Briefing Paper
January 2008

AUSTRALIAN FEDERATION OF AIDS ORGANISATIONS INC.
PO BOX 51 NEWTOWN NSW 2042 AUSTRALIA
PH +61 2 9557 9399 FAX +61 2 9557 9867
Email: afao@afao.org.au
www.afao.org.au

FOR GENERAL DISTRIBUTION

Hepatitis B

The Hepatitis B virus (HBV) is a virus transmitted in blood, semen and saliva. It was discovered in 1965 in Australia (it was originally named the Australia Antigen after its discovery in Indigenous Australians). Currently, between 90,000 and 160,000 people in Australia are chronically infected with HBV.

This paper was created after a discussion on the proposal for a National Hepatitis B Strategy at the AFAO AGM in November 2007. Its purpose is to provide a brief background into the nature and epidemiology of Hepatitis B to assist in further discussion on a Hepatitis B Strategy.

Natural History

HBV displays a complex natural history. Hepatitis B may cause acute hepatitis or chronic liver disease including primary liver cancer. The different outcomes of infection (either acute or chronic) are related to the way different individuals respond to infection. For the most part, this is determined by the age of the individual being infected.

Perinatal infection – symptoms of acute infection are rare, but 90% of infants develop chronic infection. The lifetime risk of advanced liver disease for infected infants is 20% to 30%
Childhood infection – symptoms of acute infection are uncommon, but 30% of children exposed to HBV develop chronic infection. The lifetime risk for children who develop chronic infection is 20% to 30%
Adult/adolescent infection – symptoms of acute infection are common, but there is less than a 5% chance of chronic infection. The lifetime risk of advanced liver disease among people with chronic infection is 20 to 30%.

Acute

Acute HBV is more likely to occur in adults – this is mainly due to the ability of adults to produce an active immune response to the presence of HBV. This active response is responsible for acute inflammation in the liver, producing the symptoms of acute infection. Symptoms tend to occur approximately 12 weeks after initial infection and include jaundice, anorexia (loss of appetite), lethargy, nausea, abdominal pain, myalgia (muscle pain) and arthralgia (joint pain).

The active immune response is also responsible for helping ‘clear’ the virus from the body and preventing chronic infection.

In babies, the immune system is less able to respond effectively to the presence of virus in the body. As a result, the active immune response is less likely to occur (younger children are less likely than older children to mount an effective immune response) reducing the chances of an infected baby displaying either the symptoms of acute infection whilst increasing the chances of developing a chronic infection.

Chronic

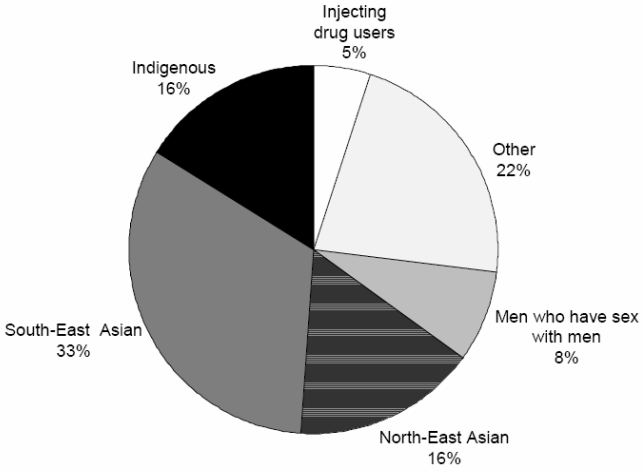
Individuals with chronic HBV infection are commonly asymptomatic for many years. This is because HBV multiplies in the hepatic (liver) cells causing little obvious damage. The infected hepatic cells are then killed by the body’s immune system (over a long period of time), which can lead to cirrhosis (scarring of the liver) and in some cases hepatocellular carcinoma (primary liver cancer). Approximately 25% of people chronically infected with HBV will develop cirrhosis, and one in five people with cirrhosis will then develop hepatocellular carcinoma.

Epidemiology

Definitive data on the prevalence and incidence of HBV in Australia is difficult to obtain[1]. Best estimates (from 2000) put the number of people living with chronic hepatitis in Australia between 90,000 and 160,000. No large scale population level studies of HBV prevalence have been undertaken and notifications of chronic HBV are dependent on levels of testing and reporting. Current estimates rely on antenatal screening data, laboratory surveys and estimates of at-risk populations.

The specific populations most at risk (of acquiring HBV) in Australia are[2]:

- People born in Asia and the Pacific Islands
- People born in other hepatitis B endemic communities
- People from Indigenous communities
- People who inject drugs
- Men who have sex with men
- People in custodial settings



Estimates of chronic hepatitis B distribution in Australia (from Dore et al)

The majority of people with chronic hepatitis B in Australia were born overseas, predominantly in countries of the Asia-Pacific region. People born in other areas with endemic hepatitis B (including Africa and the Mediterranean region) also have higher rates of infection with HBV. Other population groups at higher risk of HBV include Indigenous Australians, people engaging in high-risk sexual behaviour and people who inject drugs.

A recent Australian study [3]identified the following as the strongest risk factors for HBV infection:

- Birth in Asia or the Pacific Islands
- Birth in North Africa, the Middle East and the Mediterranean regions
- Injecting drug use
- Household contact with someone diagnosed with HBV
- HIV infection

Although people who inject drugs constitute a small proportion of the estimated chronic hepatitis B population, more than 40% of acute hepatitis B cases are attributed to injecting drug use.[4]

The Public Health Response to Hepatitis B

Australia's response to hepatitis B has been primarily focussed on the vaccination programmes. Treatment, care and support issues for hepatitis B have assumed a secondary role in the public health response. The major public health contributions include[5]:

- Screening of blood donors and the blood supply for hepatitis B
- Screening of antenatal women for hepatitis B
- Universal infant hepatitis B vaccination
- Hepatitis B vaccination for some high-risk groups, such as health care workers and people with high-risk sexual behaviour or contacts
- Licensing and funding of hepatitis B treatments (interferon, lamivudine, adefovir) through the PBS highly specialised S100 scheme

There are still significant public health challenges to be managed in the context of hepatitis B. These challenges include:

- High numbers of people chronically infected
- Poor hepatitis B vaccination rates among adolescents and high-risk adults
- Low numbers of people with chronic hepatitis B infection who are receiving antiviral therapy
- Lack of funding provided for virological assessment and monitoring of treatment response (HBV DNA levels).

Treatment

The current goals of hepatitis B treatment are to eliminate or permanently suppress replication of the virus and to reduce the risk of progression to liver disease (and development of complications such as liver failure or liver cancer). There are currently two different 'classes' of treatment drug – both of which are able to suppress viral suppression.

Less than 5% of people can fully "control" their infection, even with current treatment options. In this context, control requires the loss of viral surface antigens and the development of a viral surface antibody.
Between 20-35% of people will have normal liver function tests and ongoing viral suppression following 1 to 2 years of therapy and for a period off therapy.
Other people will not sustain suppression of viral replication off therapy, and will have ongoing inflammation of the liver – for these individuals long-term treatment is required to reduce the risk of liver disease progression.

There are ongoing issues related to hepatitis B treatment including resistance, side effects and the availability of combination therapy (many patients are only offered monotherapy).

Other Recommended Reading

Hepatitis B in Australia: Responding to a diverse epidemic
http://www.ashm.org.au/uploads/Hep-B-in-Australia.pdf

Australian National Hepatitis B Needs Assessment
Available through Australian Research Centre for Sex, Health and Society (ARCSHS) at La Trobe University

References

[1] O'Sullivan BG, Gidding HF, Law M, Kaldor JM, Gilbert GL, Dore GJ. Estimates of chronic hepatitis B virus infection in Australia, 2000. *Aust N Z J Public Health.* Jun 2004;28(3):212-216.
[2] Dore G, Wallace J, Locarnini S, Desmond P, Gane E, Crawford D. *Hepatitis B in Australia: Responding to a diverse epidemic.* Advancing the Clinical Treatment of Hepatitis B virus (ACT-HBV), 2006.
[3] Tawk HM, Vickery K, Bisset L, Lo SK, Selby W, Cossart YE. The current pattern of hepatitis B virus infection in Australia. *J Viral Hepatitis*. 2005.
[4] NCHECR. HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2006: National Centre in HIV Epidemiology and Clinical Research (NCHECR), The University of New South Wales; 2005.
[5] Dore et al