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IMPORTANT INFORMATION

This BCPRA guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to www.bcrenalagency.ca for the most recent version.

For information about the use and referencing of BCPRA provincial guidelines/resources, refer to http://bit.ly/28SFr4n.
1.0 Scope of Guideline

Applicability:
- In centre and community hemodialysis (HD) units
- Adults

This guideline provides recommendations on the screening, surveillance, vaccination and prevention of Hepatitis B.

2.0 Recommendation

Recommendation #1:
Implement the recommendations on Table 1 for the screening, surveillance, vaccination and prevention of Hepatitis B.

3.0 References


Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management (2013), Centers for Disease Control and Prevention, [https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6210a1.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6210a1.htm)

Hepatitis B FAQs for Health Professionals (no date), Centers for Disease Control and Prevention, [www.cdc.gov/hepatitis/hbv/hbvfaq.htm](http://www.cdc.gov/hepatitis/hbv/hbvfaq.htm)


4.0 Sponsors

This BCPRA guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to [bcrenalagency.ca](http://bcrenalagency.ca) for the most recent version.

Developed by:
- A working group of multidisciplinary renal care providers and infection control practitioners/medical microbiologists from across BC

Reviewed by:
- BCPRA Pharmacy & Formulary Committee

Approved by:
- BCPRA Hemodialysis Committee
- BCPRA Medical Advisory Committee

For information about the use and referencing of BCPRA provincial guidelines/resources, refer to [bcrenalagency.ca](http://bcrenalagency.ca).
Table 1: Recommendations for the Screening, Surveillance, Vaccination and Prevention of Hepatitis B

<table>
<thead>
<tr>
<th>Topic</th>
<th>Specifics</th>
<th>Hepatitis B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>When?</td>
<td>New HD starts (acute or chronic start), including pts coming from KCC, PD or transplant</td>
</tr>
<tr>
<td></td>
<td>What tests?</td>
<td>HBsAg, anti-HBc Total, anti-HBs</td>
</tr>
<tr>
<td>Ongoing testing (surveillance)</td>
<td>When?</td>
<td>See algorithms 1, 2, 3 &amp; 4 attached; plus</td>
</tr>
<tr>
<td></td>
<td>• Test for HBsAg on return from travel outside BC. Repeat 12 weeks after return (1 - 9 week window period post-exposure; average is 4 weeks).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If patient known to have HBV infection (based on positive HBsAg), this testing is not required.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clinical indications (e.g., unexplained abnormal liver enzymes).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What tests?</td>
<td>See algorithms 1, 2, 3 &amp; 4 attached</td>
</tr>
<tr>
<td></td>
<td>• HBsAg+</td>
<td>2. External surface disinfection of the dialysis area and HD machine after every patient.</td>
</tr>
<tr>
<td></td>
<td>• Isolated core positive: Anti-HBc+ and anti-HBs &lt;10 UI/L</td>
<td>3. Internal cleaning of the HD machine after every patient. Refer to BCPRA guideline on Cleaning and Disinfecting HD Machines and Stations: <a href="http://www.bcrenalagency.ca/health-professionals/clinical-resources/hemodialysis">www.bcrenalagency.ca/health-professionals/clinical-resources/hemodialysis</a></td>
</tr>
<tr>
<td></td>
<td>• Status unknown</td>
<td>Note:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Segregation of HBV+ patients in a private room or cohorting together in a separate area IS NOT necessary if the screening, surveillance and precautions outlined in this guideline are followed.</td>
</tr>
<tr>
<td></td>
<td>reporting</td>
<td>HD Unit to contact the public health unit in the patient’s health authority re appropriate public health interventions (i.e., contact tracing) for acute &amp; chronic HBV infections.</td>
</tr>
<tr>
<td>Vaccination</td>
<td></td>
<td>See algorithms 1, 2, 3 &amp; 4 attached</td>
</tr>
</tbody>
</table>

Algorithms attached:
1. Algorithm: Initial Hepatitis B Testing
2. Algorithm: Scenario #6: Isolated Anti-Core Positive Follow-Up Testing
3. Algorithm: Vaccine Responder Annual Testing
4. Algorithm: Hep B Core Positive Annual Testing
Algorithm: Initial Hepatitis B Testing

New HD starts (acute or chronic), including pts coming from KCC, PD or transplant after travel if received HD outside BC

**Scenario 1: Susceptible**
- HBsAg: Neg (Non-Reactive)
- Anti-HBc Total: Neg (Non-Reactive)
- Anti-HBs: Neg (<10 IU/L)

**Scenario 2: Immune d/t prior infection**
- HBsAg: Neg (Non-Reactive)
- Anti-HBc Total: Pos (Reactive)
- Anti-HBs: Pos (>10 IU/L)

**Scenario 3: Immune d/t hep B vaccination**
- HBsAg: Neg (Non-Reactive)
- Anti-HBc Total: Neg (Non-Reactive)
- Anti-HBs: Pos (>10 IU/L)

**Scenarios 4 & 5: Acutely or Chronically infected**
- HBsAg: Pos (Reactive)
- Anti-HBc Total: Pos (Reactive)
- Anti-HBs: Pos (>10 IU/L)

**Scenario 6: Isolated anti-core positive**
- HBsAg: Neg (Non-Reactive)
- Anti-HBc Total: Pos (Reactive)
- Anti-HBs: Neg (<10 IU/L)

**Do not vaccinate.**
- Refer to Vaccine Responder Annual Testing Algorithm (repeat anti-HBs Q12 mos)

**HBV DNA IgM Anti-HBc Total (baseline tests)**
- Do not vaccinate
- Disinfect machine
- Counsel patient on precautions
- Contact nephrologist
- Refer to Scenario #6: Isolated Anti-Core Positive Follow-Up Algorithm

**Prior completed 1st series vaccines?**
- Yes
- Do not vaccinate.
- Refer to Hep B Core Positive Annual Testing Algorithm (repeat HBsAg & anti-HBs Q12 mos)

**Prior completed 2nd series vaccines?**
- Yes
- Give 2nd series vaccines
- VACCINE RESPONDER
  - Refer to Vaccine Responder Annual Testing Algorithm (repeat anti-HBs Q12 mos)
  - Anti-HBs results?
    - >10 IU/L
    - 1st SERIES VACCINE NON-RESPONDER
      - No or unknown
      - Give 1st series vaccines
      - Repeat Anti-HBs one month after completion of series
      - Anti-HBs results?
        - <10 IU/L
        - 1st SERIES VACCINE NON-RESPONDER
          - No or unknown
          - Give 1st series vaccines
          - Repeat Anti-HBs one month after completion of series
          - Anti-HBs results?
            - <10 IU/L
            - 2nd SERIES VACCINE NON-RESPONDER
              - No further vaccinations
              - Counsel patient on precautions to prevent Hepatitis B infection
              - Repeat HBsAg monitoring to ensure no new infection.

1 Initial testing is recommended on all new HD patients. If patient is identified as a 2nd series vaccine non-responder prior to starting HD, no further vaccinations are required. Continue annual HBsAg monitoring to ensure no new infection.

2 4 possible interpretations:
   A. False positive (most common)
   B. Remote resolved past infection (or latent infection)
   C. Resolved acute HBV infection
   D. Chronic infection

**HBsAg = hepatitis B surface antigen**
**Anti-HBc Total = hepatitis B core antibody**
**Anti-HBs = hepatitis B surface antibody**
Algorithm: Scenario #6: Isolated Anti-Core Positive Follow-Up Testing

Scenario 6: Isolated anti-core positive
HBsAg: Neg (Non- Reactive)
Anti-HBc Total: Pos (Reactive)
Anti-HBs: Neg (<10 IU/L)

HBV DNA

HBV DNA results?
Positive (≥20 IU/mL)
Negative (<20 IU/mL)

Prior completed 1st series vaccines?
No or unknown
Give 1st series vaccine
Repeat Anti-HBs one month after completion of series

Prior completed 2nd series vaccines?
Yes
1st SERIES VACCINE NON-RESPONDER
Give second series vaccine
Repeat Anti-HBs one month after completion of series

No
1st SERIES VACCINE NON-RESPONDER
≥10 IU/L

2nd SERIES VACCINE NON-RESPONDER
<10 IU/L

Anti-HBs results?
<10 IU/L
Repeat Anti-HBs Q12 mos.

≥10 IU/L
VACCINE RESPONDER
Refer to Hepatitis B Core Positive Follow-Up Algorithm
(repeat HBsAg & anti-HBs Q12 mos.)

<10 IU/L

No further vaccinations
Disinfect machine
Counsel patient on precautions to prevent Hepatitis B infection
Repeat HBsAg Q12 mo.

During waiting period:
- Disinfect machine.
- Counsel patient on precautions
- Contact nephrologist

Do not vaccinate
- Disinfect machine
- Counsel patient on precautions
- Contact nephrologist

2 4 possible interpretations:
A. False positive (most common)
B. Remote resolved past infection (or latent infection)
C. Resolved acute HBV infection
D. Chronic infection

HBsAg = hepatitis B surface antigen
Anti-HBc Total = hepatitis B core antibody
Anti-HBs = hepatitis B surface antibody

1Initial testing is recommended on all new HD patients. If patient is identified as a 2nd series vaccine non-responder prior to starting HD, no further vaccinations are required. Continue annual HBsAg monitoring to ensure no new infection.
Algorithm: Vaccine Responder Annual Testing

VACCINE RESPONDER ANNUAL TESTING

Anti-HBs Q 12 mo

Anti-HBs results?

≥10 IU/L

Yes

Prior completed 1st series vaccines?

No or unknown

Give 1st series vaccines

Repeat Anti-HBs one month after completion of series

Anti-HBs results?

<10 IU/L

Yes

Prior completed 2nd series vaccines?

No or unknown

Give booster dose (Hepatitis B vaccine RECOMBIVAX-HB 40mcg IM x 1).

Repeat Anti-HBs one month after booster

Anti-HBs results?

<10 IU/L

1st SERIES VACCINE NON-RESPONDER

Yes

Give 2nd series vaccines

Repeat Anti-HBs one month after completion of series

Anti-HBs results?

<10 IU/L

2nd SERIES VACCINE NON-RESPONDER

HBsAg = hepatitis B surface antigen
Anti-HBc Total = hepatitis B core antibody
Anti-HBs = hepatitis B surface antibody

No or unknown

HBsAg = hepatitis B surface antigen
Anti-HBc Total = hepatitis B core antibody
Anti-HBs = hepatitis B surface antibody

≥10 IU/L

≥10 IU/L

<10 IU/L

≥10 IU/L

≥10 IU/L

≥10 IU/L

≥10 IU/L

1 In the event of a shortage, ENGERIX-B may be substituted for RECOMBIVAX-HB but note that the vaccination schedules are different.

In the event of a shortage, ENGERIX-B may be substituted for RECOMBIVAX-HB but note that the vaccination schedules are different.
Algorithm: Hep B Core Positive Annual Testing

1. **HBsAg =** hepatitis B surface antigen  
   **Anti-HBc Total =** hepatitis B core antibody  
   **Anti-HBs =** hepatitis B surface antibody  
   **HBV immune =** hepatitis B virus immune

2. **HBsAg & anti-HBs Q 12 mos**
   - **HBsAg results?**
     - **Pos (Reactive):**
       - Disinfect machine
       - Counsel patient on precautions
       - Contact nephrologist
     - **Neg (Non-Reactive):**
       - Anti-HBs results?
         - **<10 IU/L:**
           - Prior completed 1st series vaccines?
             - Yes
               - Give 1st series vaccines
             - No or unknown
               - Give booster dose (Hepatitis B vaccine RECOMBIVAX-HB 40mcg IM x 1).  
                 Repeat Anti-HBs one month after booster
             - Anti-HBs results?
               - <10 IU/L
                 - 2nd SERIES VACCINE NON-RESPONDER
                   - Initial testing is recommended on all new HD patients. If patient is identified as a 2nd series vaccine non-responder prior to starting HD, no further vaccinations are required. Continue annual HBsAg monitoring to ensure no new infection.
                 - ≥10 IU/L
                   - VACCINE RESPONDER
                     - Repeat HBsAg & anti-HBs Q 12 mos
               - ≥10 IU/L
                 - VACCINE RESPONDER
                   - Repeat HBsAg & anti-HBs Q 12 mos
         - ≥10 IU/L
           - Prior completed 2nd series vaccines?
             - Yes
               - Continue to disinfect machine until anti-HBs ≥10 IU/L.
             - No or unknown
               - Repeat HBsAg & anti-HBs Q 12 mos
     - ≥10 IU/L