Communicable Diseases Protocol

Hepatitis B

Revision History				
Version	**Date**	**Revised by**	**Changes**	**Approval**
1.1	**01 Jul 2015**	**CDWG**	**Case definition**	**CDNA**

Public Health Priority:
High for newly acquired cases, routine for unspecified cases
PHU response time:
Investigate confirmed newly acquired cases within 3 working days
Enter confirmed newly acquired and unspecified cases on NCIMS within 5 working days
Case management:
Investigate likely source of newly acquired cases
Contact management:
Ensure that contacts of newly acquired cases are offered post-exposure prophylaxis
Prevent transmission to household and sexual contacts by determining their immune status and offering vaccination to those who are susceptible to HBV infection

1. Reason for surveillance

- To identify the source of the infection for newly acquired cases, and to prevent further cases
- To monitor the epidemiology of hepatitis B and so inform the development of better prevention strategies.

2. Case definition

Hepatitis B – newly acquired

Reporting
Only confirmed cases should be notified.

Confirmed case
A confirmed case requires laboratory definitive evidence only.

Laboratory definitive evidence
Detection of hepatitis B surface antigen (HBsAg) in a patient shown to be negative within the last 24 months
OR
Detection of HBsAg and IgM to hepatitis B core antigen, except where there is prior evidence of hepatitis B infection
OR
Detection of hepatitis B virus by nucleic acid testing, and IgM to hepatitis B core antigen, except where there is prior evidence of hepatitis B infection

Note:

Transient HBsAg positivity can occur in patients following HBV vaccination. This occurs more commonly in dialysis patients and is unlikely to persist beyond 14 days post-vaccination.

Hepatitis B – unspecified

Reporting
Only confirmed cases should be notified.

Confirmed case
A confirmed case requires laboratory definitive evidence AND that the case does not meet any of the criteria for a newly acquired case.

Laboratory definitive evidence
Detection of hepatitis B surface antigen (HBsAg), or hepatitis B virus by nucleic acid testing, except where there is prior evidence of hepatitis B infection.

Note:
Transient HBsAg positivity can occur in patients following HBV vaccination. This occurs more commonly in dialysis patients and is unlikely to persist beyond 14 days post-vaccination.

3. Notification criteria and procedure

Hepatitis B is to be notified by:

- Medical practitioners and hospital CEOs on provisional clinical diagnosis of acute viral hepatitis (ideally reporting by telephone on day of diagnosis)
- Laboratories on serological confirmation (reporting by routine mail).

Only confirmed cases should be entered onto NCIMS.

4. The disease

Infectious agent
The hepatitis B virus (HBV).

Mode of transmission
Hepatitis B is usually transmitted by contact with bodily fluids (such as blood, semen, vaginal secretions or saliva) of an infected (HBsAg positive) person. Because of the high concentration of virus in blood in some cases, an extremely small inoculum may be sufficient to transmit infection. The virus must be introduced through broken skin or the placenta or come in contact with mucous membranes for infection to occur.

Modes of transmission include:

- Sharing contaminated objects that pierce the skin or mucous membranes, such as needles, tattoo equipment, body-piercing equipment, acupuncture equipment, razor blades and toothbrushes
- Sexual contact (heterosexual or homosexual)
- Perinatal transmission from an infected mother to her infant
- Needlestick injuries
- Contact between infective fluid and mucous membranes, such as a splash of blood into eyes or mouth
- Invasive medical or dental procedures if there has been inadequate infection control
- Transfusion of infected blood or blood products

- Human bites and other direct contact with the blood or open sores of an infected person.

Breast feeding does not appear to be a significant route of transmission. Faecal-oral and vector-borne modes of transmission have not been demonstrated. Hepatitis B is not transmitted by kissing on the cheek, coughing or sneezing, sharing food or sharing eating utensils.

Under some conditions, HBV can remain viable on environmental surfaces for at least 7 days.

Timeline
The typical incubation period from infection to appearance of symptoms is 45 to 180 days, and most commonly 60 to 90 days. Early studies however indicate the incubation period may be as short as 32 days, or even less. [1, 2]

Infectivity commences before symptom onset and generally persists while HBsAg remains present.

Following acute infection, the risk of developing chronic HBV infection varies inversely with age, and is also more likely among the immunocompromised. A small proportion of people with chronic hepatitis B will clear the infection spontaneously over time. Chronic infection over years or decades can lead to liver failure or liver cancer in a proportion of those infected.

Clinical presentation
The usual clinical presentation is characterised by an insidious onset, with anorexia, vague abdominal discomfort, nausea and vomiting, sometimes arthralgias and rash, often progressing to jaundice. The clinical course is indistinguishable from any other types of acute viral hepatitis. Only a small proportion of acute cases are clinically recognised, as only 30-50% of adults and less than 10% of children have symptoms. Infection is usually asymptomatic in infants.

5. Managing single notifications

Response times

Investigation
Within 3 working days of notification by a doctor of a newly acquired case begin follow-up investigation. Unspecified cases are followed up at the discretion of the PHU Director.

Data entry
Within 5 working days of notification enter confirmed newly acquired and confirmed unspecified cases on NCIMS.

Response procedure (newly acquired cases only)
Confirm the onset date and symptoms of the illness

- Confirm results of relevant pathology tests, or recommend the tests be done
- Find out if the case or relevant care-giver has been told what the diagnosis is before beginning the interview
- Seek the doctor's permission to contact the case or relevant care-giver
- Review case and contact management.

Case management

Case management is the responsibility of the treating doctor. PHU staff should assist with investigating the likely source of infection if requested.

Investigation and treatment
Supportive only during the acute phase.

A repeat test for HBsAg is recommended after 6 months to determine the clearance or continued presence of HBsAg. Those still HBsAg-positive are defined as having chronic disease and should be counselled accordingly.

Interferon and combination anti-viral therapy can be of value for people with certain stages of chronic hepatitis B. The treatment is not curative but aims to prevent complications (i.e. liver damage, cirrhosis, liver failure and hepato-cellular carcinoma.)

Education
The case or relevant care-giver should be informed about the nature of the infection and the mode of transmission. In particular, advice should be given emphasising that blood and other secretions are infectious until they become HBsAg negative, for adults usually after 2 to 3 months. Those with chronic infection usually remain infectious for life.

Scrupulous attention to standard precautions is important while cases are HBsAg-positive. Surfaces contaminated with blood should be cleaned and properly disinfected.

Objects potentially contaminated with blood (for example razors and toothbrushes) should not be shared with other people and should be kept out of reach of children. Contaminated sharps should be stored in an approved sharps container. Any wound should be covered with an impermeable dressing.

Infected persons (among others) should not share injecting equipment with other people. Disposable needles should only be used once. Infected persons should not donate blood or body parts.

Persons who are HBsAg-positive should be advised that the virus may be transmitted through sexual contact, and of the need to practise safe sex. Non-immune sexual partners should be immunised against hepatitis B. Sexual partners who have adequate levels of anti-HBs (>10 IU/L) are not at risk.

Pregnant or sexually active women with hepatitis B should be told about the risk of hepatitis B infection to the newborns of HBsAg positive mothers, and of the importance of prophylaxis and immunisation for such newborns. Infants born to HBV-infected mothers require hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth to help protect them from infection. The efficacy of HBIG decreases markedly if administration is delayed beyond 48 hours after birth.

Parents or guardians of HBsAg-positive persons with intellectual disabilities or behaviour problems should be alerted to the risk of HBV infection associated with aggressive behaviour, such as biting and scratching.

Instruct persons with acute HBV infection to postpone non-emergency dental care and surgery until their viraemia has cleared. HBsAg-positive persons who seek medical or dental care should notify involved personnel of their hepatitis B status.

Exposure investigation (newly acquired cases only)
Determining the source of infection for newly acquired cases may permit identification of other cases and interrupt the transmission. Information regarding exposures during the period six weeks to six months before onset of the illness should be sought. A longer risk history may be needed for acute cases identified through the detection of HBsAg within 24 months of a negative result. Risk factors for hepatitis B include:

- Household and sexual contacts with a history of hepatitis or chronic hepatitis
- Sexual contact (heterosexual or homosexual) with multiple sex partners and/or a sex partner who is an injecting drug user
- History of receiving blood transfusions or other blood products, dental or surgical care in a resource poor country
- Renal dialysis
- History of tattooing, body-piercing or acupuncture
- Use of shared needles, syringes, injecting fluids and other injecting equipment
- Needlestick or similar injury
- Accidental exposure of the eyes, mucous membranes or a wound to the blood of another person
- Work in high-risk occupational settings such as laboratories, mortuaries, ambulance or police work or employment in facilities for the intellectually impaired
- Residence in a facility for the intellectually impaired
- Any history of incarceration.

Exposure among health care workers should be managed as per the HIV, Hepatitis B and Hepatitis C - Management of Health Care Workers Potentially Exposed policy.
(www.health.nsw.gov.au/policies/PD/2005/PD2005_311.html).

Contact management

Identification of contacts
Sexual contacts of the patient while infectious (up to the preceding six months) are at risk of infection.

Investigation and treatment
The treating doctor is responsible for contact tracing. PHU's should work with Sexual Health Service staff to assist where requested by the doctor. Contacts require counselling, examination and testing, and empirical treatment. See Therapeutic Guidelines: Antibiotic for details.

Isolation and restriction
The risk of transmission of HBV in the child care setting is usually low, and can be reduced through sound infection control procedures and environmental cleanliness. Toiletry items that could be contaminated with blood or saliva should not be shared. Contaminated objects should be cleaned and disinfected as soon as possible, to prevent transmission. The risk is greatest if the individual has high HBV DNA levels or is HBeAg-positive, and/or is a child <3 years old who has open skin lesions, demonstrates aggressive scratching or biting behaviour, or has a bleeding disorder. In child cases, the PHU should carefully assess the situation to determine whether or not exclusion of the child from child care or vaccination of classroom contacts is indicated.

Hospitalised patients with acute or chronic HBV infections pose minimal risk to staff or other patients, given the implementation of standard precautions, and the appropriate pre-exposure use of hepatitis B vaccine. Dialysis units however are a particularly high risk area.
Environmental evaluation
Usually none, unless transmission occurs in a child care centre, dialysis centre, or health care facility through infected environmental surfaces or inanimate objects.

Contact management

The management of contacts is usually the responsibility of the treating doctor, but PHU staff should ensure that household and sexual contacts of newly acquired cases are tested and then vaccinated if non-immune, and assist in the follow up of close contacts of unspecified cases if requested.

Identification of contacts
Persons with significant opportunity for blood-borne exposure during the infectious period should be identified. The following is a general list of persons considered contacts if exposed to infectious cases:

- All sexual partners
- A newborn child of the case
- All household members and other close contacts who have had an opportunity for blood borne infection to be transmitted.

Treatment
There is no treatment for acute hepatitis B other than supportive therapy.
Some individuals with chronic hepatitis B benefit from treatment with anti-virals to control replication and reduce the risk of complications. They also require regular monitoring for complications.

Passive Immunisation
Passive immunisation with HBIG (along with active immunisation with hepatitis B vaccine) is used to prevent infection or modify illness due to infection with HBV. To be effective, HBIG must be given as soon as possible after exposure. The exposed person's prior history of hepatitis B infection, vaccination, and vaccine response status (if known) should always be considered, but treatment should not be unduly delayed whilst awaiting test results.

Post-exposure prophylaxis is recommended in the following situations:

- Perinatal exposure to an HBsAg-positive mother, where HBIG (100 IU IM) should be given to the newborn child within 12 hours of birth, and hepatitis B vaccination commenced

- Percutaneous or permucosal exposure to infected blood in a non-immune individual (400 IU HBIG IM for adults, as soon as possible, but <72 hours) and hepatitis B vaccination commenced
- Sexual exposure to an HBsAg-positive individual (if within 2 weeks), where HBIG (400 IU IM) should be given, and hepatitis B vaccination commenced.

HBIG is available by telephoning the Medical Registrar at the NSW Red Cross Blood Transfusion Service on (02) 9234 2444.

Active Immunisation
Hepatitis B vaccination is also indicated for persons at increased risk of infection because of lifestyle, medical history, occupation, or ongoing intimate contact with a HBV carrier. Vaccination should be recommended to persons at risk who are identified in the course of a HBV case investigation.

For details, refer to the latest Australian Immunisation Handbook.

In NSW, hepatitis B vaccine is currently available free to:

- All babies, beginning at birth
- Children less than 8 years of age requiring catch up
- School children in Year 7 if they have not been previously vaccinated (available until end 2013)
- Aboriginal people
- Household and sexual contacts of acute and chronic hepatitis B cases (consider testing before vaccination)
- Immunosuppressed people
- People with HIV or hepatitis C
- Men who have sex with men
- People of refugee background
- People who inject drugs
- Sex workers
- Clients of sexual health clinics

Further information is available on the immunisation pages of the NSW Health website:
http://www0.health.nsw.gov.au/publichealth/immunisation/programs/gp_catch_up_advice.asp

NSW Ministry of Health also funds the provision of hepatitis B vaccine to:

- Inmates of Corrective Services NSW
- Category A health care workers in the NSW Public Health System

Antibiotic prophylaxis
None

Education
Advise susceptible contacts (or parents/guardians) of the risk of infection and the need for immunisation; counsel them to watch for signs or symptoms of hepatitis occurring within six months of exposure, and to avoid exposing others to potential infection.

Isolation and restriction
None

6. Managing special situations

Cases among health care workers
If the case is a health care worker who performs exposure prone procedures, the case should be assessed and monitored in accordance with the HIV, Hepatitis B or Hepatitis C - Health Care Workers Infected policy (www.health.nsw.gov.au/policies/PD/2005/pdf/PD2005_162.pdf)

HBsAg and HBV DNA status must be ascertained before recommencing performance of exposure prone procedures. Other health care workers should be reminded of the need for compliance with standard infection control precautions described in the Infection Control Policy (www.health.nsw.gov.au/policies/pd/2007/pdf/PD2007_036.pdf#page=1) and the requirements of their respective registration boards.

Suspected health care acquired infection

If acute hepatitis B is diagnosed in a person with no known risk factors for HBV infection and circumstances suggest the possibility of health care acquired infection, initiate an investigation and notify Health Protection NSW immediately. The incident may need to be referred to the NSW Blood Borne Virus Advisory Panel (BBVAP) for review.

Blood transfusion and transplantation

The Australian Red Cross Blood Service (ARCBS) and Health Protection NSW should be notified immediately if:

- A case of hepatitis B has donated blood or plasma while infectious
- If transfused blood or blood products are suspected as the possible source of infection.

References

1. World Health Organization. Hepatitis B Fact sheet Number 201. July 2012. Available at http://www.who.int/mediacentre/factsheets/fs204/en/ (accessed 14 December 2012)
2. Barker LF, Murray R. Acquisition of Hepatitis-Associated Antigen: Clinical Features in Young Adults. *JAMA*, June 21 1971. Vol 216:12.