Ministry of Health

Ontario Public Health Standards:
Requirements for Programs, Services and Accountability

Infectious Disease Protocol

Appendix 1: Case Definitions and Disease-Specific Information

Disease: Hepatitis A

Effective: May 2022

Ontario

Hepatitis A

☒ Communicable
☐ Virulent

Health Protection and Promotion Act (HPPA)
Ontario Regulation (O. Reg.) 135/18 (Designation of Diseases)

Provincial Reporting Requirements

☒ Confirmed case
☒ Probable case

As per Requirement #3 of the "Reporting of Infectious Diseases" section of the *Infectious Diseases Protocol, 2018* (or as current), the minimum data elements to be reported for each case are specified in the following:

- O. Reg. 569 (Reports) under the HPPA;[7]
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- For certain vaccines, information to be entered into the applicable provincial inventory system; and
- Bulletins and directives issued by PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Laboratory confirmation of infection, in the absence of recent hepatitis A vaccination:

- Detection of immunoglobulin M antibody to hepatitis A virus (anti-HAV IgM)

AND

- Acute illness with discrete onset of symptoms and jaundice or elevated serum aminotransferase levels (AST, ALT)

OR

- An epidemiologic link to laboratory-confirmed case

Probable Case

Acute illness in a person with an epidemiologic link to a laboratory-confirmed case

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the *Infectious Diseases Protocol, 2018* (or as current) for guidance in developing an outbreak case definition as needed.

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The outbreak case definitions should be developed for each individual outbreak based on its characteristics, reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definition. The case definitions should be created in consideration of the outbreak definitions.

Outbreak cases may be classified by levels of probability (*i.e.,* confirmed and/or probable).

Clinical Information

Clinical Evidence

Acute clinical illness is characterized by abrupt fever, malaise, anorexia, nausea and abdominal pain followed by jaundice or elevated aminotransferase levels within a few days.

Clinical Presentation

Typically, hepatitis A is an acute, self-limiting liver infection. Clinical presentation varies with age at time of infection.[1] Infection among children less than six years of age is usually asymptomatic or mild without jaundice.[2] Illness in older children and adults is typically characterized by a 1 to 7 day prodrome of abrupt onset of fever, malaise, loss of appetite, dark urine, nausea, and abdominal pain followed by jaundice. There is usually complete recovery without complications or sequelae, however, older persons and individuals with chronic liver disease and immunocompromising conditions have an increased risk of progressing to fulminant hepatic failure resulting in death.[1,2] Extra-hepatic complications may occur.[3] Illness usually lasts less than two months; prolonged, relapsing hepatitis for up to one year occurs in 15% of cases; chronic infection is not known to occur.[1,2]

Laboratory Evidence

Laboratory Confirmation

The following will constitute a confirmed case of acute/recent hepatitis A:

- Serum/plasma sample positive for HAV IgM antibody

Approved/Validated Tests

- Tests for immunoglobulin G antibody to hepatitis A virus (anti-HAV IgG), anti-HAV IgM and anti-HAV Total (IgG and IgM) antibody

Indications and Limitations

- Anti-HAV IgM results are repeated in duplicate to confirm a positive result.
- Detection of anti-HAV IgM antibodies confirms recent infection. Antibodies are generally detectable in serum/plasma 5-10 days before symptom onset and usually decrease to undetectable levels within 6 months after onset of infection. In rare cases, anti-HAV IgM may persist for longer. Acute/recent infection should be confirmed with clinical history, symptoms, and biochemical tests (e.g., elevated serum transaminases [AST, ALT], bilirubin, etc.)

- Reactive anti-HAV IgM serological tests may be reported in the absence of clinically compatible illness or epidemiologic links to hepatitis A cases / settings with hepatitis A transmission. This may reflect a false-positive anti-HAV IgM test due to non-specific cross reactivity in the lab test, presence of rheumatoid factor in serum, following recent immunization with the hepatitis A vaccine, (both IgG and IgM antibodies will appear in serum within two weeks after immunization),.or other unexplained reasons. It may also be due to remote hepatitis A infection with persistent anti-HAV IgM, which has been reported. Finally, it may signal detection of unapparent / anicteric hepatitis A infection; as above, interpretation of a reactive anti-HAV IgM result should consider clinical history and presence of elevated AST, ALT.
- Detection of anti-HAV IgG antibodies signals recovery from acute hepatitis A infection or past vaccination. When anti-HAV IgG antibodies are detected alone, they indicate some level of immunity either from past infection or previous immunization. "Total hepatitis A virus antibody" (total IgM and IgG antibody) is not a confirmatory test for acute HAV infection but is used as an initial screening test in some laboratories.
- AST and ALT generally return to normal before the anti-HAV IgM disappears.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories.

Case Management

In addition to the requirements set out in the Requirement #2 of the "Management of Infectious Diseases – Sporadic Cases" and "Investigation and Management of Infectious Diseases Outbreaks" sections of the *Infectious Diseases Protocol, 2018* (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation.

In addition, the following disease-specific information should also be obtained:

- Symptoms and date of symptom onset, including date of onset of jaundice;

- Determine the dates of the infectious period (from 14 days prior to onset of symptoms to 7 days after onset of jaundice);
- Identify potential contacts during the infectious period;
- Determine if received hepatitis A vaccine in the two weeks prior to the blood test to rule out possible false positives due to recent vaccination;
- Determine possible source of infection, by identifying risk factors including:
    - Travel history,
    - Detailed food history,
    - Contact with a symptomatic person / person with hepatitis A, including household/close contact,
    - Attendee or employee of child care centre, resident or staff in an institution
    - Men who have sex with men,
    - Intravenous drug users (IDU), and
    - Attendance at any large functions in previous 50 days.

Education

Provide education to cases regarding transmission and personal hygiene. Emphasis should be placed on proper hand hygiene practices (e.g., after using the bathroom). Encourage limiting food handling activities by the case and discourage the sharing of food prepared by the case for the duration of the infectious period.

Exclusion

Exclude cases such as food handler, child care staff and attendees and health care workers[˙] from high risk settings for 14 days after onset of symptoms, or 7 days after onset of jaundice, whichever comes earlier.

[˙] If the healthcare setting is a hospital, use the "Enteric Diseases Surveillance Protocol for Ontario Hospitals" (OHA and OMA Joint Communicable Diseases Surveillance Protocols Committee, 2017 or as current) for exclusion.

Genotyping and subtyping of anti-HAV IgM positive specimens

Performing hepatitis A virus genotyping, sequencing and phylogenetic analysis on anti-HAV IgM positive specimens can help identify and investigate clusters or outbreaks.[10]

Public Health Ontario Laboratory identifies and refers appropriate anti-HAV IgM positive serum or plasma specimens to the Public Health Agency of Canada-National Microbiology Lab (NML) for genotyping and subtyping. Genotyping and subtyping can only be carried out on those samples with detectable HAV by conventional RT-PCR.[11]

Contact Management

Contact identification

A contact is defined as a person who has had exposure to a case during the time the case is infectious. The contact may acquire infection by the fecal-oral route by either person-to-person contact or ingestion of contaminated food or water.[12]

Identify contacts, in particular:[4,12]

- Those living in same household;
- Persons who are close non-household contacts such as sexual partners or drug sharing partners;
- Contacts who are food handlers; and
    - Food establishment patrons if case is a food handler who worked during the period of communicability (as outlined below; see: post-exposure prophylaxis [PEP] considerations for potential contacts of a hepatitis A case who is a food handler).
- Day care and institutional attendees or staff (e.g., correctional facilities, institutions for the developmentally disabled, etc).

Education

Provide education about proper hygiene, disease transmission, incubation period and symptoms; advise to seek medical care if symptoms develop.

Exclusion

Determine if any of the contacts are ill. Exclusion of symptomatic contacts from high risk settings is the same as for cases. In addition, ensure contact is screened for hepatitis A (i.e., anti-HAV IgM) if acutely ill with hepatitis A-compatible symptoms.

Exclusion is generally not warranted for asymptomatic contacts of hepatitis A cases. However, there may be exceptional circumstances in which the medical officer of health may consider, on a case-by-case basis, excluding an asymptomatic close/household contact from occupational food handling duties IF:

- The contact does not receive timely PEP (see below) or does not have serological evidence of immunity, AND
- The contact is assessed to be at high risk of both acquiring and transmitting hepatitis A via handling of food that is uncooked / after it is cooked (i.e., ready-to-eat).

Considerations regarding the risk of transmission from the case to the contact may include whether the case had poor hygiene practices or diarrhea or was diapered by the contact while infectious.

Post-exposure Prophylaxis (PEP) Recommendations

Recommendations for hepatitis A PEP are as follows:[13]

- PEP should be offered to household and close contacts of HAV case. Non-household close contacts include: sexual contacts, individuals who have handled diapers or who have assisted with the toileting or other personal care of individuals infected with HAV, and individuals who have shared illicit drugs with a case.
- PEP interventions include the administration of monovalent hepatitis A vaccine or the administration of serum immunoglobulin (IG) or both, depending on the age and underlying health of the contact.

The NACI provides PEP recommendations for hepatitis A vaccine for infants aged between six to twelve months; however, please be advised this is off-label use.[8] The Provincial Infectious Diseases Advisory Committee – Hepatitis A Post-exposure Prophylaxis provides recommendations for other age groups and/or underlying health condition.[13]

Concurrent administration of vaccine plus IG is delivered via separate needles/syringes and separate anatomical sites. Only one dose of monovalent vaccine is indicated for PEP.

When serum IG is indicated, the product monograph (GamaSTAN® S/D IG) provides dose recommendations.

Timeframe for offering PEP

Contacts of a HAV case should receive PEP as soon as possible, and ideally, within 14 days after exposure to a HAV case, as benefits of beyond 14 days after exposure are unknown.[2]

Contacts are generally referred to their health care provider to receive the vaccine as prophylaxis. The vaccine can be provided to the physician by the local board of health. In outbreak scenarios, the local board of health may decide to provide the vaccine and offer immunization clinics. Serum immune globulin (IG) must be accessed through Canadian Blood Services.

Considerations for childcare settings and kindergartens

Special consideration should be given to cases of HAV occurring in childcare settings including daycares, pre-schools, and kindergartens as young children are recognized to be very efficient at transmitting HAV infection, due to the need for diapering, developmental toileting behaviors and poor hand hygiene. Consultation with the medical officer of health is recommended in these scenarios.

Considerations when the hepatitis A index case(s) observed in childcare setting:[13]

- If index case attends a childcare setting and the source of infection is obvious (e.g., recent travel of the case or of a household contact), all attendees and staff should receive PEP, as soon as possible and ideally within 14 days of

symptom onset in the index case. The purpose of providing prophylaxis to attendees and staff is to prevent cases due to secondary transmission of HAV.

- If more than 14 days have elapsed since symptom onset in the case, or where the source of the index case is unknown, secondary transmission may have already occurred within the facility and a broader range of contacts should be offered PEP to prevent cases of tertiary transmission. These contacts include: all attendees, all household contacts of attendees, and all staff. Family members of attendees who are ≥ 50 years of age may receive HAV vaccine alone for PEP, unless they are a household/ close contact of a case, in which case they should also receive IG.
- **Note:** If there are two or more cases that occur in a childcare setting, please refer to the next section on Management of Outbreaks.

Considerations when childcare attendee is exposed to hepatitis A (i.e., a contact):[13]

- In scenarios where a childcare attendee is a close contact of a case of HAV (for example, is a household contact) and attends a childcare setting, consider the following:
    - If the contact received PEP within 14 days of symptom onset in the index case and asymptomatic transmission within the household is unlikely to have already occurred (e.g., index case recently returned from travel), supervised hand washing and increased surveillance should occur within any childcare settings the contact attends.
    - If the contact did not receive PEP within 14 days of symptom onset in the index case, or if there is concern that unrecognized asymptomatic transmission in the household may have occurred, this would support a strategy to reduce the risk of further transmission: offering PEP should be considered for all close contacts of the exposed child (including fellow day care attendees and staff).
- Staff who are ≥ 50 years of age may receive HAV vaccine alone, unless they are a household/close contact of a case in which case they should also receive IG.

PEP considerations for potential contacts of a hepatitis A case who is a food handler

If the case is a food handler, a risk assessment should inform PEP considerations (i.e., whether to recommend post-exposure HAV vaccine and/or immune globulin) for potential contacts who may have been exposed to contaminated food/water (e.g., food premise patrons). Consideration may be given as to whether, in a particular context:[12]

- The case was infectious while working

AND

- Handled foods prior to consumption which were not cooked after handling

AND

  - The food handler's practices were not hygienic,

  OR

  - The food handler had diarrhea

AND

- The contacts can be identified and be offered immunoprophylaxis within 14 days of the last exposure to the case while the case was in the infectious period.

Those who are ≥ 50 years of age may receive HAV vaccine alone, unless they are a household/close contact of a case in which case they should also receive IG.

Other non-household, non-close contacts

PEP is not routinely recommended for school or workplace contacts, or health care workers caring for HAV cases, unless an outbreak is suspected.[2]

Note: Only one dose of HAV vaccine is indicated for PEP efficacy and in Ontario, only one dose is publicly funded for PEP, unless an individual is otherwise eligible for publicly funded HAV vaccine for primary prevention.[13]

Outbreak Management

Please see the *Infectious Diseases Protocol, 2018* (or as current) for the public health management of outbreaks or clusters in order to identify the source of illness, manage the outbreak and limit secondary spread.

Two or more cases linked in time and place to a common exposure is suggestive of an outbreak.

Note: If two or more cases occur in association with a childcare setting (including staff, attendees and/or household members of attendees), this should be treated as an HAV outbreak with control measures implemented based on relevant features and epidemiology of the outbreak. In these scenarios, offering PEP to all staff, attendees and household members of attendees would generally be recommended.

Refer to Ontario's Foodborne Illness Outbreak Response Protocol (ON-FIORP) 2020 (or as current) for multi-jurisdictional foodborne outbreaks which require the response of more than two Partners (as defined in ON-FIORP) to carry out an investigation.

Prevention and Control Measures

Personal Prevention Measures

Proper personal hygiene and hand washing hygiene are key to prevent transmission. As well, travellers going to developing countries should be aware of how to carefully select food and drink to avoid infection. Pre-travel counselling may also include recommendation for Hepatitis A vaccination, depending on destination and itinerary. More information for travellers can be found at the Government of Canada's Travel Health and Safety Page.

The Canadian Immunization Guide recommends hepatitis A vaccination for additional groups at increased risk of infection or severe hepatitis A including:[2]

- Travellers to HAV endemic areas;

- Household or close contacts of children adopted from HAV endemic countries;
- Residents of communities that have high endemic rates of HAV or are at risk of HAV outbreaks;
- Individuals who use injectable and non-injectable illicit drugs;
- Men who have sex with men (MSM);
- Individuals with chronic liver disease, including persons infected with hepatitis C;
- Individuals receiving repeated replacement of plasma-derived clotting factors;
- Military personnel and humanitarian relief workers likely to be posted to areas with high rates of HAV;
- Zoo-keepers, veterinarians and researchers who handle non-human primates;
- Workers involved in research on HAV or production of hepatitis A vaccine who may be exposed to HAV; and
- Any person who wishes to decrease his or her risk of HAV.

The National Advisory Committee on Immunization (NACI) also recommends that hepatitis A vaccine may be provided to:[8]

- Infants beginning at six months of age, who are at increased risk of infection or severe hepatitis A, and/or
- Infants beginning at six months of age, who are living in a household with an individual who is at increased risk of infection or severe hepatitis A.

However, in Ontario, only the following high risk groups are eligible to receive publicly-funded hepatitis A vaccine, for primary prevention of infection:[9]

- Persons with chronic liver disease (including Hepatitis B and C);
- Persons engaging in intravenous drug use; and
- Men who have sex with men.

Infection Prevention and Control Strategies

Strategies:

- Advise cases with confirmed HAV not to donate blood for six months or as required by Canadian Blood Services;
- Routine practices and contact precautions are recommended.
- Refer to PHO's website to search for the most up-to-date information on Infection Prevention and Control (IPAC).

Disease Characteristics

Aetiologic Agent - Hepatitis A infection is caused by the hepatitis A virus (HAV), a 27-nanometer picornavirus (positive-strand ribonucleic acid [RNA] virus). It has been classified as a member of the family *Picornaviridae*.[1]

Modes of Transmission - HAV infection is transmitted primarily by the fecal-oral route, through direct contact with infected people or indirectly through ingestion of contaminated water or foods (e.g. fresh and frozen produce, seafood harvested from contaminated water).[1,6]

On rare occasions, transmission has been reported after exposure to HAV-contaminated blood or blood products obtained from viremic donors during the incubation period of their infection.[2] Transmission may also occur through sexual activities that include direct or indirect oral-anal contact but not through exposure to saliva, semen or urine.

In addition to foodborne outbreaks, outbreaks have been associated with injecting and non-injecting drug use, men who have sex with men and child care setting employees or attendees.[1,2]

The virus may remain infectious in the environment for several weeks.[2]

Incubation Period – The incubation period ranges from 15 to 50 days with an average of 28 to 30 days.[1]

Period of Communicability - Maximum communicability occurs during the latter part of the incubation period with peak levels in the 2 weeks before clinical illness. Communicability diminishes rapidly thereafter and ends shortly after the onset of jaundice.[1,2]

Cases are considered non-infectious 7 days after onset of jaundice although prolonged viral excretion up to 6 months has been documented in infants and children and immunocompromised individuals.[1,2] Chronic shedding of HAV in feces does not occur.[1]

Reservoir - Humans; rarely chimpanzees and other primates.[1]

Host Susceptibility and Resistance - Immunity following natural infection is thought to be life-long.[1] Protective antibody levels following vaccination will persist for at least 20 years or longer and protection likely persists even when antibodies are no longer measurable due to immune memory.[2]

The risk of hepatitis A infection for non-immune travellers depends on factors including: destination, length of trip, and living conditions. The risk of hepatitis A is highest among travellers who visit or live in rural areas and who eat and drink in locations with poor sanitation and unsafe food handling practices. However, there is still a risk from travel to urban areas and staying in luxury hotels, and for those who follow good hygiene, water, and food practices.[6]

Please refer to PHO's Reportable Disease Trends in Ontario reporting tool for the most up-to-date information on infectious disease trends in Ontario.

For additional national and international epidemiological information, please refer to the Public Health Agency of Canada and the World Health Organization.

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Document History

Revision Date	Document Section	Description of Revisions
April 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
April 2022	Epidemiology: Occurrence section	Removed.
April 2022	ICD Codes	Removed.