

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

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Hepatitis B

Effective: May 2022

Hepatitis B

Communicable

Virulent

[Health Protection and Promotion Act \(HPPA\)](#)

[Ontario Regulation \(O. Reg.\) 135/18 \(Designation of Diseases\)](#)

Provincial Reporting Requirements

Confirmed case

Chronic 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;³
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by PHO.

Refer to the [Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018](#) (or as current) for reporting and data collection requirements.⁴

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case (Acute Case)

Laboratory confirmation of infection:

- Detection of Hepatitis B surface antigen (HBsAg) and Immunoglobulin M (IgM) antibody to Hepatitis B core antigen (anti-HBc) in the context of a compatible clinical history or probable exposure

OR

- Loss of HBsAg over 6 months in the context of a compatible clinical history or probable exposure

Chronic Case (Carrier)

Laboratory confirmation of infection:

- Persistence of detectable HBsAg for more than 6 months

OR

- Persistence of detectable Hepatitis B virus (HBV) deoxyribonucleic acid (DNA) for more than 6 months

OR

- Detection of HBsAg with a negative IgM anti-HBc in the context of a compatible clinical history (consider section 4.3: Indications and Limitations)

Probable Case (Acute Case)

- Acute clinically compatible signs and symptoms in a person with an epidemiologic link to a laboratory-confirmed case

OR

- Acute clinically compatible signs and symptoms and detection of HBsAg (and anti-Hepatitis A virus [HAV] and Hepatitis C virus [HCV] negative) when the test for IgM antibody to anti-HBc is not available

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 HBV infection is often not clinically apparent, with 50-70% of adult cases being asymptomatic. Acute illness, if symptomatic, typically includes anorexia, vague abdominal discomfort, nausea, and vomiting, sometimes arthralgias and rash, often progressing to jaundice. Fever may be absent or mild. After acute HBV infection, the risk of developing chronic infection varies inversely with age. Chronic HBV carriers may not display symptoms or experience symptoms associated with cirrhosis and other complications of chronic HBV infection.

A clinical consultation is necessary for diagnosis.

Clinical Presentation

Infants and children with acute HBV infection rarely have symptoms, while 30%-50% of adults are symptomatic.¹ The onset of symptoms is usually insidious with anorexia, fatigue, vague abdominal discomfort, joint pain, fever and jaundice.¹

The risk of becoming a chronic HBV carrier is 90% to 95% for infants, 25% to 50% for children over one and less than five years of age, and 3% to 10% for adolescents and adults.² Chronic HBV carriers may not display symptoms or experience symptoms associated with cirrhosis and other complications of chronic HBV infection.¹

Laboratory Evidence

Laboratory Confirmation

Any of the following will constitute a confirmed case of hepatitis B in the laboratory:

Positive for HBsAg confirmed by one or more of the following:

- Positive anti-HBc Immunoglobulin G (IgG)/IgM
- Neutralization of HBsAg using neutralization assay
- Positive for HBV DNA

Approved/Validated Tests

- HBV test for HBsAg
- HBV test for anti-HBc total Antibody (IgG/IgM)
- HBV test for anti-HBc IgM
- Nucleic acid amplification test (NAAT) or hybridization tests for HBV DNA

Indications and Limitations

Some chronic cases of hepatitis B may develop acute exacerbations and may develop detectable anti-HBc IgM antibodies during these episodes. This does not indicate a new/recent infection.

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.

The following should also be considered:

- Acute cases of HBV should abstain from sexual contact or practice safer sex until partners and or/relevant contacts have been appropriately screened and or immunized.⁶
- Ensure that pregnant women, identified as HBV carriers are aware of their status as is their health care provider following the pregnancy.
- Ensure that acute HBV cases are tested for other STIs and HIV as appropriate.
- Ensure HBV carriers are linked with appropriate health care services.
- Acute cases and HBV carriers should not donate blood.
- Some regulatory professional colleges have developed policies addressing members who are infected with blood-borne viruses. Health care professionals licenced by these regulatory colleges, who are infected with hepatitis B must be aware of and follow the requirements of their regulatory college.

There is ongoing study of anti-viral treatment options that can produce sustained virologic response and delay or prevent long-term sequelae in chronic hepatitis B carriers.

For management of cases refer to the [Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018](#) (or as current).⁴ For more information, refer to the [Primary Care Management of Hepatitis B – Quick Reference Guide \(HBV-QR\)](#).⁶

Contact Management

Contacts include:

- household members
- persons who share personal care items such as razors or tooth brushes, or needle sharing partners
- sexual contacts

- persons exposed to infected blood, or body fluids
- infants born to HBV infected mothers

Management of contacts is done in collaboration with the attending medical professional. Contacts should be assessed and immunized as required.

HBIG should be administered to infants born to HBsAg positive mothers within 24 hours after birth. Additionally, the administration of HBIG could be considered in the instance of percutaneous, mucosal or sexual exposure to an HBV positive person.²

In the instance of potential exposure to hepatitis B, individuals should, where relevant, be made aware of the [Mandatory Blood Testing Act](#).⁸

For contact management of cases, refer to the *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current).⁴ For more information, refer to the Primary Care Management of Hepatitis B – Quick Reference Guide (HBV-QR).⁶

Outbreak Management

An outbreak is defined as the occurrence of two or more cases of HBV infection linked by time or a common exposure source or setting.

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.

Prevention and Control Measures

In the event that publicly funded vaccines are needed for case and contact management, the board of health should contact the Ministry of Health's (ministry) immunization program at vaccine.program@ontario.ca as soon as possible.

Personal Prevention Measures

- Immunize as per the current [Publicly Funded Immunization Schedules for Ontario](#).⁵

- Prenatal screening for all women for each pregnancy so that newborns can receive prophylaxis, if necessary.
- Counselling/education regarding risk behaviours.
- Harm reduction strategies such as needle exchange programs.
- Promote screening of adopted children from countries with high prevalence of infection and persons in high risk groups.
- Promote screening for HBV in individuals from countries with high prevalence of this infection.
- Hospital policies and procedures to ensure HBV screening and availability of Hepatitis B immune globulin (HBIG) and vaccination for exposed newborns.⁶
- The [Blood-Borne Diseases Surveillance Protocol for Ontario Hospitals](#) details preventive measures to reduce the risk of transmission of hepatitis B in employees who are at risk of exposure.⁷

For more information on prevention measures refer to the following: Primary Care Management of Hepatitis B – Quick Reference (HBV-QR).⁶

Infection Prevention and Control Strategies

- Use of routine practices at all times.
- Adequate sterilization of instruments used in invasive procedures including personal service settings such as ear piercing and tattooing.
- Appropriate measures for disinfection following body fluid spills.
- Occupational exposures should be managed according to the Blood-Borne Diseases Surveillance Protocol for Ontario Hospitals.⁷
- Maximize uptake of hepatitis B vaccine in those at high risk of exposure.

More information is available in the Primary Care Management of Hepatitis B – Quick Reference Guide (HBV-QR) and Blood-Borne Diseases Surveillance Protocol for Ontario Hospitals.^{6,7}

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 B virus (HBV) is the causative agent. It is a deoxyribonucleic acid (DNA) virus composed of a nucleocapsid core (HBcAg) and is surrounded by an outer lipoprotein coat containing the surface antigen (HBsAg).¹

Modes of Transmission - Via infectious body fluids including blood, saliva, cerebrospinal fluid (CSF), pleural, peritoneal, semen and vaginal secretions and any other body fluid containing blood.¹ The risk of transfusion-related hepatitis B is extremely low in Canada and the USA because all blood and blood products are tested.²

Routes of transmission include:^{1,2}

- percutaneous, principally injection drug users
- sexual: anal, vaginal, oral
- horizontal: household contacts
- vertical: mother to neonate

Incubation Period – The incubation period is 45-180 days, average 60-90 days. It may be as short as 2 weeks to the appearance of HBsAg and rarely as long as 6-9 months. The variation is related in part to the amount of virus in the inoculum, the mode of transmission and host factors.¹

Period of Communicability - All persons who are HBsAg positive are potentially infectious. Blood is infective many weeks before onset of first symptoms and remains infective through the acute course of disease.¹ The infectivity of chronically infected persons varies from high to modest.¹

Cases and carriers positive for hepatitis B envelope antigen (HBsAg) are known to be highly infectious. Chronic carriers can experience spikes in viremia over time, impacting infectivity.¹

Reservoir - Humans.¹

Host Susceptibility and Resistance - All non-immunized and not adequately immunized people are susceptible; disease presentation is usually milder in children and may be asymptomatic in infants.¹

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.

References

1. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.
2. National Advisory Committee on Immunization, Public Health Agency of Canada. Part 4- Active Vaccines: Hepatitis B Vaccine. 2018. In: Canadian Immunization Guide [Internet]. Evergreen ed. Ottawa, ON: Her Majesty the Queen in Right of Canada, [cited May 1, 2018]. Available from: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines.html>
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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.