



Health and  
Wellness

# Prince Edward Island Guidelines for the Management and Control of Hepatitis B

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**Department of Health and Wellness**  
**Chief Public Health Office**



# Hepatitis B Virus

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## Case Definition (1)

### Confirmed Case (Acute)

A laboratory confirmation of infection is determined by:

- The detection of a positive Hepatitis B surface antigen (HBsAg) and immunoglobulin M antibody to the positive Hepatitis B core antigen (anti-HBcIgM) in the context of a compatible clinical history or probable exposure

**OR**

- The clearance of the HBsAg (anti-HBs positive) within the last six months in the context of a compatible clinical history or probable exposure.

### Probable Case

A probable acute case is an acute clinical illness<sup>1</sup> in a person who is epidemiologically linked to a confirmed case (acute or chronic).

### Confirmed Case (Chronic)

A laboratory confirmation of infection is determined by:

- The detection of a positive Hepatitis B surface antigen (HBsAg) for greater than six months

**OR**

- The detection of the HBsAg in the absence of the anti-Hepatitis B core antigen immunoglobulin M (anti-HBc IgM)

**OR**

- The detection of HBV DNA positive for greater than six months.

## Reporting Requirements

The Provincial Laboratory shall in accordance with the [Notifiable Diseases and Conditions and Communicable Diseases Regulations](#)(2)of the Prince Edward Island [Public Health Act](#) (3), report all positive laboratory results by phone and mail, fax or electronic transfer as soon as the result is known to the Chief Public Health Officer (CPHO) (or designate).

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<sup>1</sup>An acute clinical illness is characterized by a discrete onset of symptoms and jaundice or elevated serum aminotransferase levels.

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## Additional Reporting Requirements

Timeline for initiation of response by CPHO	Timeline to initiate Follow-up by PHN re: case/contacts	Timeline for Completion of Follow-up by PHN
Within 2 working days of receipt of lab confirmation	Within ~10 working days of receipt of case/contact name	~30 days, immunization series will take longer

- Canadian Blood Services (CBS): All persons testing positive must be reported by the CPHO (or designate) to CBS if they have ever had a history of donating or receiving blood in Canada.
  - A copy of the positive test result must accompany the report, and all information should be sent to the Lookback/Traceback Coordinator, CBS.
  - For donors and recipients, the following information is required:
    - Name and date of birth of the infected person,
    - the HBV test result,
    - Any previous known test results for the same infection,
    - The date of the donation or receipt of the blood or blood product,
    - The name of the facility where the blood or blood product was donated or received,
    - If the medical officer of health becomes aware of the infection by means of a laboratory report, the information set out in that report, and
    - Any other information that may be necessary to ensure the safety of the blood supply.
- Immigration, Refugees, and Citizenship Canada: There are currently no guidelines for immigrants as HBV testing is not required as part of the immigration process.

## Etiology (4)

The Hepatitis B virus (HBV) is from the hepadnaviridae family. It is a DNA virus, composed of a nucleocapsid core (HBcAg), surrounded by an outer lipoprotein coat containing the surface antigen (HBsAg). The distribution of subtypes varies geographically. No differences in clinical features have been related to subtypes.

A third Hepatitis B antigen, the “e” antigen (HBeAg), has been identified as a soluble antigen, whose sequences are a subset of those in the core antigen, but without cross-reactivity. The

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presence of the HBeAg is known to be a marker of a highly replicative and infectious state for HBV.

## Clinical Presentation (4)

**Acute:** Only a small proportion of acute HBV cases may be clinically recognized. Less than 10% of children and 30%–50% of adult acute cases will have icteric disease. HBV infection in children is most often milder and often anicteric. Infants are typically asymptomatic.

In cases with clinical illness, the onset is usually insidious with anorexia, vague abdominal discomfort, nausea and vomiting, sometimes arthralgia and rash, often progressing to jaundice. Fever may be absent or mild. Severity ranges from unapparent cases detectable only by liver function tests to fulminating, fatal cases of acute hepatic necrosis. The case-fatality rate in hospitalized cases is about 1% and is higher in those over 40 years of age.

**Chronic:** Following acute HBV infection, the risk of developing chronic infection varies inversely with age (see Host Susceptibility on page 8). Often, people are unaware that they have the chronic infection. Cases that develop a chronic HBV infection may have no evidence of liver disease or may experience symptoms on the spectrum of the disease ranging from chronic hepatitis to cirrhosis to liver cancer(5). Additionally, chronically infected individuals may have flare ups and experience similar symptoms to those described in the acute stage above (5). Also, most pregnant women are unaware of their disease status and can unknowingly transmit the virus to newborns during childbirth.

## Diagnosis

Diagnosis of HBV is via a [blood test](#). Three serologic tests are commonly used (however others may be required) to determine if a person is a chronic or acute case (4). They are:

- HBsAg,
- anti-HBc IgM, and
- anti-HBc total (total antibody to hepatitis B core antigen)

The HBsAg can be detected in the serum from several weeks before the onset of symptoms to days, weeks or months after onset in acute cases and will persist in chronic cases (6). In acute cases that resolve, the HBsAg declines, disappears and is followed by the appearance of the antibody to the Hepatitis B surface antigen (anti-HBs) (6). See [Appendix A](#) for characteristics of the HB antibody response.

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Testing for the anti-HBc total includes the detection of both the anti-HBcIgM and the anti-HBc IgG. Thus the anti-HBc total is positive at the onset of illness and persists indefinitely (6). The anti-HBc total presence in serum indicates infection, either current or past (6). Anti-HBc IgM is present in high titre in acute cases and usually disappears within six months; rarely, it can reactivate in chronic cases, thus a positive anti-HBc IgM is not an absolute indicator of an infection (6). In resolving cases, the anti-HBc total may be present while the HBsAg and the anti-HBs are both absent (6). This is known as the “window period” (6).

Screening for HBV DNA is not a routine practice but may be done in cases receiving treatment, those being monitored by specialists, and for cases with unusual HBV serologic markers (e.g. who are HBsAg and anti-HBs negative but positive for anti-HBc total) for clarification of their status(6). It may also be used to assess the degree of infectivity (6).

## Hepatitis B Serological Markers and Indications (5)

Marker	Indications
<b>HBsAg +</b> Hepatitis B surface antigen	Current acute infection, or chronic carrier if persists beyond six months.
<b>Anti-HBs +</b> Antibody to Hepatitis B surface antigen	Immunity from either infection or vaccine.
<b>Anti-HBcIgM +</b> Immunoglobulin M (IgM) antibody to Hepatitis B core antigen	Recent acute infection and rarely during exacerbations of chronic infection.
<b>Anti-HBc total +</b> Total antibody to Hepatitis B core antigen	Current acute infection, chronic carrier, or past infection. Not present after immunization.
<b>HBeAg +</b> Hepatitis B e antigen	Highly infectious. Can be present during both acute and chronic infections
<b>Anti-HBe +</b> Antibody to Hepatitis B e antigen	Appears with recovery of acute infection. May be present in chronic infection that indicates a reduced infectious state.
<b>HBV DNA +</b>	Measures level of circulating DNA and is a marker of infectivity.

<sup>5</sup> **Public Health Agency of Canada.** Primary Care Management of Hepatitis B - Quick Reference. [Online] March 2013. [Cited: February 15, 2017.] <http://www.phac-aspc.gc.ca/publicat/hep/hbv-vhb/index-eng.php>

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## Interpretation and Recommended Intervention Based on HBV Serology Marker Results

HBsAg	Anti-HBcIgM	Anti-HBc Total	Anti-HBs	HBeAg	HBV DNA	Interpretation	Recommended Intervention
-	-	-	-	-	-	Client susceptible	Offer immunization
+	-	-	-	-	n/a	Early HBV infection before anti-HBc response	Provide education re: reducing transmission; re-offer serology in 6 months to see if resolved or chronic
+	+	+	-	-	n/a	Early HBV infection. Because anti-HBc IgM is positive, the onset is within 6 months. IgG antibody usually appears shortly after IgM; therefore both are usually positive when IgM is positive (acute infection)	Provide education re: reducing transmission; re-offer serology in 6 months to see if resolved or chronic
-	+	+	-/+	-	n/a	Recent acute HBV infection (within 4 to 6 months) with resolution; ie: HBsAg has already disappeared. Anti-HBs usually appears within a few weeks or months of HBsAg disappearance	No longer infectious if HBsAg neg.
+	-	+	-	-	n/a	HBV infection onset at least 6 months earlier because anti-HBc IgM has disappeared (chronic infection)	Provide education re: chronic management; offer HBeAg and HBV DNA serology regularly to monitor infectious state
-	-	-	+	-	n/a	Response to HB vaccine, no evidence of infection	Client immune, no intervention needed
-	-	+	-	+/-	+	Chronic HBV infection (currently infectious)	Provide education re: reducing transmission; monitor serology regularly for liver damage; consider antiviral medication
-	-	+	+	-	n/a	Past HBV infection, recovered	Immune due to natural infection, no intervention needed
-	-	+	-	-	-	Interpretation unclear: -resolved infection (most common) -false-positive anti-HBc (thus susceptible) -low level chronic infection -resolving acute infection	Intervention depends on interpretation



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## Epidemiology

### 1. Reservoir

The HBV reservoir is humans (4).

### 2. Transmission(4)(5)(6)

Transmission of HBV is human to human through infected blood and body fluids.

Infection can occur via:

- Percutaneous/per mucosal exposure by:
  - Injection drug use (IDU),
  - HBV-contaminated or inadequately sterilized equipment such as needles/other drug paraphernalia, tattoo/body piercing tools,
  - Medical or dental equipment that has not been properly sterilized, or
  - Semen, vaginal secretions, and saliva, as well as other body fluids (pleural, amniotic, pericardial, peritoneal synovial and cerebrospinal) that may contain the virus;
- Sexual contact from:
  - Heterosexuals with multiple sexual partners, or with known sexually transmitted infections, or
  - Men who have sex with men (MSM);
- Vertical transmission<sup>2</sup> from:
  - An infected mother to her newborn infant;
- Horizontal transmission to:
  - Household contacts who may have been exposed to contaminated blood or body fluids, or
  - Through toothbrushes, razors, dental floss, or any other object that may have been exposed to contaminated blood.

Because HBV is stable on environmental surfaces for up to, and including, seven days, indirect inoculation of the virus can also occur via inanimate objects (4). Fecal-oral or vector-borne transmission has not been demonstrated.

Transmission from breast milk is unlikely; feces, nasal secretions, sputum, sweat, tears, urine, and vomit are not implicated unless they are visibly contaminated with blood.

Risk of transmission from screened and donated blood, manufactured blood products, and transplanted organs is minimal due to donor screening and processing of blood products.

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<sup>2</sup> Vertical transmission is common in endemic areas of Southeast Asia and the Far East (e.g. Pacific Islands), especially when HBsAg-carrier mothers are also HBeAg positive with high HBV DNA levels.

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In approximately 35% of HBV infections, the transmission is unknown.

### 3. Incubation Period

The incubation period for HBV is 45 to 180 days, with an average of 60 to 90 days (4). It may be as short as two weeks to the appearance of the HBsAg, and rarely as long as six to nine months (4). The variation is related, in part, to the amount of virus in the inoculum, the mode of transmission, and host factors (6).

### 4. Period of Communicability(4)

The period of communicability is while the HBsAg is present in the blood and is highest during the acute phase of the illness. Cases in the “window period” and those rare cases that are concurrently HBsAg and anti-HBs positive should be considered infectious. In the latter case, if the HBsAg disappears and the anti-HBs remains, cases can be considered non-infectious. The presence of the “e” **antigen** or high levels of viral DNA indicate high infectivity, while the presence of the “e” **antibody** and low levels of viral DNA indicate diminished infectivity.

Typically, the period of communicability begins from several weeks before the onset of symptoms, until the infection resolves. If the infection does not resolve, the case is considered to be chronically infected and can transmit the virus when they experience periods of higher viral loads. This can happen intermittently throughout the lifespan.

### 5. Host Susceptibility

Susceptibility is general. Protective immunity follows infection if antibodies to the HBsAg (anti-HBsAg positive) develop and the HBsAg becomes negative (4).

The primary determinant of the risk of developing chronic infection is age at the time of infection. Infants born to mothers who have acute HBV infection during the third trimester of pregnancy have a risk of up to 90% of acquiring the infection (5). Children aged one to five years have a risk of 25% to 50% whereas older children and adults have a risk of 10% (5).

Persons with Down syndrome, lymphoproliferative disease, HIV infection, and those on hemodialysis appear to be more likely to develop chronic HB infection.

## Occurrence

### 1. General

Hepatitis B occurs worldwide and is endemic with little seasonal variation. In areas of Africa and Asia, widespread infection may occur in infancy and in childhood. In North America, infection is most common in young adults. In the United States (US) and Canada, serologic evidence of previous infection varies depending on age and socioeconomic class. The HB vaccine has contributed to a decreased number of cases,

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and was first introduced in 1982(7). See [Appendix B](#) for a geographical map of HB endemic countries.

## 2. Canada

Acute HBV has been reportable in Canada since 1969. In 1997, there was a significant decline in the number of reported cases and this decrease has continued in more recent years. This may be, in part, attributed to the introduction of universal HB immunization programs for infants and children in provinces/territories across Canada. The first Hepatitis B vaccine program was established in British Columbia in 1992(7).

Approximately 1% of Canadians have a chronic HBV infection. Research suggests that the majority of these (approximately 70%) are immigrants who arrived in Canada from areas where HBV is endemic (5).

## 3. Prince Edward Island

Prince Edward Island (PEI) established a Hepatitis B immunization program in 1995 (7). Over the last ten years, PEI had an average of 8 cases of undifferentiated (chronic or acute) HBV per year. As in the rest of Canada, many of the cases on PEI are found in people who have emigrated from endemic HBV countries. Additionally, the majority of cases have been pregnant women; routine prenatal testing for HBV is offered as per the [Health PEI Clinical Practice Guidelines for Prenatal Laboratory Screening and Testing](#).

## Control

### Management of Case

#### 1. Case Management

- The CPHO is involved with the investigation of all Hepatitis B cases. Public Health Nursing (Health PEI) will follow all lab confirmed cases. Advice on the management of cases is provided by the CPHO.
- Notification of test results and prescription of treatment (if required) will be carried out by the Health Care Provider.
  - Collect additional epidemiologic information such as the reason for testing, past history of exposure of HBV, etc.
  - Discuss testing for other sexually transmitted blood born infections and the need for follow up based on risk factors
    - Follow-up testing for acute cases includes:
      - HBsAg and anti-HBs six months after detection (this can be as soon as three months) to determine if he/she is a chronic carrier.

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- If the case does not develop the anti-HBs at six months, he/she may still be in the “window period”; the case should be retested at six-month intervals to assess the development of the anti-HBs while the HBsAg remains negative.
- Provide information about disease transmission and the appropriate infection prevention and control measures to be implemented to minimize the possibility of transmission (see [Appendix C](#) for a list of discussion topics)<sup>3</sup>.
- Management of **chronic cases** should also include monitoring for disease progression including<sup>4</sup>:
  - ALT and AST levels, HBsAg, HBeAg, and HBV DNA annually.
  - Monitor to determine the eligibility of antiviral medication treatment. Please refer to [Treatment of a Case](#) for more information.

## 1.1 Case Management (Pregnant Women)

- Pregnant women should be tested more frequently, especially if they will deliver before the six-month clearance interval, to determine disease status and to discuss newborn eligibility of the HBIG<sup>5</sup> and HB immunizations<sup>6</sup>. If the pregnant woman is within the infectious stage or is a chronic carrier, education is needed regarding the importance of prophylaxis management.
  - **Note:** Regardless of the mother’s status, the HBIG and HB immunizations will be offered to the newborn.

## Management of Contacts

- Contacts are defined as:
  - Sexual partners,
  - Injection drug users/other contacts who may have shared drug paraphernalia with a case,
  - Household contacts, and

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<sup>3</sup> To be completed by Public Health Nursing.

<sup>4</sup> To be completed by Primary Care Provider

<sup>5</sup>HEPATITIS B IMMUNE GLOBULIN (HBIG) should be given to the exposed person preferably within 48 hours of exposure if the exposed person is known to be non-immune. However it may be deferred for up to 72 hours if the exposed person can be tested for Hepatitis B immunity and results reported within 72 hours OR the source person is being tested for Hepatitis B surface antigen and results are expected. Please refer to the [Guidelines for the Management of a Percutaneous or Sexual Exposure to Bloodborne Pathogens](#).

<sup>6</sup>HEPATITIS B VACCINE should be administered to the exposed person after the HBIG is given, preferably within 72 hours. However, it can be delayed up to 7 days or more if the Hepatitis B surface antibody (immunity level) result on the exposed person is expected. Please refer to the [Guidelines for the Management of a Percutaneous or Sexual Exposure to Bloodborne Pathogens](#).

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- Newborns and infants under 12 months to mothers who have acute **or** chronic HB infection.
- Public Health Nursing to collect information regarding follow up and immunization history.
- For more information regarding needle stick injuries and sexual assault contacts, please refer to the [Guidelines for the Management of a Percutaneous or Sexual Exposure to Bloodborne Pathogens](#).
- HBIG and the HB immunization series is required if a contact is susceptible (HBsAg and anti-HBs negative), *and has been exposed in the past 14 days* (the immunization series can begin concurrently or as soon as possible after the HBIG is given).
  - HBIG can be accessed through the ER at the Queen Elizabeth Hospital (QEH)
  - Prince County Hospital and the Community Hospitals get HBIG from the blood bank at the QEH.

See [Appendix D](#) for the management of contacts.

## Treatment of a Case

- If a case is acutely infected, details concerning treatment should be obtained in consultations with a Hepatologist/Gastroenterologist/ Infectious Disease Consultant.
- If a case is chronically infected, antiviral medications may be recommended based on the viral load and are available through the Provincial Pharmacare Program. Consultation is required from a Hepatologist/Gastroenterologist/Infectious Disease Consultant and/or the primary care provider. Current medications available include Adefovir, Entecavir, and, Lamivudine.
- Treatment may be accessed by the primary care provider or attending provider by sending a prescription for the required treatment to the Provincial Pharmacare Program (fax: 902-368-4905). The health care provider will also inform the CPHO who is responsible for approving access to the Hepatitis B Program and providing written notification of this approval to the Provincial Pharmacare Program. Once approved, ongoing prescriptions may be sent directly to the Provincial Pharmacare Program (fax: 902-368-4905) without contacting the CPHO.

## Preventative Measures

### 1. Immunization

- A universal HB immunization program for PEI is offered to infants at two, four, and six months of age (refer to [PEI's Childhood Immunization Schedule](#)).

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- A catch-up program is offered to children or students up to age 18 (or while they are still in school) who have moved from another province or country who have not been immunized.
- Immunization is recommended for adults <sup>7</sup>with the following high risk conditions or risk factors<sup>8</sup>:
  - Chronic liver disease (including those with Hepatitis C),
  - Chronic renal failure and dialysis,
  - Congenital immunodeficiency,
  - Haematopoietic stem cell transplant (HSCT) or are awaiting solid organ transplant,
  - Human immunodeficiency virus (HIV),
  - Lifestyle risks for infection including MSM, repeated sexually transmitted infections or syphilis, and/or high risk sexual practices,
  - Haemophiliacs and other people receiving infusions of blood or blood products (e.g. Sickle cell disease),
  - Household or close contacts of children adopted from HB-endemic countries if the adopted child is HBsAg positive,
  - Illicit drug use,
  - Immigrants from areas with a high prevalence of HB,
  - Solid organ transplant, or
  - Occupations with high risk<sup>9</sup>.
- Travelers to HBV endemic countries should be advised to confirm the need for vaccination with an appropriate travel clinic before traveling.
  - **PEI does not publicly fund HB immunization for travelers.**

## 2. Routine Screening of HBV

- Routine screening for HBV is recommended for:
  - Adopted children from countries or family situations in which there is a high prevalence of HBV infection,
  - Males or females with multiple sexual partners, or with recent history of sexually transmitted infections,
  - Injection drug users, and
  - Blood donors (all donations of blood, blood products, tissues, organs and semen are screened by CBS since 1985).

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<sup>7</sup> As recommended per the [Prince Edward Island Adult Immunization Schedule](#).

<sup>8</sup>All vaccines are provided at no cost to the individual. Immunization is not covered for those who do not present with a high risk condition or risk factor.

<sup>9</sup>Individuals in occupations with high risk should consult with their employer. Some insurance companies may cover the vaccine and it can be administered by a physician, nurse practitioner or community pharmacist.

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- Additional screening may be necessary for pregnant women to prevent transmission to newborns. Repeat testing may be necessary before delivery in HBsAg positive and anti-HBs negative women who continue with high-risk behaviours.
  - Screen all women routinely either at preconception or during the first prenatal visit (as per [Health PEI Clinical Practice Guidelines for Prenatal Laboratory Screening and Testing](#)).
  - If prenatal women have not been screened and delivery has occurred:
    - Consider the mother's lifestyle risks.
    - If the results can be obtained within 12 hours, give the first dose of the HB immunization with the decision to hold the HBIG until results are known.
    - If the results cannot be obtained within 12 hours, give the first dose of the HB immunization. HBIG administration should be considered based on the presence or absence of maternal risk factors.
    - When the HB series is started, complete as per the recommended schedule (0, 1, and 6 months), regardless of maternal status.

### 3. Other Precautions

- All occupational exposures to potentially infectious material should be managed according to the Occupational Health and Safety guidelines for the workplace where the incident occurred or by a personal primary care provider.
- Removal of organic material must occur after a blood spill followed by appropriate disinfection (typically 1:10 dilution of household bleach).
- Ensure that there is adequate sterilization of instruments used in invasive procedures, including personal care services (e.g. ear/body piercing, tattooing equipment).
- Healthcare workers (HCW) who are HBV positive and are uncertain about the potential transmission risks or proper practices to minimize the risk to clients should consult with employee health, infection control, and/or patient safety groups responsible for the quality of care of clients.
  - HBV positive HCWs should also contact CPHO to discuss potential risks. Upon assessment, the CPHO may refer the worker to the *Bloodborne Pathogen/Health Care Worker Review Committee* for further assessment.
  - The Panel may also review those workers who perform exposure-prone procedures when it is uncertain whether continued or modified practices are required.

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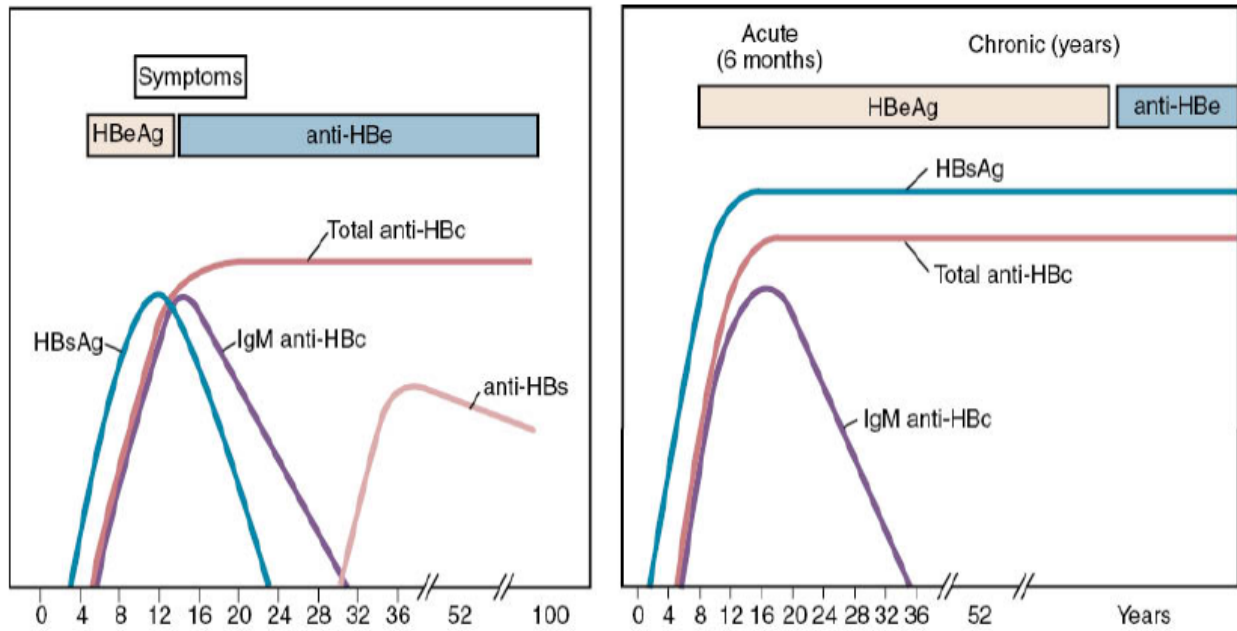
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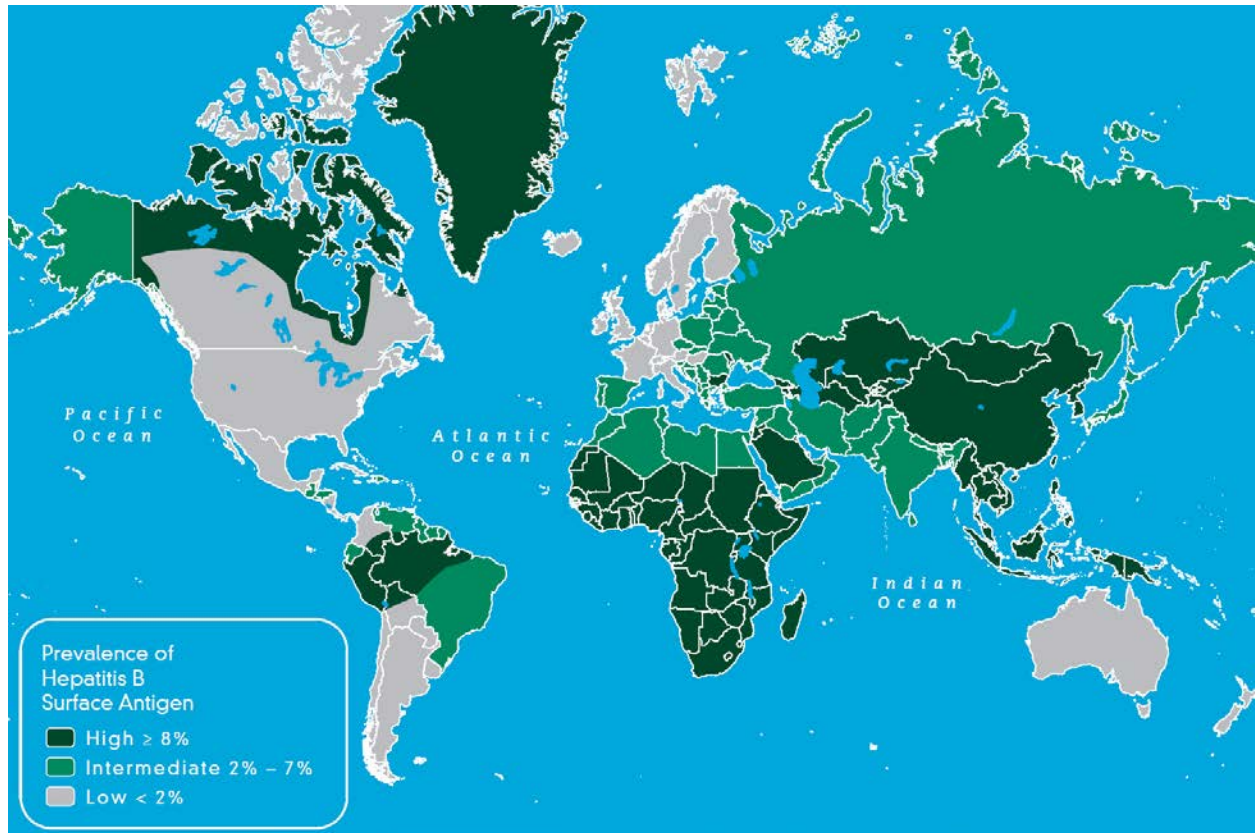
## Appendix A: Hepatitis B Antibody Response



**Figure 146-8 Typical course of hepatitis B.** Left, Typical course of acute hepatitis B. Right, Chronic hepatitis B. HBc, hepatitis B core; HBe, hepatitis B early; HBsAg, hepatitis B surface antigen; IgM, immunoglobulin M.

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## Appendix B: Geographical Distribution of Hepatitis B Endemic Countries



Source: <https://wwwnc.cdc.gov/travel/images/map3-4-prevalence-chronic-infection-hepatitis-b-large.png>

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## **Appendix C: List of Discussion Topics for HBV Counseling and Education (Cases)**

- Do not donate blood, semen, tissues or body organs.
- Do not share dental floss, toothbrushes, razors, earrings, or any other items that may have contaminated blood on them.
- Keep all cuts and wounds covered.
- Practice safe sex, including notification of HBV to any sexual partners. Discussion to partners should include HB immunization. Use of a latex condom is recommended until series is complete and serology indicates immunity (of contact).
- Appropriately dispose of items that may have been contaminated (dental floss, tampons, pads, Kleenex) by placing them in a separate bag before you put them in the garbage.
- Ensure disposal of all razors or any other sharp items into a hard, sealed container.
- Do not share drug paraphernalia (straws, pipes, cookers, needles, etc).
- Avoid pregnancy until resolution of infection (acute case) or identification as chronic carrier; if pregnant, discuss risks to newborn.
- Advise anyone who may come in contact with the infected blood (doctors, dentists, tattoo artists, body piercers, etc) of HBV infection.
- Promote healthy lifestyle habits to minimize liver damage (limit drugs and alcohol).

### **General Discussion Topics (Case and Contact)**

- HBV information (mode of transmission, how to reduce risk).
- Information about immunization.
- General lifestyle habits such as healthy eating and exercise.
- Expected follow-up procedures (including blood work and timelines).

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## Appendix D: Guidelines for the Management of a Percutaneous or Sexual Exposure to Bloodborne Pathogens, Management of Contacts

Exposed Person		Source (Case)
Vaccination Status	Anti-HBs Level	HBsAg Positive
<b>Vaccinated</b>	>/ 10 IU/L documented at any time	No action necessary
	Known non-responder (anti-HBsAg level <10 IU/L after vaccination)	<sup>†</sup> <b>HBIG<sup>+^</sup></b>
	Level unknown and unable to be determined within 48 hours	<sup>†</sup> <b>HBIG<sup>+</sup> + single booster</b>
<b>Unvaccinated</b>	>/ 10 IU/L	No action necessary
	Level unknown at 48 hours or < 10 IU/L	<sup>†</sup> <b>HBIG<sup>+</sup> + full vaccine course</b>

<sup>†</sup>Hepatitis B immune globulin 0.06 mL/kg preferably given within 48 hours of exposure. Efficacy decreases with time and is unknown after 7 days.

<sup>^</sup>If exposed person has received only three vaccine doses, an additional three-dose series may be administered.

For more information, please refer to the [Guidelines for the Management of a Percutaneous or Sexual Exposure to Bloodborne Pathogens](#).

Source: Canadian Immunization Guide, Seventh Edition, 2006

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