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<td>Health &amp; Safety Committee</td>
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<td>Date ratified</td>
<td>09/01/2013</td>
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<td>Document Manager (job title)</td>
<td>Dr Susan Harvey, Consultant and Clinical Lead, Occupational Health and Safety Service</td>
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**Related Procedural Documents**

- Trust policies: Prevention and Management of Needlestick (‘sharps’) Injuries (NSI) and Contamination incidents
- Hepatitis C: protecting employees and patients
- HIV infected health care workers - guidance on management

**Key Words (to aid with searching)**

- Hepatitis B virus, occupational health, exposure prone procedure, pre-employment health assessment, BBV, Sharps injury
QUICK REFERENCE GUIDE

For quick reference the guide below is a summary of actions required. This does not negate the need for the document author and others involved in the process to be aware of and follow the detail of this policy.

1. Health Care Workers (HCW) joining the Trust who will have direct contact with patient’s blood or other body fluids/ tissues, must provide documentary evidence of satisfactory hepatitis B antibody levels (anti-HBs >10mIU/mL) or must undergo testing and/or hepatitis B immunisation.

2. HCW who are new to the NHS and who will perform Exposure Prone Procedures (EPP) or existing staff who are new to EPP and renal unit staff joining the Trust must also be tested for hepatitis B surface antigen (HBsAg) [reference: Health Clearance for TB, hepatitis B, hepatitis C and HIV: new healthcare workers. DH 2007], since there are rare cases where a vaccine response has been seen in the presence of hepatitis B virus carrier status.

3. Non-immune clinical HCW, or other HCW who will have regular contact with blood or bodily fluids, must receive appropriate immunisations against hepatitis B in the Occupational Health Department.

4. All EPP workers and clinical HCW in renal units who are hepatitis B surface antigen positive must have viral load measures and must refrain from EPP or renal unit work when the viral load exceeds prescribed levels.

5. HCW who are hepatitis B e-antigen positive must not carry out any EPP or renal unit work and must be assessed by an occupational health physician.

6. Immunisation must be used in conjunction with Standard Precautions (see appendix 2) to prevent risk of infection e.g. compliance with hand hygiene, personal protective equipment, aseptic technique and safe handling of sharps.

7. All sharps injuries and contamination incidents must be reported to Occupational Health on 02392 283352 or to the Emergency Department (ED) on ext. 3366 out of hours.

8. Following a sharps injury or contamination incident from a hepatitis B positive source or an unknown source, a risk assessment for hepatitis B booster immunisation and Hepatitis B immunoglobulin (HBIG) must be performed (see appendix 1). Non-responders to HBV immunisation must have HBSAg checked at 3 and 6 months following a NSI.
1. INTRODUCTION
The UK is a very low-prevalence country for chronic carriage of Hepatitis B Virus (HBV), but prevalence does vary across the country. It is higher in those born in high-endemicity countries, many of whom will have acquired the infection at birth or in early childhood. This is reflected in the prevalence rates found in antenatal women, which vary from 0.05 to 0.8% in some rural areas but rise to 1% or more in certain inner city areas.

Acute infection with HBV may have an insidious onset with anorexia, abdominal discomfort, nausea, vomiting and rash, which can progress to jaundice and hepatic necrosis. However, in many cases the acute infection is asymptomatic. About 10% of those infected as adults become chronic carriers with Hepatitis B surface antigen (HBsAg) persisting for longer than 6 months. The most infectious carriers are those with Hepatitis B e-antigen (HBeAg).

In a non-occupational setting, HBV can be transmitted by the sharing of needles or other equipment by intravenous drug users; by perinatal transmission from mother to child; or sexually from an acute case or carrier.

In an occupational setting transmission can occur from patients with acute infection or who are carriers of HBV to health care workers through needle stick/ sharps injuries or splashes to mucous membranes or non-intact skin (e.g. eczema or abrasions) of blood, body fluids (e.g. cerebrospinal fluid, peritoneal fluid, synovial fluid, amniotic fluid) or any other body fluid containing visible blood, including saliva in association with dentistry. The risk of transmission is 1 in 3 if the source patient is HBeAg positive and between 1 in 18 to 1 in 100 if the source patient is e antigen negative. The approximate risk for mucocutaneous exposure is 1 in 1000 overall.

There is a risk of transmission from hepatitis B infected health care workers to patients during Exposure Prone Procedures (see section 4 for definition). Worldwide, more than 300 patients have been infected by hepatitis B carrying health care workers (mainly gynaecologists and cardiothoracic surgeons). The transmission rate is approximately 4-9%.

Prevention of occupationally acquired hepatitis B infection is by immunization; good infection control measures (see appendix 2; reduction of risk during surgical procedures; safe handling and disposal of sharps and the correct management of sharps injuries. Although immunisation offers 90% protection against HBV it should not be used as a substitute for other methods of prevention since it offers no protection from other blood borne viruses e.g. hepatitis C, HIV.

2. PURPOSE
To inform Trust management and employees of the background and risks of hepatitis B infection in the workplace and the requirements needed in terms of immunisation, safe working and the protection of staff and patients.

3. SCOPE
This Policy applies to all staff who have direct contact with patients and to the staff who manage these employees.

*In the event of an infection outbreak, flu pandemic or major incident, the Trust recognises that it may not be possible to adhere to all aspects of this document. In such circumstances, staff should take advice from their manager and all possible action must be taken to maintain ongoing patient and staff safety*

4. DEFINITIONS
Health Care Worker (HCW): all staff working in hospitals and General Practice who have direct patient contact, e.g. cleaners on wards, some catering staff, ambulance staff, some reception and clerical staff, as well as medical and nursing staff
Exposure Prone Procedures (EPP): invasive procedures where there is a risk that injury to the worker may result in the exposure of the patient’s open tissues to the blood of the worker (bleed-back). These include procedures where the worker’s gloved hands may be in contact with sharp instruments, needle tips or sharp tissues (e.g. spicules of bone or teeth) inside a patient’s open body cavity, wound or confined anatomical space where the hands or fingertips may not be completely visible at all times. Other situations, such as pre-hospital trauma care should be avoided by health care workers restricted from performing exposure prone procedures, as they could also result in the exposure of the patient’s open tissue to the blood of the worker.

Non-exposure Prone Procedures: where the hands and finger tips of the worker are visible and outside the patient’s body at all times, and internal examinations or procedures that do not involve possible injury to the worker’s gloved hands from sharp instruments and/or tissues, are considered not to be exposure prone provided routine infection control procedures are adhered to at all times.

Examples of non-EPP:
- Taking blood
- Setting up and maintaining intravenous lines or central lines (provided any skin tunnelling procedure used for the latter is performed in a non-exposure prone manner)
- Minor surface suturing
- Incision of external abscesses
- Routine vaginal or rectal examinations
- Simple endoscopic procedures

Obstetric/ intrapartum care:
Normal vaginal delivery in itself is not an EPP but an infected health care worker must not perform procedures involving the use of sharp instruments such as infiltrating local anaesthetic or suturing of a tear or episiotomy, since the fingertips may not be visible at all times. Neither can they perform an instrumental delivery requiring forceps or suction if infiltration of local anaesthetic or internal suturing is required.

Renal Dialysis/ Transplantation Units
Activities undertaken on renal units are not regarded as EPP. However the possibility of transmission of Hepatitis B virus cannot be entirely ruled out. Therefore HCWs who are HBeAg positive or HBeAg negative with a hepatitis B virus DNA level exceeding 10³ genome equivalents per ml should not undertake clinical duties on renal units. HIV and hepatitis C virus infected HCWs may continue to perform clinical duties on renal units (non EPP only).

5. DUTIES AND RESPONSIBILITIES

Occupational Health Department is responsible for:
- Giving Health Clearance for EPP work after pre-placement health assessment and for the administration of all appropriate / required immunisations or other treatments.
- Auditing Occupational Health notes for compliance, evidence from OPAS matched with ESR.
- Monitoring and reporting on compliance to the Health & Safety Committee. The Health & Safety Committee is responsible for receiving the results and taking action as required.

Healthcare Workers: have ethical and legal obligations to take all proper steps to safeguard the interests of their patients and this includes ensuring all appropriate steps are taken to protect patients from transmission of infection; HCW must ensure that they are safe to practice and must inform Occupational Health in confidence if they believe they may be carriers of any blood borne virus, including hepatitis B. Strict confidentiality about specific reasons for restriction of practice (if required) will be maintained by Occupational Health.
Blood exposure incidents to both HCW and patients must be managed appropriately as set out in the relevant Trust policy (Prevention and Management of Needlestick (‘sharps’) Injuries and Contamination Incidents).

6. PROCESS

6.1 Occupational Health screening for hepatitis B virus:

6.1.1 A HCW joining the Trust who may have direct contact with patient’s blood or other body fluids/ tissues, must provide adequate documentary evidence of satisfactory hepatitis B antibody levels (anti-HBs >10mIU/mL) or must undergo hepatitis B immunisation (see below).

6.1.2 A HCW who is new to the NHS and who will perform Exposure Prone Procedures (EPP) or existing staff who are new to EPP, and renal unit staff joining the Trust must also be tested for hepatitis B surface antigen (HBsAg) since there are rare cases where a vaccine response has been seen in the presence of hepatitis B virus carrier status and infection.

6.2 Hepatitis B immunisation:

6.2.1 Standard immunisation; immunisation entails a course of 3 injections at 0, 1 and 6 months with subsequent testing of antibody response at 3 months and a booster at 5 years.

6.2.2 Accelerated immunisation (e.g. for unvaccinated EPP workers): vaccine doses are administered at 0, 1 and 2 months with a fourth dose 12 months. Antibody levels should be measured 2-3 months after the third dose. A five year booster is required.

6.2.3 Very Rapid immunisation; a schedule of three doses given at 0, 7 and 21 days. A fourth dose is recommended at 12 months. This schedule is licensed for use in adults over 18 years of age at immediate risk. Five year booster is required.

6.2.4 A hepatitis B immunisation booster dose will be given after exposure to the virus following a sharps injury or contamination incident from a hepatitis B positive source patient.

6.2.5 A hepatitis B immunisation booster will be given after potential exposure to the virus in poor or non-responders to vaccine (see below for definition).

6.2.6 Hepatitis B- containing vaccines are inactivated, do not contain live organisms and cannot cause the disease against which they protect.

6.3 Immunosupression or renal dialysis:

HCW who are immununosupressed or on renal dialysis may require larger or additional doses of vaccine depending on initial response to vaccination. Cases to be discussed individually with Occupational Health Physician.

6.4 Occupational Health Clearance:

6.4.1 Health Clearance for EPP work will be given by the Occupational Health Department after pre-placement health assessment. EPP duties cannot be commenced until clearance has been given. Where EPP work is an essential element of a post and the relevant criteria are not met, managers will be informed accordingly, although confidentiality about the specific reason for non-clearance will be maintained.

6.5 Response to hepatitis B vaccine:

Antibody responses to hepatitis B vaccine vary widely between individuals. It is preferable to achieve anti-HBs levels above 100mIU/ml, although levels of 10mIU/ml or more are generally accepted as enough to protect against infection.
6.5.1 **Poor responders**: around 10-15% of adults fail to respond to three doses of vaccine or respond poorly. Poor-responders to vaccine (anti-HBs between 10 and 100mIU/ml) will be offered one additional dose of vaccine at that time. In immunocompetent individuals, further assessment of antibody level is not indicated. A reinforcing booster dose should be given at five years, as for good responders.

6.5.1.1 **Non-responders**: An antibody level below 10mIU/ml is classified as a non-response to vaccine, and testing for markers of current or past infection is required (HB core antibody test requested [anti-HBc]; if positive lab will proceed to HBSAg). In non-responders, a repeat course of vaccine is recommended, followed by re-testing of antibodies 3 months after the second course. Those who still have anti-HBs levels below 10mIU/ml, and who have no markers of current or past infection, will require Hepatitis B immunoglobulin (HBIG) for protection if exposed to the virus e.g. after sharps/needle stick injury from a hepatitis B positive source patient.

6.5.2 **Non-responders and EPP**: non-responders who perform EPP require annual testing for HBsAg to ensure they have not become infected with HBV.

6.5.3.1 **Poor/ Non responders and Needlestick injuries**: After a sharps/ Needlestick injury, poor and non-responders will be assessed as per Green Book guidance (see appendix1). A hepatitis B booster and hepatitis B immunoglobulin (HBIG) may be required, depending on the nature of the incident and source patient details. The need for HBIG will be determined in conjunction with a consultant virologist. Non-responders to HBV immunisation must have HBSAg checked at 3 and 6 months following a NSI.

6.6 **Hepatitis B Virus Carriers**:

6.6.1 **Hepatitis B acute infection and carriers and EPP**: all HCW who are HBsAg positive must cease performing EPP or clinical duties in renal units until their e-antigen status is determined.

6.6.2 **Hepatitis B virus e-antigen positive**: those who are e-antigen positive must refrain from all EPP duties. E-antigen positive HCW will be given career advice and advised to seek referral via their General Practitioner to a physician specialising in liver disease.

6.6.3 **Hepatitis B virus e-antigen negative**: those who are e-antigen negative must be tested for HBV DNA on an annual basis. If the viral DNA load is greater than 10³, EPP must not be performed. Viral load must be tested annually by two Identified Validated Samples (IVS) of 7mls clotted blood taken 1 week apart and sent to Department of Health approved laboratories. Where the viral DNA load does not exceed 10³, EPP work can be resumed for a 12-month period after review by the Occupational Health Physician (unless there is any evidence of transmission to a patient).

6.6.4 **Treatment with oral anti-viral therapy**: Department of Health (March 2007) permits e-antigen negative hepatitis B infected health care workers with pre-antiviral HBV DNA levels between 10³ and 10⁵ genome equivalents to perform EPP while on oral antiviral therapy if the viral load is maintained below 10³ genome equivalents. It is recommended that these healthcare workers should have their HBV DNA levels checked every 3 months, and should cease to perform EPP if the level rises above 10³ on or after treatment, or if treatment stops for any reason.
Due to patient safety concerns, healthcare workers with a baseline viral load of above 10⁵ will not be allowed to perform EPPs while taking oral antiviral therapy.

6.6.5 **Treatment with antivirals/ interferon:** HBV-carrying HCW who have been treated with interferon or antivirals must have a viral load less than 10³ 12 months after cessation of treatment before a return to unrestricted working practices can be considered. Annual testing then applies as for other e-antigen negative workers.

6.7 **Other Blood Borne Viruses (BBV):**

6.7.1 Blood Borne Viruses are transmissible from infected patients to HCWs and from HCWs to patients to a lesser extent. The main viruses of concern apart from hepatitis B are hepatitis C Virus (HCV) and HIV. These viruses have carrier status, persistent viral replication in the body and persistent viraemia. They are found in blood, certain body fluids and visibly bloodstained body fluids. Other than for HBV there are no vaccines available to protect against these BBVs and therefore infection control standards must not be relaxed following HBV immunisation. HIV and hepatitis C carriers (hepatitis C RNA positive) are not permitted to perform EPP and must be assessed in the Occupational Health Department.

7. **TRAINING REQUIREMENTS**

Information contained in this policy will be made available at general staff inductions, e-induction packages, junior doctor inductions, sharps training and health promotion activities, pre-placement health checks and educational written material produced within the Trust.

8. **REFERENCES AND ASSOCIATED DOCUMENTATION**


2. Health Service Guidance (HSG) (93) 40 Protecting Health Care Workers and Patients from Hepatitis B.

3. Addendum to HSG (93) 40 Protecting Health Care Workers and Patients from Hepatitis B.


9. **EQUALITY IMPACT ASSESSMENT**

Portsmouth Hospitals NHS Trust is committed to ensuring that, as far as is reasonably practicable, the way we provide services to the public and the way we treat our staff reflects their individual needs and does not discriminate against individuals or groups on any grounds.

This policy has been assessed accordingly.
### 10. MONITORING COMPLIANCE

As a minimum, the following will be monitored to ensure compliance

<table>
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<tr>
<th>Element to be monitored</th>
<th>Lead</th>
<th>Tool</th>
<th>Frequency</th>
<th>Reporting arrangements</th>
<th>Acting on recommendations and Lead(s)</th>
<th>Change in practice and lessons to be shared</th>
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<td>Compliance with pre-placement questionnaire</td>
<td>Consultant and Clinical Lead OHD</td>
<td>Audit of Occupational Health notes: evidence from OPAS matched with ESR</td>
<td>Annually</td>
<td>Health &amp; Safety Committee</td>
<td>Health &amp; Safety Committee</td>
<td>Annual Health &amp; Safety Action plan / Health &amp; Safety Newsletter</td>
</tr>
<tr>
<td>Compliance with requirements for Hep B immunisations</td>
<td>Consultant and Clinical Lead OHD</td>
<td>Audit of Occupational Health notes: evidence from OPAS matched with ESR</td>
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### APPENDIX 1:

Table 18.5 HBV prophylaxis for reported exposure incidents

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<th>HBV status of person exposed</th>
<th>Significant exposure</th>
<th>Non-significant exposure</th>
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<tr>
<td></td>
<td>HBsAg positive source</td>
<td>Unknown source</td>
</tr>
<tr>
<td>≤ 1 dose HB vaccine pre-exposure</td>
<td>Accelerated course of HB vaccine*</td>
<td>Accelerated course of HB vaccine*</td>
</tr>
<tr>
<td>≥ 2 doses HB vaccine pre-exposure (anti-HBs not known)</td>
<td>One dose of HB vaccine followed by second dose one month later</td>
<td>One dose of HB vaccine</td>
</tr>
<tr>
<td>Known responder to HB vaccine (anti-HBs &gt; 10mIU/ml)</td>
<td>Consider booster dose of HB vaccine</td>
<td>Consider booster dose of HB vaccine</td>
</tr>
<tr>
<td>Known non-responder to HB vaccine (anti-HBs &lt; 10mIU/ml 2-4 months post-immunisation)</td>
<td>HBIG × 1 Consider booster dose of HB vaccine A second dose of HBIG should be given at one month</td>
<td>HBIG × 1 Consider booster dose of HB vaccine A second dose of HBIG should be given at one month</td>
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*An accelerated course of vaccine consists of doses spaced at zero, one and two months. A booster dose may be given at 12 months to those at continuing risk of exposure to HBV. Source: PHTLS Hepatitis Subcommitte (1992).
APPENDIX 2: GENERAL INFECTION CONTROL MEASURES

- Wash hands before and after contact with each patient
- Wash hands before putting on and after removing gloves
- Change gloves between patients
- Cover existing wounds or skin breaks with waterproof dressings
- Use great care when handling or disposing sharps
- Follow safe procedures for disposal of contaminated waste
- Wear gloves when contact with blood is anticipated e.g. venepuncture
- Follow correct decontamination, waste disposal and specimen labelling procedures

Safe handling and disposal of Sharps

- Provide sharps containers in adequate numbers and never overfill
- Avoid re-sheathing needles manually
- Use appropriate devices if necessary
- Discard disposable syringes and needles in a single unit wherever possible
- Consider benefits of new technology such as self-sheathing needles
- Only remove needles from syringes when essential

Measures to reduce risk during surgical procedures

- Consider double gloving and regular change of gloves during long procedures
- Use blunt-tipped needles and stapling devices where possible
- Consider need for protection of eyes and face to prevent mucocutaneous transmission
- Use instruments rather than fingers for retraction
- Use instruments to handle needles and to remove scalpel