Hepatitis B

Epidemiology in New Zealand
Risk factors for acute hepatitis B in New Zealand include overseas travel and sexual contact, as well as household contact with a chronic carrier. An estimated 1–2 percent of the New Zealand population are carriers of hepatitis B. Chronic hepatitis B carrier status is currently not notifiable.

There has been a downward trend in the rate of acute hepatitis B notifications over the last 20 years in New Zealand.

More detailed epidemiological information is available on the Institute of Environmental Science and Research (ESR) surveillance website at www.surv.esr.cri.nz.

Case definition

Clinical description
The clinical manifestations of acute hepatitis B infection in adults range in severity from minimal symptoms to fulminant hepatitis (in less than 1 percent of cases). Adults may experience the insidious onset of fever, malaise, abdominal discomfort and anorexia with jaundice or elevated serum aminotransferase levels.

Acute hepatitis B infection in the first few months of life seldom causes clinical disease, and symptoms or signs are less common in children than in adults.

Laboratory test for diagnosis
Laboratory confirmation requires at least one of the following:
- HBsAg positive in an infant aged under 12 months
- change from HBsAg negative to HBsAg positive within a 12-month period (if testing is performed at the same laboratory and the cumulative history is readily available within the laboratory information systems)
- anti-HBcore IgM reactive (unless HBsAg positive more than 6 months ago and the history is readily available in laboratory information systems)
- detection of hepatitis B virus (HBV) nucleic acid.
Case classification

- **Under investigation:** A case that has been notified, but information is not yet available to classify it as probable or confirmed.

- **Probable:** A clinically compatible illness with a positive HBsAg (over 12 months of age).

- **Confirmed:** A clinically compatible illness that is laboratory confirmed (see laboratory criteria above, including positive HBsAg under 12 months of age).

- **Not a case:** A case that has been investigated and subsequently found not to meet the case definition.

Spread of infection

**Incubation period**

45–180 days, commonly 60–90 days.

**Mode of transmission**

Many body substances and tissues (such as blood, semen and vaginal fluids) are capable of transmitting hepatitis B, via percutaneous (intravenous, intramuscular, subcutaneous or across broken skin) or permucosal exposure. This includes transmission through sexual contact, body piercing and tattooing.

Perinatal mother-to-infant transmission and transmission through occupational exposure to infected blood is now uncommon in New Zealand.

**Period of communicability**

The case is potentially infective 2–3 weeks before the onset of symptoms, during the clinical disease and usually for 2–3 months after acute infection or as long as HBsAg continues to be present in blood.

If a person continues to have HBsAg present in their blood, they are a carrier; defined as having two positive HBsAg tests taken at least 6 months apart. Carriers of hepatitis B continue to be infectious. Those who are both HBsAg and HBeAg (HB early antigen) positive have the highest infectivity. The carrier state may follow asymptomatic infection and is most common after perinatal infection, infection in infancy or in those with immunodeficiency.

**Notification procedure**

Attending medical practitioners and laboratories must notify the local medical officer of health of an acute illness, not the carrier status.
Management of case

Investigation
Obtain a history of possible risk factors including travel, body piercing or tattooing, infectious sexual or household contact, sharing of drug-injecting equipment, occupational exposure to or transfusion of blood or blood products, recent medical procedure or haemodialysis therapy over the last 6 months. Also obtain a history of vaccination and recent sexual and household contacts.

Ensure full hepatitis B serological testing of the case (including HBeAg and anti-HBe) and consider testing for other blood-borne virus infections.

Advise the case and primary health care doctor to repeat HBsAg testing after 6 months to identify the chronic carrier status.

Although chronic carriers are not notifiable, consider referral back to the primary health care doctor regarding follow-up for case care and testing and immunisation of contacts. See ‘Hepatitis B carriers’ below.

Restriction
Cases acutely infected with hepatitis B must not donate blood. Donors contracting acute hepatitis B may be acceptable 1 year after the acute episode providing there was clearance of HBsAg within 6 months and the New Zealand Blood Service medical officer has given medical clearance.

Employers must assess infected health care workers to determine whether any work restrictions are indicated (for example, regarding exposure-prone procedures and adoption of universal precautions).

Counselling
Advise the case and their caregivers of the nature of the infection and its mode of transmission. For example, advise the case to:
- not share drug-injecting equipment, razors or toothbrushes
- use safer sex practices
- avoid exposing others to their blood or other body fluids (including not donating blood or semen or registering as an organ donor)
- inform health care workers (including dentists) of their infectious status.
Management of contacts

Whenever immediate protection is required for contacts, a combination of vaccine and HBV immunoglobulin (HBIG) should be administered (at different sites). HBIG does not interfere with the response to vaccine.

Definition

Contacts include all household members and people who have had unprotected relevant contact (for example, perinatal, sexual or percutaneous, including sharing drug-injecting equipment or sharps injury, or mucosal exposure) with a case in the 3 weeks before onset of illness or during the subsequent period of communicability.

Table 1: Management of contacts of hepatitis B cases – summary

<table>
<thead>
<tr>
<th>Contact</th>
<th>Serological testing of contact (HbsAg, anti-HBs, anti-HBc IgM and IgG)</th>
<th>Immunoglobulin (if within 7 days of onset of case’s symptoms)</th>
<th>Immunisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any sexual contact, including protected sex</td>
<td>Yes</td>
<td>Yes, immediately after blood taken</td>
<td>Yes, immediately after blood taken</td>
</tr>
<tr>
<td>Household, mucosal or percutaneous</td>
<td>Yes</td>
<td>Yes, if serology negative</td>
<td>Yes, if serology negative</td>
</tr>
<tr>
<td>Other</td>
<td>Yes</td>
<td>No</td>
<td>Yes, if serology negative</td>
</tr>
</tbody>
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Investigation

All contacts require serological testing for HbsAg, anti-HBs and anti-HBc, IgM and IgG. Public health should liaise with the contact’s primary health care doctor to determine who will do this. Results should be sent to both public health and the contact’s primary health care doctor.

Interpretation of results of serology

1. If HBsAg negative + anti-HBs negative + anti-HBc negative, the contact is susceptible and vaccination is required.
2. If HBsAg negative + anti-HBs negative + anti-HBc positive, the contact may still be susceptible and vaccination is required because the results may indicate (amongst other possibilities) a false positive anti-HBc or, if an infant, maternal antibody.
3. If the contact is HBsAg positive, ensure their primary health care doctor is aware of this and that follow-up is arranged.
No post-exposure prophylaxis is required for contacts who have had previous hepatitis B infection, or have a current protective level of antibodies from hepatitis B vaccination, or have documented previous seroconversion from hepatitis B vaccination to a protective level (see the *Immunisation Handbook 2011* for more information).

Any difficulties with interpreting serological results for cases and contacts should be discussed with an infectious diseases physician or the laboratory.

**Restriction**

As for a case, at least until results of initial (and any necessary follow-up) blood tests are known.

**Prophylaxis**

See Table 1 above.

**Immunoglobulin for contacts of hepatitis B cases**

HBIG is given at the same time as the vaccine but at a different site. Table 6 sets out the required dose by age group.

<table>
<thead>
<tr>
<th>Age</th>
<th>HBIG dose (IU)</th>
</tr>
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<tbody>
<tr>
<td>Neonates under 1 month</td>
<td>100</td>
</tr>
<tr>
<td>1 month–4 years</td>
<td>200</td>
</tr>
<tr>
<td>5–9 years</td>
<td>300</td>
</tr>
<tr>
<td>10 years and over</td>
<td>400</td>
</tr>
</tbody>
</table>

Most public health units will have agreed delivery systems in place for HBIG. HBIG is available from the New Zealand Blood Service.


**Counselling**

Advise all contacts of the nature of the infection and its mode of transmission, and to seek early medical attention if symptoms develop.
Other control measures
Consider referral to needle-stick management, as discussed under ‘Health education’ in the hepatitis C chapter.

Identification of source
Investigate potential relation to body piercing and/or tattooing or health care events. If the case could be transfusion-related, contact the New Zealand Blood Service.

Disinfection
Hepatitis B virus is stable on environmental surfaces (for example, inanimate objects) for at least 7 days.

Clean equipment and surfaces potentially contaminated with blood or body fluids. See Appendix 1: Disinfection.

Hepatitis B carriers
Although hepatitis B carriage is not notifiable, health care professionals looking after such carriers should ensure that close contacts have been offered immunisation and should provide carriers with appropriate information on how to protect others and how to look after themselves, with a referral if required.

The Ministry of Health contracts the Hepatitis Foundation of NZ to provide a hepatitis B surveillance programme to eligible carriers. This programme provides regular hepatitis serology and liver function testing, enabling timely referral in cases of early evidence of liver disease and/or cancer.

Immunoglobulin for contacts of hepatitis B carriers
HBIG can be considered for susceptible household, sexual, percutaneous and mucosal contacts, particularly if the exposure is of recent limited duration and highly significant (for example, exposure to a significant volume of infected blood) and the source case is HBeAg positive, has high serum levels of HBV DNA or the sexual contact was non-consensual.

Indications for hepatitis B vaccination are the same as for contacts of acute hepatitis B cases.

Reporting
Ensure complete case information is entered into EpiSurv.

If an outbreak occurs, inform the Ministry of Health Communicable Diseases Team and outbreak liaison staff at ESR, and complete the Outbreak Report Form.
References and further information
