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Hepatitis B

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Introduction

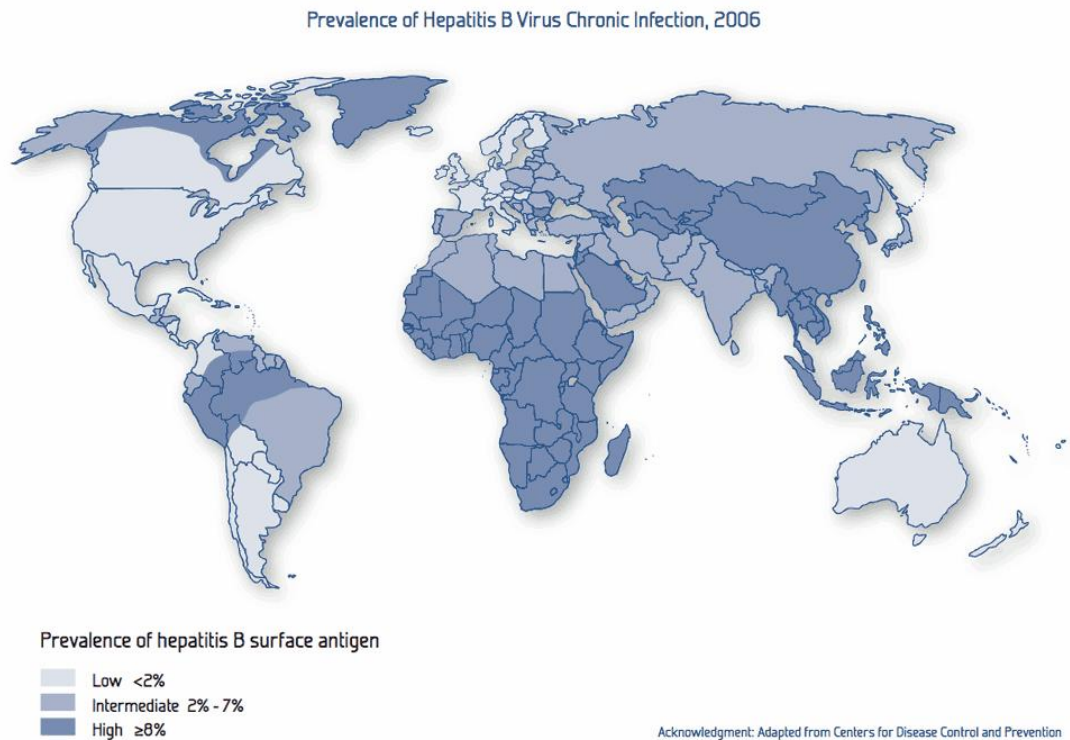
The hepatitis B virus (HBV) is one of the most prevalent bloodborne viruses worldwide and is a major cause of chronic liver disease and hepatocellular carcinoma. Approximately 350 million people are believed to be chronic carriers of HBV worldwide [2]. It is a DNA virus of the *Hepadnavirus* family, 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% carriage of hepatitis B antigen) (Figure 1). 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]. See [NaTHNaC Country Information Pages](#) for prevalence of hepatitis B in each country.

Figure 1. Map of prevalence of hepatitis B virus chronic infection, 2006



Map from Health Information for Overseas Travel, 2010

Hepatitis B in travellers in England

In 2009, 597 cases of acute hepatitis B were reported in England [3]. As there is very limited data on travel history, it is difficult to determine how many of these cases were acquired during travel [4].

Risk for travellers

The risk of HBV for tourists and short term travellers is low. However, as 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 destination [5].

Frequent, long-term and expatriate travellers and those travelling for medical reasons or with medical conditions can be at higher risk if they need medical treatment whilst overseas. Those at occupational risk, including healthcare and humanitarian aid workers are also at increased risk.



Transmission

HBV is transmitted by exposure to infected blood or bodily fluids, vertically from mother to child, and percutaneously.

Unprotected sexual intercourse, body piercing, tattoos, acupuncture, injecting drug use and contact sports are behavioural risk factors [6,7]. 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 [8].

The percutaneous route of transmission also includes the use of contaminated medical, dental or other instruments and transfusion of infected blood products.

In areas of high endemicity infection is predominantly acquired during childhood by perinatal transmission or from child-to-child [8].

Signs and symptoms

In the majority of cases, hepatitis B is a sub-clinical illness, with less than 10% of children and between 30% to 50% of adults experiencing symptoms. Following an incubation period of 40 to 60 days, symptomatic patients will experience anorexia, abdominal pain, nausea and vomiting and occasionally mild fever. They will then become jaundiced, with dark urine and pale stools [6]. The case fatality rate is approximately 1% in adults [6].

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. Twenty to 25% of those with chronic infection develop chronic liver disease and cirrhosis that can lead to liver cancer [8].

Treatment

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

The aim of treatment of chronic hepatitis B is to prevent liver cirrhosis or hepatocellular carcinoma. Interferon, lamivudine and adefovir are options for treatment of chronic hepatitis B [9]. Treatment should be initiated by a specialist and follow national guidelines.

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 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

Vaccine is recommended for all travellers considered to be at risk of HBV.

Any traveller can be at risk of an accident or require emergency treatment. Travel to areas of moderate or high endemicity increases the likelihood that an exposure will occur [6].

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 or intermediate prevalence areas.
- Those considered being 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.
- Travellers with pre-existing medical conditions such as renal disease, or pregnant women, who may need invasive medical procedures abroad.

Availability of vaccine

Several monovalent Hepatitis B antigen vaccines are licensed for use in the UK.

In addition, Fendrix® and HBVaxPRO 40® vaccines have been developed to prevent HBV in patients with renal insufficiency, including high risk groups such as haemodialysis and pre-haemodialysis patients.

Combined hepatitis A and B vaccines are also available.

All hepatitis B vaccines available in the UK are inactivated.

Vaccines (listed alphabetically) [10-17]

Vaccine and antigen component	Manufacturer	Schedule	Length of protection	Age range
Ambirix® Combined hepatitis A (720 ELISA units) and B (20mcg)	GlaxoSmithKline	2 dose schedule given 6-12 months apart	Hepatitis B: see 'Length of protection' below Hepatitis A: at least 10 years*	Children from 1 to 15 years
Engerix B® Monovalent hepatitis B (20mcg/ml)	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; 4 th at 12 months.	See 'Length of protection' section below	
		Very accelerated schedule of 3 doses: 0, 7 and 21 days; 4 th dose at 12 months.		Very accelerated schedule: Adults, 18 years and above.
		In children aged 11-15 years, 2 doses of the adult dose at 0 and 6 months.		
Fendrix Monovalent hepatitis B (20mcg/0.5ml); with adjuvant	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
HBvaxPRO Paediatric®	Sanofi Pasteur MSD	3 doses: 0, 1 and 6 months	see 'Length of protection' section below	From birth to 15 years

Monovalent hepatitis B (5mcg/0.5ml)		Accelerated schedule of 3 doses: 0, 1 and 2 months; 4 th dose at 12 months	protection' section below	
HBVaxPRO® Monovalent hepatitis B (10mcg/ml)	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; 4 th dose at 12 months.		
HBVaxPRO40® Monovalent hepatitis B (40mcg/ml)	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
Twinrix Adult® Combined hepatitis A (720ELISA units) and B (20mcg)	GlaxoSmithKline	3 doses: 0, 1 and 6 months	see 'Length of protection' section below	Adults and children from 16 years of age.
		Accelerated schedule of 3 doses: days 0, 7 and 21; 4 th dose at 12 months.	Hepatitis A: at least 10 years*	Adults, 18 years and above.
Twinrix Paediatric® Combined hepatitis A (360ELISA units) and B (10mcg)	GlaxoSmithKline	3 doses: 0, 1 and 6 months	See 'Length of protection' below Hepatitis A: at least 10 years*	Children from 1 to 15 years.

* There is no evidence that further reinforcing doses of hepatitis A vaccine are needed in immunocompetent individuals following completion of the primary course [18]. The duration of protection from a completed course of vaccine can be expected to be at least 20 years and probably indefinite. The Joint Committee on Vaccination and Immunisation (JCVI) has accepted a 20 year interval for a booster dose of vaccine for those at ingoing



risk. However, specific advice should be sought for individuals with altered immune responses.

The vaccine Summary of Product Characteristics (SPC) should be consulted prior to administration of any vaccine.

It is good practice to continue a course of hepatitis B with the same product. However, should this not be possible, monovalent vaccine products may be used interchangeably, with the exception of Fendrix and HBVaxPRO40 in those with renal insufficiency.

Length of protection

The Department of Health (DH) currently advises that post vaccination hepatitis B surface antibody levels should only be checked in those with renal failure or at risk of occupational exposure [8]. 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; it is not necessary to measure anti-HBs levels either before or after this dose [8].

Interrupted courses

It is not necessary 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 [19].

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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Link

[Health Protection Agency Hepatitis B information](#)