Hepatitis A
National guidelines for public health units

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Communicable Disease Network Australia and endorsed by the Australian Health Protection
Committee. Their purpose is to provide nationally consistent advice and guidance to public
health units in responding to a notifiable disease event. These guidelines capture the
knowledge of experienced professionals, built on past research efforts, and provide advice on
best practice based upon the best available evidence at the time of completion.

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Revision history

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1. Summary

Public health priority
High

Case management
- Respond to probable and confirmed cases within 1 working day.
- Enter probable and confirmed cases in Notifiable Diseases Database within 1 working day.
- While infectious, the case should not attend preschool or childcare, provide personal care to others, or work as a food handler.

Contact management
- Counsel and arrange post exposure prophylaxis for susceptible exposed contacts

2. The disease

Infectious agent
The hepatitis A virus (HAV)

Mode of transmission
Hepatitis A is transmitted almost entirely by the faecal-oral route. Transmission may occur through ingestion of: food that is not further cooked after being contaminated at source or by an infectious food handler, drinking water that is not treated after contamination, or faecal material transferred directly from an infectious case on hands or during sexual activity.

In recent years, outbreaks of hepatitis A have been linked to contaminated oysters, childcare centres, infectious food handlers, men who have sex with men, illicit drug users and homeless youth. A large proportion of Australian cases of hepatitis A are in people who have travelled to developing countries. The virus may be present in faeces for two weeks before the onset of jaundice and faecal shedding rapidly declines thereafter. Faecal shedding of HAV may continue for longer periods in infants and children.

Parenteral transmission is rare because viraemia is brief and the concentration of virus in blood is low. Urine may be infective during this brief period of viraemia. Saliva has not been shown to be a source of infection.

Timeline
The incubation period is 15 to 50 days, but more commonly 28 to 30 days.

The concentration of virus in the stool, and therefore infectivity, is highest just before onset of jaundice or peak transaminitis. Cases are considered infectious from a few days before onset of prodromal symptoms to a few days after onset of jaundice (or peak transaminitis), and non-infectious one week after onset of jaundice (if it occurs) or two weeks after onset of prodromal symptoms, whichever comes first. This period may be longer in immunocompromised persons.

Clinical presentation
The usual clinical presentation is acute fever, malaise, anorexia, nausea and abdominal discomfort, followed a few days later by dark urine and jaundice. Symptoms usually last several weeks. The likelihood that symptoms will follow infection increases with age: jaundice occurs in only a small proportion of infants and young children, but a majority of adults. Infants and children infected with HAV may have mild or no symptoms.
3. Risk assessment

Routine prevention activities
The prevention of hepatitis A rests largely on the provision of contamination-free potable water, adequate hand-washing facilities, safe sewage disposal and hygienic handling of food throughout the chain of production to consumption.

Hepatitis A vaccine is highly effective and recommended for people at higher than background risk of disease. These include -- but are not limited to -- people travelling to or expatriates living in developing countries, men who have sex with men, illicit drug users, and people living in or working in remote indigenous communities.

Threat and vulnerability
Until the mid 20th century hepatitis A was probably endemic in many parts of Australia. The incidence of infection has subsequently declined in most parts of Australia, possibly related to improved water supplies, safer food handling practices, improved home hygiene and smaller family size. A sero-prevalence study in 1998 estimated that 38% of the population had evidence of previous infection. This varied from 70% of people aged 60-69 years to 10-20% in persons aged less than 20 years. Sero-prevalence and notification rates are higher in the Northern Territory and it is likely that infection remains endemic in many aboriginal and remote communities. The majority of the community is now vulnerable to infection should exposure occur. Although a highly effective vaccine has been available in Australia since the mid 1990s, only a small proportion of the population is likely to have received it.

Risk mitigation
The risk of hepatitis A is reduced by maintaining high quality drinking water, safe food, and promoting vaccination and hygiene in people at risk of exposure to infection through their travel, occupational, recreational or social activities.

4. Surveillance objectives
   - To prevent disease in contacts already exposed
   - To prevent further transmission of infection from cases
   - To identify and control the source of the infection in outbreaks
   - To monitor the epidemiology of hepatitis A and so inform the development of better prevention strategies.

5. Data management
Within 1 working day of notification enter probable and confirmed cases on the Notifiable Disease Database.

6. Communications
Notify the State/Territory Communicable Diseases Branch about each case, including the person’s age, sex, whether died and whether linked to other cases.

7. Case definition
   Confirmed case
A confirmed case requires laboratory definitive evidence only.
**Laboratory definitive evidence**

1. Detection of anti-hepatitis A IgM, in the absence of recent vaccination, OR
2. Detection of hepatitis A virus by nucleic acid testing.

**Probable case**

A probable case requires **clinical evidence AND epidemiological evidence.**

**Clinical evidence**

Clinical hepatitis (jaundice and/or bilirubin in urine) without a non-infectious cause.

**Epidemiological evidence**

1. Contact between two people involving a plausible mode of transmission at a time when:
   a. one of them is likely to be infectious (from two weeks before the onset of jaundice to a week after onset of jaundice), AND
   b. the other has an illness that starts within 15 to 50 (average 28 - 30) days after this contact, AND
2. At least one case in the chain of epidemiologically linked cases (which may involve many cases) is laboratory confirmed.

**8. Laboratory testing**

In a patient who has not recently been vaccinated for hepatitis A, diagnosis is largely established by the presence of IgM anti-HAV antibodies. IgM antibodies usually become detectable before the onset of clinical symptoms and persist for $\geq$ 4 months in most persons (and occasionally up to 1 year). Approximately three percent of HAV infected people will be IgM negative if blood is taken on or before the onset of jaundice. Probable cases with negative IgM results from early specimens should be retested in 4 to 7 days. IgM antibodies are detectable in subclinically infected persons as well as symptomatic cases. False positive hepatitis A IgM antibodies have been documented in some people who have undergone screening tests but have no clinical indication of hepatitis. Anti-HAV IgG antibodies are markers of any exposure to the disease or immunisation and they persist for life after infection. Although useful for identifying persons who are currently immune to HAV infection, they are not useful indicators of recent infection. Nucleic acid testing can detect virus in blood and stool but is not routinely used for diagnosis.

**9. Case investigation**

**Response times**

Begin the follow-up investigation within 1 working day of notification of a probable or confirmed case.

**Response procedure**

**Case investigation**

The response to a notification will normally be carried out in collaboration with the case’s health carers. But regardless of who does the follow-up, PHU staff should ensure that action has been taken to:

- Confirm the onset date and symptoms of the illness
- Confirm results of relevant laboratory tests, or recommend the tests be done
- Find out if the case or relevant care-giver has been told what the diagnosis is before beginning the interview
- Seek the doctor's permission to contact the case or relevant care-giver
- Review case and contact management, ensuring that relevant exclusions have been made
- Determine the likely source of infection
• Assess the number of contacts requiring prophylaxis
• Ensure proper control measures are taken to prevent further spread.

**Exposure investigation**
Information regarding history of prior immunisation and of exposures during the period 15 to 50 days before onset of jaundice should be sought. This should include:

• Household and sexual contacts who have had an illness consistent with hepatitis
• Restaurants where the case has eaten or worked
• Social gatherings where the case has eaten
• All sources of drinking water
• Consumption of raw or partially cooked shellfish
• Attendance or employment at child care services by case or household contacts
• Illicit drug use
• Travel (by the case or household contacts) to countries with endemic hepatitis A
• Recreational water exposure
• Exposure to sewage, or failed sewage disposal systems
• Hospitalisation
• Male to male sexual contact
• Attendance at educational/residential facility, association with Indigenous community
• Association with an Aboriginal or Torres Strait Islander community
• Prison/remand centres
• Whether the case is a HCW.

**Case management**
Treatment is supportive only.

**Education**
The case or relevant care-giver should be informed about the nature of the infection and the mode of transmission. Education should include information about hygienic practices, particularly hand-washing before preparing food and eating and after going to the toilet.

While infectious period, cases should:

• Not donate blood
• Not prepare or handle food to be consumed by other people
• Not have sex
• Not attend preschool, childcare, school, work, or to provide personal care to others
• Not share drug paraphernalia.

**Isolation and restriction**
Confirmed and probable cases should not attend child care facilities, provide personal care to people in child care or health care settings or handle food for others while infectious (for at least 7 days after onset of jaundice or dark urine, or 2 weeks after onset of the prodrome).

**Active case finding**
Where cases are identified in settings such as child care facilities, schools and residential care facilities where transmission might be expected to occur, work with health care providers and administrators to identify other possible infectious cases.
10. Control of environment

Hepatitis A virus can contaminate water ways and remain viable for weeks.

Water supply
Drinking water systems are potential sources of HAV infection if there is opportunity for faecal contamination. Where an unexpected cluster is reported, an evaluation may include review of water treatment procedures and bacteriological quality.

Sewage disposal
Determine if the case has been exposed to a failed sewage disposal system.

Food service facility
Where contaminated food is a suspected source, PHU staff should arrange for a review of the premises where food was prepared and served in order to determine the likelihood of disease transmission in that setting, and to ensure current food safety practices protect against the transmission of hepatitis A. Review an records of illness among staff and ascertain if food handling staff worked while ill.

Child care facility
PHU staff should ensure that the facility’s infection control procedures are reviewed to determine the likelihood of disease transmission, and establish if carers of children <2 years old have changed nappies and prepared food in the same shift.

11. Contact management

The purpose of public health intervention/contact management is to reduce the risk of further transmission and clinical disease among those people who were close contacts of the case during the case’s infectious period.

The following is a general list of persons considered to be contacts if exposed to infectious cases:

- immediate family, household members and sexual partners, including people who stayed and shared their primary bathroom facilities with the case
- persons who consumed food not subjected to further cooking that was prepared by the case
- If the case is a food handler, other food handlers in the same establishment
- if the case is in nappies, persons who provided direct care to the case
- If the case attends child care or preschool, other children and adults in the same classroom or care group.

The available interventions for contacts include Normal Human Immune Globulin (NHIG) and monovalent inactivated hepatitis A vaccine. Traditionally, post exposure prophylaxis (PEP) of hepatitis A has consisted of administration of NHIG. Recent evidence indicates that monovalent hepatitis A vaccine has similar efficacy to NHIG for PEP, at least for people aged between 1 and 40 years. US, Canadian and UK health authorities recommend vaccine over NHIG for people aged 1 to 40 years, but recommend NHIG over vaccine for immunosuppressed people. Their recommendations diverge on what should be used for otherwise well people >40 years (see: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm), [http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-hepa-eng.php#ru](http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-hepa-eng.php#ru), [http://www.hpa.org.uk/cdph/issues/CDPHvol4/No3/HepAguidelines0901.pdf](http://www.hpa.org.uk/cdph/issues/CDPHvol4/No3/HepAguidelines0901.pdf)).

PEP should be offered to contacts within 2 weeks of last exposure to an infectious case as follows:
- Monovalent hepatitis A vaccine is recommended for contacts over the age of 1 year who are not immunosuppressed, who have not had chronic liver disease diagnosed, and for whom vaccine is not contraindicated.
- NHIG is recommended to be reserved for the following contacts:
  - <12 months of age,
  - immunosuppressed
  - chronic liver disease, or
  - for whom vaccine is contraindicated.

PEP is not indicated for contacts of sporadic cases in the school or work settings.

**Passive immunisation**

Normal human immunoglobulin (NHIG, also called gamma globulin) is a preparation of pooled antibodies. Its efficacy declines rapidly within days of exposure, and becomes ineffective about 2 weeks after exposure. NHIG should be given in a single intramuscular dose at the following dosage:

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<td>&lt;25 kg</td>
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<tr>
<td>25-50 kg</td>
<td>1.0 mL</td>
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<tr>
<td>&gt;50 kg</td>
<td>2.0 mL</td>
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NHIG may not prevent excretion of HAV, so those given NHIG may still transmit the virus, even if they do not develop clinical illness.

The administration of NHIG may interfere with the immune response from live virus vaccines. Consult the latest edition of the Australian Immunisation Handbook for detailed advice.

Supply of NHIG is by local arrangement within each jurisdiction.

**Active immunisation**

A single dose of monovalent hepatitis A vaccine gives protection to most recipients within 2 weeks. A two-dose course is recommended for long-lasting protection. Persons given a single dose for PEP should be advised to complete the course through their General Practitioner. Not all vaccines are licensed for children aged down to one year of age -- check details in the Australian Immunisation Handbook. Note also that recent immunisation may confuse the interpretation of follow-up serology.

**Antibiotic prophylaxis**

None.

**Education**

Provide contacts (or parents/guardians) with a Hepatitis A Fact Sheet, including advice on the risk of infection; counsel them to watch for signs or symptoms of hepatitis occurring within 50 days of exposure and seek medical attention early if symptoms develop. Parents of infants or young children should be reminded that jaundice may not occur in young children. Advice about careful hygiene should be given, particularly about hand washing after going to the toilet and changing nappies.

It is especially important that any food handlers monitor their own development of hepatitis symptoms after contact with the disease and seek medical attention promptly if symptoms are detected.

**Isolation and restriction**

Nil.
12. Special situations

A case in a child care setting
Because most HAV infections in young children are asymptomatic, illness among staff members or household contacts is often the first (and only) indication of child care centre outbreaks. Staff of child care centres are recommended to receive pre-exposure vaccination with hepatitis A vaccine (complete course).

Hepatitis A vaccine or NHIG should be administered to all previously unvaccinated staff members and attendees of child care facility if:

- one or more cases of hepatitis A are recognised in children or employees, or
- cases are recognised in two or more households epidemiologically linked to the centre.

For a single case, hepatitis A vaccine or NHIG needs be administered only to classroom contacts of the index patient. Written advice should be provided to parents and staff caring for children in other groups. For multiple cases, careful consideration should be given to whether other contacts within the facility should be offered PEP.

When an outbreak occurs (i.e., hepatitis A cases in three or more families), hepatitis A vaccine or NHIG also should be considered for members of households who have children (centre attendees) in nappies.

In order to quickly identify new infections, the PHU should institute surveillance for hepatitis-like illness among households connected to the centre for 50 days after onset of the last case; this is usually done by letter. All such households should be provided with basic information about hepatitis A, and instructed to contact the PHU immediately should suspicious symptoms develop.

The critical role of good personal hygiene (especially hand washing) should be reviewed with child-care staff. Staff involved in food handling should not be involved in changing nappies on the same shift. Affected centres should be discouraged from accepting new children for 50 days after onset of the last case, unless hepatitis A vaccine or NHIG is given before admission. Transferring children to other centres should be discouraged during this period.

A case in a school, hospital, or work setting
Hepatitis A PEP is not routinely indicated when a single case occurs in a school or work setting, and the source of infection is outside the school or work setting. Similarly, when a person who has hepatitis A is admitted to a hospital, staff members should not routinely be administered hepatitis A PEP. Careful hygienic practices should be emphasised. Hepatitis A vaccine or NHIG should be administered to persons who have close contact with index patients if an epidemiologic investigation indicates HAV transmission has occurred among students in a school or among patients and staff members in a hospital and circumstances suggest that further protection over and above improvements in hygienic practices is warranted.

A case in a food handler
Most food handlers with hepatitis A do not transmit hepatitis A to others. The public health response is based on a careful risk assessment, conducted as part of a site visit. The risk assessment includes whether the food handler was working while infectious, reports from the food handler and his/her supervisor and co-workers about illness (including diarrhoea) and hygiene practices (glove use, hand hygiene), evidence of hygiene training, and previous assessments of the sanitation practices in the facility. Other food handlers at the facility are usually considered at increased risk if they ate food handled by the case or shared toilets or washing facilities with the case.

Follow up of patrons should be considered if: the food handler, while infectious, directly handled food that was not subsequently cooked prior to serving AND had diarrhoea or poor hygienic practices AND patrons can be identified and provided with PEP within 2 weeks of exposure. Use of PEP should be considered in institutional settings where multiple exposures among patrons may have occurred. PHU staff must work in close collaboration with the jurisdictional food safety officers in managing the risk to other staff and patrons.
**Risk to other food handlers and patrons from a food handler diagnosed with hepatitis A infection**

Food handlers can transmit hepatitis A to patrons and co-workers through contaminated food, and possibly utensils or surfaces. If the investigation shows that other food handlers at the facility are at risk because they either ate food prepared by the case, or because they shared toilets or washing facilities with the case, then PEP should be provided to other unimmunised food handlers at the facility. Where other cases are suspected among food handlers, blood should be collected (with consent) for serology.

**Alerting patrons when a risk is identified**

It can be difficult to identify all people who may have been exposed to food prepared by a case. It is therefore important to evaluate the degree of risk to patrons by assessing the risk behaviours of the case. Where a risk is identified, there are two primary reasons to alert patrons:

- To provide PEP to potentially exposed individuals, in order to prevent further cases
- To warn persons who may be already incubating the infections (and their doctors) about their exposure, educating them about the symptoms and signs of hepatitis, in order to facilitate rapid diagnosis and prevent a subsequent generation of cases. (Public announcements can be worthwhile even if it is too late to offer NHIG to exposed individuals.)

These measures can be readily applied in a setting with an easily located clientele, such as a school, childcare centre or private home. Identification and follow-up of consumers is not as easy in other food service settings such as restaurants and sandwich shops. In these situations, it sometimes becomes necessary to notify those at risk through the news media or other forms of public announcement. The food service facility operators should be counselled about their responsibility to protect the public's health and the need to cooperate in public alerts.

**Going public**

The following guidelines are designed to assist in deciding whether potentially exposed patrons should be alerted via the news media. In applying these criteria and judging the risk of further spread of infection, the PHU should:

- Make every possible effort to obtain accurate information
- Exercise considerable judgment about the accuracy of information received, especially the consistency of hygiene information received from different sources
- Consider the history of the facility's food inspections records while under its current management
- Determine whether the manager has had food safety training and applies it through employee training, supervision and hazard control systems at the facility. Good practices include:
  - Management supervises and inspects food protection and food handling practices of all shifts on a routine basis
  - Training addresses personal hygiene and supervision of food handler hand washing practices
  - Management has established a routine means of evaluating employee performance such as watching that all food handlers wash their hands upon entering a food preparation area in addition to restroom hand washing
  - Hand washing facilities are checked frequently each day for adequate supplies and operation and records are kept
  - High risk food handling tasks are designed so that direct handling of food and cross-contamination are minimised
  - An effective management policy is in place for encouraging employees not to work with symptoms that could indicate a communicable disease (e.g., diarrhoea or vomiting), thereby encouraging employees to report illnesses to management.

High Risk Food is defined as food that is handled and not subsequently cooked before consumption (e.g., salad fixings, cake icing, and sliced fruit).
**General principles for decision-making**

Generally, infectious food handler situations fall into one of three categories. The decision-making process is unique for each of them. In all cases, other food handlers at the establishment in question should be evaluated to determine whether any have, or recently have had, hepatitis A. If other food handlers are found to be infected, the risk to patrons should be re-evaluated. The PHU and food service managers should monitor other food handlers who are at risk for hepatitis A for one incubation period (50 days) after their last exposure to the index case.

1. **Food handler has not handled any high risk food.**
   Notification of potentially exposed patrons is rarely necessary.

2. **Food handler handles high risk foods, but facility manager has received food service safety training and uses a hazard control system.**
   If the case always uses gloves or utensils appropriately, then public notification generally is rarely necessary. Glove use per se is not a panacea, however, and at worst can create a false sense of security. The potential for breaks in proper practices should be carefully evaluated.
   If the food handler has handled high risk foods with bare hands, but the facility manager can document receipt of approved training and implementation of an approved hazard control system, public notification is usually not indicated, if the following conditions are met:
   - No transmission within the facility to co-workers or to patrons has been documented
   - The record of inspections of the facility under present management indicates that both personal hygiene of food handlers and the facilities for food handlers to wash hands have met inspection standards
   - Inspection of the facility after identification of the case reveals that hand washing facilities for employees are adequate
   - Information obtained from the infected food handler, supervisor, and other reliable sources indicates that the infected food handler followed good hand washing practices
   - The infected employee, while potentially infectious, did not handle high risk foods on days when experiencing diarrhoea.

3. **The food handler handles high risk food, and the manager has not received training and/or does not have an approved hazard control system.**
   If the food handler has handled high risk foods and the facility manager has not received training within the last three years and/or does not use a hazard control system, notification of potentially exposed patrons through the news media should be considered, especially if one or more of the following criteria is met:
   - Transmission within the facility to co-workers or to patrons has already been documented
   - Inspection of the facility after identification of the case reveals that hand washing facilities for employees in the food preparation area or the employees toilet facility are inadequate (e.g., no soap, no towels, no running water)
   - One or more food handlers are not conforming to good hygienic practices (e.g., food handlers are not washing their hands on arrival at work or after using the toilet)
   - The record of inspections of the facility under the present management indicates that personal hygiene of food handlers or facilities for food handlers to wash their hands have been a problem two or more times during the previous two years
   - The infected employee, while potentially infectious, handled high risk foods on days when experiencing diarrhoea
   - Information obtained from the infected food handler, supervisor, or other reliable source indicates that the infected food handler did not follow good hand washing practices or failed to appropriately use gloves or utensils, (e.g., didn’t change gloves when food preparation was interrupted for a non-food preparation task)
   - The infected food handler in the facility handled high risk foods with bare hands, (e.g., failed to use gloves or utensils).
Consult with the state/territory Communicable Disease Branch (CDB) staff and the Media Unit before going public. The CDB may convene an expert panel to advice in difficult cases.

13. Additional sources of information

- The Australian Immunisation Handbook

14. Appendices

- Hepatitis A Fact Sheet

15. Jurisdiction specific issues

Links to State and Territory Public Health Legislation, the Quarantine Act, and the National Health Security Act 2007