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Hepatitis B

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Introduction

The hepatitis B virus (HBV) is one of the most prevalent blood borne viruses worldwide and is a major cause of chronic liver disease and hepatocellular carcinoma. It is a hepadnavirus, consisting of a core antigen surrounded by a surface antigen.

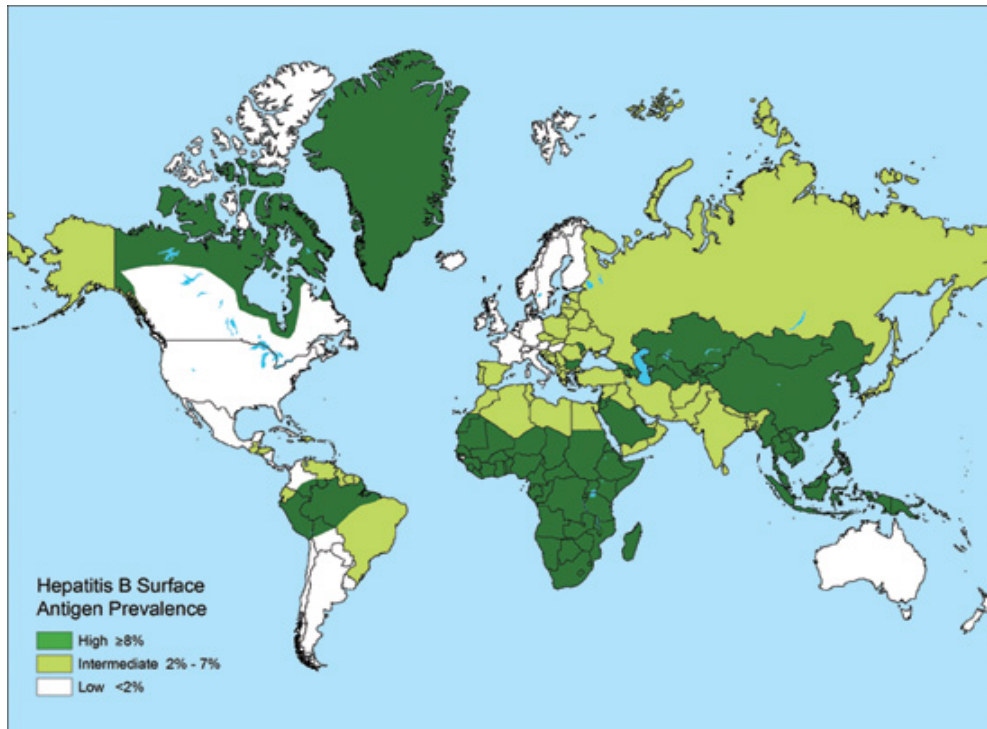
Epidemiology

Global Epidemiology

The prevalence of chronic HBV infection varies worldwide. In all socioeconomic groups in sub-Saharan Africa, most of the Far East, parts of Eastern Europe and central Asia, Greenland, parts of rural northern Canada, the Western Pacific, much of the Middle East and the Amazon River basin the prevalence of chronic HBV infection is high (>8%). Parts of southern and eastern Europe, central and southwest Asia, parts of the Middle East, Russia, Japan, most areas surrounding the Amazon basin, parts of north Africa and areas of central America and the Caribbean have an intermediate rate of chronic HBV infection, with between 2% and 7% of the population considered to be infected. Prevalence of HBV chronic infection is considered low (< 2%) in the general population of northern and western Europe, most of North America, Mexico, Australia, New Zealand and southern South America. [1]

Approximately 350 million people are believed to be chronic carriers of HBV worldwide [2].

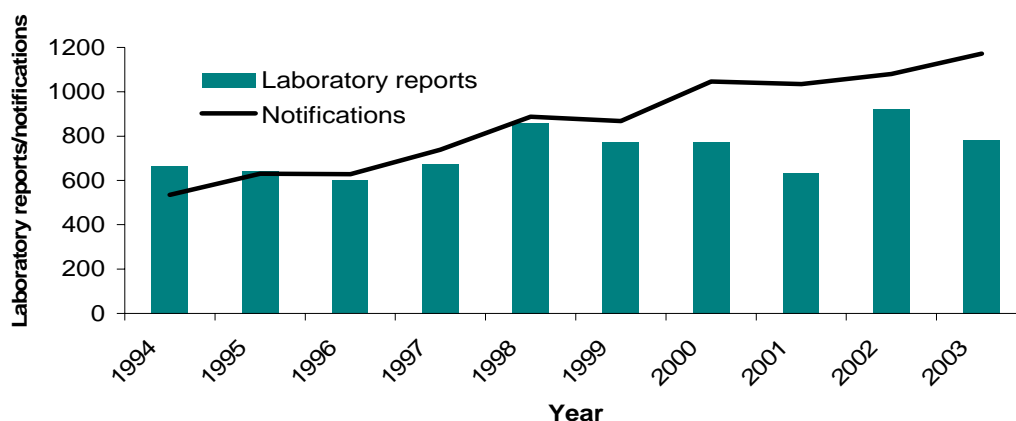
Map of global prevalence of chronic infection with hepatitis B, by country, 2006



Map courtesy of the US Centers for Disease Control and Prevention

Hepatitis B in travellers from England and Wales.

Figure 1: Total Laboratory reports of acute hepatitis B and notifications of Hepatitis B in England, Wales, and Northern Ireland: 1994 - 2003





Graphs from Health Protection Agency, "Foreign travel-associated illness. England, Wales and Northern Ireland – Annual Report 2005".

Risk for travellers

The risk of HBV for tourists and short term travellers is considered to be low. However, as this risk is associated with behaviour, it will increase with certain activities particularly in areas of high endemicity.

Sexual transmission is an important factor in travel related cases. The Health Protection Agency states that for 2003, 48% of travel-related cases in England, Wales and Northern Ireland reported heterosexual exposure as a risk factor. Asia, in particular Thailand, was the most common area of travel [3]

Frequent travellers, long-term travellers and expatriates, those travelling for medical reasons or with medical conditions, and those visiting friends and relatives are at higher risk as they are more likely to need medical treatment whilst overseas. Those at occupational risk, including healthcare and humanitarian aid workers should also be aware of the increased risk.

Transmission

HBV can be found in blood and body fluids. It is transmitted through person to person contact via infected body fluids, vertically from mother to child, child to child and percutaneously.

Unprotected sexual intercourse, body piercing, tattoos, contact sports, acupuncture and intravenous drug use are all behavioural risk factors [4]. Risk of sexual transmission of HBV is high for individuals who change partners frequently, particularly men who have sex with men and commercial sex workers [5]

The percutaneous route of transmission also includes the use of contaminated medical, dental or other instruments and transfusion of infected blood products. Therefore blood transfusions and medical and dental treatment in intermediate or high prevalence areas increases the risk of exposure to HBV.

Signs and symptoms

In the majority of cases, hepatitis B is a sub-clinical illness, with less than 10% of children and between 30-50% of adults experiencing symptoms. Following an incubation period of 40 to 160 days symptomatic patients will experience anorexia, abdominal pain, nausea and vomiting and occasionally mild fever. They will then become jaundiced, with dark urine and lightening of stools [5]. The case fatality rate is approximately 1% in adults [4].



Chronic infection occurs in 90% of those infected perinatally, 20% to 50% in those infected between the ages of one and five years and in approximately 5% of those infected as adults. It can progress to cirrhosis, chronic liver disease and liver cancer [5]

Treatment

There is no specific treatment for acute hepatitis B, but rather supportive intervention.

Antiviral agents can be used in some patients to treat chronic hepatitis B. The response rate is variable and long term therapy is often required.

Prevention

All travellers should receive the following advice to reduce their risk:

- Avoid unprotected sexual intercourse.
- Avoid tattooing, piercing and acupuncture.
- Do not share needles.
- Follow universal body fluid precautions if working in a medical/dental/ high risk setting
- Carry a sterile medical kit.

Travellers should be aware that using precautions against HBV will prevent other blood and body fluid borne viruses, such as HIV and [hepatitis C](#), for which there are no available vaccines.



Vaccine information

Vaccination is recommended for all travellers considered to be at risk of HBV. Potentially any traveller is at risk of accident or emergency treatment. Travel to areas of moderate or high endemicity increases risk of exposure [4].

Hepatitis B vaccine is recommended for:

- Those who may be exposed to blood or blood products through their occupation, e.g. healthcare professionals, aid workers and public service workers such as police and fire-fighters.
- Travellers who intend to stay for long periods in high prevalence areas.
- Those considered to be at risk of HBV through their planned activities, e.g. volunteers undertaking manual work, contact sports, casual sex.
- Young children who may be in close contact with the local population and therefore at risk of cuts and scratches.
- Travellers with pre-existing medical conditions such as renal disease who may be at higher risk of requiring medical procedures abroad. Pregnant women are also potentially more likely to need medical treatment

Availability of vaccine

Three different brands of hepatitis B vaccine are licensed in the United Kingdom (UK). They are all inactivated and use a recombinant surface antigen of HBV. Fendrix® and HBVaxPRO 40mcg vaccines have been developed to prevent HBV in patients with renal insufficiency, including high risk groups such as haemodialysis and pre-haemodialysis patients.

There is also a combined hepatitis A and B vaccine, brand name Twinrix®, licensed in the UK [5]

Vaccine	Manufacturer	Schedule	Length of protection	Age range
Engerix B [®]	GlaxoSmithKline	3 doses. 0, 1 and 6 months	see 'Length of protection' section below	Neonates to adults Note different dosage for children up to and including 15 years of age.
		Accelerated schedule of 3 doses. 0, 1 and 2 months	A 4 th dose should be given after 12 months	
		Accelerated schedule of 3 doses. 0, 7 and 21 days. Can be used when rapid protection is required.	A 4 th dose should be given 12 months after the first.	Adults, 18 years and above.
		In children aged 11-15 years, 2 doses of the adult dose at 0 and 6 months will illicit an antibody response if it is felt they will be non-compliers.		
HBvaxPRO [®] 5mcg	Sanofi Pasteur MSD	3 doses. 0, 1 and 6 months	see 'Length of protection' section below	From birth to 15 years
		Accelerated schedule of 3 doses. 0, 1 and 2 months	A 4 th dose should be given 12 months after the first.	
HBVaxPRO [®] 10mcg	Sanofi Pasteur MSD	3 doses. 0, 1 and 6 months	see 'Length of protection' section below	16 years and older

		Accelerated schedule of 3 doses. 0, 1 and 2 months.	A 4 th dose should be given 12 months after the first.	
HBVaxPRO® 40mcg	Sanofi Pasteur MSD	3 doses. 0, 1 and 6 months	see 'Length of protection' section below	For adults with renal insufficiency, including pre-haemodialysis and haemodialysis patients
Fendrix®	GlaxoSmithKline	4 doses. 0, 1, 2 and 6 months.	see 'Length of protection' section below	For adults and children aged 15 years and older with renal insufficiency, including pre-haemodialysis and haemodialysis patients
Twinrix®	GlaxoSmithKline	3 doses. 0, 1 and 6 months	see 'Length of protection' section below Hepatitis A component – at least 10 years*.	Adults and children from 1 year of age. Note different dosage for children up to and including 15 years of age.
		Accelerated schedule of 3 doses. 0, 7 and 21 days. Can be used when rapid protection is required.	A 4 th dose should be given after 12 months.	Adults, 18 years and above.

* There is no evidence that further reinforcing doses of hepatitis A vaccine are needed in immunocompetent individuals following completion of the primary course [6]. However, further advice should be sought for individuals with altered immune responses.

NaTHNaC strongly advises that the vaccine Summary of Product Characteristics (SmPC) is consulted prior to administration of any vaccine.



It is good practice to continue a course of hepatitis B with the same brand of vaccine. However, should this not be possible, vaccine brands may be used interchangeably.

Length of protection

The Department of Health (DH) currently advises that post exposure hepatitis B surface antibody levels should only be checked in those with renal failure or at risk of occupational exposure. Following the completion of a full course, the DH recommends that individuals at continuing risk of infection should be offered a single booster dose of the vaccine approximately five years after the primary vaccination course [5].

Interrupted courses

It is unnecessary to repeat doses if the hepatitis B course has been interrupted. Longer than recommended intervals between doses do not appear to reduce the final antibody level or efficacy [7].

Contraindications

Known hypersensitivity to any components of the vaccine, or to a previous dose. Vaccination should be delayed in acute febrile illness.

Adverse events

Adverse reactions following hepatitis B vaccine tend to be mild and transient. They include soreness, erythema and induration at the vaccine site. Less commonly fatigue, fever, malaise and influenza-like symptoms have been reported.

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