Provincial Hepatitis B Primary Care Screening, Testing, & Monitoring Pathway

Quick Links: Primer & Expanded details | Provider resources | Patient pathway | Provide feedback

Due to the complexity of Hepatitis B infection and management, this clinical pathway has been subdivided into 2 pages. Page 1 highlights history, investigations and management of individuals who have **Natural immunity or are exposed** and those who are **Not immune or not exposed**. Page 2 provides information for the management of clients who are **infected**.

STOP: This pathway does not address urgent hepatic findings:
- Jaundice
- New liver mass
- Cirrhosis and/or decompensation (variceal bleed, new onset ascites, encephalopathy)
- ALT >250 at presentation

→ Follow local protocol for workup and referral

None

1. History: *Who should undergo hepatitis B virus (HBV) testing?*

Any patient who requests testing (even without risk disclosed)

Country of origin/residence, living arrangement history:
- Born or resident in region where HBV is common *(see expanded details)*
- People with experience in high-risk congregate living environment (e.g., corrections facilities, group homes, etc.)
- Received healthcare/hospitalization in HBV endemic region

Family:
- Household contacts of HBV infected person
- At any time, close contact with any person known to have hepatitis, liver cancer, and/or especially maternal history of hepatitis

Vaccine history:
- No known Hx of hep B vaccination OR born before 1982 in Canada

Risk-Based:
- Sexual contact(s) with HBV infected person
- Multiple sexual partners
- Injection and/or intranasal substance use (past or present)
- Recipient of blood/blood products prior to 1972 in Canada, or recipient of blood/blood products outside of Canada

Medical history:
- Chronic renal failure needing dialysis
- Signs of liver disease or STBBI (e.g., Hep C, HIV)
- Current pregnancy
- Patient needing immune modulation therapy or those who will be immunosuppressed (e.g., chemotherapy) (see expanded details)

2. Investigations

Support destigmatization of hepatitis B and engage in shared decision-making for screening.

- HBsAg - Hepatitis B virus surface antigen
- HBsAb (also called Anti-HBs or Anti- HBsAg) - Hepatitis B virus surface antibody
- Anti-HB core total (also called Anti-HBc) - Hepatitis B virus core total antibody
- ALT → If ALT> 250 → Urgent referral to specialty as locally available
- Screen for hepatitis A and STBBI (e.g., Hep C, HIV, syphilis, gonorrhea, chlamydia) → STBBI positive → Treat as appropriate. Alberta Treatment Guidelines for Sexually Transmitted Infections. If Hep C positive, see Hep C Pathway

3a. NATURAL IMMUNITY/EXPOSED
HBsAg NEGATIVE
HBsAb NEGATIVE OR POSITIVE
Anti-HBc total POSITIVE

a. Is this person immunosuppressed or requiring immunosuppression?

Yes → Referral to Specialty or telephone advice

No → If chemo/ Immunosuppression needed

- No further monitoring required unless need for immunosuppression or chemotherapy arises.
- No need for HBV immunization.
- Note: isolated HBcAb positive result usually represents prior cleared infection (false positives are very rare, <0.2%).

3b. **INFECTED
HBsAg POSITIVE
(***see next page for management***)

3c. NOT IMMUNE/NOT EXPOSED
HBsAg NEGATIVE
HBsAb NEGATIVE
Anti-HBc total NEGATIVE

c. Immunize in accordance with Alberta Immunization and routine immunization schedule

Primary Care Alberta

Call to Action: We need your feedback during this **new** pathway's initial testing phase!

Alberta's Pathway Hub | Background

3b. Person with hepatitis B (HBsAg POSITIVE)

While the scope of this pathway is adult patients with hepatitis B, some general guidance for pregnant and pediatric patients can be found in the expanded details.

b. Assess Status of Infection: (Hepatitis B infection follow up tests)

Further hepatitis B tests

- HBeAg: HBV e antigen. Prognostic marker for HBV infection.
- Anti-HBe: antibodies to HBV e-antigen. Prognostic marker for HBV infection.
- HBV DNA: determination of viremia or treatment monitoring

Note: While ideal to complete these tests prior to referral, not all are required for triage to specialty. Different requirements exist between zones. See expanded details.

Liver Tests

- FIB4 test (ALT, AST, platelets)
- Liver function tests – bilirubin, albumin, INR
- Ultrasound (baseline abdominal) to assess for liver abnormality

Other infectious disease tests:

- Test for Hepatitis A immunity
- (HAV IgG) and refer for publicly funded vaccine if not immune
- Screen for other STBBI if not done previously (see Box 3)

- Info on completing requisitions
- Serology and Molecular Testing Requisition form

Refer to Specialty for assessment

4. Ongoing Primary Care Monitoring and Management Support

(while awaiting specialty consult or if patient discharged from specialty)

Monitoring:

- ALT q 6 months
- FIB4 every 1-2 years to assess fibrosis
- HBV DNA annually
- HBsAg q 2-3 years to assess for spontaneous clearance
- Hepatocellular carcinoma (HCC) surveillance:

  Indications:
  - Right away if PMHx of cirrhosis or family Hx of HCC, starting at 10 years before the affected family member was diagnosed
  - At age 30 (male/female) if sub-Saharan African-born
  - At >40-year-old male, >50-year-old female
  - Other risk calculators may be useful (*see expanded details*)

  Screening includes both:
  - Ultrasound q 6 months
  - Alpha fetoprotein (AFP) q 6 months (as per HCC screening recommendations)
    - If elevated >20ug/L, ensure ultrasound within 3 months.
    - If not within 3 months, order liver ultrasound and investigate other causes (pregnancy, testicular Ca, etc.). Repeat in 3 months.

  *Consider referral to HCC screening program as available (see expanded details)

Parameters for re-referral or e-consult:

- Review elevated ALT for cause in conjunction with HBV DNA. Use clinical judgment for referral *(see expanded details for more information)*
- HBV DNA:
  - If > 2000 – 3000 IU/mL once, check again in 6 months. If > 2000 IU/mL again, re-refer to specialty
  - If >3000 IU/mL, re-refer to specialty
- AFP:
  - Persistent AFP 20ug/L – 100ug/L (two elevated 3 months apart) → refer to specialty or seek specialist advice
  - If AFP >100ug/L re-refer to specialty
- FIB-4 ≥ 1.30
- Platelets <150
- Abnormal ultrasound (e.g., mass > 1 cm, cirrhosis)
- Acute cirrhosis decompensation – variceal bleed, ascites, jaundice, hepatic encephalopathy. Urgent re-referral or ER as necessary
- Q3-5 years due to evolving management recommendations

Management Support:

- **Patient education -**
- What hepatitis B is, its transmission, and hepatitis B in pregnancy (as relevant)
- Emphasize importance of vaccination for close contacts and how to get vaccinated
  - Strategies to reduce stigma and fear
  - Assess need for mental health supports
- Counselling on diet, activity, stress management to support liver health. Consider referral to CDM, allied health, dietitian

This primary care pathway was co-designed provincially by Primary Care Providers, Specialist Physicians including Hepatology and Infectious Diseases, Clinical Microbiologists, Patient and Family Advisors, and the Primary Care Alberta Provincial Pathways Unit. It is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home.

EXPANDED DETAILS

Pathway Primer

Hepatitis B is a vaccine-preventable liver infection caused by the hepatitis B virus (HBV) [1].

In 2021, a Canadian surveillance and epidemiology study based on national notifiable data on hepatitis B Virus was conducted. The study showed an overall total incidence rate of 9.2 per 100,000, with a 0.3 per 100,000 incidence rate of acute HBV. HBV rates are higher among males versus females [2].

The majority of those infected with hepatitis B are unaware they are infected and are either asymptomatic or have mild symptoms [1]. While about 95% of adults infected with HBV experience acute self-limiting infection, others will develop chronic infection. About 15-25% of adults chronically infected will develop life-threatening complications such as cirrhosis, hepatocellular carcinoma (HCC), or fulminant hepatic failure [3] [4]. Hepatitis B is the leading cause of end-stage liver disease and liver cancer [5].

Studies show that about 50% of individuals with HBV infection remained undiagnosed in Canada [5]. Factors contributing to under-diagnosis include health literacy barriers and persistent stigma, resulting in avoidance to seek a diagnosis [5]. Removing these barriers to enable prompt identification, treatment, and ongoing monitoring of patients with hepatitis B is critical in optimizing patient health and disease management.

HBV is highly infectious, remains infectious on surfaces for greater than 7 days, and can be transmitted in the absence of visible blood [6]. Anyone who tests positive for HBsAg is infectious, and those with elevated HBV DNA or HBeAg are more infectious than HBsAg alone.

Routes of transmission include:

- Vertical transmission (also called perinatal transmission or mother-to-child transmission) – most common in regions where HBV is common. Non-endemic regions who do not screen mothers for HBsAg and do not vaccinate infants at birth may also see this route of transmission.
- Contact with blood or body fluids of close household contacts and family members with hepatitis B, especially if exposed under the age of 5 years
- Sexual contact – HBV can be transmitted through semen and vaginal secretions from a person with hepatitis B
- Percutaneous exposure to infectious body fluids, such as: close contact by open cuts and sores (e.g., among children in hyperendemic areas), needle sharing, needlestick injury in healthcare settings, traditional practices (e.g., tattoos), iatrogenic from improperly sterilized medical equipment (horizontal transmission).

Acute Hepatitis B:

Acute hepatitis B infection is characterized by infection that resolves within 6 months. When present, symptoms of acute infection appear within 2-6 months and are often non-specific, including [1]:

- fever
- fatigue
- nausea
- vomiting
- joint pain
- dark urine
- loss of appetite
- right upper quadrant tenderness
- clay-coloured stool
- jaundice

90-95% of adults with acute HBV will experience spontaneous resolution within 6 months, resulting in lifelong protection (i.e., natural immunity) [1]. Management for these cases is typically supportive [3]. Of concern for those with natural immunity is the risk of HBV reactivation should these patients become immunosuppressed in the future. While uncommon, reactivation can lead to sudden and severe active infection and hepatic failure, which could be life-threatening.

Chronic Hepatitis B:

Those unable to spontaneously clear the hepatitis B surface antigen after 6 months meet criteria for chronic infection [1]. Complications of untreated chronic hepatitis B infection include cirrhosis, hepatocellular carcinoma, and hepatic decompensation as end stage liver disease. Other concerns include renal dysfunction and acute necrotizing vasculitis [7].

Pathway goal and scope:

This pathway represents the cumulative agreement of specialists, practitioners, and lab medicine scientists. Its use in primary care is intended to optimize hepatitis B screening, testing, and patient care by:

- raising awareness of who, in the population, may benefit from hepatitis B screening (however, screening should be offered to all individuals if requested)
- offering rapid differential and referral triggers for primary care
- promoting a consistent approach to screening, testing, monitoring, and managing hepatitis B patients in primary care
- improving vaccination rates for those who are not protected
- reducing community transmission where possible

This pathway is intended for use with adult patients.

Urgent hepatic findings:

This pathway does **not** address urgent hepatic findings:

- Severe acute hepatitis – symptoms include jaundice, right upper quadrant pain in the abdomen, nausea, loss of appetite, fatigue or malaise, fever
- ALT >250
- New liver mass NYD
- Decompensated cirrhosis – characterized by jaundice, variceal hemorrhage, hematemesis, melena, hepatic encephalopathy, ascites, coagulopathy

See cirrhosiscare.ca for more details.

Patients presenting with urgent hepatic findings should have appropriate workup and referral as locally available.

1. History

Country of origin/residence, living arrangement history:

- Born or resident in region of high HBV endemicity; see Hepatitis B Virus Infection - High Endemic Geographic Areas (alberta.ca)
- People with experience in high-risk congregate living environment (e.g., corrections facilities, group homes, etc.)
- Received healthcare/hospitalization in HBV endemic region

Family:

- Household contacts and family members of HBV infected person
- At any time, close contact with any person known to have hepatitis, liver cancer, and/or especially maternal history of hepatitis

Vaccine history:

- No known history of HBV vaccination OR born before 1982 in Canada

Risk-Based:

- Sexual contact(s) with HBV infected person
- Multiple sexual partners
- Injection or intranasal substance use (past or present)
- Recipient of blood/blood products prior to 1972 in Canada, or recipient of blood/blood products outside of Canada

Medical history:

- Chronic renal failure needing dialysis
- Signs of liver disease or other STBBI (e.g., Hepatitis C, HIV)
- All pregnant people
- Patient needing immune modulation therapy or those who will be immunosuppressed (e.g., chemotherapy). Note: For these patients, test for HBV **before** administration of IVIG due to risk for false positive results.

IMPORTANT/OTHER CONSIDERATIONS

Vaccination is key to prevention of HBV infection. Despite the availability of HBV vaccine, challenges with eradication in Canada continue due to lack of a universal birth dose vaccine and interprovincial variation in screening and care linkage [5].

Many experts are advocating for universal screening of adults because it is cost-effective compared with risk-based screening and helps prevent liver disease and death [8]. Unfortunately, many people with hepatitis B are not identified through risk-based testing alone [6].

SPECIAL POPULATIONS:

Many patients with hepatitis B that present to primary care will have families that include infants, children, and pregnant persons under the same primary care provider's care.

All close contacts should be screened for hepatitis B, regardless of vaccination status, except for the following scenarios:

- There is a record of previous screening, and the patient is determined to be protected (e.g., through previous infection that has cleared or through vaccination) Note: close contacts with lab confirmation of positive anti-HBs but without evidence of previous infection and without documentation of any doses of hepatitis B vaccine should be offered a series of hepatitis B vaccine to ensure long term immunity).
- Records show a patient was previously screened (with "not immune/not exposed" status) and subsequently vaccinated with documented immunity (Note: lab reports confirm immunity). Data shows immunity is lifelong [9].

Check the vaccination status of all family members/household residents and encourage vaccination for those whose screening results show "not immune/not exposed" status.

Public Health is automatically notified of all HBsAg positive cases, and they will contact the ordering physician. Wherever possible, Public Health endeavors to ensure the patient's family practitioner informs patients of their positive status given already-established trust and rapport. Regardless of who makes first contact, a public health nurse will always try to contact the patient for education, contact tracing, and to encourage treatment as per the Alberta Public Health Disease Management Guidelines: Hepatitis B – Acute and Chronic.

Hepatitis B monitoring, management, and follow-up is nuanced and varied for patients who are pregnant and for children, particularly for those <2 years old.

Hepatitis B positive in pregnancy:

- Preconception planning: Patients living with hepatitis B may question whether they can have children safely. Providers should offer positive reassurance that conception and having a healthy baby is possible. Inform patient that steps will be taken to protect baby throughout the pregnancy and during delivery. While hepatitis B vaccine and immunoglobulin prophylaxis (HBIG) is typically successful at protecting baby, there is a small chance of prophylaxis failure that can be mitigated with antiviral treatment from specialty care.
- All pregnant patients must be referred to specialty in the first trimester to assess viremia and determine if antiviral treatment is necessary during pregnancy to reduce viral load prior to delivery.
- Blood work orders: For hepatitis B positive pregnancies, ordering the prenatal infectious disease panel will signal automatic process within APL to ensure hepatitis B vaccine and/or HBIG are available at birth for baby.
- Public Health will follow up with all hepatitis B cases in pregnancy (even if repeat pregnancy) and will send the ordering physician a letter outlining standards of care and instructions on notification, referral, and arranging treatment for the infant prior to discharge from hospital.
- Coordination of care: Primary care providers should have timely post-partum follow-up with patients to ensure the necessary interventions occurred.

Hepatitis B positive children:

- Refer to specialty as locally available (typically pediatric infectious diseases, hepatology or gastroenterology).

First Nations:

- All HBsAg-positive lab results from patients living in First Nations will be directed to Indigenous Services Canada (ISC).
- ISC connects with community health nurses who conduct outreach follow-up, such as education, teaching, and recommendations as per the Alberta Public Health Disease Management Guidelines: Hepatitis B – Acute and Chronic.
- Notes for primary care:
    - Typically, the primary care/ordering physician should share the diagnosis with the patient. If a primary care provider is unable to contact the patient, please email the generic ISC inbox at equipecmtab-abcdcteam@sac-isc.gc.ca. They will notify the community health nurse who can attempt to make contact through direct outreach. The goal is to prevent patients from being lost to follow-up.
    - When ordering hepatitis B screening, primary care providers should inform the patient that a community health nurse may contact them (if they test positive) to do appropriate public health follow up. This helps prevent confusion and ensures the patient is aware of why they are receiving a call from Public Health.
- To reduce barriers to care, some health care centers in First Nations have access to resources such as immunizations, on-site blood draws, or medical transportation if care is required outside the health center.

Healthcare workers:

- For healthcare workers who screen HBsAg positive, contact infectious disease, hepatology, or Public Health for most appropriate next steps. It is important to note that the *Health Information Act* of Alberta prohibits disclosure of specific diagnoses to employers. However, employers are entitled to request workplace restricted activities including quarantine duration if necessary.
- If the healthcare employee is able to work in a limited or modified capacity, employers are required by law to offer modified duties (with medical documentation listing restricted activities) up to the point of undue hardship. Accommodations may include restrictions from patient care if necessary.
- Many healthcare employees are unionized, and as such are afforded Union representation for medical accommodations if the employee wishes to seek support.
- Resources: Health Information Act | Alberta.ca

Post-Exposure Prophylaxis (PEP):

- The most critical treatment for PEP is the hepatitis B vaccine. When the recommended schedule is followed, a complete immunization series is 95-100% effective in preventing chronic infection, that lasts lifelong [10] [9].
- Hepatitis B immunoglobulin (HBIG) offers immediate short-term passive immunity and may give additional protection in the following cases:
    - Exposure through sexual contact if within 14 days of last exposure
    - Exposure through non-sexual contact with blood/body fluids if within 7 days of last exposure
- Patients requiring vaccine-only: patients can call 811 to book an appointment at their nearest public health centre.
- Patients requiring vaccine and HBIG: providers can contact Public Health, 8:30 am to 4:00 pm weekdays at 1-855-444-2324.
- More information on hepatitis B PEP: Alberta Guidelines: Post-Exposure Management and Prophylaxis.

2. Investigations

Primary care providers play a critical role in supporting the destigmatization of hepatitis B. Approach screening conversations with sensitivity. Support patients to make an informed decision by engaging in shared decision-making and presenting screening as an opportunity to best manage their health. See Appendix A.

HBV screening tests:

Serology and Molecular Testing Requisition form

- HBsAg - Hepatitis B virus surface antigen
- HBsAb (also called Anti-HBs or Anti- HBsAg) - Hepatitis B virus surface antibody
- Anti-HB core total (also called Anti-HBc) - Hepatitis B virus core total antibody

Other tests:

- ALT
  - **If >250, send urgent referral to specialty as locally available.**
- Screen for hepatitis A and STBBI (e.g., hepatitis C, HIV, syphilis, gonorrhea, chlamydia)
  - If patient screens positive for other STBBIs, treat as appropriate. Refer to Alberta Treatment Guidelines for Sexually Transmitted Infections
  - If patient screens positive for hepatitis C, refer to Hepatitis C Virus Primary Care Pathway

Table 1: Interpretation of Hepatitis B Screening Tests

Interpretation	HBsAg	HBsAb (anti-HBs)	HBcAb (anti-HBc)	Details and actions needed
Natural immunity/Prior exposure	-	+	+	Patient has had, and recovered from, hepatitis B infection. HBV dormant in the liver. Reactivation risk if immunosuppressed due to occult* infection. Patients unable to donate blood. HBsAb positive at any titer means vaccine not needed.
Prior exposure	-	-	+	When HBcAb is the only positive serological marker, this usually represents a prior cleared infection with HBV (false positives are very rare, <0.2%) Patient unable to donate blood. Unless patient is immune compromised or will require immunosuppression, no further action is needed. If immune compromised, refer to specialty.

Interpretation	HBsAg	HBsAb (anti-HBs)	HBcAb (anti-HBc)	Details and actions needed
Immune-protected	-	+	-	Patient has not been exposed to, or infected with, hepatitis B. Patient is vaccinated and protected.
Infected	+	-/+	+	An HBsAg positive result indicates the patient is infected with HBV. Patient can pass infection to others. Additional investigations, referral to specialist, and ongoing monitoring needed. Patients unable to donate blood.
Not immune/Not exposed	-	-	-	Patient hasn't been exposed or infected with HBV and is not protected. Patient is at risk of hepatitis B infection. Vaccine series needed.

*Occult HBV infection is defined by the presence of detectable low-level HBV DNA using sensitive tests (usually <200IU/ml) in persons who are HBsAg-negative.

3A. NATURAL IMMUNITY/EXPOSED

Immunosuppressed or requiring immunosuppression:

- The risk of hepatitis B reactivation is higher in people with chronic infection (HBsAg positive). However, hepatitis B reactivation can occur in patients with past infection because HBV DNA remains in the liver indefinitely.
- Reactivation is characterized by sudden increase in HBV DNA and liver enzymes (ALT), a change in HBsAg biomarker from negative to positive, hepatitis B flares and/or other signs of liver damage.
- Causes: While reactivation can be spontaneous, it is mostly caused by:
    - immunosuppressive therapies for cancer or autoimmune disorders (such as B cell depletion therapy for people with multiple sclerosis)
    - chemotherapy treatment for cancer
    - antiviral treatment for hepatitis C (although this is rare)
    - immunosuppression (e.g., solid organ transplant, stem cell transplant, HIV)
- Reactivation can lead to sudden and severe active infection and hepatic failure, which could be life-threatening.
- For more information about reactivation, prevention strategies, and to see a **list of medications that are risk factors for reactivation**, see the Hepatitis B Reactivation Guide Revised Version.
- Immunosuppression in the context of hepatitis B is a rapidly evolving area. I**f unsure whether your patient meets criteria for being immunosuppressed, seek specialty telephone advice.**

3B. INFECTED

Hepatitis B is a notifiable disease. Lab Services will notify Public Health of all positive hepatitis B surface antigen results. Public Health will contact the ordering physician. Wherever possible, Public Health encourages the patient's family practitioner to inform patients of their positive status given already-established rapport and trust. When needed, (e.g., if unable to reach family practitioner to confirm whether they have notified the patient, or if patient tested in ER and doesn't have a family practitioner), Public Health will inform patients of their positive results. A public health nurse will also contact the patient for education, contact tracing, and to encourage the patient to seek treatment.

When sharing results with patients, allow the patient to ask questions and create space to correct misinterpretations and dispel unrealistic fears. Engage in conversation about what this diagnosis means for them in their life. Remind patients that hepatitis B is treatable, and patients can continue to live meaningful lives with the correct management.

Assess Status of Infection (Hepatitis B infection follow up tests)

Note: The following tests are ideally completed prior to referral to aid the triage process; however, not all are required for referral. Tests required for specialty referral differ by zone; see the "Referral Process" section for details.

i. **Further hepatitis B testing:**

- **Hepatitis B virus e-antigen (HBeAg):** first detectable in early stage of infection, after appearance of HBsAg, or consistently during or after a surge of viral replication. A negative result may indicate early acute infection (before viral replication peak) or early convalescence (when HBeAg drops below detectable levels).
- **Antibodies to hepatitis B virus e-antigen (Anti-HBe)**: formed through seroconversion of e-antigen to e-antibodies. Helps determine phase of infection. A reactive anti-HBe indicates early convalescence. A non-reactive anti-HBe may indicate early acute infection (before viral replication peak).
- **Hepatitis B virus DNA**: determination of viremia; measures antiviral treatment effectiveness.

ii. **Liver tests:**

- **Fibrosis-4 Score (FIB-4) test**: a calculated test based on age, ALT, AST, and platelet count that helps estimate the amount of scarring of the liver. Introduction of Fibrosis-4 (FIB-4) Score Ordering and Reporting in Alberta.

  If ALT, AST, and platelets are ordered separately, physicians are required to manually calculate the FIB-4. FIB-4 calculator: Fibrosis-4 (FIB-4) Index for Liver Fibrosis.
- **Liver function tests** – baseline bilirubin, albumin, INR (ongoing testing not required unless cirrhosis or severe hepatitis is present).
- **Baseline abdominal ultrasound**: should be ordered to look for signs of cirrhosis, portal hypertension, and hepatocellular carcinoma (HCC). Abdominal ultrasound is not an ongoing test unless patient meets criteria for HCC screening.

  Note: if using HCC screening program requisition to order this baseline ultrasound, it could take up to 3 months to determine if patient is accepted into the program. Suggest ordering U/S using standard requisition form to expedite U/S completion. See this section for more information on HCC screening program.

iii. **Other Infectious Disease tests:**

- **Test for hepatitis A immunity (HAV IgG)** and refer for publicly funded vaccine if not immune.
- **Screen for other STBBI if not done previously**: refer to Alberta Treatment Guidelines for Sexually Transmitted Infections. If hepatitis C positive, see Hepatitis C Virus Primary Care Pathway.

3C. NOT IMMUNE/NOT EXPOSED

Recommend immunization in accordance with Alberta Immunization and routine immunization schedule.

4. Ongoing Primary Care Monitoring and Management Support

Monitoring

Monitoring blood work includes:

- ALT q 6 months
- FIB4 (AST, ALT, CBC) every 1-2 years to assess fibrosis
- HBV DNA annually
- HBsAg every 2-3 years to assess for spontaneous clearance

Hepatocellular carcinoma (HCC) screening and ongoing surveillance:

- Patients with chronic hepatitis B (i.e., HBsAg positive) are at risk of developing hepatocellular carcinoma.
- All people with cirrhosis should have HCC screening.
- The purpose of HCC screening is to support early detection of hepatocellular carcinoma through regular screening over the long term.
- The most current screening guidelines from the Canadian Association of the Study of the Liver support the following HCC screening indications:
    - Right away if past medical history of cirrhosis or family history of HCC, starting at 10 years before the affected family member was diagnosed.
    - At age 30 (male/female) if sub-Saharan African-born (Note: age ranges continue to change; the most current screening guidance is 30 years old).
    - At >40-year-old male, >50-year-old female.
    - Other risk calculators may be useful. For example, PAGE-B score (see Appendix D in the Hepatocellular Carcinoma Clinical Practice Guideline), REACH score (REACH-B Score for Hepatocellular Carcinoma (HCC)).
    - Note: Updated Screening Guidelines from The Canadian Association for the Study of the Liver are currently in development (will add link when available).
- **HCC screening includes:**
    - **Ultrasound** q 6 months
        - If no mass or suspicious findings, repeat in 6 months.
        - If mass 10 mm or less in size, repeat in 3 months. If the lesion remains stable after 12 months of follow-up, return to every 6 months for surveillance.
        - If mass >10 mm in size, refer to specialty.

    - **Alpha fetoprotein** (AFP) q 6 months
        - If elevated >20ug/L, ensure ultrasound within 3 months. If not within 3 months, order liver ultrasound and investigate other causes (pregnancy, testicular Ca, etc.). Repeat in 3 months.
- More information: Hepatocellular Carcinoma - Cirrhosis Care
- HCC surveillance for eligible patients can be completed by primary care physicians or through an HCC screening program, where available.
- **HCC surveillance program locations:**
    - Edmonton, Fort McMurray, Leduc, Sherwood Park, Spruce Grove, and St. Albert through Insights Medical Imaging (HCC Surveillance Program - Insight Medical Imaging)
    - Edmonton, Calgary, and Okotoks through Canada Diagnostic Centres (Reference Materials for Physicians - Essential Information)
    - Edmonton, Sherwood Park, Ft. Saskatchewan, and St. Albert through MIC Medical Imaging (MIC-General-Requisition_2021_writeable.pdf)
    - Calgary, Airdrie, and surrounding areas through EFW Radiology (HCC Screening Program - Calgary - EFW Radiology)
    - Automated radiology recall programs are preferred to support consistent screening at appropriate time intervals.
- If the HCC screening program is not offered in a location your patient resides and they prefer/cannot travel to a location, primary care can order the necessary screening tests at the appropriate time interval. Where possible in workflows or EMRs, place automated reminder on the patient's chart so screening frequency is maintained.

Management Support: *refer patients to **Hepatitis B Patient Pathway** for management support information*

Patient Education - Hepatitis B basics:

Persistent stigma, fear, and knowledge gaps among those with hepatitis B have a significant impact on patient importance and readiness to engage in screening, treatment, and ongoing monitoring/management, including protective mechanisms to keep close contacts safe. Primary care providers play a critical role in entering conversations with empathy, supporting patient health literacy around hepatitis B, and reducing the stigma attached to this infection.

Engage in conversation to understand patient's current health literacy around hepatitis B, transmission, and prevention, and fill in any knowledge gaps. Support patient to understand next steps and how they can manage their condition and continue to live a full and meaningful life.

Emphasize importance of hepatitis B vaccination of close contacts and hepatitis A and pneumococcal vaccine for infected individuals if not already immune (both vaccines are provincially funded for patients living with hepatitis B). Offer support for how to get vaccinated:

- Hepatitis B vaccine:
    - Offered in a 2 or 3-dose series, depending on age.
    - The cost of the hepatitis B vaccine is covered in the following cases:
        - As part of the routine immunization schedule for infants and children in Alberta.
        - As part of the Public Health School Immunization Program if a child did not get vaccinated in infancy. Learn more: myhealth.alberta.ca/Topic/Immunization/Pages/school.aspx

        - Those born in 1982 or later and didn't get the vaccine series before.
        - Any close contact of a person who is infected with HBV.
        - As part of post-exposure prophylaxis treatment.
    - Patients who do not meet the above criteria may elect to purchase hepatitis B vaccinations. Extended health benefit programs may include coverage for vaccinations.

- Hepatitis A vaccine:
    - Offered in a 2-dose series, 6 months apart.
    - The cost of the hepatitis A vaccine is covered for anyone with chronic liver disease, including hepatitis B.

- Patient Resources - Hep B basics:
    - Myhealth.alberta.ca: myhealth.alberta.ca/health/pages/conditions.aspx?Hwid=hw40968
    - Hepatitis B Foundation: www.hepb.org/
    - Liver Canada: liver.ca/patients-caregivers/liver-diseases/hepatitis-b

- Patient Resources - Hepatitis A and B vaccination:
    - Myhealth.alberta.ca: myhealth.alberta.ca/Topic/Immunization/Pages/hepatitis-b-vaccine.aspx
    - Myhealth.alberta.ca: Hepatitis A (HAV) vaccine
    - Find public health centres near you: Community Health Centres | Alberta Health Services
    - For providers: Alberta immunization policy | Alberta.ca

Patient Education - Hepatitis B and pregnancy:

- Provide teaching around:
    - transmission to baby and implications (infants are at high risk of developing chronic hepatitis B if not vaccinated at birth)
    - blood work during pregnancy to determine need for antiviral therapy in the second or third trimester to help reduce risk of transmission to baby
    - steps to prevent transmission to baby during delivery
- Inform patient that their healthcare provider will refer them to a specialist with expertise in hepatitis B during their pregnancy to reduce transmission risk to baby.
- Patient **resources – hepatitis B and pregnancy**:
    - Hepatitis B Foundation: hepb.org/treatment-and-management/pregnancy-and-hbv
    - MyHealth Alberta: myhealth.alberta.ca, search "Hepatitis B in pregnancy" in the search bar

Self-management teaching

Key teaching points include:

- Diet (as per Canada's Food Guide). A registered dietitian can support patients with their nutrition needs. Patients can self-refer at ahs.ca/811 or call 811 and ask to talk to a dietitian.
- Reduction/cessation of alcohol use.

- Activity as per Canadian 24-Hour Movement Guidelines (150 min of moderate to vigorous physical activity per week, muscle strengthening activities at least twice per week, several hours of light physical activity, including standing).
    - Alberta Healthy Living Program | Alberta Health Services offers free group exercise programs
    - Prescription to get active – gives patients access to low cost or free activity options and remote behavioural support
- Stress **management and mental health:** A hepatitis B diagnosis can bring stress, worry, and uncertainty for patients and their loved ones. Consider referral to mental health as appropriate.
    - There are online support groups for those with hepatitis B: www.hepb.org/resources-and-support/online-support-groups/
    - Additional resources:
        - Mental Health Helpline: 1-877-303-2642
        - Crisis Text Line: Text CONNECT to 741741
        - Crisis Services Canada: 988, or visit talksuicide.ca

Parameters for re-referral:

Review elevated ALT for cause in conjunction with HBV DNA:

- ALT levels can fluctuate due to many influencing factors, such as alcohol use, metabolic liver disease (formerly called fatty liver disease), infection, etc.
- Reviewing elevated ALT results in conjunction with HBV DNA results will support determination of viremia and whether antiviral therapy may be indicated.
- Additional special biomarkers are in development and may be useful to help with future management decisions (i.e., quantitative hepatitis B surface antigen can only be ordered by specialty.)

HBV DNA

- If >2000 – 3000 IU/mL once, check again in 6 months. If > 2000 IU/mL again, re-refer to specialty
- If >3000 IU/mL, re-refer to specialty
- **Rationale:** a number of patients may experience occasional elevation in HBV DNA slightly above 2000 IU/mL and may normalize on its own without requiring intervention. If, however, repeat testing shows HBV DNA >2000 IU/mL, or a one-time HBV DNA value >3000 IU/mL, re-referral is warranted.

AFP

- Persistent AFP 20ug/L – 100ug/L (two elevated 3 months apart) → refer to specialty or seek specialist advice
- If AFP >100ug/L → re-refer to specialty
- **Rationale:** While AFP elevation can be seen in pregnancy and testicular cancer, AFP >100ug/L is more likely to be sensitive for liver cancer.

FIB-4 ≥ 1.30

- FIB-4 < 1.3 = Low risk for significant liver fibrosis
- FIB-4 between1.3-2.67 = Intermediate risk for significant liver fibrosis
- FIB-4 > 2.67 = High risk for significant liver fibrosis

Platelets <150

- **Rationale:** Platelets are an indirect marker of portal hypertension and splenic sequestration of platelets.

Abnormal ultrasound (e.g., mass > 1 cm, cirrhosis)

- **Rationale:** Mass >1cm should have definitive workup to assess for features of hepatocellular carcinoma.

Acute Decompensated Cirrhosis:

- Ascites, jaundice, hepatic encephalopathy, variceal bleeding. **Urgent re-referral or Emergency Department as necessary.**

Advice Options

If patient presents with ascites, jaundice, hepatic encephalopathy, variceal bleed, they need to be directed to hospital through RAAPID or the ER. Call RAAPID or 911.

Zone	Program	Online Request	Phone Number
Urgent Telephone			
All Zones	RAAPID	N/A	**North:** 1-800-282-9911 780-735-0811 **South:** 1-800-661-1700 403-944-4486
Non-Urgent Electronic			
Edmonton, North, South (Hepatology issue)	Netcare eReferral (eConsult)		N/A
Non-Urgent Telephone			
Calgary	Specialist Link	Online Request	403-910-2551
Edmonton, North	ConnectMD	Online Request	1-844-633-2263

Continue to access advice as locally practiced.

Referral Process

- **Send referrals for HBsAg positive cases to:**
  - **Calgary Zone**: Hepatology Central Access and Triage (Alberta Referral Directory - CAT Service At Facility Details). Note: HBsAg, HBV DNA and ALT are required to triage referral.
  - **Central Zone**: Gastroenterology
  - **Edmonton Zone**: Hepatitis Support Program (Alberta Referral Directory - Service At Facility Details). Note: HBsAg is the only test required for referral.
  - **North Zone**: Refer to specialty as locally available.
    - The Hepatitis Support Program accepts referrals from North Zone (Alberta Referral Directory - Service At Facility Details)
    - Grand Prairie Area: refer to QEII Hepatitis Clinic Alberta Referral Directory - Service At Facility Details
  - **South Zone**: Gastroenterology
- See Alberta Referral Directory for referral information.

BACKGROUND

About this pathway

- This pathway was developed in collaboration with hepatologists, infectious disease specialist, Alberta Precision Laboratories, Public Health, primary care physicians, patient and family advisors, and Primary Care Alberta's Provincial Pathways Unit. A special thank you to Provincial Public Health and Indigenous Services Canada for their consultative support.
- Condition-specific clinical pathways are intended to offer evidence-based guidance to support primary care providers in caring for patients with a range of clinical conditions.

Authors and conflict of interest declaration

The authors represent a multi-disciplinary team. Names of the content creators and their conflict-of-interest declarations are available on request by emailing AlbertaPathways@primarycarealberta.ca.

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Pathway review process, timelines

Primary care pathways undergo scheduled review every three years or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is June 2028. However, we welcome feedback at any time. Please send us your feedback here.

Copyright information

DISCLAIMER

This pathway represents evidence-based best practice but does not override the individual responsibility of healthcare professionals to make decisions appropriate to their patients using their own clinical judgment given their patients' specific clinical conditions, in consultation with patients/alternate decision makers. The pathway is not a substitute for clinical judgment or advice of a qualified healthcare professional. It is expected that all users will seek advice of other appropriately qualified and regulated healthcare providers with any issues transcending their specific knowledge, scope of regulated practice or professional competence.

PROVIDER RESOURCES

Resource	Link
Hepatitis B Resources	
Alberta Guidelines for Post-Exposure Management and Prophylaxis	https://open.alberta.ca/dataset/f1e62045-b801-49a8-8549-ddc6b283ae67/resource/bf50d5ab-fe5d-41d0-91ae-c43c2167fea0/download/pep-guidelines-2019-03.pdf
Alberta Precision Lab ordering details for HBV	www.albertahealthservices.ca/webapps/labservices/indexAPL.asp?id=5164&tests=&zoneid=1&details=true
Alberta Public Health Disease Management Guidelines: Hepatitis B – Acute and Chronic	https://open.alberta.ca/dataset/6a1c5b9a-a45d-4c01-981e-b5a076335444/resource/209ca31a-dfdb-4468-b928-c05c3a3083c2/download/hlth-phdmg-hepatitis-b-acute-chronic-2024-06.pdf
CirrhosisCare.ca – Resources for Healthcare Professionals	https://cirrhosiscare.ca/practitioner-pathway
Hepatocellular Carcinoma	www.cirrhosiscare.ca
Hepatocellular Carcinoma Clinical Practice Guideline	www.albertahealthservices.ca/assets/info/hp/cancer/if-hp-cancer-guide-gi007-hepatocellular-carcinoma.pdf
Hepatitis B Reactivation Guide	www.hepb.org/assets/Uploads/Hepatitis-B-Reactivation-Guide-Revised-Version.pdf
Hepatitis B Virus Infection – High Endemic Geographic Areas	https://open.alberta.ca/dataset/aip/resource/121de497-de68-42f1-a1b9-868696932615/download/AIP-BP-Hepatitis-B-Endemic.pdf
Primary Care Management of Hepatitis B – Quick Reference	www.canada.ca/en/public-health/services/reports-publications/primary-care-management-hepatitis-b-quick-reference.html
World Health Organization: Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection	https://iris.who.int/bitstream/handle/10665/376353/9789240090903-eng.pdf

Eliminating Hepatitis B	
Action Hepatitis Canada - Progress Toward Viral Hepatitis Elimination in Canada 2023 Report	www.actionhepatitiscanada.ca/progressreport.html
Canadian Association for the Study of the Liver: Progress toward hepatitis B elimination in Canada	https://utppublishing.com/doi/full/10.3138/canlivj-2024-0014
Vaccination Resources	
Alberta Immunization Policy	www.alberta.ca/alberta-immunization-policy
Alberta's Immunization and routine immunization schedule	www.alberta.ca/immunization-routine-schedule
Hepatitis B Vaccines: Canadian Immunization Guide for health professionals	www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-7-hepatitis-b-vaccine.html
Pneumococcal Vaccine information	www.ahs.ca/assets/info/hp/cdc/if-hp-cdc-pneu-c20-conjate-vac-bio-pg-07-293.pdf

PATIENT RESOURCES

Resource	Link
Patient Pathway on MyHealth Alberta > A webpage and two PDF formats are available to allow for easy printing, download, or scanning a QR code with the patient's smart phone for more information at their convenience.	Coming soon
Hepatitis B Basics	
Hepatitis B specific page - CATIE (Canada's source for HIV and Hep C info)	www.catie.ca/hepatitis-b
Liver Canada	www.liver.ca/patients-caregivers/liver-diseases/hepatitis-b
Hepatitis B Foundation	www.hepb.org
MyHealth Alberta > Health Information & Topics> Hepatitis B. Information on causes, symptoms, treatments, and resources for Hepatitis B	myhealth.alberta.ca/health/pages/conditions.aspx?Hwid=hw40968

Vaccine Resources	
Hepatitis A Vaccine	myhealth.alberta.ca/Topic/Immunization/Pages/hepatitis-a-vaccine.aspx
Hepatitis B Vaccine	myhealth.alberta.ca/Topic/Immunization/Pages/hepatitis-b-vaccine.aspx
Public Health Centres – Locations across Alberta	www.albertahealthservices.ca/info/Page17791.aspx
Routine Immunization Program	myhealth.alberta.ca/Topic/Immunization/Pages/routine-schedule.aspx
School Immunization Program	myhealth.alberta.ca/Topic/Immunization/Pages/school.aspx
Hepatitis B and Pregnancy	
Hepatitis B Foundation	hepb.org/treatment-and-management/pregnancy-and-hbv
MyHealth Alberta	MyHealth Alberta: myhealth.alberta.ca, search "Hepatitis B in pregnancy" in the search bar
Mental Health Resources	
Hepatitis B Foundation Online Support Groups	hepb.org/resources-and-support/online-support-groups
Mental Health Helpline	www.ahs.ca/findhealth/Service.aspx?id=6810&serviceAtFacilityID=1047134
Diet and Exercise Resources	
Canadian 24-hour Movement Guidelines	https://csepguidelines.ca
Alberta Healthy Living Program (AHS)	www.albertahealthservices.ca/info/page13984.aspx
Fitness prescription	www.prescriptiontogetactive.com
Cirrhosis Resources	
Patients and Families - offers information on cirrhosis as well as healthy living resources (e.g., advanced care planning, alcohol, nutrition resources) and support resources for Albertans (e.g., housing and food resources, employment and financial benefits, etc.)	www.cirrhosiscare.ca

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Appendix A: Shared Decision-Making Guide: *Engage in hepatitis B screening or not*

1 **Making the decision to have hepatitis B screening can cause fear and uncertainty.**

2 **Help your patient explore the pros and cons of having hepatitis B screening tests based on their life and what matters to them personally:**

Have hepatitis B screening testing	Don't have hepatitis B screening testing
Explore with your patient why they might consider having hepatitis B screening. Discuss what benefits there may be for the patient and for the things/people that are important to the patient. • Screening tests not only help to determine if you have hepatitis B, but also if you have immunity or are at risk • Knowing if you have hepatitis B will help ensure you have the right care, treatment, and ongoing monitoring to keep your liver as healthy as possible • If the test shows you don't have immunity, you are eligible for hepatitis B vaccine to ensure you are protected for life • Early diagnosis of hepatitis B infection can help identify when and if you need monitoring for hepatocellular carcinoma (liver cancer) • Knowledge is power when it comes to hepatitis B	**Explore what the benefits of <u>not</u> having hepatitis B screening tests may be for the patient.** • While rare, there is a potential for screening tests to include false positive values which may lead to further testing • Avoidance of anxiety • No immediate medical cost
Explore what might be unappealing or concerning for the patient in having hepatitis B screening. • Getting blood work can be stressful for those who have needle phobias or find it inconvenient to have to travel to the lab • A diagnosis of hepatitis B can provoke anxiety and fear, which can translate into not wanting to get tested • Patients need to understand that hepatitis B screening may result in additional testing if the patients screens positive for hepatitis B • Treating hepatitis B may impact quality of life due to possible side effects of treatment (however, quality of life can also be impacted by choosing to opt out of treatment given the risk for progressing liver disease)	**Explore the downside of <u>not</u> having hepatitis B screening with the patient.** • If you are not immune (and unaware of same), there is a risk of contracting hepatitis B from exposure to infected blood or body fluids • If you have hepatitis B and are unaware (due to not getting screened), you may engage in behaviours that put your loved ones and close contacts at risk (if they are not protected via vaccine). Knowledge is power when it comes to hepatitis B • If you have hepatitis B and are unaware, there is risk for liver damage and/or progressing liver disease if you are not monitored

3 **Check your patients' readiness to move forward or not with hepatitis B screening by asking:**

Do you have enough information to make a fully informed decision on whether to get hepatitis B screening?