# HUMAN RESOURCES (WITH OCCUPATIONAL HEALTH)

## HEPATITIS B VIRUS: PROTECTING EMPLOYEES AND PATIENTS

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Standard Precautions Policy.  
Isolation Policy  
Employment Checks Policy |
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<th>Author name and designation</th>
<th>Summary of main changes</th>
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<tbody>
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<td>October 2012</td>
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<td>Mike Blackwell – Interim Head of HR&lt;br&gt;Deborah Kretzer – Infection Control Lead Nurse</td>
<td>Full review. Adapted from Wirral University Teaching Hospital Policy Reference: 200 Hepatitis B Virus: Protecting Employees and Patients (Jeanette Berry Occupational Health and Wellbeing Manager). CCC HR &amp; OR have been involved to clarify and reflect CCC health practices and legal requirements for pre-employment screening and staff health issues.</td>
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1.0 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 endemic 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 a carrier.

In an occupational setting transmission can occur from patients 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 (EPP) (see section 6.2 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 immunisation; good infection control measures (see Appendix 1); 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 (BBV’s), e.g. Hepatitis C, HIV.

2.0 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.

3.0 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 policy In such circumstances, staff should take advice from their manager and all possible action must be taken to maintain ongoing patient and staff safety’

4.0 Responsibilities
It is the responsibility of every member of staff within The Clatterbridge Cancer Centre (CCC) to make themselves familiar with this policy, to comply with its contents and to ensure that the procedures within it are followed. Mandatory infection prevention and control training is provided for all staff groups at Trust
Induction and thereafter according to agreed timescales explicit within the Training and development Policies.

In addition, Health Care Workers (HCWs) are under ethical and legal obligation 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.

HCWs have a legal and ethical responsibility to 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

Body fluid exposure incidents to both HCWs and patients must be managed appropriately as set out in the CCC policy: Inoculation Injury - prevention and management of occupational exposure to blood borne viruses (including needlestick & splashes of blood and/or body fluids), available on the Intranet policy A-Z section (under I).

5.0 Laws & Regulations

5.1 The Health and Social Care Act 2008 Regulations 2010

Regulation 12 concerning cleanliness and infection control - states that the registered person (CCC) must, so far as reasonably practicable, ensure that service users; employees and others who may be at risk of exposure to a health care associated infection are protected against identifiable risks of acquiring such an infection by the following means:

- the effective operation of systems designed to assess the risks and to prevent, detect and control the spread of health care associated infection;
- the provision of appropriate treatment for those who are affected by a health care associated infection; and
the maintenance of appropriate standards of cleanliness and hygiene in relation to premises; equipment, medical devices and other materials.

The associated Code of Practice on the prevention and control of infections, (Part 2) sets out the 10 criteria against which the Care Quality Commission (CQC) will judge a registered provider on how it complies with the cleanliness and infection control requirement, which is set out in regulations. This includes the requirement for policies covering:

- Measures to avoid exposure to blood borne viruses (BBVs);
- Prevention of occupational exposure to blood-borne viruses (BBVs), including prevention of sharps injuries including use of Personal Protective Equipment;
- Management of occupational exposure to BBVs and post-exposure prophylaxis to ensure any member of staff who has a significant occupational exposure to blood or body fluids is aware of the immediate action required and is referred appropriately for further management and follow-up.

5.2 European Directive


The Directive requires risk assessment to be conducted for all situations where there is potential for injury or exposure to blood or other potentially infectious material. Where the results of the risk assessment reveal a risk of exposure, this must be controlled, by:

- Elimination - eliminating the unnecessary use of sharps by implementing changes in practice and on the basis of the results of the risk assessment,
• Safe Procedures - specifying and implementing safe procedures for using and disposing of sharp medical instruments and contaminated waste. The practice of recapping shall be banned with immediate effect;
• Engineering Controls - providing medical devices incorporating safety engineered protection mechanisms;
• Personal Protective Equipment (PPE) - the use of gloves, masks, goggles, aprons, gowns etc.

5.3 Health and Safety at Work etc Act 1974
According to Health and Safety Legislation employers must assess the risks to their employees and appropriate PPE must be provided by the employer and used and worn appropriately by the employee for their own protection. Pertinent legislation includes The Management of Health and Safety at Work Regulations 1992; The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985; The Health and Safety (Dangerous Pathogens) Regulations 198. The Health and Safety at Work Act also requires the employer through their Occupational Health services, to have an appropriate immunisation policy in place for example immunisation against Hepatitis B virus is recommended for all healthcare workers.

5.4 The Control of Substances Hazardous to Health Regulations 2002
The Control of Substances Hazardous to Health Regulations 2002 (COSHH) (as amended) relate to biological agents (micro-organisms/infection risks) and chemicals (disinfectants), providing a framework of actions designed to control the risk to health from a wide range of substances. The Control of Substances Hazardous to Health Regulations 2002 (COSHH) requires both employers and employees to take responsibility to avoid any risk where possible e.g. safe handling and disposal of sharp implements and the use of personal protective equipment (gloves, face visors) to minimise exposure to blood or body fluids. Employees are required under COSHH to perform their own assessment of risk and to implement necessary measures to protect both themselves and others.
6.0 Definitions

6.1 Blood Borne Virus (BBV):
For the purpose of this Policy, the term ‘blood borne virus’ includes human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV).

6.2 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. 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 such procedures include:

- Taking blood;
- Setting up and maintaining intravenous lines or central lines (provided any skin tunneling 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.
6.3 Health Care Worker (HCW)
This includes 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.

7.0 Main Body
7.1 Pre Employment Checks
All HCWs joining the Trust who may have direct contact with patient’s blood or other potentially infectious body fluid or tissues, will be asked to provide documentary evidence of previous Hepatitis B vaccination, and satisfactory Hepatitis B antibody levels (anti-HBs >10mIU/mL).

In addition, all staff performing EPP must be tested for hepatitis B surface antigen (HBsAg) to rule out current infection on joining the Trust, since it is now recognised that on occasion it is possible to develop antibodies to the vaccine in the presence of on-going infection.

For HCWs joining the Trust without previous immunisation against hepatitis B, this will be offered and provided by the Occupational Health Department. Health Clearance for EPP work will be notified by the Occupational Health Department on the health clearance form 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 and recruitment personnel will be informed accordingly, although strict confidentiality about the reasons for non-clearance will be maintained. Relevant follow up of the HCW will be arranged in the OHD.

Further information about hepatitis B vaccination can be obtained from Occupational Health Department on 0151 482 7635
7.2 Immunisation and Antibody Response

Immunisation entails a course of 3 injections with subsequent testing of antibody response at 3 months and a booster at 5 years. A booster dose is also recommended after exposure to the virus following a sharps injury or contamination incident.

When staff performing EPP have not been previously immunised, an accelerated course of vaccine may be given, i.e. doses at 0, 1 and 2 months with a booster at 12 months. Antibody levels should be measured 2-3 months after the third dose. Recently, an extension to the product license for Engerix B™ has been granted to allow for a very rapid immunisation schedule of three doses given at 0, 7 and 21 days. When this schedule is used, a fourth dose is recommended at 12 months. This schedule is licensed for use in adults over 18 years of age at immediate risk. Hepatitis B - containing vaccines are inactivated, do not contain live organisms and cannot cause the disease against which they protect.

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. 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. After a sharps/needle stick injury, poor responders will be offered an additional dose of vaccine.

Hepatitis B vaccine can also be given after exposure to the virus and is highly effective at preventing infection if given shortly after exposure in non-immune individuals. Ideally it should commence within 48 hours, but should still be considered up to a week after exposure. The use of hepatitis B immunoglobulin
(HBIG) in addition to vaccine is recommended only in high-risk situations in a previously unvaccinated individual, or in a known non-responder to vaccine. HBIG is obtained from the plasma of immunised and screened human donors. Because of a theoretical risk of transmission of vCJD from plasma products, HBIG used in the UK is now prepared from plasma sourced from outside the UK, and supplies are scarce. Advice will be obtained in conjunction with the Director of Public Health/HPA.

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. 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 HBIG for protection if exposed to the virus e.g. after sharps/needle stick injury from a hepatitis B virus carrier.

Non-responders who perform EPP require annual testing of hepatitis B surface antigen (HBsAg). All HCWs who are HBsAg positive must cease performing EPPs or clinical duties in renal units until their e-antigen status is determined. Those who are e-antigen positive must refrain from all EPP duties. Those who are e-antigen negative must be tested for HBV DNA on an annual basis. If the viral DNA load is greater than $10^3$ EPP may no longer 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 $10^3$, 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). E-antigen positive HCWs will be given career advice and advised to seek referral via their general practitioner to a physician specialising in liver disease.
Guidance from the Department of Health (March 2007) permits e-antigen negative hepatitis B infected health care workers with pre-antiviral HBV DNA levels between $10^3$ and $10^5$ genome equivalents to perform EPPs while on oral antiviral therapy if their viral load level is maintained below $10^9$ genome equivalents. It is recommended that these healthcare workers should have their HBV DNA levels checked every 3 months, and should cease to perform EPPs if the level rises above $10^3$ 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 $10^5$ will not be allowed to perform EPPs while taking oral antiviral therapy.

HBV-carrying HCWs who have been treated with interferon or antivirals must have a viral load less than $10^3$ 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.

7.3 Other Blood Borne Viruses (BBV)

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 exposure prone procedures and must be assessed in the Occupational Health department.
7.4 **Standard (Infection Control) Precautions**

The term ‘Standard Precautions’ is now used extensively as minimum set of infection prevention and control measures to be used for the care of **all** patients. Standard precautions are based on the principle that all blood, body fluids, secretions and excretions (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents. These ‘standard precautions’ are designed to prevent cross transmission from both recognised and unrecognised sources of infection, especially in respect of blood borne viruses.

Essential elements of Standard precautions include:

- Hand hygiene;
- Personal Protective Equipment (PPE), depending on the type of exposure, safe use and removal of gloves, gown, mask, eye protection, or face shield;
- Sharps Safety and safe injection practices.

All staff must undertake risk assessments when assessing the requirement for infection control precautions and select and use appropriate PPE according to said risk.

**8.0 Training**

All new staff made aware of this policy and procedure at induction. Staff will be updated via the intranet and Team Brief process.

**9.0 Audit**

This policy will be audited annually by the Infection Control Team and Health & Safety Committee, who will consider data relating to:

- Pre-employment checks
- Immunisation
- Incident Reports
An annual report will be made to the Integrated Governance Committee.

10.0 References


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


5. Hepatitis B infected healthcare workers: Guidance on implementation of Health Service Circular 2000/020


7. Good Practice Guidelines for Renal Dialysis/ Transplantation Units; prevention and control of blood-borne virus infection. London: UK Health Departments 2002


11.0 Appendices
Appendix 1 Quick Reference Guide

This policy must be followed in full when developing or renewing and amending Trust procedural documents.

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

1. All clinical Health Care Workers (HCW) to be assessed for immunity to hepatitis B.
2. Non-immune clinical HCW to be offered appropriate immunisations against hepatitis B in the Occupational Health Department.
3. All Exposure Prone Procedures (EPP): see section 4 for definition) workers to have evidence of hepatitis B surface antigen testing and viral load measures where indicated.
4. Immunisations must be used in conjunction with Standard Precautions to prevent risk of infection e.g. compliance with hand hygiene, personal protective equipment, aseptic technique and safe handling of sharps procedures.
5. All sharps injuries and contamination incidents must be reported to A+E and Occupational Health Department.
6. Following a sharps injury or contamination incident from a hepatitis B positive source, a booster immunisation should be given.
7. Further information about hepatitis B vaccination can be obtained from Occupational Health Department on 0151 482 7635