HBsAg, Anti-HBs and Anti-HBc total
HBsAg can be detected 4-12 weeks after exposure

HBsAg negative
Anti-HBc Total negative
Anti-HBs positive*
Immune due to vaccination

HBsAg negative
Anti-HBc Total negative
Anti-HBs negative
Susceptible

HBsAg positive
Anti-HBc Total positive
Anti-HBs negative
Acute or Chronic infection

HBsAg negative
Anti-HBc Total positive
Anti-HBs positive*
Immune due to natural infection

HBsAg negative
Anti-HBc Total positive
Anti-HBs negative
Isolated HBV core antibody

No further follow-up
Immune memory persists despite waning antibodies

Immunize
Offer one complete hep B vaccine series if indicated**

Clinical Evaluation
• Symptoms (see over)
• History of exposure

Reactivation
Can occur if immunocompromised (rare)
See isolated HBV core letter
Reactivation can occur if immunocompromised (rare)

Acute HBV infection
• No history of prior infection
• Symptomatic
• Recent exposure risks
• 95% of immune competent adults will resolve infection
• Order anti-HBc IgM^*^^
• Rule out other potential causes of acute hepatitis‡
• Repeat serology to confirm status and possible resolution

Follow-up
• Test and offer hep B vaccine and/or HB IgG if indicated, to recent contacts
• Public Health to complete the BCCDC HBV Acute Case Report Form

Chronic HBV infection
• History of prior infection or originating from endemic country
• Often asymptomatic
• No recent exposure
• HBsAg positive > 6 months
• Order anti-HBc IgM^*
• Recommend further evaluation: HBV DNA, HBeAg and ALT/AST
• Liver fibrosis assessment: APRI/FIB-4 and Elastography (e.g. Fibroscan®)
• Baseline ultrasound as appropriate
• Consult liver specialist

Follow-up
• Offer vaccines for hep A, pneumococcal and influenza
• Test and offer household and sexual contacts hep B vaccine

* Anti-HBs ≥ 10 IU/L
** If prior vaccination history and/or anti-HBs is detectable but <10 IU/L, see the BCCDC Hepatitis B Guidelines and Immunization Manual
For post-exposure prophylaxis, see the BCCDC Hepatitis B Guidelines Manual and Blood and Body Fluid Exposure Management Guidelines.
^ Appears early in acute HBV infection and often present in chronic infection. Chronic infection implied if anti-HBc IgM negative and HBsAg positive.
‡ Other infectious causes include Hepatitis A, C, D and E, Cytomegalovirus and Epstein-Barr Virus. Non-infectious causes include hepatotoxic drugs, autoimmune hepatitis, Wilson’s disease, vascular causes, or other pre-existing chronic liver diseases. Screen for HIV infection.
Background

Because of BC’s hepatitis B vaccination programs, there are only 10-15 acute HBV infections per year. Acute HBV infections occur more often in men who have sex with other men, people who inject drugs, or through sexual contact.

Chronic HBV in BC is most often seen in immigrants from endemic countries, such as East Asian populations. Females tend to get diagnosed at an earlier age than males, most likely related to universal prenatal HBsAg screening. Chronic HBV infection is treatable, but not curable. Oral antivirals can help to suppress HBV replication and reduces the risk of cirrhosis, liver failure and hepatocellular carcinoma (HCC).

Symptoms and Clinical Description

**Acute HBV infection:** symptoms can be absent. Onset can be insidious with right upper quadrant abdominal discomfort, fatigue, fever, nausea, vomiting, malaise, abnormal liver tests, dark urine, rash, arthralgia, jaundice, hepatomegaly & splenomegaly.

**Chronic HBV infection:** symptoms can be absent for decades in adult infection. Around 15-40% of adults are at risk for cirrhosis or chronic liver failure, and around 5% for HCC and end-stage liver disease.

Who to test

- Symptoms of hepatitis
- From a HBV endemic country
- Contacts of acute or chronic HBV infection
- HBsAg prenatal screening in first trimester (must identify as ‘prenatal’ on the lab requisition)

For a complete list see the BCCDC Hepatitis B Guidelines.

<table>
<thead>
<tr>
<th>Standard screening tests</th>
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<tbody>
<tr>
<td><strong>HBV Surface Antigen (HBsAg):</strong> detectable 4-12 weeks after infection, indicates infectiousness, present in acute or chronic infection</td>
</tr>
<tr>
<td><strong>Antibody to HBV Surface Antigen (anti-HBs):</strong> produced after immunization or natural HBV infection</td>
</tr>
<tr>
<td><strong>Antibody to HBV Core Antigen (anti-HBc Total):</strong> produced after HBV infection, detects both IgG and IgM</td>
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<tr>
<th>Other HBV markers</th>
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<tr>
<td><strong>IgM class Antibody to HbcAg (anti-HBc IgM):</strong> appears early in acute infection, lasts more than 6 months, and is also common in chronic infection</td>
</tr>
<tr>
<td><strong>HBV E Antigen (HBeAg):</strong> correlates with higher HBV DNA levels and higher risk for HBV transmission. Useful for treatment monitoring only.</td>
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<tr>
<td><strong>HBV DNA:</strong> high viral loads increase the risk of cirrhosis and HCC development. Useful for prognosis and monitoring.</td>
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Key education points to provide with HBV testing

<table>
<thead>
<tr>
<th>Engage into care</th>
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<tr>
<td>• Spread via blood and bodily fluids</td>
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<tr>
<td>• Ensure immunizations are up to date</td>
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<tr>
<td>• Assess and counsel about safer alcohol use</td>
</tr>
<tr>
<td>• Assess for substance use and need for counselling, harm reduction services and opioid substitution therapy</td>
</tr>
<tr>
<td>• Offer STI screening and counsel about safer sex</td>
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<tr>
<td>• Liver education (e.g., diet and acetaminophen use)</td>
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<th>Transmission prevention</th>
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<td>• If pregnant, discuss treatment options and refer to a liver specialist. Plan for HBIg and HBV vaccine administration to neonate at birth. Risk of chronic infection is inversely related to age at time of infection.</td>
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<tr>
<td>• Do not share personal care items (e.g., glucometers)</td>
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<tr>
<td>• Dispose items and sharps with blood or body fluids in separate bags or containers</td>
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<tr>
<td>• Keep all open cuts and sores covered</td>
</tr>
<tr>
<td>• HBV is NOT spread by kissing, hugging, sneezing, coughing, sharing dishes or cutlery or casual contact</td>
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<tr>
<th>HCC Surveillance for chronic HBV infection: indications for abdominal ultrasound every 6 months</th>
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<tr>
<td>• Individuals with cirrhosis</td>
</tr>
<tr>
<td>• Asian men &gt; 40 years of age</td>
</tr>
<tr>
<td>• Asian women &gt; 50 years of age</td>
</tr>
<tr>
<td>• Africans &gt; 20 years of age</td>
</tr>
<tr>
<td>• Family history of HCC</td>
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<tr>
<td>• HIV coinfection</td>
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Resources

- BCCDC website ([www.bccdc.ca](http://www.bccdc.ca)) for:
  - Acute HBV case report form
  - BCCDC BBFE Guidelines – post exposure prophylaxis
  - Isolated Hep B Core Antibody – sample letter for providers
  - Immunization recommendations
  - CASL - 2012 Hepatitis B Guidelines
  - AASLD - 2015 Guidelines for Treatment of Chronic HBV

Questions?

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