**HEPATITIS B ALGORITHM**

**WHO TO TEST?**

- **At-risk patients**
  - Māori, Pacific and Asian people born in New Zealand and aged over 25.
  - Immigrants of any age from the Pacific Islands or Asian, Middle Eastern or African countries
  - Contacts of HBsAg positive patients
  - People who live with someone who has hepatitis B

- **Others at high-risk**
  - Anyone who has had unprotected sexual contact with an HBV-infected person, who has received a tattoo using unsterile equipment or whose mother or close family member has hepatitis B.

- **HBsAg-negative:**
  - No further action required.

- **HBsAg-negative, anti-HBs-negative and anti-HBc-negative:**
  - Not immune. Consider HBV vaccination.

- **HBsAg-positive**
  - Refer to The Hepatitis Foundation.

**DIAGNOSTIC SEROLOGY TEST**

- HBsAg – Hepatitis B Surface Antigen
- HBeAg – Hepatitis B Envelope Antigen.

  - If surface antigen negative and surface antibody positive, the patient is immune and no further action is required.

**TREATMENT FOR HEPATITIS B**

- **Not everyone with hepatitis B needs treatment**

  Treatment does not usually cure hepatitis B. Anti-viral medications reduce the inflammation and damage occurring in the liver by suppressing viral multiplication and lowering the viral load (HBV DNA). In New Zealand there are drugs used to treat chronic hepatitis B.

- **Pegylated interferon (Pegasys)** boosts the body’s immune system and changes the virus’ ability to multiply. It is a synthetic version of a protein our bodies naturally produce (interferon). In select individuals a 48-week course of pegylated interferon can be undertaken. The goal of therapy is to put the virus into an inactive state. The virus may be cured in a very small proportion of people treated.

- **Anti-viral therapy** – Entecavir is an oral antiviral drug used in adults who have active virus and liver damage. Entecavir is funded as a first-line therapy for patients with chronic hepatitis B. Almost all patients achieve viral suppression (undetectable HBV DNA) and biochemical response (ALT below the upper limit of normal). Entecavir resistance is rare at less than one per cent after six years.

  - Tenofovir is an antiviral drug. It is an oral tablet taken once a day. Tenofovir has replaced Adefovir in New Zealand as the first-line therapy for Lamivudine-resistant hepatitis B infection. This is the preferred treatment during pregnancy and breastfeeding. No resistance to Tenofovir has been observed after five years of therapy.

  - The hepatitis B virus cannot usually be cured and, in most cases, anti-viral therapy needs to be lifelong. In select cases therapy may be discontinued but only under close supervision by a specialist.

**The Hepatitis Foundation of New Zealand**

www.hepatitisfoundation.org.nz | 0800 33 20 10 PO Box 647, Whakatāne, New Zealand
### What the Hepatitis Foundation Offers

- The Ministry of Health contracts us to provide the national hepatitis B monitoring programme. This includes free, lifelong follow-up for all New Zealanders with chronic hepatitis B infection;
- In partnership with you, we will become responsible for managing your patient’s hepatitis B (including referral to secondary care as required);
- We will ensure your patients are tested at regular intervals and abnormal results are reviewed by clinical staff;
- You will be kept informed of your patient’s care through our state-of-the-art system enabling effective management of hepatitis B, in partnership with primary care and the Foundation.

### The Hepatitis Foundation of New Zealand and the Hepatitis B Monitoring Programme

The national hepatitis B monitoring programme is one of the largest of its kind in the world. The Hepatitis Foundation runs this Ministry of Health-funded initiative to help people living with chronic hepatitis B maintain a healthy life.

Healthcare providers are urged to refer patients confirmed as HBsAg-positive to the Foundation for enrolment in the Hepatitis B Monitoring Programme. Individuals enrolled will be offered six-monthly blood tests, education, up-to-date information, and access to secondary care if required.

You will be kept informed of all test results and your patient’s management. In addition, access to secondary care if required.

The Hepatitis Foundation of New Zealand will keep you informed of patient’s regular blood test results.

### Managing People through the Hepatitis B Monitoring Programme

Regular monitoring of hepatitis B is vital in reducing morbidity and mortality from primary liver cancer (hepatocellular carcinoma (HCC)). Research shows six-monthly follow-up of chronic hepatitis B patients is the gold standard of care to help reduce the risk of liver disease (including HCC). Blood tests include ALT/AST: if elevated are markers of active liver inflammation and potential need for anti-viral therapy.

Under the national hepatitis B monitoring programme people with hepatitis B are offered regular blood tests to determine if they are still infected with the virus. Routine blood tests performed six monthly are:

- HBsAg;
- Anti-HBs;
- Anti-HBc or HBcAb;
- ALT: screen for active liver inflammation (and need for antiviral treatment);
- AFP: screen for hepatocellular carcinoma (HCC). Please note: this will also be elevated during pregnancy.

The Hepatitis Foundation’s community nurses actively support and provide education to individuals and families in the community.

### Monitoring for Complications of Chronic Hepatitis B

(I) Active hepatitis needing anti-viral therapy

Six monthly measurement of serum ALT in all HBsAg positive individuals.

For those with mild inflammation of the liver (ALT >2x upper limit of normal (ULN)), continued six-monthly monitoring is indicated. For those with significant inflammation of the liver (ALT >2xULN). A clinician will review these results, make a personalised plan for that individual and refer to secondary care as needed.

(II) Hepatocellular carcinoma (HCC)

Six monthly measurement of serum alpha fetoprotein (AFP) in all HBsAg positive individuals.

If the AFP is elevated >20IU/ml/ng/ml) the results are reviewed by our clinician and, depending on the scenario, it may be repeated at a short interval; an ultrasound may be requested or they may be referred immediately to secondary care. Please note: in all women of child-bearing potential, need to exclude pregnancy cause as elevated AFP.

The Hepatitis Foundation of New Zealand will keep you informed of patient’s regular blood test results.

### Testing for Chronic Hepatitis B

The following blood tests are required to identify immune status:

<table>
<thead>
<tr>
<th>TEST</th>
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<tbody>
<tr>
<td>HBsAg</td>
<td>Indicates viral infection;</td>
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<tr>
<td>Anti-HBs</td>
<td>Indicates a high level of infectivity;</td>
</tr>
<tr>
<td>Anti-HBc or HBcAb</td>
<td>When HBsAg-negative, levels of Anti-HBs &gt;10 IU/ml indicate protective immunity;</td>
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<tr>
<td>HBeAg</td>
<td>Indicates current or past infection.</td>
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Initially, a positive HBeAg test simply reveals the presence of hepatitis B in the blood. In order to consider an individual to have chronic hepatitis B, a further confirmatory test six months later is required. HBsAg, anti-HBs and anti-HBe testing should be offered to household and sexual contacts of people with hepatitis B and vaccination should be offered to those who are susceptible to the virus. This is free of charge on the immunisation schedule to people under 18, sexual partners, household contacts, and other groups. Refer to immunisation handbook.

### Markers of Hepatitis B Virus Infection

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<td>HBsAg</td>
<td>Shows whether a person has a current hepatitis B virus infection. In chronic HBV infection, HBsAg is always detected.</td>
</tr>
<tr>
<td>HBcAb or Anti-HBc</td>
<td>Shows whether a person is developing immunity to HBV. If HBsAg is positive and HBcAb is negative they are immune and protected against future infection. Their immunity could be from prior infection or vaccination. HBsAb can be positive while a person still has the virus (HBAg-positive).</td>
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<tr>
<td>HBeAg</td>
<td>Usually detected in the absence of anti-HBs. Shows that the hepatitis virus is multiplying at a very high rate and is therefore very infectious. The HBeAg-positive phase is the earliest phase of HBV infection and is the most common one in children and young adults.</td>
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<tr>
<td>HBeAb or Anti-HBe</td>
<td>Usually detected in the absence of HBeAg. This later phase of HBV infection follows the development of the patient’s immune response against HBeAg and is the most common phase of HBV infection found in middle-aged and elderly patients. This phase is usually associated with lower levels of the virus and reduced viral replication. However, HBsAg-negative patients are still infectious. They may still have active liver disease and can progress to cirrhosis.</td>
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<tr>
<td>Anti-HBc IgM</td>
<td>Shows whether a person has ever been exposed to the hepatitis B virus. It is detected in patients with current infection and in those who have had previous infection that has cleared. It is not detected in anyone who has immunity through vaccination.</td>
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<tr>
<td>HBV DNA (HBV DNA)</td>
<td>Quantitative measure of the HBV viral load. High HBV DNA levels are one of the criteria for commencing antiviral therapy along with high ALT or cirrhosis.</td>
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