hot holding temperatures
- Proper cooling time and temperatures
- Adequate warewashing facilities
- Ensure and document that kitchen workers are trained in food safety and handling

Response to Sporadic Hepatitis A Cases

Conduct a routine investigation as outlined in the GSI. Once it is established that a hepatitis A case is an inmate at a jail, work with jail medical staff to complete the investigation and assessment of risk factors.

Determine the infected inmate's locations and risk behaviors during their likely exposure period (15–50 days prior to onset) to determine if the infection was acquired in the jail.

Determine the infected inmate's location and activities in the jail during their infectious period (two weeks prior to onset of symptoms and one week after the onset of jaundice or symptoms) to identify close contacts, activities at higher risk of spreading the infection, and scope of post-exposure prophylaxis (PEP) needed.

To reduce the risk of transmission, infected inmates should be medically isolated during their infectious period (two weeks prior to onset of symptoms and one week after the onset of jaundice or symptoms). During this time, infected inmates should be housed separately (with access to a separate sink and toilet), restricted from work duties, and may need to be kept in the medical unit. Ideally, the inmate should not have any close contact with other inmates during their infectious period.

Ensure all recommendations are provided to jail administration and medical staff in writing.

Jail staff should use standard precautions to prevent fecal-oral transmission to others entering the inmate's cell. Ideally, 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.).

Medical staff should use contact precautions while providing care for infected inmates in the medical units.

Conduct a contact investigation to identify close contacts. 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, coworker food handlers.

- Often a whole housing unit is determined to be at risk of infection and are candidates for PEP.
- If the infected inmate-patient was a food handler, additional assessment is needed to determine risk to other inmates.
- Close contacts may include persons who have been moved to other locations in the jail.

Identify staff that have had close contact with the infected inmate, including contact with soiled personal items and exposure to feces or environments contaminated with feces (i.e., bathrooms, cells, etc.).

When a hepatitis A infection is acquired in the jail, 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, including external contracted employees) 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. Any food service worker reporting hepatitis symptoms should be referred to a medical provider for an evaluation and acute hepatitis testing.

For post-exposure prophylaxis,

1. Follow current ACIP guidelines: www.cdc.gov/mmwr/volumes/67/wr/mm6743a5.htm.
2. The facility's medical staff will need to determine inmate close contacts who also need to be provided immune globulin (IG).
3. Coordinate with the jail administration and medical staff to provide logistical support, hepatitis A vaccines, and IG (as needed).

Work with the jail's medical staff to conduct active surveillance for hepatitis A in the inmate population, particularly known close contacts, for 50 days from the end of the infectious period. Any inmates showing signs or symptoms of hepatitis A should be removed from group housing units immediately and medically assessed and tested for hepatitis A infection.

Response to Jail Acquired Hepatitis A Outbreaks

An outbreak of hepatitis A in a jail setting is defined as:

- Two or more confirmed cases of hepatitis A among inmates,
- AND who spent their entire incubation period (50 days prior to symptom onset) in the jail,
- AND with disease onsets or specimen collection dates (if disease onset is unclear) within 50 days.

A jail outbreak is resolved once 100 days has passed without detecting a new hepatitis A case that was acquired in the facility.

Enhancing inmate and staff vaccination during outbreaks:

- When an outbreak is detected, all inmates and staff, not only close contacts, on impacted housing units should be offered the vaccine. This may result in recommending vaccine for the entire facility.
- Inmates who resided in the affected housing unit during the exposure period, but have subsequently transferred to other buildings at the jail, should be vaccinated and observed for symptoms.
- Inmates who wish to work in food service or health care should have at least one of the following:
    - documented they have received at least one dose of hepatitis A vaccine at least two weeks prior to working;
    - documentation from a health care provider of natural hepatitis A infection;
    - demonstration of hepatitis A immunity by serologic testing.

- New inmates being housed in at-risk populations should be offered vaccine upon arrival into the facility.
- For those inmates that initially refused vaccination, continue to offer the vaccine to them every day.
- As part of routine care, the jail is responsible for administering the second dose of hepatitis A vaccine to inmates still in the facility. For inmates that are released prior to second dose, the CHD may choose to offer the second dose of vaccine.

Inmate transfers:

If possible, transfer of inmates between housing units should be limited.

For inmates who were exposed and possibly incubating and need to be transferred to other facilities, the receiving facility should be notified of their potential risk for hepatitis A infection and the need to monitor them for hepatitis symptoms. Where possible, the transferred inmate should go into isolated or single-person housing to limit exposure to others.

Consider reducing movement of inmate populations at risk (as determined by the epidemiology of the outbreak to limit opportunities for transmission [e.g., limiting group activities, recreation time, work activities, etc.]). Where possible halt interaction between exposed and non-exposed groups (e.g., separate recreation times). Restrict work activities off site and outside of the living area.

Enhancing environmental assessments:

Conduct assessments following the inspection rules in Chapter 64E-11, Florida Administrative Code and Section 381.0072, Florida Statutes for food service facilities under the regulatory authority of the Florida Department of Health.

Collaborate with Environmental Health to conduct a detailed assessment of the facility to examine areas to improve food safety and food service cleaning and disinfection practices.

An infection control environmental assessment of inmate living facilities and general living areas (including exercise and work areas) is recommended.

Submission of Serum Specimens to the Bureau of Public Health Laboratories (BPHL)

For hepatitis A cases among jail inmates, a serum specimen should be requested from the laboratory that performed the HAV IgM test to be sent to BPHL-Tampa for genotyping. For potential jail outbreak associated cases, if no specimen is available from routine serologic testing, the county should consider requesting a new serum specimen if collected within 3 weeks of disease onset.

Additionally, for investigation of at-risk individuals that have some indication of hepatitis A infection, but do not yet meet the case definition (e.g., no discrete onset of symptoms, slightly elevated liver function tests, etc.), serum specimens submitted to BPHL-Tampa for HAV PCR may be beneficial to confirm the infection.

Example Best Practices

- During mass jail vaccination events, work with jail administration to allow computers to be brought in by DOH staff.
- Work phones can be used as mobile hotspots to look up inmates in Florida SHOTS before administration to prevent unnecessary over-vaccination.
    - Request a list of all inmates with full name and DOB prior to the vaccination event to try to pre-screen in Florida SHOTS. Some jail IT systems are not capable of providing that information.
    - Lists of persons and DOB can be provided to the Immunization Program of the Bureau of Epidemiology for a batch look up, if desired.
- Including a CIC epidemiologist during the environmental assessment is important to identifying possible breaches for infection control where transmission may have occurred.
- In some circumstances, having epidemiology staff go into the jail to conduct the interviews after notification of the infected inmates is more effective for getting the answers to some of the more sensitive questions. Inmates may be wary of giving such personal information to jail staff.
- In counties with active outbreaks among persons frequently jailed (i.e., drug users, homeless individuals) new intakes/transfer inmates should not have a job (such as food service or trustee) until a period of 50 days after intake. They should be on symptom watch until 50 days (and no new exposures in the jail) have passed.

Although similar approaches may be useful in Federal Bureau of Prisons or Florida Department of Corrections prisons, these agencies have existing policies to guide their staff's actions.

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