

Hepatitis A

A Handbook for Public Health Personnel

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List of Abbreviations

ACIP:	Advisory Committee on Immunization Practices
ALT:	alanine aminotransferase
anti-HAV:	antibody to the hepatitis A virus
AST:	aspartate aminotransferase
DPH:	Division of Public Health
HAV:	hepatitis A virus
IG:	immune globulin
LHD:	local health department
MSM:	men who have sex with men
SLH:	Wisconsin State Laboratory of Hygiene

Introduction and Suggestions on Using this Handbook

This handbook was created to provide a concise, practical guide for public health personnel when working with cases of acute hepatitis A virus (HAV) infection; it is by no means an exhaustive treatise on hepatitis A. Although every effort was made to develop specific guidelines for various disease scenarios, we acknowledge that decisions about real life outbreaks are seldom clear cut. There are bound to be exceptions and extenuating circumstances when the recommendations in this manual will not result in the most appropriate public health intervention. However, the guidelines contained here do address questions that have been most frequently posed to the Department of Health Services (DHS) over the years.

This handbook is organized into sections on diagnosis, day care settings, food handlers, and other topics. Each module is (more or less) self-contained and cross-referenced to allow the reader to refer to the specific section appropriate to the task at hand, without having to read the entire manual. However, the reader is strongly encouraged, at a minimum, to read the basic information contained in the “Basic Information and Background” section of this handbook.

Throughout this manual, the reader will find numerous directives to collect certain information important to managing various hepatitis A-related situations. Readers should know that nearly all pertinent information can be gathered using (1) the basic hepatitis A questionnaire (Appendix 1), which should be administered to ALL hepatitis A case-patients; (2) the supplemental questionnaire for individuals in high-risk occupations or settings (Appendix 2); and (3) the worksheet for inspection of food establishments at which a hepatitis A case has been identified (Appendix 8). We strongly encourage the use of these questionnaires and worksheets to help assure that the pertinent information is gathered during the initial interview.

We hope you will find this publication useful and we welcome your comments and suggestions.

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BASIC INFORMATION, BACKGROUND, AND PROCEDURES

Hepatitis A is an acute inflammatory condition of the liver caused by the hepatitis A virus (HAV), a picornavirus. In the vast majority of cases, the disease is acquired by ingestion of the virus, which is shed in the stool of infected individuals (**fecal-oral transmission**). Spread of the virus is enhanced by poor personal hygiene and overcrowding. Cases are most commonly linked by close personal contact within a family or institution, and less commonly via contaminated food and water. Very small numbers of the HAV can produce infection, thus the disease is highly infectious. A brief viremia occurs during the late incubation period; therefore, it is possible for HAV to be transmitted in blood, but this route of infection is rare. No cases of intrauterine HAV infection have been reported. Infection with HAV confers lifelong immunity. Hepatitis A virus does not cause chronic infection or chronic liver disease.

Although usually a self-limited illness, hepatitis A can cause substantial morbidity and mortality. The overall case fatality rate in the U.S. is 3 deaths per 1000 cases, but increases to about 20 per 1,000 cases among persons over 50. Persons with chronic liver disease are at increased risk for fulminant hepatitis A. The costs associated with hepatitis A are substantial. Between 11% and 22% of persons who have hepatitis A are hospitalized. Based on a 1989 study from the state of Washington, the average time lost from work due to the illness is 27 days. Average per-case costs (both medical and lost wages) were \$2460 and \$430 for adults and children, respectively. This translates to approximately \$4,795 and \$838 in 2016 dollars. Control efforts are also costly and labor-intensive. In the Washington study, an average of 11 contacts per reported case were given immune globulin (IG).

A. Signs and Symptoms

The signs and symptoms of hepatitis A vary between patients and are generally less severe and of shorter duration in children than in adults. Asymptomatic infections can occur in all age groups, but are much more common in children. **The majority of young children (less than age 5 years) infected with HAV do not become jaundiced.** Subclinical cases can be identified by HAV serologic tests and by liver enzyme alterations (page 7-8). Individuals with asymptomatic HAV infection should be considered to be as infectious as those with clinically apparent cases.

Early signs and symptoms of hepatitis A usually include fever, anorexia, fatigue, myalgia, nausea, and occasionally diarrhea. These typically precede the onset of jaundice by approximately one week. Shortly after early signs and symptoms appear, the patient may exhibit right upper quadrant or epigastric abdominal pain. Hepatomegaly and the passage of dark urine usually precede the onset of jaundice by one to several days.

B. Incubation Period

The incubation period of hepatitis A can vary between 15 and 50 days depending, to a large extent, on the inoculum of HAV received. **In the majority of cases, disease onset occurs about 30 days after initial infection.** During an outbreak, cases that occur within two weeks of each other generally suggest co-exposure to a common source rather than separate generations of illness.

C. Period of Infectivity

It is important to know when HAV is shed in the stool relative to the onset of clinical signs and symptoms because this allows one to determine when the patient is infectious to others. If jaundice occurs, its onset serves as the best benchmark for determining the period of infectivity. Fecal shedding of the virus peaks during the week prior to onset of symptoms.

For purposes of public health interventions, a patient is be considered to have been infectious for 10 days prior to the onset of the early signs and symptoms, or for 14 days prior to the onset of jaundice. Patients are potentially infectious for seven to 10 days after onset of jaundice.

If a patient is asymptomatic, consider the day on which the positive serologic specimen was obtained as the date of onset, unless liver function tests suggest an earlier onset (see page 7-8). The possibility of a false positive serologic result should also be considered in asymptomatic patients (see page 9), especially those who have no apparent risk factors for HAV infection. Specific exclusion guidelines from work or day care are discussed later in this handbook.

D. Laboratory Diagnosis

1. Serology

The confirmation of hepatitis A requires serologic testing to detect antibody against HAV (anti-HAV Ab). The antibody response to HAV consists initially of the IgM class of antibody, which usually becomes detectable at the time of illness onset (generally about 30 days post-exposure). Detectable anti-HAV IgM usually persists four to six months after infection (Figure 1).

Therefore, the presence of anti-HAV IgM is associated with active or recent HAV infection.

The appearance of the IgG class of anti-HAV follows the IgM response by several weeks. IgG antibody to HAV persists for life in most cases. The receipt of immune globulin should not interfere with subsequent serologic tests for anti-HAV IgM.

HAV serologic testing often involves testing the serum for the presence of **total** antibody against HAV (i.e., IgM and IgG combined). If this test is negative, no further tests are needed on that sample. If it is positive for total HAV antibody, the serum should be specifically tested for IgM anti-HAV.

Thus, three results are possible when testing for antibody against HAV:

RESULT	INTERPRETATION
1. Total antibody negative	No evidence of HAV infection
2. Total antibody positive and IgM negative	Prior HAV infection (possibly years ago); currently immune, not an active case of hepatitis A, not currently infectious
3. Total antibody positive and IgM positive	Recent infection; a new case of hepatitis A

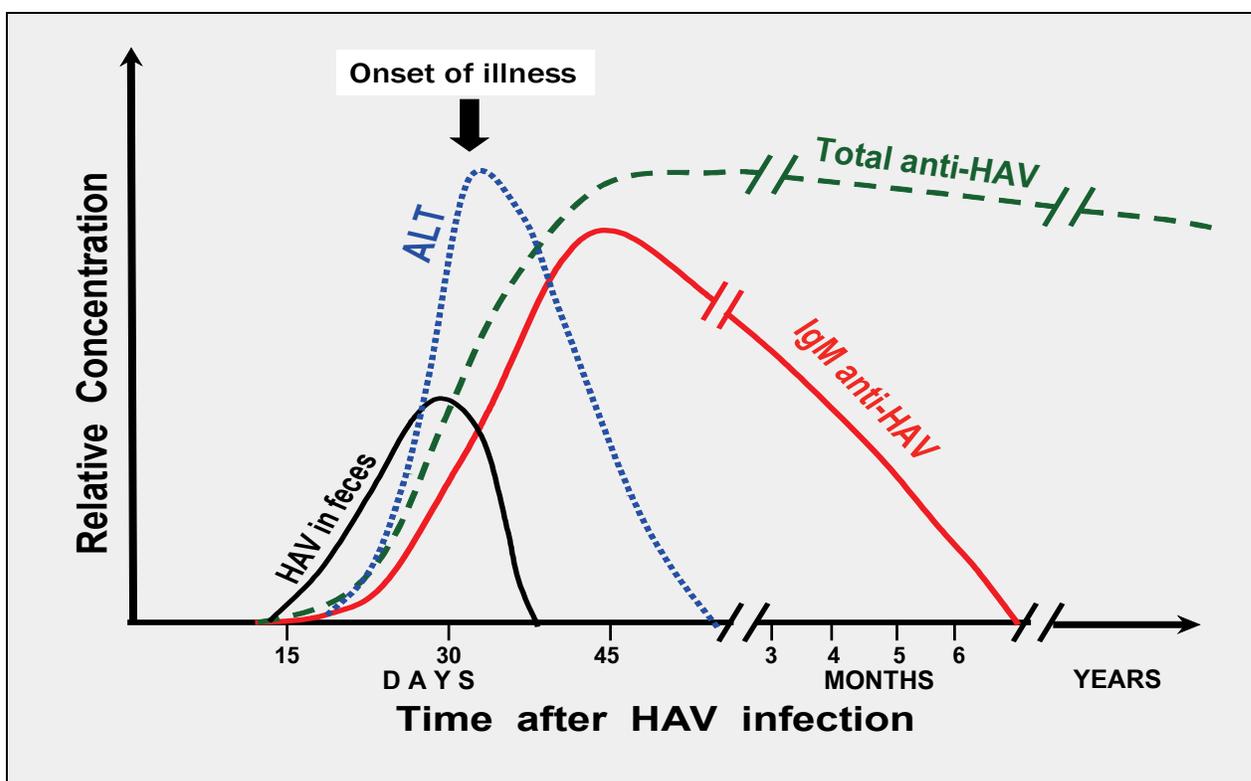
NOTE: To have a confirmed case of hepatitis A, the patient must be IgM anti-HAV positive.

Occasionally, a laboratory will report an HAV serology as "IgM and IgG positive." Although this wording can be confusing, it means that the specimen was total antibody positive and says nothing about the patient's IgM status. One should always confirm that a specific test for anti-HAV IgM was conducted and that it was positive.

2. Blood Chemistry

A variety of liver function tests (e.g., ALT [formerly called SGPT], AST [formerly called SGOT], alkaline phosphatase, bilirubin) that are used to detect hepatic damage or biliary stasis will be elevated during an acute episode of hepatitis A. Of all these tests, ALT is the most specific test for liver damage and is usually the first liver function test to become abnormal, peaking just prior to the onset of jaundice (Figure 1). During acute viral hepatitis resulting from HAV infection, ALT levels are typically in the range of 500-2000 IU. Elevations in ALT will occur even in patients who are not symptomatic.

Figure 1. Events in a Typical Hepatitis A Virus Infection



Levels of ALT can sometimes be useful as a **temporary** surrogate for the HAV antibody test since it can usually be performed more quickly than the serology. Although ALT elevation is usually concurrent with seroconversion to IgM anti-HAV positive status, in some patients elevated ALT levels may precede the presence of detectable IgM by a few days. Thus, ALT elevation can sometimes be an earlier indicator of hepatitis than seroconversion.

Serially obtained ALT levels are more informative than a single one, since they can indicate whether this enzyme is increasing or declining. Serial ALTs are of particular value in a patient whose IgM anti-HAV test is equivocal or if the patient is questionably symptomatic and a falsely positive IgM anti-HAV result is suspected (see page 9).

ALT levels drop relatively soon after onset of illness (typically within a few weeks). Therefore, a patient who is IgM anti-HAV positive but has a normal ALT is likely to be in the convalescent (non-infectious) stage of hepatitis A infection.

Although these hepatic tests can be of value, it is important to realize that they are merely a gauge of liver function/damage; none of these tests are specific for HAV infection. The definitive diagnosis of acute hepatitis A requires testing for IgM antibody to HAV.

3. Possibility of false positive serologic tests

With the dramatic decline in the incidence of hepatitis A due to the widespread use of the hepatitis A vaccine, false positive IgM results have become increasingly common. IgM anti-HAV tests are reliable for diagnosis of acute hepatitis A in persons who have signs or symptoms of acute viral hepatitis. However, tests for IgM anti-HAV can be falsely positive, especially when used to test patients who are asymptomatic and have no known risk factors for hepatitis A. The positive predictive value of any test depends on the prevalence of the condition among the persons being tested, and the likelihood of a false-positive test result increases when the tests are used in low-risk populations. For these reasons, IgM anti-HAV serologic testing should be limited to persons who have signs/symptoms of acute hepatitis or who have an epidemiologic link to a known case of hepatitis A. IgM anti-HAV testing should not be used as a general “screening test” for asymptomatic persons or for the workup of abnormal liver enzyme tests among asymptomatic patients. Any positive IgM anti-HAV result in an asymptomatic patient without a travel history or a known epidemiologic link to another hepatitis A case should be examined in conjunction with liver enzyme values and clinical history. Consult with staff at DHS, Division of Public Health, if there is a suspicion of a false positive result.

4. Interpretation of serology results for persons who received the hepatitis A vaccine

Using commercially available assays, some vaccinees will develop a detectable IgM anti-HAV response within two to three weeks, with levels typically, **but not always**, falling below the threshold of detectability in approximately one month.

However, concentrations of anti-HAV achieved after hepatitis A vaccination are 10-100 fold lower than those produced by natural HAV infection and are often below the detection level of commercially available diagnostic assays. Routine post-vaccination serologic testing is not indicated because of the high rate of vaccine response among both children and adults, and because testing methods that have the sensitivity to detect low anti-HAV concentrations after vaccination are not approved for routine diagnostic use in the U.S.

E. Submission of Serum Specimens to the Laboratory

1. Recommendations for Specimen Collection and Handling

- a. Draw one red top or serum separator tube; use good specimen collection technique to avoid hemolysis. Place tube in vertical position until clotting is complete. Clotting generally takes 20-30 minutes in tubes without clot activators; 5-15 minutes in tubes with activators. A minimum of 1 ml of serum is required at the Wisconsin State Laboratory of Hygiene (WSLH). A minimum of 2 ml of serum is required if testing is to be done for hepatitis antibodies, enzyme testing, and CDC Hepatitis A genotyping (testing must be approved by the Wisconsin Division of Public Health).

- b. When filling a vacutainer from a syringe, puncture the stopper with the needle and allow blood to flow slowly into the tube; never force blood into an evacuated tube. If blood is to be transferred from syringe to unstoppered tube, remove needle and gently expel blood into tube, allowing it to run down the tube's side.
- c. Keep stopper on tube during and after centrifugation; this avoids dangerous aerosols and possible contamination and evaporation problems. Do NOT centrifuge more than once; repeated or prolonged centrifugation to obtain sufficient sample will cause inaccurate test results. If you are experiencing trouble obtaining enough specimen, check your rotor speed and/or have the centrifuge serviced. It should not be necessary to centrifuge the specimen for more than 15 minutes at 1000-1200 X g. If you have used a serum separator tube, visually check the sample after centrifugation to ensure that the gel has completely separated serum from cells. After centrifugation, serum separator tubes may be stored overnight under refrigeration.
- d. Remove serum from cells within two (2) hours of specimen collection. Following centrifugation, immediately transfer the serum to appropriately labeled screw-cap plastic vials (kit #22 - available from the WSLH) by using a disposable pipette (decanting is not recommended), and follow the instructions in the kit for preparing the samples for transport.
- e. Protect tubes from heat and light; excessive heat will cause hemolysis, light affects bilirubin. Specimens must be stored and transported to the lab at 2-8 C (refrigerated/ with frozen cold packs). Freeze serum if testing will not be performed within seven days of collection.
- f. Specimens must be received at the lab within three days of collection to avoid loss of enzyme activity. Specimens do not need to be split. See below for details on submission forms and mailing instructions for the WSLH.
- g. Call the WSLH's Customer Service Unit (800-862-1013) to notify the staff that HAV-related specimens are being sent. This is especially important in outbreak situations.

2. Instructions for Mailing HAV Outbreak Specimens to the WSLH

- a. Fill out the appropriate WSLH form (CDD Requisition Form B) for each patient serum sample submitted. Please check SS00020 Hepatitis A IgM & IgG Ab Diagnostic, and note on the front of this form whether the individual is symptomatic, a food handler or day care worker, and other pertinent information. Check SS02776 ALT on this form if an ALT level is also to be performed.
- b. Transfer serum to the plastic vial provided with the mailing containers. Please do NOT use tape or parafilm around the cap of the vial. Simply tighten the cap securely.
- c. Wrap each vial with one strip of the provided absorbent material.
- d. Place several vials in each pressure bag and close securely. Place completed lab slip(s) in outside pocket of pressure bag.
- e. The styrofoam mailing containers are designed to hold five vials. Place pressure bag(s) containing lab slips and patient specimens inside of the styrofoam mailer, along with a frozen cold pack.
- f. Place a sticker with the WSLH address on the styrofoam mailer, and attach sufficient postage.

3. Important points to remember:

- a. Federal postal regulations stipulate that no more than 500 ml of infectious material may be mailed in a single container (1000 ml for UN3373-approved shipping containers). Therefore, when mailing large numbers of patient specimens, ensure that the volume of serum in each vial is no more than 2.5 ml. A minimum of 1.0 ml of each specimen should be submitted for testing. If specimens are being sent by an alternate means (e.g., Greyhound or Badger Bus), it is not necessary to adhere to these volume requirements.
- b. **Please call the WSLH's Customer Service Unit (800-862-1013) to advise them that you are sending HAV outbreak specimens or are submitting a specimen to confirm a result from another laboratory.** It is important to send samples to the lab promptly so that you get results as quickly as possible. Do NOT wait several days until all samples have been collected. Mail each day's specimens as they are collected.
- c. Laboratory forms and mailing kits are available at no charge. It is a good idea to maintain an inventory of lab requisition forms and mailing kits so specimens can be sent as soon as they are obtained. To order additional mailing kits, components, or lab requisitions, call Clinical Orders toll free at 800-862-1088. Please be prepared to provide your assigned account number, test requisition form name (CDD requisition form B), and kit number (#22). The entire mailing kit or any component of the kit can be sent. This includes screw-cap plastic vials, absorbent material, ziploc bags, and styrofoam containers. Materials should arrive at most locations in Wisconsin within three working days of ordering.
If this is an emergency request, please inform the person handling the order for expeditious processing.

4. Advanced Planning for Hepatitis A Outbreaks—Laboratory Considerations

- a. Have adequate supplies available for drawing blood; 4 ml serum separator tubes are a good size for both children and adults. The separator gel degrades over time, so check the outdate printed on the box to ensure that the tubes are not outdated.
- b. Have adequate supplies of kit #22 and the appropriate requisition forms from the WSLH.
- c. Make arrangements with a local hospital or clinical laboratory to use their centrifuge if your agency does not have one, or to use as a backup if your centrifuge is out of order.
- d. U.S. Postal Service delivery to the WSLH takes one to three days, depending on the location of the post office and the time of day the package is posted. Since specimens must be received at the lab within three days of collection to avoid loss of enzyme activity, this option may not be advisable. Investigate alternative transportation if faster delivery is desired (e.g., U.P.S., Federal Express, Statmedex).
- e. Current phone numbers for contact people at the Wisconsin Division of Public Health (both central and regional offices) and the WSLH should be readily available. Although the two agencies coordinate with each other, they are geographically and organizationally separate.

HEPATITIS A VACCINE

The two currently available single antigen vaccines against hepatitis A are approved for use in persons one year of age and older. These are inactivated vaccines, and are available in both pediatric and adult formulations. Both products are administered on a two-dose schedule, with the second dose recommended 6–18 months after the first dose. Because the vaccine is highly immunogenic, routine post-vaccination serologic testing is not recommended for healthy individuals, but may be indicated in persons with advanced liver disease. (See part C5, below.) In addition to the two vaccines mentioned above, a combination hepatitis A/ hepatitis B vaccine is available, which is administered on a three-dose schedule.

A. Serologic response after vaccination

Using commercially available assays, some vaccinees will develop a detectable IgM anti-HAV response within two to three weeks, with levels usually, **but not always**, falling below the threshold of detectability in approximately one month. However, concentrations of anti-HAV achieved after hepatitis A vaccination are 10-100 fold lower than those produced by natural HAV infection and are often below the detection level of commercially available diagnostic assays.

B. Routine childhood immunization

Based on the recommendations of the Advisory Committee on Immunization Practices (ACIP), all children should receive hepatitis A vaccine at 1 year of age (i.e., 12-23 months). Vaccination should be completed according to the licensed schedules and integrated into the routine childhood and adolescent vaccination schedule. Children who are not vaccinated by 2 years of age can be vaccinated at subsequent visits.

C. Persons at increased risk for HAV infection who should be routinely vaccinated

1. International travelers

Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A should be vaccinated or receive IG before departure. Hepatitis A vaccination at the age-appropriate dose is preferred.

- a. Travelers to North America (except Mexico and Central America), Western Europe, Japan, Australia, or New Zealand are at no greater risk for infection than in the United States. Data are not available regarding the risk for hepatitis A for persons traveling to developed areas of the Caribbean, although vaccine or IG should be considered if travel to areas that have questionable sanitation is anticipated.
- b. The first dose of hepatitis A vaccine should be administered as soon as travel is considered. Travelers who receive hepatitis A vaccine less than two weeks before traveling to an endemic area and who do not receive immune globulin (either by choice or because of lack of availability) likely will be at lower risk of infection than those who do not receive hepatitis A vaccine or IG. In the case of travel within four weeks of vaccine administration, a dose of immune globulin (0.1 mL/kg) may be given alone or in addition to hepatitis A vaccine, at a different site, for optimal protection. In the case of unavailability or refusal of immune globulin, administration of hepatitis A vaccine alone for this group is recommended, but they should be informed that they are not optimally protected from acquiring hepatitis A in the immediate future (i.e., the subsequent two to four weeks) A second vaccine dose administered according to the recommended schedule is necessary for long-term protection.

- c. Travelers who are allergic to a vaccine component or who elect not to receive vaccine should receive a single dose of IG (0.1 mL/kg), which provides effective protection against hepatitis A for up to one month. Travelers whose travel period exceeds one month should be administered IG at 0.2 mL/kg; administration must be repeated every two months if the travel period exceeds two months.

2. Men who have sex with men (MSM)

MSM (both adolescents and adults) should be vaccinated. Studies have shown that most MSM would accept hepatitis A vaccination if recommended by their providers. Providers in primary-care and specialty medical settings where MSM receive care should offer hepatitis A vaccine to patients at risk. Implementation strategies to overcome barriers and increase coverage, such as the use of standing orders, should be considered.

3. Users of illegal drugs

Vaccination is recommended for injecting and non-injecting illegal drug users. The importance of vaccination for this population might depend on the particular characteristics of the population of drug users, including the type and duration of drug use.

4. Recipients of blood products and clotting factor supplementation

Susceptible persons who receive clotting-factor concentrates, especially solvent-detergent-treated preparations, should receive hepatitis A vaccine.

5. People with chronic liver disease

Susceptible persons who have chronic liver disease should be vaccinated. Similarly, susceptible persons who are either awaiting or have received liver transplants should be vaccinated. Because seroconversion rates for such patients are considerably lower than in healthy individuals, serologic testing after hepatitis A vaccination is recommended in vaccinees with decompensated or advanced end-stage liver disease.

6. Persons who have occupational risk for infection

Persons who work with HAV-infected primates or with HAV in a research laboratory setting should be vaccinated. No other groups have been shown to be at increased risk for HAV infection because of occupational exposure. Studies conducted to date among U.S. workers exposed to raw sewage do not indicate a significantly increased risk of HAV infection.

7. Residents of outbreak communities

Children in communities that have historically high rates of hepatitis A and periodic outbreaks should be vaccinated. In Wisconsin, these currently include tribal reservations.

8. Household members and other close personal contacts (e.g., babysitters) of adopted children newly arriving from countries with high or intermediate hepatitis A endemicity

Between 1998 and 2008, 99.8% of the approximately 18,000 foreign adoptees came from countries where hepatitis A is considered to be of high or intermediate endemicity. The risk for hepatitis A among close personal contacts of international adoptees is estimated to be more than 100 times the incidence of hepatitis A in the general population.

9. Others

Although not part of official ACIP recommendations, strong consideration should be given to vaccination of residents and staff of institutions for the developmentally disabled, and to children who attend day care or Head Start programs. Although professional food handlers are not at increased risk of acquiring hepatitis A, vaccination of this group should be encouraged because of the risk posed to the public by an infected food worker.

Even though currently available data do not indicate a clear benefit for the routine vaccination of persons with Hepatitis B or Hepatitis C virus infections who have no evidence of chronic liver disease, hepatitis A vaccination should be seriously considered for all persons with an established diagnosis of hepatitis B and hepatitis C. Similarly, some experts advise hepatitis A vaccination of all HIV-positive persons who are susceptible to hepatitis A.

D. Use of hepatitis A vaccine for post-exposure prophylaxis:

The October 19, 2007, issue of the MMWR contains updated recommendations for hepatitis A prevention (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm>). The primary new recommendations in this article are based on a clinical trial which suggests that the performance of vaccine, when administered ≤ 14 days after an exposure to hepatitis A, approaches that of immune globulin (IG) in healthy children and adults aged ≤ 40 years (i.e., approximately 80%-90% effective in preventing clinical disease). This finding offers an alternative to the use of (IG) for postexposure prophylaxis for many exposed persons. In fact, vaccine is preferred over IG for this age group because of the duration of protection it provides. These guidelines are summarized below.

For persons who have been exposed to hepatitis A within the past 14 days, and who previously have not received hepatitis A vaccine, the following is advised:

1. Healthy persons aged one to 40 years should receive hepatitis A vaccine at the age-appropriate dose.
2. Healthy persons > 40 years should receive IG (0.1 mL/kg), although **vaccine may be used if IG cannot be obtained in a timely manner.**
Persons > 40 may receive a dose of vaccine simultaneously with IG if they are in a group for which vaccine is routinely indicated (e.g., illegal drug users, travelers to a hepatitis A endemic area).
3. Healthy persons < 1 year old should receive IG (0.1 mL/kg). The hepatitis A vaccine is not approved for use in children less than one year old.
4. Persons who are immune compromised or have chronic liver disease should receive IG prophylactically. They then can receive the vaccine at a later date.

Persons who receive a first dose of vaccine as post-exposure prophylaxis should receive a second dose at least six months later to confer ongoing protection.

E. Division of Public Health policy for supplying hepatitis A vaccine

1. Because of the Vaccine for Children Program, hepatitis A vaccine is provided at no cost for persons aged 1 through 18 years.

2. If vaccine supply and other circumstances permit, DPH will supply the vaccine at no cost to local health departments to prevent hepatitis A in group exposure situations. Examples of such situations include prophylaxis of restaurant employees or day care attendees/staff.
3. **In general, adult household contacts of cases of hepatitis A should receive the vaccine from their health care provider.** Circumstances permitting, DPH will supply vaccine at no cost to LHDs for the immunization of household contacts of a hepatitis A case only if:
 - a. The contact attends/lives/works in a setting that entails a high-risk of transmission of hepatitis A to the public, **OR**
 - b. The contact is uninsured and cannot afford to obtain vaccine through a private provider, **OR**
 - c. The contact, for whatever reason, will not receive the vaccine unless it is obtained through the public health system.

In any event, provision of hepatitis A vaccine is predicated on exposure to a **confirmed** case of hepatitis A (i.e., IgM antibody positive) within the past 14 days.

IMMUNE GLOBULIN (IG)

A. Basic Information

Immune globulin (IG), historically also referred to as immune serum globulin or gamma globulin, is a sterile solution of antibodies (immunoglobulins). IG is effective in preventing hepatitis A if given prior to exposure (e.g., for travel to developing countries) or in the early incubation period after exposure to HAV. It is considered to be 80%-90% effective at preventing disease if given within 14 days after exposure to HAV.

NOTE: IG given more than 14 days after exposure is unlikely to prevent hepatitis A, and thus should not be used.

IG must be refrigerated during storage, but should not be frozen. Receipt of IG will not interfere with subsequent serologic tests for anti-HAV IgM.

IG is prepared from pooled human plasma by cold ethanol fractionation. Only plasma proven to be free of hepatitis B surface antigen, antibody to the hepatitis C virus, and antibody to the human immunodeficiency virus (HIV) is used in the preparation of IG. In addition, the FDA requires that the process used to produce IG include a viral inactivation step or that final products test negative for hepatitis C virus RNA by polymerase chain reaction assay. **Commercial IG for intramuscular use available in the U.S. has never been implicated in the transmission of hepatitis B, hepatitis C, HIV, or any other viruses.** This was even true for lots prepared before 1985, prior to when screening of donor plasma for HIV was initiated. Currently available IG preparations contain no preservatives and therefore are free of mercury.

Because of the current low incidence of hepatitis A in Wisconsin and the availability of the hepatitis A vaccine for post-exposure prophylaxis, the Division of Public Health does not stock IG. The product must be obtained through a medical provider.

B. Who should receive IG?

1. **Post-exposure use:** *(Note that the hepatitis A vaccine is preferred over IG for post-exposure prophylaxis of persons between 1 and 40 years of age. See section on the post-exposure use of vaccine on page 14 of this manual.)*

IG should be administered to previously unvaccinated persons who have a reasonable risk of having been exposed to HAV if it can be administered within two weeks of their exposure. Persons considered at reasonable risk of exposure include household contacts, sexual contacts, persons who have had other close personal contact (e.g., babysitters), persons who consumed high-risk foods handled by the case patient (see definition of high risk foods on page 24), and persons who have shared illegal drugs with a person with HAV. Prophylaxis guidelines for specific settings like child day care centers, food establishments, and various institutional settings are described in subsequent sections of this handbook.

2. **Pre-exposure use:** Although the hepatitis A vaccine is now preferred for pre-exposure protection (see page 14), IG can be administered for the protection of travelers to countries where hepatitis A is endemic. IG should be used if the traveler is allergic to one of the components in the vaccine. Such persons should receive a single dose of immune globulin (0.1 mL per kg). Travelers whose travel period exceeds one month should be given immune globulin at 0.2 mL per kg; administration must be repeated every two months if the travel period exceeds two months. For more detail on protection of travelers, see page 12.

C. Dosage and Administration

IG is administered intramuscularly, usually in the gluteal muscle. The dose for hepatitis A post-exposure prophylaxis is 0.1 ml/kg. For pre-exposure use, when a prolonged exposure is anticipated (i.e., travel to a highly endemic area for an extended period), a dose of 0.2 ml/kg can be used to provide immunity for up to two months, although the use of the hepatitis A vaccine is now preferred for pre-exposure protection. Standard IG should never be given intravenously; special IG preparations are available for intravenous use, but these are not intended for hepatitis A prophylaxis.

D. Adverse Reactions and Precautions

Serious adverse effects from properly administered IG are rare. The most common problem encountered with the use of IG is discomfort and pain at the injection site. Less common reactions include flushing, headache, chills, and nausea. The rare serious reactions include chest pain or constriction, dyspnea, and anaphylaxis. Although such reactions are uncommon, it is prudent to have epinephrine and other means of treating acute reactions immediately available. An increased risk of systemic reactions results from inadvertent intravenous administration.

Anaphylaxis has been reported after repeated administration to persons who have known immunoglobulin A (IgA) deficiency; thus, IG should not be administered to these persons. IG should not be given to patients with severe thrombocytopenia or any coagulation disorder that would preclude intramuscular injection. Caution should be used in giving IG to a patient with a history of adverse reactions to immune globulins. Pregnancy or lactation is not a contraindication to IG administration.

IG does not interfere with the immune response to oral poliovirus vaccine or yellow fever vaccine, or, in general, to inactivated vaccines. However, IG can interfere with the response to other live, attenuated vaccines (e.g., measles, mumps, and rubella [MMR] vaccine and varicella vaccine) when administered either as individual or combination vaccines. Administration of MMR should be delayed

for >3 months and varicella vaccine for >5 months after administration of IG for hepatitis A prophylaxis. IG should not be administered <2 weeks after administration of MMR or <3 weeks after varicella vaccine unless the benefits of IG administration exceed the benefits of vaccination. If IG is administered <2 weeks after administration of MMR or <3 weeks after administration of varicella vaccine, the person should be revaccinated, but not sooner than three months after IG administration for MMR or five months for varicella vaccine.

The receipt of immune globulin should not interfere with subsequent serologic tests for anti-HAV IgM.

Patients receiving IG through their local health department (LHD) should be asked to sign a consent form. A sample consent/information form for IG recipients is supplied in Appendix 6. Recipients should be cautioned that IG is only 80%-90% effective in preventing hepatitis A, and that in spite of receipt of IG, hygiene remains crucial in preventing transmission of HAV to others. Such contacts should also be counseled to limit their food preparation to their immediate household. Both recommendations should be practiced for 50 days after the last potential exposure to HAV.

PUBLIC HEALTH INTERVENTIONS

RESPONSE TO A SUSPECTED CASE OF HEPATITIS A

Considerable time and resources can be wasted implementing control measures in response to a "case" of hepatitis A, which, in reality, may be some other disease entity. **Therefore, whenever a case of hepatitis A is reported to a public health agency, it is absolutely necessary to confirm the diagnosis (i.e., establish that the patient is anti-HAV IgM positive, ascertain the ALT level and the patient's clinical presentation).**

However, there are measures that can be taken before a reported case is serologically confirmed. These measures are primarily information gathering in nature, and are especially important when the suspect case-patient works or lives in a high-risk setting. If hepatitis A is strongly suspected, collecting some basic information prior to laboratory confirmation can allow the investigator to "hit the ground running" if hepatitis A is confirmed.

While HAV-IgM results are pending, it is generally useful for the LHD to:

1. Obtain the patient's liver enzyme test results and the clinical presentation from the attending physician. Also ascertain if the patient has been vaccinated against hepatitis A. Based on how strongly suggestive of hepatitis A the findings are, LHD staff may proceed with the steps below or wait until laboratory confirmation is obtained.
2. Interview the patient to determine risk factors for hepatitis A acquisition, exactly what signs/symptoms were experienced, and when onset of these symptoms occurred. The interviewer should make it clear to the patient that the final diagnosis is still pending, and there is only a suspicion of hepatitis A.
3. Determine the patient's occupation as well as the identity and occupation of other members of the household. If a person has been clinically diagnosed with hepatitis A, consider excluding that individual from work/school/day care while serologic results are pending. Suspect cases in high-risk settings are discussed below. Individuals symptomatic with diarrhea should be excluded even if they do not work in a high-risk setting.
4. Determine if the suspect case-patient prepared any meals that were consumed by persons other than immediate family members within the two weeks immediately preceding symptom onset (e.g., potlucks, church picnics, etc.)
5. Educate the potential case-patient regarding hepatitis A and ways to avoid transmission. The Hepatitis A Disease Fact Sheet ([P-42054](#)) is useful for this purpose (see Appendix 7).

Consider using the questionnaire in Appendix 1

The hepatitis A questionnaire in Appendix 1 should be used to gather the above information.

Patients can be difficult to contact so it is important to be thorough during the first interview.

A high-risk setting can be defined as any setting outside of the case-patient's household in which a substantial risk of HAV transmission from the patient to others exists. Examples of high-risk settings include eating/drinking establishments, food processing operations, child day care, nursing homes, hospitals, and institutions for the developmentally disabled. Other settings might be considered high risk if circumstances exist that favor HAV transmission.

If the suspect case occurs in a high-risk setting, the LHD should consider the following actions:

1. Exclude the suspected case-patient from the high-risk setting immediately.
2. Efforts should be made to expedite the serologic test results. A delay of several days to confirm the diagnosis of hepatitis A in a high-risk individual is not acceptable. Liver enzyme levels can be used as a temporary surrogate until serologic results are obtained (see pages 7-8).
3. If hepatitis A is strongly suspected, some basic information about the high-risk setting can be gathered such as exact work duties and days/shifts worked by the patient. A questionnaire for high risk individuals is included in Appendix 2.
4. If the suspect case-patient works as a foodhandler, a sanitarian can inspect the workplace (more details on page 22) and an assessment can be made of the patient's hygiene.

RESPONSE TO A CONFIRMED CASE OF HEPATITIS A

A. General

The LHD investigator should always confirm that a test for anti-HAV IgM was performed and that it was positive. Do not rely on vague verbal reports such as "the blood test was positive for hepatitis A." It is advisable to have the written lab results faxed to the LHD. Once it is established that the case is serologically confirmed, **all of the recommendations described in the previous section for suspect cases (page 18) should be implemented** if those measures have not yet been taken (i.e., obtain liver transaminase levels, ascertain clinical signs/symptoms, administer the hepatitis A questionnaires, perform patient education, order job exclusions as discussed later in this manual). Recommendations for prophylaxis of family members and other close contacts should be made by the LHD at this time. (See prophylaxis information on pages 13 and 14.) If the patient interview reveals close contacts who are in high-risk settings (defined on page 18), measures should be considered to minimize the danger that these contacts might pose if they later develop hepatitis A. (See page 32 for a discussion of contacts of confirmed cases.)

It is important to use the hepatitis A questionnaire contained in Appendix 1 to gather thorough information during the first interview with the patient. It should be noted that this questionnaire is intended only as a worksheet to assist the LHD in collecting information necessary to: (1) make prudent decisions about which contacts of a case-patient may be at risk of developing HAV infection; and (2) draw conclusions about a patient's HAV infection source, which can be extremely helpful in the early identification of a common source outbreak. Please consider putting the completed questionnaire into the WEDSS filing cabinet for confirmed cases.

B. Determining the Source of Exposure:

Unless there has been a known contact with another case of hepatitis A or a travel history to an endemic country, it can be difficult to determine the source of infection. Remember that the incubation period for hepatitis A is usually around 30 days (range 15 to 50 days). Therefore, the time period on which to focus most closely in interviews is approximately three to six weeks prior to illness onset. The hepatitis A questionnaire (Appendix 1) contains several questions specifically designed to identify potential exposure sources, and includes a section for patient food history.

In the absence of an apparent source, the case-patient should be questioned about contact with young children who are frequently asymptomatic. For example, if a case-patient with no obvious source of infection is a close contact to a child who attends day care, it is reasonable to suspect that the child may be the source of infection. Testing of the child can then be performed.

Although the vast majority of cases of hepatitis A are acquired by person-to-person transmission, whenever a cluster of unrelated cases with no apparent common exposure occurs in a community, it is possible that transmission might have occurred from a common food exposure. Obtaining a patient food history for meals eaten 15 to 50 days prior to onset is difficult because of the time elapsed. The location of meals eaten or prepared outside the home (e.g., restaurants, potlucks, meals-on-wheels, etc.) is probably more important initially than the specific foods that were consumed. If a detailed food history cannot be obtained, the patient can be asked to identify restaurants or other sources of out-of-home meals at which he/she eats frequently. Sources of drinking water, both at home and at the workplace, should be determined (private well versus municipal water supply).

It is essential to collect food histories in an unbiased fashion. In a potential outbreak situation, the initial case patients should be asked open-ended questions about their food histories, such as those contained in the hepatitis A questionnaire, and they should be encouraged to be as thorough as possible. If one or a few establishments are repeatedly named by these initial patients, a "prompt list" of establishments can then be developed for interviewing subsequent cases. The prompt list should contain the name(s) of those establishments cited most frequently by the initial group of cases. The list should also include names of approximately 10 other food establishments located within reasonable proximity to the suspect establishment(s). This prompt list should then be used to supplement subsequent interviews. If patients can recall specific dates or food items eaten when they visited certain establishments, these should be noted on the list. Once the prompt list is in use, the patient being interviewed should still be given the opportunity to identify other establishments not on the list. Even after the probable source of an outbreak is identified, keep an open mind regarding other possible exposure sources for each new case.

C. Reporting to the Division of Public Health:

Cases should be reported using the Wisconsin Electronic Database Surveillance System (WEDSS). Cases in high-risk settings should also be phoned into the Bureau of Communicable Diseases at the Division of Public Health. The pertinent information needed to complete the hepatitis A WEDSS tab can be collected by using the hepatitis A questionnaire in Appendix 1 of this manual.

Wisconsin Case Definition: A person with a clinically compatible illness that is laboratory confirmed **OR** an asymptomatic person who is IgM anti-HAV positive and is linked epidemiologically to a confirmed case or to a known outbreak of hepatitis A.

PREVENTING FURTHER HAV TRANSMISSION: LOW-RISK SETTINGS

High-risk settings are defined on page 18. Once it has been established that the patient does not live in, attend, or work in a high-risk setting, LHD intervention efforts should focus on two goals:

1. Determine the patient's source of HAV infection (discussed on page 19).
2. If the patient is still infectious (see page 6), minimize the chances of further transmission among the patient's contacts. This is accomplished by:
 - a. Educating the patient about hepatitis A and the crucial importance of personal hygiene to prevent HAV transmission. The hepatitis A fact sheet is useful here (see Appendix 7).
 - b. Making recommendations regarding prophylaxis for close contacts or for persons who consumed high-risk foods that the patient handled.

Case-patients in low-risk settings who have received education concerning the transmission and prevention of hepatitis A generally do not need to be excluded from work or school unless they are symptomatic with diarrhea.

In general, non-vaccinated family contacts of cases should receive IG or hepatitis A vaccine from their physician. The Wisconsin Division of Public Health's policy is to supply vaccine at no cost to LHDs for the prophylaxis of family contacts who can be immunized within 14 days of exposure AND who:

1. Attend/live/work in a setting with a high risk of transmission to the public, **OR**
2. Are indigent and cannot afford to obtain it through a physician, **OR**
3. For whatever reason, would not receive prophylaxis unless it was obtained and administered through a public health agency

PREVENTING FURTHER HAV TRANSMISSION: HIGH-RISK SETTINGS

FOOD HANDLERS

A. Response to a Confirmed Case in a Food Handler

The key to effective intervention is timeliness. The importance of confirming the diagnosis cannot be overstated. Once serologic results confirm that a food handler is IgM positive, the following eight steps should be taken:

1. A food handler with confirmed hepatitis A should be **excluded from work according to these guidelines:**
 - a. For the interval extending through day 10 following onset of jaundice.
 - b. For the interval extending through day 14 following onset of symptoms if the food handler does not develop jaundice.
 - c. Individuals who are asymptomatic but are IgM antibody positive should be excluded from work for the interval extending through day 14 following the date of their positive laboratory result. However, if ALT levels are known to be normal, that person may safely return to work. (See discussion of blood chemistry on pages 7-8.)

2. A local public health official, usually the local or regional sanitarian, should **inspect the food establishment**. The inspection should focus on handwashing practices, restroom facilities, the types of foods and beverages that are served (especially those handled by the case-patient), and how these foods and beverages are handled. A list of all employees should be obtained. (Worksheets for food establishment inspection and staff are contained in Appendices 2, 3, and 8.)

The manager should be apprised of the situation and given complete information about the disease, including the mode of transmission, symptoms, and prevention. Provide the employer with the hepatitis A fact sheet (Appendix 7). The importance of employees being excluded from food/beverage handling when ill must be stressed, as well as the need to immediately report any ill employees to the LHD. Inform the manager of any plans to test and immunize employees as discussed below. Consider posting a written notice for employees at the worksite containing pertinent information on the disease, its prevention, dates/times of clinics to be held for employees, and a contact person's name and phone number at the LHD.

3. LHD staff should obtain a very **careful history** of which days and shifts the case-employee worked, exact duties, types of food handled, any use of disposable gloves, as well as an assessment of the employee's hygiene. (See the supplemental questionnaire for high-risk occupations in Appendix 2 and the worksheet for food establishment inspection in Appendix 3.) Ask the patient whether s/he worked while symptomatic with diarrhea; if so, note the dates on which this occurred.

Inquire about tasks performed by the case-employee during his/her infectious period that may have differed from normal job duties. Ascertain if food prepared on one shift is carried over to the next shift or to the next day. Determine if other employees ate food prepared by the index case-employee (this applies in food plant situations as well as dining establishments). Both the case-employee and his/her supervisor need to be interviewed about these points. Ascertain whether the case-employee is working any other high-risk jobs.

4. **Post-exposure prophylaxis and testing are typically recommended for all non-vaccinated food handlers** at the establishment. (If the case-employee has an obvious source of HAV infection outside the food establishment and had no opportunity to expose fellow employees, this step may sometimes be omitted. Consultation with DPH staff is recommended in such cases.) Employees who have previously received the hepatitis A vaccine do not need to receive prophylaxis, nor do they need to be tested.

Concurrent with prophylaxis, obtain blood samples from all non-vaccinated food handlers for HAV serology and ALT levels. Blood can be obtained either prior to or immediately after prophylaxis. Receipt of IG should not interfere with the results of HAV anti-IgM tests, and although the vaccine can cause IgM seroconversion, this is not a concern if blood specimens are obtained the same day that the vaccine is administered. (See discussion of vaccine and IG on pages 12 and 15 respectively.) While being immunized, employees can be questioned individually about a past or present history of illness compatible with hepatitis A.

- a. Do not wait for the test results of these other food handlers before administering prophylaxis to them.
- b. Phone the laboratory to inform them of the samples you will be submitting. (See section on submission of samples to the lab, page 9.)

A sample worksheet designed to track food establishment staff is contained in Appendix 8.

5. The food establishment **employees should be educated** about the disease (symptoms, mode of transmission, prevention). Provide the employees with Hepatitis A Disease Fact Sheets ([P-42054](#) or see Appendix 7).
 - a. Stress the importance of **thorough handwashing** and regular use of a fingernail brush as the most effective measure in preventing transmission of HAV, both in the workplace and at home.
 - b. Teach the employees that IG/vaccine given after an exposure does not absolutely guarantee immunity against hepatitis A, and that if they do develop hepatitis A, they will be highly infectious for several days before they know they are ill.
 - c. Stress the importance of employees not working if they feel ill. Workers must notify the LHD if they develop signs or symptoms compatible with hepatitis A.
 - d. Strongly consider requiring the use of **disposable gloves** by employees handling cold foods for a period of 50 days from the end of the transmission risk period (i.e., from the last day the index employee worked while s/he was infectious).

Employees should be educated about the **proper use of gloves**:

- Gloves should be changed if a tear is noticed;
 - Glove use is not a substitute for good handwashing practices—hands should be washed prior to using or replacing gloves;
 - A fresh pair of gloves must be worn after each employee use of the restroom or whenever gloves have been used to touch items other than food or clean utensils used to directly prepare food.
6. Once the test results of the employees are known, interpret the results as explained on page 7. **Any employee who is anti-HAV IgM positive should be excluded from work** using the same guidelines as for the index case in point #1 of this section. An employee with elevated liver enzymes or who is known to be total anti-HAV positive should be immediately excluded from work until his/her IgM anti-HAV status is precisely known.
 7. The manager of the establishment should **monitor employees daily** for the presence of signs and symptoms of hepatitis A (anorexia, nausea, vomiting, diarrhea, abdominal pain, fever and jaundice). If specific symptoms develop, a supervisor should immediately exclude the person from work, contact the LHD, and refer the person to a physician for diagnosis. This monitoring should continue through an interval extending 50 days from the end of the transmission risk period. Monitoring can be performed at the start of each shift by reminding employees of the risk of HAV transmission and the signs and symptoms of the disease. In addition, staff who call in sick should be questioned to determine if their illness is compatible with hepatitis A.
 8. A local health officer or sanitarian should visit the establishment during the transmission risk period to **confirm compliance with all recommended control measures**.

If it becomes apparent that HAV transmission from the index employee to co-workers or to patrons has occurred, retesting of all food handlers may be indicated. Contact DPH regarding the advisability and timing of subsequent sample collections if such a circumstance arises.

When addressing hepatitis A in a food-handling establishment that is a franchise operation, it is usually beneficial to notify the franchise headquarters early in the course of the investigation.

B. Assessing the likelihood of transmission to the patrons of a food establishment:

Whenever a case of hepatitis A occurs in a food handler, a determination should be made whether there is a sufficient risk of HAV transmission to the public to warrant notification of the establishment's patrons. This determination is ultimately made at the local level, but should be made in consultation with DPH staff. The CDC and DPH recommend that prophylaxis of patrons of a food establishment be considered **if all** the following three conditions are met:

1. The infected food handler is assessed to have **less than adequate personal hygiene, OR worked while symptomatic with diarrhea.**

Hygiene may be subjectively judged by evaluating:

- Personal cleanliness, especially hands and fingernails
 - Having patient describe handwashing practices (when? after breaks? after bowel movements? how long a scrub? how hands are dried?)
 - Personal recall of handwashing facilities (color of soap, hot/cold water availability, location of towel dispenser, etc.)
 - Availability of toilet paper, disposable towels, soap, and water in restroom facilities
 - History of diarrhea while working (increases likelihood of fecal contamination)
 - Manager's or co-workers' impressions of case-patient's hygiene
2. The individual handled **high-risk foods** with bare hands. High-risk foods are items that are served raw or are handled after being cooked. (HAV is inactivated by a temperature of 190°F for four minutes.) Examples of high-risk foods include, but are not limited to:
 - Lettuce, tomatoes, etc., on sandwiches that receive no further heating
 - Salads, vegetables, and fruits at salad bars
 - Sliced cooked foods, such as ham, which may be contaminated during boning or slicing procedures
 - Cold cuts
 - Cake icing
 - Ice that is scooped by hand or with a contaminated scoop
 - Garnishes for drinks (olives, lime wedges, etc.)
 3. It has been **14 days or less** since these potentially contaminated foods were served. If the food handler is judged to have poor personal hygiene and has handled high-risk foods, unvaccinated persons who have eaten these foods within 14 days should receive IG or the hepatitis A vaccine. (Prophylaxis is not effective after this time).

If these three criteria are met and the decision is made to "go public," notification generally occurs by **issuing a news release** to appropriate media sources. It is crucial that such a news release contain very specific information that will accurately convey to the public the nature of their risk, and a suggested course of action designed to minimize their risk and reduce the chances of further transmission of hepatitis A.

Generally, if a news release is issued in a timely fashion and advises patrons to receive prophylaxis, the LHD will hold a clinic to offer immunizations to these individuals. However, the statement should also urge patrons to seek treatment from their personal providers. **Notification of major medical providers in the area** by the LHD is necessary to ensure that physicians have adequate information to manage patient care and respond appropriately to patient inquiries. The LHD investigators should consider the potential for exposure of groups of people from other parts of the state or from out of state and should notify DPH if such a potential exists.

For a typical situation involving a food handler who is judged likely to have transmitted HAV to patrons, the following elements should be incorporated into a news release:

- The specific dates and times when patrons may have been exposed.
- The specific food item(s) contaminated by the food handler.
- A clear statement indicating who is an appropriate candidate for prophylaxis.
- Information about the protective effects of IG/vaccine.
- Where and when to obtain IG/vaccine (e.g., private medical providers, public immunization clinics if these are to be held).
- The fact that prophylaxis is effective only if administered within 14 days of exposure.
- Mechanism of HAV transmission, incubation period, clinical signs and symptoms, and the potential for asymptomatic infection.
- The importance of hygiene in preventing further HAV transmission.
- The need to contact one's physician if signs and symptoms compatible with hepatitis A are noted.

A sample news release can be found in Appendix 4.

Situations may arise in which an infected food handler is thought to have posed a significant risk to patrons, but more than 14 days have elapsed since the exposure occurred. The advisability of patron notification in such circumstances is not clear cut, and should be discussed with DPH staff. Issues to be considered here include whether the advantages (e.g., the public's right to know, recommendations for enhanced personal hygiene, an increased index of suspicion of hepatitis A in persons with suggestive signs/symptoms) outweigh the disadvantages (e.g., damage to the establishment's business, generating public anxiety with no specific intervention measures offered).

C. Management of food handlers who are contacts of known cases:

See general discussion of case-contacts who work in high risk occupations on page 32.

CHILD DAY CARE

A. Response to a Confirmed Case in a Child Day Care Setting

Child day care settings (CDCS) include day care centers and home day care (licensed or unlicensed). Hepatitis A virus transmission in a CDCS can be insidious because children in this age group are often asymptomatic when infected. The virus may spread very easily when infected children are still in diapers. For these reasons, hepatitis A vaccination is strongly recommended for day care attendees. (See page 14.)

Whenever a case of hepatitis A in a child day care attendee or provider is reported, **one's first response should be to confirm the diagnosis**; i.e., ensure the "case" is positive for IgM anti-HAV. (See page 7 for interpretation of serology.) Once the case-patient is confirmed, the following actions should be taken by the LHD.

1. **A child day care attendee or provider with confirmed hepatitis A should be excluded from the CDCS according to these guidelines:**
 - a. For a period extending through day 10 following onset of jaundice
 - b. For a period extending through day 14 following onset of symptoms if s/he does not develop jaundice
 - c. Individuals who are asymptomatic but are IgM antibody positive should be excluded for a period extending through day 14 following the date the positive specimen was obtained.

However, if ALT levels are known to be normal, that person may safely return to the CDCS. (See discussion of blood chemistry, pages 7-8.)

- d. If all child day care staff and attendees have received prophylaxis or have a prior history of hepatitis A vaccination (see item #5 below), the case-patient may return to the facility at any time.

Parental education and LHD oversight is necessary to ensure that an excluded child is not simply moved to another CDCS.

2. Determine if the index case-patient attended the child day care facility while **symptomatic with diarrhea** and if the case-patient is **toilet trained**.
3. **Visit**, or otherwise become familiar with, the CDCS to determine:
 - a. The number of attendees and staff.
 - b. Age of attendees.
 - c. Whether attendees of different age groups are cohorted and whether staff members or attendees "float" between rooms and age groups; note presence of diapered children within cohorts.
 - d. The physical layout of the child day care facility, paying particular attention to hand washing and diaper changing facilities, and areas where food preparation occurs (e.g., proximity of handwashing sink and food prep areas to diaper changing tables; disinfection of changing tables; availability of nailbrushes, soap, and disposable towels at staff handwashing sinks).
 - e. How meals and snacks are prepared and served by the staff, and whether children have an opportunity to handle food that might be consumed by others both within and outside of their cohort group (this includes treats brought from home). Is food preparation performed by unvaccinated staff who also provide "hands-on" childcare?
4. **Educate child day care staff** regarding hepatitis A and its prevention and control. Provide them with the Hepatitis A Disease Fact Sheet ([P-42054](#), Appendix 7).
 - a. Stress the importance of thorough **handwashing** as the most effective measure in preventing transmission of HAV, both in the CDCS and at home.
 - b. Because HAV can survive on environmental surfaces for weeks, **environmental hygiene** is also important. Soiled surfaces (e.g., diaper changing tables) and play objects should be **thoroughly** cleaned with soap and water, disinfected with a 1:16 solution of household bleach (1 cup bleach to 1 gallon water), and then rinsed with water. The bleach solution should be kept capped when not in use and should be made up fresh daily.
 - c. Set up a mechanism with the child day care provider for recognition and **prompt reporting** of any new suspect hepatitis A cases to the LHD.
5. The LHD should consider **prophylaxis of unvaccinated staff/attendees** according to the following general guidelines:
 - a. When a case occurs in an **enrolled child**:
 - (1) **For day care facilities with all children older than two years and who are toilet trained:** Vaccine or IG is recommended for all unvaccinated staff in contact with the index case-patient. Hepatitis A vaccine should be given to unimmunized children in the same room as the index case.

Certain circumstances, related to factors mentioned in points 2 and 3 above, may warrant extending prophylaxis to other attendees and staff. If in doubt about the appropriateness of prophylaxis, consider consultation with DPH staff.

(2) For facilities with children not yet toilet trained:

In such a facility, when one case of hepatitis A occurs in a day care attendee, or in the household contacts of two or more of the enrolled children, prophylaxis is usually recommended for all staff and children in the facility. (The use of vaccine versus IG is age-dependent, see page 14.) During the six weeks after the last case is identified, all unimmunized new employees and attendees > 1 year old should also receive vaccine. Note that if strict cohorting of children and staff is the norm for a particular day care center, it may be possible to limit prophylaxis to a particular at-risk cohort.

(3) If recognition of hepatitis A is delayed by three or more weeks from the onset of the index case, or if the illness has occurred in three or more unrelated households, prophylaxis is usually recommended for all unvaccinated staff and children in the facility, and for household contacts of all enrolled children (or more conservatively, for household contacts of attendees who are not toilet trained). During the six weeks after the last case is identified, all new employees and attendees > 1 year old should also receive vaccine unless they have a record of prior immunization.

- b. When a case occurs in a **day care provider**, determine if the case-patient has a known source for his/her infection that is not connected with the day care setting (e.g., a history of foreign travel to a hepatitis A endemic area). Determining the source of a patient's HAV infection is discussed on page 19.
- (1) If no other source is plausible, assume that the case-employee acquired the HAV infection from an unrecognized case of hepatitis A in an attendee of the day care. In such a situation, the above recommendations in 5.a.(3) regarding delayed case recognition should apply.
 - (2) If it is apparent that the case-employee acquired HAV infection outside of the day care setting, prophylaxis is recommended for those unvaccinated attendees with whom the index case-employee has had direct or high-risk contact and for any attendees and staff who may have eaten food prepared or handled by the case-employee during his/her infectious period.

6. **Inform parents of attendees** about the situation at the facility. Educate them about the symptoms, mode of transmission, and prevention of hepatitis A; inform parents of any planned course of action such as an IG/vaccine administration clinic. This is usually accomplished with a letter and the Hepatitis A Disease Fact Sheet ([P-42054](#)). Ask parents to inform the LHD if other family members are ill or develop illness compatible with hepatitis A.

An example of a parental notification letter can be found in Appendix 5.

B. Management of child day care attendees who are contacts of known cases:

It may be reasonable to exclude an unvaccinated child from a CDCS who is a close contact of a confirmed hepatitis A case, especially if that case-person is the primary caregiver and the child is still in diapers. Unfortunately, the period of exclusion would need to be quite lengthy—seven weeks after exposure to the index case. Consider testing the child for hepatitis A (both serology and ALT), especially if there is no obvious alternative source for the recognized case. Such testing will rule in or rule out the possibility that the child was actually the source for the recognized case and thus is now immune. However, if the child is IgM positive, it would mean that there has been delayed recognition of a case in the day care and the recommendations in section 5.a.(3) above would likely apply. See also the general discussion of case contacts in high-risk settings on page 32.

Response to a Confirmed Case in a School Setting

A. Elementary/Middle/High Schools

Typically, classroom exposure in these grades to an isolated case of hepatitis A does not pose a significant risk of infection to other students and teachers, and prophylaxis is not routinely indicated for classroom contacts. However, prophylaxis should be considered for close friends of a school-age child if they spend considerable time at each other's homes and/or share food items within or outside the school setting. Unusual circumstances could warrant classroom-wide prophylaxis if, for example, the index case-person experienced a fecal accident at school, or handled food thought to be high risk, which was consumed by classmates. (See page 24 for a definition of high-risk foods.)

In general, students with hepatitis A should be excluded from school through day 7 following onset of jaundice or through day 14 following onset of symptoms if s/he does not develop jaundice. If this exclusion period is burdensome for a case-patient in this setting, the LHD may consider permitting an earlier return to school provided: (1) the patient does not have diarrhea, and (2) there is some assurance that the patient will practice good hygiene during the infectious period (e.g., education about proper hand-washing, daily checks by the school nurse, etc.) This depends, to a large extent, on the age and maturity of the child.

B. Kindergartens

The potential for hepatitis A transmission in kindergartens falls somewhere between that of elementary schools and day care centers. An assessment of the need for prophylaxis of students and staff must be done on a case-by-case basis. The investigator should ascertain the case-patient's hygiene, and whether potentially risky activities occurred within the kindergarten during the time the index case would have been infectious. Examples of this might include an infected pupil handing out food items to classmates, handling food in a common container that is later shared by other children, or soiling of the premises from a fecal accident. A history of such potentially risky activities will usually warrant prophylaxis for non-immune classroom contacts.

C. Head Start Programs

Cases of hepatitis A in Head Start Programs should be handled as described above for child day care settings.

Response to a Confirmed Case in an Institutional Setting

A. Hospitals

1. Hepatitis A in hospitalized patients

A case of hepatitis A in a hospitalized patient does not routinely call for prophylaxis of hospital personnel or to roommates of the case-patient. However, once the diagnosis is confirmed, prophylaxis of unvaccinated contacts may be indicated under certain circumstances. For example, if the case-patient could not or did not routinely wash hands after bowel movements and contaminated the environment with infective material; or if soiling of the environment occurred due to fecal accidents, diaper leakage, etc., prophylaxis should be considered for staff and/or other hospitalized patients who might have had contact with infective material. Therefore, information about the case-patient, such as fecal continence and visibly soiled hands or bed linens, should be gathered by the investigator in order to make a determination regarding the need for prophylaxis. Such information must be correlated with knowledge of when the patient may have been infectious and the fact that prophylaxis is only effective if given within 14 days of exposure. (See page 7 for period of HAV shedding.)

Standard infection control precautions should be sufficient to prevent the transmission of HAV in a hospital setting. These precautions can be summarized as follows: *[Excerpted from Hospital Infections, 1986. JV Bennett and PS Brachman eds. Little, Brown and Co.]*

- a. A private room is indicated if the patient cannot or will not wash hands after touching infective material, contaminates the environment with infective material, or shares contaminated articles with other patients. When a private room is not available, a cubicle can be used, or an "isolation area" can be designated by the use of partitions and tape on the floor. Instruction cards can be posted to inform personnel and visitors about necessary isolation precautions such as gowns and gloves.
- b. Masks are not indicated.
- c. Gowns are indicated if soiling is likely.
- d. Gloves are indicated for touching infective material.
- e. Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient.
- f. Articles contaminated with infective material should be discarded or bagged and labeled before being sent for decontamination and reprocessing.

Although there is a brief period of viremia during the late incubation period of HAV infection, hepatitis A has not been reported to occur after inadvertent needle sticks.

2. Hepatitis A in **hospital staff**

In general, the risk of HAV transmission from hospital personnel to patients or to other staff is low, and such a scenario would not routinely call for prophylaxis. However, this risk might be appreciable enough to warrant patient prophylaxis on a limited basis if the case employee's job responsibilities included feeding patients or assisting patients with dental/denture hygiene while s/he was infectious. Factors such as the use of gloves and the handwashing practices of the infected staff person should be considered, as well as whether the employee worked while symptomatic with diarrhea. Hospital personnel who consumed foods prepared or handled by the case employee (e.g., at an office "potluck") while s/he was infectious should also be considered for prophylaxis.

Health care workers with hepatitis A should be excluded from "hands-on" patient care for an interval extending through day 10 following onset of jaundice or day 14 following onset of symptoms if s/he does not develop jaundice. If a hospital food service employee develops hepatitis A, the guidelines listed above for infected food handlers apply (see page 21).

B. Nursing Homes

Fortunately, hepatitis A is not common among the elderly due to a relatively high proportion of immune individuals. Therefore, it is especially important to serologically confirm a diagnosis of HAV infection in a nursing home resident (see information on possible false positive serology results on page 9). When a case does occur at such a facility, either in a resident or a staff person, the potential for transmission of hepatitis A to non-immune persons is likely to be greater than in a typical hospital setting because of the nature of certain types of care given at nursing homes (e.g., feeding, providing oral/denture hygiene, cleaning diapered residents). **The guidelines listed above for hospitals apply equally to long-term care facilities.** Visitors of HAV-infected residents should be notified regarding their risk of acquiring the disease.

C. Facilities Serving Individuals With Developmental Disabilities

In general, the potential for HAV transmission in facilities (residential or daily rehabilitative) serving individuals with developmental disabilities has been found to be high, with one study reporting that up to 80% of susceptible institutionalized patients may contract HAV infection within three years of admission. Furthermore, unless the case-patient becomes obviously icteric, case recognition within these facilities may be difficult because of limited verbal abilities of some of the clients/residents. For these reasons, the occurrence of hepatitis A in such facilities should provoke a quick, aggressive response. Vaccination of non-immune, newly-admitted residents and staff against hepatitis A is strongly recommended.

1. When investigating a report of hepatitis A **in a client/resident** of a facility serving individuals with developmental disabilities, the LHD should work with the facility's infection control practitioner or director of nursing to ensure collection of the following information:
 - a. Confirm the diagnosis (i.e., make certain the case-patient is definitely anti-HAV IgM positive) and obtain ALT levels.
 - b. Determine facts about the case-patient that impact on the potential for HAV transmission, e.g., profoundness of disability, mobility of resident, fecal continence, level of hygiene, coprophilic behavior (an abnormal interest in feces).
 - c. Determine which other individuals had contact with the case-patient during the infectious period and the nature of that contact. To do this, one must ascertain the physical layout of the facility; which rooms/units/wings the case-patient may have frequented; staffing patterns at the facility (staff limited to certain units versus floating staff); presence of persons who may have visited the case-patient (both other clients of the facility and outside visitors); and any extramural schooling, vocational training, or supportive employment programs the case-patient attended during his/her infectious period. Follow-up within such extramural programs is an important part of the LHD's response to HAV infection in developmentally disabled persons.

After the above factors are determined, prophylaxis should be provided to unvaccinated persons who had potentially risky contact with the case-patient within the past 14 days. The liberal use of the hepatitis A vaccine and/or IG is strongly recommended in such a setting. If there is evidence that more than one generation of hepatitis A has occurred in the facility, consideration should be given to facility-wide use of the hepatitis A vaccine, especially if the case-patients are not limited to a single unit/floor/wing of the facility. Note that some facilities may have records of their clients' HAV immune status or hepatitis A vaccination history. If this is the case, considerable time, effort, and money can be saved by knowing which clients/residents are immune and therefore do not require prophylaxis. Ambulatory clients who have confirmed or suspected cases of hepatitis A will likely need to be restricted to some degree during their infectious period in a manner that will minimize the potential for spread of HAV.

2. If a case of hepatitis A occurs in a **staff member** at a facility serving individuals with developmental disabilities, public health interventions depend on an assessment of the case-employee's hygiene and the type of job duties performed. Ascertain whether the case-employee's job responsibilities included high-risk activities such as feeding clients of the facility or assisting clients with oral hygiene. Assess the case-employee's personal hygiene by interviewing the patient and his/her supervisor about the index employee's handwashing practices and the use of disposable gloves during activities that could potentially transmit HAV. Determine whether the employee worked while symptomatic with diarrhea.

Non-immune clients of the facility who have had potentially risky contact with the case-employee should be strongly considered for prophylaxis if there is any suggestion that the case-employee's hygiene was less than adequate or if s/he worked while symptomatic with diarrhea. In the event that a case-employee has no apparent source of HAV infection, consider the possibility that s/he acquired the infection from a client of the facility. In such situations, a heightened index of suspicion for hepatitis A among facility clients is advisable.

Management of Contacts of Cases

The Question of Exclusion in High-Risk Settings

Whether to restrict the activities of an individual who does not currently have hepatitis, but has been recently exposed to HAV, can be a difficult decision. Consider these scenarios:

- *A confirmed case of hepatitis A in a 2-year-old child has been reported to you. The child's mother works in a restaurant where she does bulk food preparation for the salad bar. Should this woman be excluded from work? If yes, for how long?*
- *A physician reports a confirmed case of hepatitis A in a young woman who has a child attending a day care center. Should the child be held out of the facility? Should the child be tested?*

Such decisions are difficult because exclusion of contacts is often financially burdensome to the individual and his/her family. In addition, there are no established guidelines for restricting the activities of contacts. Furthermore, it is impossible to determine retrospectively that an aggressive exclusion policy had been necessary and correct in a specific situation. Only if one decides not to exclude a contact, and this decision subsequently results in more cases of hepatitis A, can you know in retrospect that your policy was not aggressive enough.

Determining how long to exclude a risky contact is likewise difficult. Within the first two weeks of the index case's onset, there is a possibility that both the case-person and the contact may have had a common exposure. For approximately the next 35-40 days, it is possible that the contact may become part of the second generation of hepatitis A cases, having been infected by the index case-person. Thus, the period during which the contact person may develop hepatitis A extends approximately 50 days from the date of contact with the index case-patient.

With these difficulties in mind, public health personnel should **consider the following points** when deciding whether to exclude a contact of a case of hepatitis A from a high-risk setting:

- A. Is the contact person **susceptible or immune** to HAV infection?
- B. Did the contact **receive prophylaxis in a timely fashion?** (i.e., within 14 days of exposure)
The answer to this question may not be straightforward if contact with the index case was ongoing over a period of time. This is frequently the situation within a household.

Consider the hypothetical mother/salad bar worker mentioned above. The 2-year-old had onset May 1, saw his pediatrician May 4, and hepatitis A was confirmed on May 9. The mother then received hepatitis A vaccine prophylaxis on May 11.

APRIL						
S	M	T	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

MAY						
S	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Although it was appropriate to give the vaccine, it is important to realize that the child had been infectious since about April 21 (10 days prior to onset). Prophylaxis of the mother would not be efficacious if she had been exposed to HAV prior to about April 27 (14 days from date of vaccine administration).

Unless confirmation of the case and prophylaxis of family contacts are accomplished quickly, the timeliness (and therefore the efficacy) of prophylaxis of family contacts of cases is often questionable.

- C. What is the **nature of this individual's contact** with the index case? How strong is the possibility of HAV transmission to the contact?
- D. **Can you depend on the contact-person** to follow instructions regarding hygiene? Is the contact-person incontinent of stool or a diapered child?
- E. Can the contact-person be **moved to a low-risk job** at his/her workplace? (e.g., temporarily move the salad bar worker to table bussing or cashier work.) If this is possible, it would be much less financially burdensome to the employee than total exclusion. It also may have the added benefit of keeping the contact-person from finding new employment at another food establishment without the LHD's knowledge. The LHD and sanitarian can try to work with the employer to keep the employee in pay status at a low-risk job to avoid this.
- F. How serious would be the **consequences of failure to exclude** if the contact-person were to subsequently develop hepatitis A? Consider the worst-case scenario.
- G. Can a responsible party **monitor the contact during the risk period** by checking periodically on compliance with hygiene measures or the proper usage of disposable gloves in a food establishment setting?
Remember, by the time liver transaminases are elevated as a result of acute hepatitis A or the anti-HAV IgM becomes positive, the patient has already been infectious for several days. Thus, attempts to monitor the contact-person serologically are seldom useful.

After considering all of these factors, local public health personnel may temporarily exclude a contact of a case if it is their judgment that the contact is likely to develop hepatitis A and would subsequently pose a significant risk to the public health. During an outbreak of hepatitis A, more stringent measures may be applied in an effort to bring the outbreak under control.

Additional Suggestions for Local Health Departments Regarding Public IG or Vaccine Administration Clinics

- A. Ensure that all appropriate notifications about the public clinic have been made to interested parties. These include area health care providers, city/county officials, and DPH central and regional offices.
- B. Ensure that sufficient supplies of IG and/or vaccine, needles and syringes, alcohol swabs, consent forms, etc. are on hand for the clinic.
 - 1. IG should be refrigerated, but never frozen.
 - 2. The dosage of IG for hepatitis A prophylaxis is 0.1 ml/kg.
 - 3. IG formulated for IM administration should be administered deep in a large muscle mass, usually in the gluteal region. The recommended needle is 20-22 gauge, 1 to 1.5 inch.
 - 4. The current preparation of IG for intramuscular injection does not contain a preservative.
- C. Issuing a news release about a hepatitis A outbreak/exposure situation and offering a public clinic will result in a very large number of phone calls to the LHD. Prepare for this by assigning a staff member to handle all the routine calls about clinic hours, location, etc. If possible, maintain a phone line that will not get tied up by these calls in the event that providers, staff from other LHDs, or DPH need to contact you. Give this "emergency" phone number to DPH.
- D. Choose a site for the public clinic carefully. Consider factors such as accessibility, size, comfort (an extended waiting period is not uncommon), and the need for privacy at the actual injection administration stations.
- E. Consider giving each client upon arrival: (1) a number that will be called when it is their turn, (2) a hepatitis A fact sheet, (3) the consent form or the hepatitis A vaccine information statement, and (4) an information sheet detailing the risk factors necessitating IG or vaccine administration (e.g., ensuring that the client has not previously been vaccinated, and identifying the specific times, dates, and food items that would put a patron at risk from an infected foodhandler). This information sheet can help reduce the inappropriate use of IG and inform the client immediately whether s/he is a candidate for prophylaxis.
- F. Delineate staff duties clearly prior to holding the clinic. In addition to the personnel performing the actual immunizations, specific staff persons should be assigned to control traffic flow both at the entrance and at the immunization stations, pass out the information detailed above, call patient numbers, serve as clinic coordinator, make technical decisions, and respond to any media inquiries/interviews.
- G. It is usually beneficial to hold a debriefing the next day with clinic staff to discuss difficulties encountered during the clinic, and ways to improve the procedure in the future. A call to update DPH staff is appreciated.

APPENDIX 1: Worksheet for Confirmed and Suspected Cases

[Click here for Fillable form](#)

DEPARTMENT OF HEALTH SERVICES
Division of Public Health
F-02241 (03/2018)

STATE OF WISCONSIN
Bureau of Communicable Diseases

HEPATITIS A WORKSHEET CONFIRMED AND SUSPECTED CASES

INSTRUCTIONS: Enter responses in WEDSS or fax completed worksheet to the Bureau of Communicable Diseases at (608) 261-4976 or submit with the Acute & Communicable Disease Case Report, [F-44151](#).

PATIENT INFORMATION

Patient Name (*last, first, middle initial*)

Current Age	Date of Birth	Sex <input type="checkbox"/> Male <input type="checkbox"/> Female
-------------	---------------	--

Street Address

City	Zip Code	County
------	----------	--------

Telephone: Home	Work	Cell
-----------------	------	------

Race White Black Native American/Native Alaskan Asian (specify):
 Native Hawaiian/Other Pacific Islander Other:

Ethnicity Hispanic Non-Hispanic

*Occupation (Specify if multiple jobs)	Last day worked or attended school or day care
--	--

* Note: If patient is a food-handler, childcare provider, health care worker, or works with the developmentally disabled, fill out the high-risk occupation questionnaire in addition to this one.

Employer/School/Daycare - Name If School specify grade

Address

Patient's Physician Name	Address
--------------------------	---------

Hep A Vaccination History None Vx 1 date: Vx2 date:

SYMPTOM AND SIGNS HISTORY

Onset date of first symptoms: _____ or Date of onset of jaundice _____

Symptoms or signs (check all that apply)

Fever Nausea Diarrhea
 Fatigue Dark urine Jaundice
 Other _____

LABORATORY RESULTS

Date blood drawn for hepatitis testing	HAV serology results (check one)
Liver enzyme values: SGPT(ALT) _____ SGOT (AST) _____ Other test(s) _____	<input type="checkbox"/> Total HAV positive, IgM positive <input type="checkbox"/> Total HAV positive, IgM negative <input type="checkbox"/> Total HAV antibody negative <input type="checkbox"/> Pending <input type="checkbox"/> Not done / unknown

EXPOSURE HISTORY

Use a calendar to establish the dates 50 days and 15 days prior to onset of first symptoms. This establishes the time-period during which the patient became infected.

Date 50 days prior to onset:

Date 15 days prior to onset:

Use this **time interval above** to answer the following questions. It may be helpful for the patient to consult his/her personal or business calendar to assist recall.

If the patient cannot recall specific meals/drinks or items purchased at restaurants/bars, grocery stores, or bakery visits, ask which establishments they would have been most likely to frequent. Attach additional pages if necessary.

Restaurants and bars (where foods were eaten or beverages consumed during this time-period)

Name	City	Date(s)	Food(s) Eaten / Drink(s) Consumed

Grocery store or bakeries (where food was purchased during this time-period)

Name	City	Date(s)	Items purchased

Group Meals (Potlucks, dinner parties, meals on wheels, etc. attended during this time-period)

Type of function	City	Date(s)	Describe what was consumed

During this time, did patient consume raw shellfish? Yes No

During this time, did patient travel outside of U.S.A.

Yes No If Yes, specify place and date(s)

Did anyone in patient's household travel outside of U.S.A. before patient's onset?

Yes No If Yes, specify place and date(s)

If patient traveled, did they receive IG or hepatitis A vaccine prior to travel? Yes No Date received:

During this time, did patient travel outside of Wisconsin?

Yes No If Yes, specify place and date(s)

EXPOSURE HISTORY (continued)

During this period, did patient have contact with other confirmed/suspected cases of hepatitis A, or with other persons who were sick with similar symptoms? Yes No

If yes, list names, date(s) of contact, and nature of contact (e.g. family member, dinner party, social gathering, sexual partner, etc.)

Name	Date(s)	Nature of contact

During this period, was the patient an attendee or employee of a day care center or preschool? Yes No

If yes, name and location of the day care/preschool(s)

Name	Location	Date last attended/worked	Day care or Preschool

During this period, did the patient have contact with young children (< 6 years of age)? Yes No

If yes, list name and address of child(ren), and day care attended below.

Name(s) of Child(ren)	Address	Date of contact	Name of day care attended

What is the source of patient's drinking water? Private well Municipal water supply

During this period, did the patient receive blood or blood products? Yes No

During this period, did the patient use illegal drugs including marijuana? Yes No If yes, describe and specify injecting or non-injecting drug use.

For males only

During this period, have you had sexual contact with another man? Yes No

TRANSMISSION

Use a calendar to establish the dates 14 days prior to onset of symptoms and 10 days after onset. This establishes the time-period during which the patient been infectious to others.

Date 14 days prior to onset:

Date 10 days after onset:

During this infectious period, did patient prepare or handle food, consumed at any gatherings by people outside of the patient's household (e.g. school parties, potlucks; bringing food to worksite, dinner parties etc.)?

Yes No If yes, please list below.

Occasion	Location	Food(s) handled	Date(s)

List all of the patient's household contacts, work contacts, and other close or intimate contacts, that the patient was with during the infectious period. Indicate whether these contacts work in food service, work/attend day care or pre-school, or work in health care.

In the last column, provide the date that contact received immune globulin or hepatitis A vaccine. Indicate if none given

Name of Contact	Age	Food Service	Day care/ Pre-school	Health care	IG/Vx Date given
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None

For these close contacts above who attend or work in these high-risk environments listed above, list the name and location of the food service, day care/preschool, or health care.

Name of Food Service/Day care/Pre-school or Health Care	Location

Name/Agency of Interviewer	Date of Interview
----------------------------	-------------------

Did the patient have diarrhea on any of the days worked during the infectious period?

Yes, No If yes, please specify the date(s) worked with diarrhea. _____

Ask patient to describe his/her handwashing technique in detail.

Does patient wash their hands with soap after having bowel movements?

Never Sometimes Usually Always

Does patient wash their hands with soap before beginning work?

Never Sometimes Usually Always

Ask patient to describe handwashing and toilet facilities he/she uses at work (location of sinks, availability of soap, type of soap, towels, toilet paper, and sink location. Check all that apply.

Soap	Towels	Toilet paper	Sink location
<input type="checkbox"/> Hands free dispenser liquid	<input type="checkbox"/> Paper	<input type="checkbox"/> Covered dispenser	<input type="checkbox"/> In general toilet area
<input type="checkbox"/> Pump dispenser liquid	<input type="checkbox"/> Cloth dispenser	<input type="checkbox"/> Uncovered dispenser	<input type="checkbox"/> Outside of toilet area/stall
<input type="checkbox"/> Bar soap	<input type="checkbox"/> Hot air dryer	<input type="checkbox"/> Loose on top of tank	<input type="checkbox"/> Not in bathroom at all

Any additional comments:

FOOD-HANDLERS ONLY

Ask patient to describe in general his/her food handling activities, during his/her infectious period. Check any of the following job duties that apply.

<input type="checkbox"/>	Prepared salads or did bulk prep for salads
<input type="checkbox"/>	Prepared cold sandwiches
<input type="checkbox"/>	Prepared or handled other uncooked foods (cold cuts, fruits and vegetables, cake/pastry icing, etc.)
<input type="checkbox"/>	Handled garnishes for food and drinks (e.g. lime wedge, parsley, olives, etc.)
<input type="checkbox"/>	Handled ice without utensils (i.e. with bare hands)
<input type="checkbox"/>	Handled any other food that was not subsequently cooked before being served Specify

If the patient handled any of the above items, did he/she wear gloves?

Always Usually Occasionally Never

Did co-workers eat food handled by the patient?

Yes No

Specify any other food-related duties, including deviations from routine job duties, during infectious period:

DAY CARE WORKERS – ONLY

Number of children at day care where patient works:	Range of age of children who attend day care: to
Are children separated and cared for by age groups? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, what are the age groups:
During the patient's infectious period which age group did he/she provide care for:	How many staff work at the same day care center where the patient works?

During the infectious period did the patient prepare/handout food for the children or staff?
 Yes No If yes, specify the food(s) and date(s)

Food(s) prepared/handed out	Date(s)	Children	Staff
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

HEALTH CARE WORKERS – ONLY

Please check any of the following work activities the case-patient performed **while not wearing gloves** during the infectious period:

Passed medications Performed oral hygiene for patients Fed patients

Handled food or ice that consumed by patients and/or co-workers.

Specify below food handled, and the date consumed.

Food(s) prepared	Date(s) consumed	Co-worker(s)	Patient(s)
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Does case-patient wash hands before caring for each patient? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Occasionally <input type="checkbox"/> Never	Does case-patient wear gloves when caring for patients? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Occasionally <input type="checkbox"/> Never
---	--

Print Name of interviewer Date of interview

- g) What is supervisor's overall impression of employee's hygiene? Good
 Adequate
 Possibly inadequate
 Clearly inadequate

ASSESSMENT OF EMPLOYEE HANDWASHING AND TOILET FACILITIES
From direct inspection of the facility and interviews with staff, please ascertain:

- a) Accessibility of handwashing facilities for food handlers Adequate Inadequate
- b) Availability of soap Always present
 Usually present
 Occasionally present
 Never or nearly never present
- c) Availability of toilet tissue Always present
 Usually present
 Occasionally present
 Never or nearly never present
- d) Hand-drying provisions Single use disposable ↔ Always available? Y N
 Single use cloth roll ↔ Clean roll always present? Y N
 Multiple use cloth towel
 Hot air dryer
 None
- e) Faucet type in handwashing sink Mixing valve or combination faucet
 Self-closing (metering) faucet
 Other (describe)

- If self-closing faucet used, is it functioning properly (i.e. minimum 15 second flow)? Y N

- Inspector's overall impression of handwashing and toilet facilities Good
 Adequate
 Possibly inadequate
 Clearly inadequate

Please note below any other factors which might have had an impact on case-employee's hygiene:

Name of Inspector _____

Date of Inspection ____/____/____

APPENDIX 4: Sample Media Release, Hepatitis A Infected Food Handler

FOR IMMEDIATE RELEASE

{Date}

- HEPATITIS A ALERT -

Today, the {name of public health agency} announced that a case of hepatitis A occurred in a food worker employed at {restaurant name & location}.

Health officials warn that people who ate {implicated risky food item(s)} at this restaurant between the dates of {dates/times when risk of transmission occurred} may be at risk for developing hepatitis A. Persons who ate these food item(s) on these dates should receive an immunization if their exposure occurred within the past 14 days. These individuals should contact their physician immediately and arrange to receive the injection. (if you plan on holding a clinic, include this next sentence:) Alternately, persons may obtain the injection free of charge through {local public health agency name} {Provide place, date, and times for immunization clinics.} The preventive immunization should provide protection against infection with hepatitis A virus if given within 14 days of exposure. Persons who have previously received the hepatitis A vaccine are protected and do not need to receive an additional injection.

The early signs and symptoms of hepatitis A typically appear three to six weeks after exposure and commonly include mild fever, loss of appetite, nausea, vomiting, diarrhea, profound fatigue, pain in the upper right side of the abdomen, dark urine, and jaundice (yellowness of eyes or skin).

The disease varies in severity, with mild cases lasting two weeks or less, and more severe cases lasting six weeks or longer. Some individuals, especially children, may not develop jaundice, and may have an illness so mild that it can go unnoticed. However, even mildly ill persons can still be highly infectious. Persons with illness suggestive of hepatitis should consult a physician even if symptoms are mild.

Hepatitis A virus is spread as a result of fecal contamination (fecal-oral route) and may be spread from person to person through close contact or through food handling. The virus is commonly spread by contaminated food or beverages. Persons are also at increased risk of acquiring hepatitis A if they have been in close and continuous contact with an infected individual, particularly in a household or day care setting.

Persons who ate {implicated risky food item(s)} at {name of restaurant} between {dates} are urged to be particularly thorough in handwashing after toileting and prior to food preparation to avoid any potential further spread of disease. They should not prepare or handle food for anyone outside of their immediate family. Handwashing should include vigorous soaping of the hands. All surfaces should be washed including the back of the hands, wrists, between fingers, and under fingernails. Hands should then be thoroughly rinsed with running water.

—END—

APPENDIX 5: Sample Parental Letter, Hepatitis A in a Day Care Attendee

Dear Parent/Guardian –

A child at the _____ day care has been diagnosed as having hepatitis A. Hepatitis A is a liver disease caused by a virus.

Hepatitis A typically causes a very mild illness in pre-school aged children. In fact, many young children will have no detectable symptoms at all. However, hepatitis A is highly infectious, even if the person who has it is not particularly sick. Infected children can readily transmit the virus to parents and older siblings, where it can cause a much more serious illness characterized by fever, profound fatigue, nausea, dark urine, and jaundice (yellowing of the skin and whites of the eyes). In adults, the disease can last for weeks or even months.

The hepatitis A virus is spread when the virus enters the mouth, multiplies in the body, and is passed in the stool, which is highly infectious. If careful handwashing is not done, the virus can contaminate the infected person's hands and can be spread to others by direct contact or by contaminating food that the infected person touches.

The _____ Health Department and the Wisconsin Division of Public Health recommend that all attendees and staff at your child's daycare receive an injection of hepatitis A vaccine or immune globulin (depending on age). This injection will prevent hepatitis A in the vast majority of people who receive it. A clinic will be held at the _____ day care on _____ at _____. Nurses will be there to provide immunizations to the children at no cost. Please accompany your child to the day care on the day of the clinic. If you are unable to attend, please complete the attached permission slip and consent form, allowing another designated adult to accompany your child to the clinic.

If your child has already received the hepatitis A vaccine, they are not at risk of hepatitis A and do not need to be re-immunized. Parents of these vaccinated children are asked to provide proof of hepatitis A vaccination (e.g., an immunization record) to the nurses who are administering the clinic.

Please take a few minutes to read the accompanying consent form and the hepatitis A fact sheet. A signed consent form must be submitted in order to immunize your child.

If you have any questions, please contact the _____ Health Department at _____.

This template may need to be altered to reflect any decision to immunize household contacts of attendees, or to indicate that only specific rooms of children need to get IG. May also need to add info re. vaccine if it is being recommended, which will provide long-term immunity.

APPENDIX 6: Consent Form for IG Administration

Important Information about Immune Globulin and Consent to Administer for Protection Against Hepatitis A

Immune Globulin and Hepatitis A

Immune globulin (IG) is recommended for the prevention of hepatitis A. Hepatitis A is an infection of the liver caused by the Hepatitis A virus. It is spread from person to person through close personal contact, or by food or water contaminated by someone with the disease who fails to wash his/her hands properly after using the toilet.

Hepatitis A varies from a mild illness lasting one to two weeks, to a disabling disease that lasts several months, and can (rarely) even be fatal. Onset is usually abrupt with fever, fatigue, lack of appetite, nausea and abdominal discomfort followed by jaundice. Some infections in young children are without symptoms; some cases may be mild and without jaundice. Definite diagnosis of the disease is done with a blood test that detects antibodies to the hepatitis A virus. Almost all persons develop lifelong immunity after an episode of hepatitis A infection.

Exposure to a confirmed case of Hepatitis A is defined as: 1) household contact; 2) slept in the same bed with the case; 3) ate food prepared or handled by the case; 4) sustained close contact with a case; or 5) sexual contact with a case.

What is IG?

IG is a sterile solution of antibodies (immunoglobulins) made from human plasma. It is injected into the muscle and can usually prevent hepatitis A from developing. There is no evidence that hepatitis B virus, HIV (the causative agent of AIDS), or other viruses have ever been transmitted by IG for intramuscular injection that is commercially available in the United States. The value of IG in preventing hepatitis A is greatest (80 – 90%) when given either before exposure or within the two weeks after an exposure. IG given longer than 14 days after exposure is unlikely to prevent the disease. The United States Public Health Service recommends a dosage of 0.01 ml/ lb of body weight for contacts of a confirmed case of Hepatitis A.

(PLEASE ALSO READ OTHER SIDE)

Recipient: Detach and Keep upper portion for reference

I have read or have had explained to me the information on this form about Hepatitis A and IG. I have had a chance to ask questions which were answered to my satisfaction. I believe I understand the benefits and risks of IG and ask that I, or the person named below for whom I am authorized to sign, receive it in the recommended amount.

Name of person receiving IG

Birthdate: _____ / _____ / _____
Mo / Day / Year Age

Street address

City, State

Zip

Signature of person to receive IG or authorized to sign

Mo / Day / Year

APPENDIX 7: Hepatitis A Disease Fact Sheet

HEPATITIS A

(Infectious Hepatitis)



Hepatitis A is a liver infection that is caused by the hepatitis A virus. Anyone can get the hepatitis A virus, but children and people who live in or travel to countries where hepatitis A is common are more likely to get it. Approximately 10-30 cases of hepatitis A occur per year in Wisconsin. Once you have hepatitis A, you cannot get sick from it again.

What causes it?



- ▶ Hepatitis A is usually spread when the virus is taken in by mouth from contact with objects, food, or drinks accidentally contaminated by feces (stool) of an infected person.
- ▶ Common ways people can become sick are through person-to-person contact (e.g., when someone uses the bathroom and does not wash their hands properly and then touches objects or food, or when someone has sexual contact with an infected person) or through contaminated food or water.

What are the signs and symptoms?



Some people with hepatitis A do not have any symptoms. Infants and young children tend to have very mild or no symptoms. People can spread the disease for two weeks before symptoms appear. If symptoms do occur, they can show up anywhere from two to seven weeks after being exposed. These symptoms can develop over several days:

- ▶ Fatigue
- ▶ Poor appetite
- ▶ Fever
- ▶ Dark colored urine
- ▶ Nausea
- ▶ Jaundice (yellowing of the skin and whites of the eyes)

What are the treatment options?



There are no medicines that specifically treat hepatitis A. Eating well, getting enough rest, and drinking fluids are usually what is needed to recover. Some people may need to be hospitalized, but people rarely die from hepatitis A.

How can it be prevented?



- ▶ The single most effective way to prevent the spread of the hepatitis A virus is to get the hepatitis A vaccine. The vaccine is recommended for all children one year of age or older and other groups of people who are at high risk for getting hepatitis A. People who are traveling to countries with high rates of hepatitis A or those with chronic liver disease should talk with their doctor about getting vaccinated.
- ▶ It is always important to wash your hands after using the toilet, after changing diapers, and before touching any food.
- ▶ People who have been exposed to hepatitis A should get one dose of the vaccine or immune globulin as soon as possible, but not longer than 14 days after they were exposed. People who have been in close contact with an infected person should talk with their doctor as soon as possible to see if they should get the vaccine.



APPENDIX 8: Sample Worksheet for Tracking Restaurant Staff

Name of establishment _____ Address _____ Contact person _____
 Phone _____ Number of meals served daily B _____ Days & Hours of operation _____
 L _____
 D _____

Number of employees _____

Enter available information for all employees who worked at this establishment during the past two months.

<u>Name</u>	<u>Date Vx/IG Received</u>	<u>Serology Total IgM</u>	<u>Liver Enzymes</u>	<u>Employee position</u>	<u>Symptomatic?</u>	<u>Prior Hepatitis A vaccine? (date)</u>
1. _____						
2. _____						
3. _____						
4. _____						
5. _____						
6. _____						
7. _____						
8. _____						
9. _____						
10. _____						

(Make additional copies of this page as needed to list all employees.)