

Hepatitis B

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Key Messages

Hepatitis B is a viral infection of the liver transmitted by contact with the blood or body fluids of an infected person.

Infants who are infected with the virus at birth or in their first year of life are more likely to develop persistent hepatitis B infection and chronic (long-term) liver disease.

The risk of contracting hepatitis B infection for most travellers is low. The risk can be reduced by avoiding unprotected sex with new partners abroad and avoiding sharing drug injection equipment, public shaving, sharing shaving equipment, acupuncture, skin piercing and tattoos (unless sterile equipment is used).

Hepatitis B vaccination is recommended for all travellers considered to be at risk and can be given to adults and children from birth.

Those who need to seek urgent medical or dental care in resource poor countries should consider the risks from contaminated equipment or blood/blood products.

A sterile medical equipment kit may also be helpful when travelling to some countries.

Overview

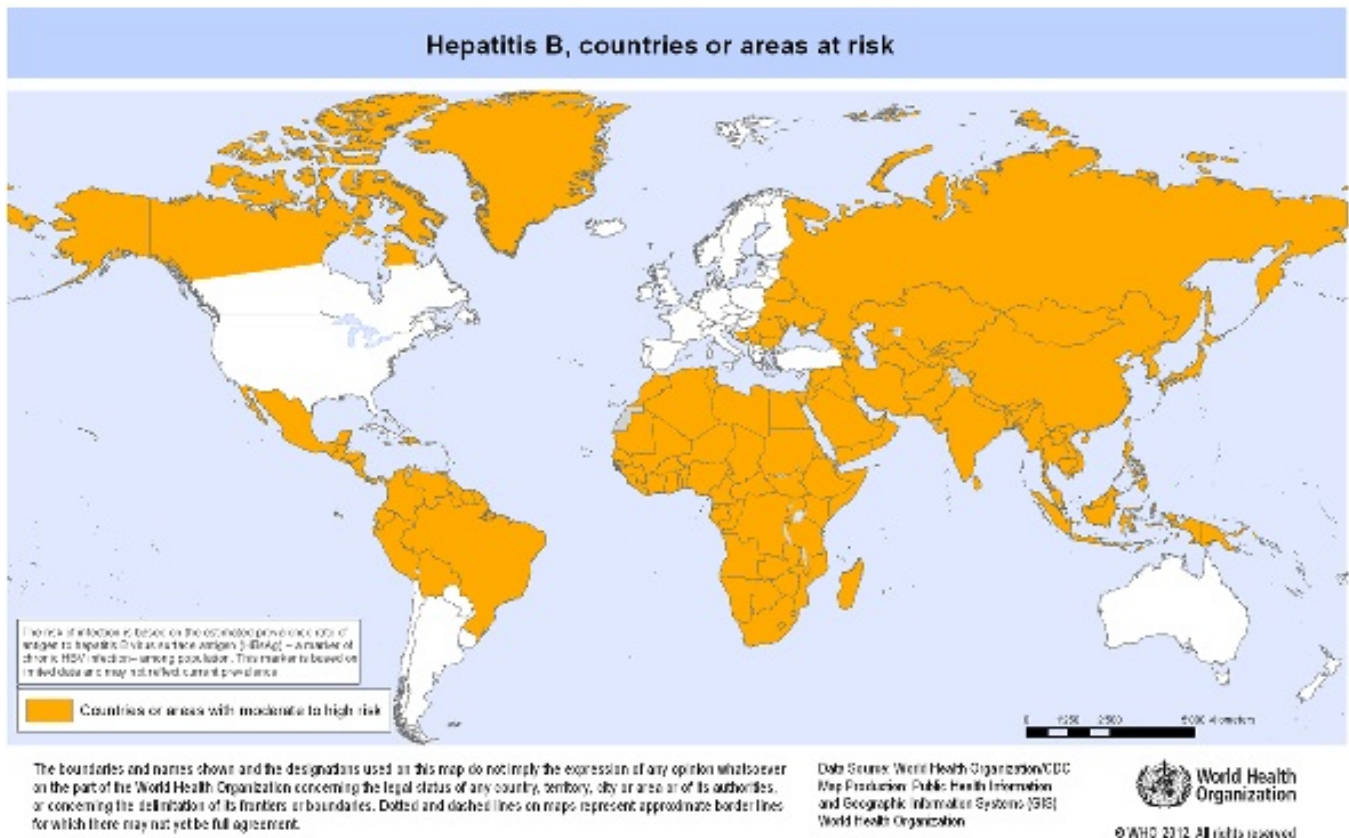
The hepatitis B virus (HBV) is one of the most prevalent blood-borne viruses worldwide and is a major cause of chronic liver disease and hepatocellular (liver) cancer. It is estimated that worldwide more than 240 million people are persistently infected with hepatitis B virus [1]. Approximately 780,000 people die annually due to the acute or chronic consequences of hepatitis B infection [1].

Risk areas

Hepatitis B prevalence is highest in parts of East Asia and Sub Saharan Africa where between five and ten percent of the adult population are estimated to have persistent hepatitis B infection [1]. High rates of infection are also found in the Amazon and the southern parts of eastern and central Europe [1]. In the Middle East and Indian subcontinent, an estimated two to five percent of the

general population is persistently infected. Less than one percent of the population in western Europe and North America is persistently infected [1].

Figure 1: World Health Organization map of countries or areas with intermediate to high prevalence (>2% of the population) of hepatitis B infection, 2012



Source: [World Health Organization, 2012](#)

For country specific information and vaccine recommendations please see our [Country Information pages](#).

Risk for travellers

The risk of HBV for tourists and short term travellers is usually low. However, as risk is associated with particular behaviours, it will increase with certain activities particularly in areas of intermediate to high risk (where two percent or more of the population are known or presumed to be persistently infected with the virus).

Sexual transmission is an important factor for those infected whilst abroad. In 2003, 48 percent of travel-related cases in England, Wales and Northern Ireland had reported heterosexual exposure as

a risk factor. Asia, in particular Thailand, was the most common destination [2].

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 [3, 4]. Those at occupational risk, including healthcare and humanitarian aid workers are also at increased risk [5] (see Vaccine Information section below for further details).

Hepatitis B in travellers in England

In 2013, 414 acute or probable acute cases of hepatitis B were reported in England, of which 60 percent (249) had reported risk factor information. There were 18 health care related exposures including surgery, dental treatment, blood transfusion and dialysis (of which five cases were reported to have been exposed abroad) [6].

Transmission

HBV is transmitted by exposure to infected blood or bodily fluids contaminated with infectious blood, passed from mother to baby, or percutaneously (puncture of the skin) e.g. contaminated medical, dental or other instruments or blood transfusion or mucocutaneous transmission when blood or blood contaminated body fluids splashes into the eyes noses or mouth or onto broken skin.

Unprotected sexual intercourse, body piercing, tattoos, acupuncture, injecting drug use and contact sports are behavioural risk factors [5, 7]. Risk of sexual transmission of HBV is high for individuals who change partners frequently, for both heterosexual relationships and men who have sex with men [6] and commercial sex workers.

In areas of high endemicity, infection is predominantly acquired by perinatal transmission (infection passed from mother to baby before or after birth) or from person to person during childhood [1].

Signs and symptoms

In the majority of cases, hepatitis B is asymptomatic (without symptoms), with less than 10 percent of children and between 30 to 40 percent of adults experiencing symptoms. Following an incubation period of 40 to 160 days, patients who do experience symptoms may have anorexia (loss of appetite), abdominal pain, nausea and vomiting and occasionally fever. Dark urine and pale stools may also be apparent. During the acute stage of infection cases may develop jaundice (yellowing of eyes and skin). Approximately one percent of adults will die during the acute stage of infection [8].

Persistent infection develops in 80-90 percent of children infected in the first year of life and 30-50 percent of those infected before the age of six years. Of those adults infected in childhood who become persistently infected, 15-25 percent die from hepatitis B related liver cancer or cirrhosis.

Persistent infection develops in less than 5 percent of healthy adults infected in adulthood [1].

Diagnosis and treatment

Hepatitis B is diagnosed by serology (antibody testing) and antigen (part of the virus) detection in the blood [9].

There is no specific treatment for acute hepatitis B, simply supportive care.

The aim of treatment for those persistently infected with hepatitis B is to prevent liver cirrhosis or hepatocellular carcinoma (cancer) and to reduce infectiousness. Treatment options include interferon, and a range of antivirals such as tenofovir and entecavir. Treatment should be initiated by a specialist and follow national guidelines [9].

Preventing hepatitis B

All travellers should avoid contact with blood and bodily fluids to reduce their risk, this includes:

- avoiding unprotected sexual intercourse.,
- using appropriate protective precautions where contact is unavoidable e.g. due to occupation
- avoiding tattooing, piercing and acupuncture (unless sterile equipment is used)
- not sharing needles or other injection equipment..
- not sharing shaving equipment

Hepatitis B vaccination is recommended for all travellers considered to be at risk of HBV (see vaccine information below).

Travellers should consider taking a sterile medical equipment kit if travelling to resource poor areas.

Travel health insurance may help traveller's access better medical facilities if they need urgent medical or dental care abroad.

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. Travellers to areas of intermediate or high endemicity can be at increased risk [8].

Hepatitis B vaccine is recommended for travellers whose behaviours or travel plans place them at risk and include those who:

- may have unprotected sex
- may be directly exposed to blood or blood products through their occupation, such as healthcare professionals
- may be exposed to contaminated needles through injecting drug use, or as a result of accessing medical or dental care e.g. those with pre-existing medical conditions e.g. dialysis patients who intend to undergo dialysis overseas and those travelling for medical care
- are participating in contact sports
- are adopting children from a country with an intermediate or high prevalence of hepatitis B
- are long stay travellers

Hepatitis B vaccine is listed in the [Country Information pages](#) of our website for countries where two per cent or more of the population are known or presumed to be persistently infected with the hepatitis B virus (intermediate/high prevalence).

Availability

[Fendrix®](#) and [HBVAXPRO 40mcg®](#) vaccines have been developed to prevent HBV in patients with renal insufficiency (kidney failure); including high risk groups such as haemodialysis and pre-haemodialysis patients (these vaccines are not listed below).

All hepatitis B vaccines available in the UK are inactivated.

Vaccines

(listed alphabetically) [10-15]

The vaccine Summary of Product Characteristics (SPC) should be consulted prior to administration of any vaccine (these can be found by clicking on the vaccine names in the table below).

For the hepatitis B vaccine (without hepatitis A added) for most adult and childhood risk groups, an accelerated schedule should be used, with vaccine given at zero, one and two months. An alternative schedule at zero, one and six months should only be used where rapid protection is not required and there is a high likelihood of compliance [5].

Health professionals should take care to review the recommended schedules of vaccines as they are age and brand specific e.g. Twinrix is not licensed for a schedule at 0, 1, 2 months and Twinrix Adult is licensed for administration at 0, 7 & 21 days in adults from the age of 18 years; the vaccine can be administered from the age of 16 years, but the longer schedule should be used.

Details are given in the Summary of Product Characteristics for each licensed product in the UK on the [electronic Medicines Compendium](#) [eMC]

Table 1: Schedules and age range for hepatitis B vaccinations

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Vaccine and antigen component	Schedule	Age range
Ambirix ® Combined hepatitis A (720 ELISA units) and B (20mcg)	2 dose schedule given 6-12 months apart	Children from 1 to 15 years
Engerix B ® Monovalent hepatitis B (20mcg/1ml)	3 doses: 0, 1 and 6 months	From 16 years (dose 20mcg) Note 10mcg dosage for children up to and including 15 years of age.
	Accelerated schedule: 0, 1 and 2 months. A fourth dose at 12 months can be considered for those at high risk	
	Super accelerated schedule of 4 doses: 0, 7 and 21 days; 4th dose at 12 months In children aged 11-15 years, 2 doses of the adult dose at 0 and 6 months	Super accelerated schedule: Adults, 18 years and above (can consider 'off license' for 16-17 year olds [4].
Engerix B ® Monovalent hepatitis B (10mcg/0.5ml)	3 doses: 0, 1 and 6 months	From birth to 15 years
	Accelerated schedule: 0, 1 and 2 months. A fourth dose at 12 months can be considered for those at high risk	From birth to 15 years
Infanrix hexa ® Diphtheria, tetanus, pertussis (acellular), hepatitis B, poliomyelitis	3-dose • There should be an interval of at least 1 month between	Full term infants

(inactivated) (IPV)
 and *Haemophilus*
influenzae type b (Hib)
 conjugate vaccine
 (0.5ml)

primary doses.

- The booster dose should be given at least 6 months after the last priming dose and preferably before 18 months of age.

2-dose

- There should be an interval of at least 2 months between primary doses.
- The booster dose should be given at least 6 months after the last priming dose and preferably between 11 and 13 months of age.

3-dose

- There should be an interval of at least 1 month between primary doses.
- The booster dose should be given at

Pre-term infants born after at least 24 weeks of gestational age

	least 6 months after the last priming dose and preferably before 18 months of age.	
HBVAXPRO Paediatric ® Monovalent hepatitis B (5mcg/0.5ml)	3 doses: 0, 1 and 6 months	From birth to 15 years
	Accelerated schedule: 0, 1 and 2 months. A fourth dose at 12 months can be considered for those at high risk	
HBVAXPRO Adult ® Monovalent hepatitis B (10mcg/ml)	3 doses: 0, 1 and 6 months	16 years and older
	Accelerated schedule: 0, 1 and 2 months. A fourth dose at 12 months can be considered for those at high risk	
Twinrix Adult ® Combined hepatitis A (720ELISA units) and B (20mcg)	3 doses: 0, 1 and 6 months	Adults and children from 16 years of age
	Super accelerated schedule of 4 doses: days 0, 7 and 21; 4th dose at 12 months	Adults, 18 years and above
Twinrix Paediatric ® Combined hepatitis A (360ELISA units) and B (10mcg)	3 doses: 0, 1 and 6 months	Children from 1 to 15 years

Length of protection

Those who have received a primary course of immunisation, including children vaccinated according to the routine childhood schedule and individuals at high risk of exposure, do not require

a reinforcing dose of hepatitis B-containing vaccine, except:

- patients with renal failure. Antibody levels should be monitored annually and a booster given to those who have responded to vaccine previously and whose antibody levels fall below 10mIU/ml. A booster dose should be offered to any haemodialysis patients who are intending to visit high risk countries and who have previously responded to the vaccine, particularly if they are to receive haemodialysis and have not received a booster in the last 12 months.
- at the time of a significant exposure

National guidance currently advises that post vaccination hepatitis B surface antibody levels (anti-HBs) should only be checked in those with renal failure and those at risk of occupational exposure. [Guidance for those at risk of occupational exposure](#) is available in Public Health England's 'Green book' [5].

On the advice of the Joint Committee on Vaccination and Immunisation (JCVI) booster doses are no longer routinely required for healthy, immunocompetent adults who have completed a primary course of vaccine, including health care workers who are known responders [16].

The duration of protection from a completed course of hepatitis A vaccine can be expected to be at least 25 years and probably indefinite. However, until further evidence is available, a further booster of hepatitis A vaccine is indicated at 25 years for those at ongoing risk of infection [17]. However, specific advice should be sought for individuals with altered immune responses.

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, however vaccine doses for each schedule should be given at the correct interval [18].

It is good practice to continue a course of hepatitis B with the same product. However, should this not be possible, monovalent (single antigen) vaccine products may be used interchangeably, with the exception of Fendrix and HBVAXPRO40 for those with renal insufficiency.

Contraindications

Known hypersensitivity (allergy) to any components of the vaccine, or to a previous dose. Vaccination should be delayed in those with an acute febrile illness (fever).

Undesirable effects

Adverse reactions following hepatitis B vaccine tend to be mild and transient. They include soreness, erythema (redness of the skin) and induration (hardening of the skin) at the vaccine site. Fatigue, fever, malaise and influenza-like symptoms have also been reported. See the individual

Summary of Product Characteristics (links in table above on the vaccine name) for full details.

Resources

- [Public Health England hepatitis B information](#)
- [World Health Organization hepatitis information](#)
- [NHS Choices Hepatitis B](#)

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