1.0 Purpose

2.0 Scope

3.0 Definitions and Abbreviations

Health Care Workers (HCW)

Blood Borne Viral Infections (BBVI)

Human Immune Deficiency Virus (HIV)

Hepatitis B (HBV)

Hepatitis C (HCV).

Hepatitis B surface antigen (HbsAG)

Occupational Health Department (OHD)

Exposure Prone Procedures (EPP)

Personal Protective Equipment (PPE)

Central Sterile Services Department (CSSD)

Accident and Emergency Department (A/E Dept)
Interpretation of laboratory reports of Hepatitis B

- **Hepatitis B surface antigen (HbsAG).**
  The viral antigen found in acute hepatitis B and chronic HBV carriers.

- **Hepatitis B e antigen (HbeAG).**
  This antigen is present in acute hepatitis B and also in chronic HBV carriers during the initial phase, which generally lasts 5-10 years or longer. *Associated with high infectivity.*

- **Antibody to hepatitis B surface antigen (anti-HBs).**
  This antibody usually develops after resolved HBV infection and is protective. It is the antibody induced by vaccination.

- **Antibody to hepatitis B core antigen (anti-HBc).**
  Appears in an acute infection, initially as IgM. High levels are found in HBV carriers. Sometimes found in the absence of HbsAG or anti-HBs indicating a past HBV infection and possible residual infectivity, but only at a level, which is important in donated blood. This is the best marker for past HBV infection.

- **Antibody to HbeAG (anti –Hbe).**
  This antibody appears during recovery from acute HBV and in the second phase of chronic HBV infection. If present with HBsAG it indicates low infectivity. Chiefly of importance in donated blood.

### 4.0 Responsibility

### 5.0 Procedure/Guideline

Blood borne infections include Human Immune Deficiency Virus (HIV), Hepatitis B (HBV), and Hepatitis C (HCV). Standard precautions state that all blood and body fluids are potentially infective. Therefore it is essential to
treat all patients as potentially infectious and maintain the same high standards of infection control throughout their care.
Historically, importance has been placed on identifying patients in ‘high risk’ categories. Currently, with the increasing prevalence of BBVI, it is believed unwise to assume that only certain groups of people are likely to be infected. The following patients are regarded as an inoculation risk group, and hence at risk of transmission of BBVI.

1. HIV infected patients, irrespective of stage of disease.

2. HbsAG positive patients.

3. HbeAG positive patients

4. Hepatitis C positive patients.

5. Intravenous drug users and patients attending drug detoxification units.

6. Patients who have received blood, blood products, semen or tissue from HIV or hepatitis B or C positive donors.

7. Heterosexuals with multiple partners, men who have sex with men or bisexual males.

8. Patients from areas of high HIV seroprevalence.


10. Sex Workers.

11. Sexual contacts of any of the above.

5.1 Standard Precautions.

The most effective way of preventing BBVI transmission in the health-care setting is to make the working environment as safe as possible. It is necessary to observe Standard Precautions in the care of all patients, regardless of their diagnosis. This involves wearing personal protective
equipment when in contact with blood, body fluids, non-intact skin or mucous membrane, secretions, and excretions except sweat, regardless of the presence or absence of visible blood.

**Standard Precautions involve the following:**

- **Hand hygiene** after patient contact or contact with blood, body fluids, excretions, secretions, or contaminated materials even if gloves are used.

- **Gloves:** for contact with blood, body fluids, excretions, secretions and contaminated materials.

- **Facial Protection:** Use of a mask with visor or goggles when splashing is anticipated with blood, body secretions or fluids, e.g. endotracheal intubation, bronchoscopy, endoscopy, during surgical procedures, delivery of babies and other at risk procedures.

- **Plastic Aprons:**
  
  For contact with infected patients, excretions, secretions contaminated equipment or materials.

- **Prevention of Sharps injury:**
  Adoption of safe work practices that minimise risk of injury, in particular safe disposal of needles and sharps. (Please refer to ICR 8 on the Management of Sharp/Needle stick incidents and other exposure incidents and section 5.3 of this guideline).

- **Cleaning/Decontamination:**

  Appropriate cleaning and decontamination of all medical devices and patient care equipment. Ensure bedpans and urinals are processed in an automated washer/disinfector. Ensure correct temperature is reached i.e. 80°C, on all cycles. Ensure all automated Washer/Disinfectors are serviced regularly.

- **Environmental decontamination:**

  Disinfection of environmental surfaces and equipment:
  Use of 1,000 ppm available chlorine 1% e.g. Presept 2.5g tablets x 2 in 2.5 litre of water.
Disinfection all blood spillages:
Apply a chlorine releasing agent 10,000 ppm available chlorine 1% e.g Presept 2.5g tablets x 7 in 1 litre of water before wiping up. If spillage is on the floor/horizontal surface use Precept granules. To wipe up blood spillages wear appropriate PPE and use paper towels. Wash area with detergent and water. Discard disposable equipment into a yellow healthcare risk waste bag. After removal of protective clothing, perform hand hygiene.

- **Linen:**
  
  All linen soiled by blood or body fluids should be placed in a water-soluble or alginate bag and placed into RED linen bags (Contaminated/Foul/Infected) for appropriate decontamination in laundry.

- **Waste:** Dispose of contaminated waste as healthcare risk waste.

### 5.2 General Measures to prevent Occupational Blood Exposure and Sharps Injury for all HCWs.

The avoidance of needlestick injuries is critical in the prevention of infections and every effort must be made to avoid injury or accidental exposure to contaminated materials.

- Hand hygiene and the wearing of gloves when handling any items contaminated with blood or body fluids is essential.
- Hand hygiene must be performed after removing gloves in case any contamination has occurred, through holes that may have developed in the gloves during use or because the hands may become contaminated during glove removal. Some studies confirm glove perforation rates of 37% (Korniecwicz et al 1989). Cover all cuts and abrasions with a waterproof dressing.

#### 5.2.1 Safe Handling of Sharps.

- Extra care must be taken during the use and disposal of sharps
- Avoid the use of sharps where possible.
• Sharps i.e. needles, broken glass, scalpels, trochars must always be discarded into a sharps container.
• Never leave sharps unattended.
• It is the responsibility of the person who uses a sharp to dispose of it safely.
• Used sharps must be discarded immediately into a sharps container at the point of use by the user.
• Used needles must never be bent, broken or re-sheathed.
• Sharps must not be passed directly from hand to hand, and handling should be kept to a minimum.
• Use an injection or IV tray to carry needles and syringes.
• Dispose of syringe and needle as a single unit.
• Drop sharps into Sharps container. Never insert fingers/hands past the level of the lid.
• Never empty small sharps containers into large sharps containers
• Ask for assistance when taking blood or giving injections or intravenous fluids to unco-operative patients.
• All sharps containers should be UN approved.
• Sharps containers must be correctly assembled, with lid firmly locked on the container prior to first use.
• Sharps containers must be securely closed when 2/3 full, or when the fill line is reached.
• Tag Sharps containers with a red numbered Healthcare Risk Waste tag when securely closed, prior to disposal.
• Sharps containers should be wall or trolley mounted, or attached to injection’/I.V. Tray or Kick-about trolley where possible and not left on the floor.
• Keep sharps containers in an area that excludes risk of injury to staff, patients or visitors.
• Never place sharps containers at floor level or at a height where children have easy access to them.
• When using sharps during a procedure, ensure that they do not become obscured by dressings, paper towelling or drapes.
• Personnel involved in transporting waste must wear heavy-duty gloves.
• Sharps containers must be transported and stored in an upright position.
• Sharps containers should not be left in corridors while awaiting collection for disposal.
• Sharps containers must be stored in a locked holding area while awaiting final collection.
• Always carry a sharps bin by the handle and away from the body.
• Healthcare Risk Waste must be handled carefully.
• Never discard needles, syringes or other sharps in a polythene bag.
• Healthcare risk waste must be disposed of by the licensed route in accordance with local and national policy.
• Refer to Sharps Injury Management Guidelines (ICR 10)

5.2.2 **Prevention of Sharps Injury:**

♦ Assessment and management of the risks associated with the use of sharps is paramount to identify and prevent sharps injuries
♦ All HCWs must comply with the safe handling and disposal of sharps to minimise these risks to themselves, and other HCWs.
♦ Many sharps injuries are preventable if sharps are used and disposed of correctly
5.2.3 Initial management of sharps injuries/ splashing.

- Any injury caused by used sharps should be encouraged to bleed.
- Wash the injury immediately under running water.
- Cover with a waterproof dressing.
- Splashes into the mouth – rinse mouth with plenty of cold water.
- Splashes into the eyes – rinse eye with sterile normal saline or sterile water for 10 minutes.
- Inform Line Manager immediately. The cause of the injury should be investigated.
- Identify source patient if possible.
- The injured person (recipient) should be referred to the nearest A/E department immediately.
- Follow up will be undertaken by the Occupational Health personnel.
- An Incident/near miss report form should be completed identifying the source patient if possible.
- Please refer to guideline for the management of Sharps/Needlestick Incidents and other exposure incidents, ICR 10.

5.3 General Measures to Prevent Blood Borne Infection

- Immediate and careful disposal of sharps into a ‘sharps’ containers.
- Hepatitis B Vaccine and follow up HBsAb titre.
- Immediate reporting of needlestick injuries and exposure incidents as per policy.
• Post exposure prophylaxis hepatitis B and/or HIV as appropriate.

• Awareness that administration of blood and blood products carries risks, and ensuring that the anticipated benefit of blood product administration is proportionate to the risk. Risk of transmission of BBVs is particularly high in Renal Dialysis Units.

5.3.1 Specific Protection against HBV

Hepatitis B is transmitted mainly by blood. The virus may be present in faeces, urine, saliva, semen, donor tissue and bile. The main hazards in the health care setting are needlestick injuries and contamination of small skin wounds, conjunctiva or mucous membranes. Measures specific to preventing hepatitis B are:

• A safe and effective vaccine is now available to provide immunity against HBV. All HCWs who have direct contact with blood or body fluids or with patients’ tissues and who are therefore at risk of acquiring HBV occupationally should avail of the vaccination from the occupational health department for their own protection.

• All HCWs who perform EPP must be immunised against HBV, unless they have documented proof of natural immunity or previous immunisation.

• HCWs who are carriers of hepatitis B are at risk of transmitting HBV to patients and must therefore not perform EPP.

• All this information and further details are available through the Occupational Health Department (OHD).

• EPP may be defined as those where there is a risk of injury to the HCW which may result in exposure of the HCW’s blood to the patients’ open tissues or blood. These procedures include those where the worker’s gloved hand may be in contact with sharp instruments, needle tips or sharp tissues inside a patient’s open body cavity, wound or confined anatomical space where the hands or fingertips may not be visible at all times. (Ayliffe 1997).

5.3.2 Protection against HCV AND HIV.
There is no vaccine to protect against HIV or HCV. The introduction of screening for HIV is considered to be discriminatory and national policy on HIV/AIDS supports voluntary, not mandatory, screening (Department of Health, 2000).

All HCWs must, on commencement of employment, be made aware of their ethical and legal obligations to inform appropriate authorities if they know that they are infected with HIV or HCV, or that they may be at risk.

- Any HCW who suspects that he/she may have been exposed to HIV or HCV must report to the nearest A/E Dept.

- Any HCW infected with HIV or HCV must inform the OHD of their status to seek advice on the need, if any, to modify their practice.

- A HCW infected with HIV or HCV must follow the advice given by the OHD regarding any limit to their practice.

5.4 The Care of Patients with BBVI

5.4.1 Standard Precautions form the basis of all measures to prevent BBVI (see Section 5.1).

Isolation: Isolation is not required for patients with a BBVI unless there is haemorrhage or a continual uncontrolled blood loss.

- Appropriate risk assessment should be carried out.

- Patients with BBVI do not require their own toilet facilities. Should blood spillages occur from any patient (regardless of their HIV/HCV/HBV status), the spillage should be decontaminated immediately. (see Standard precautions at 5.1 above).

- Visitors: Do not need to wear protective clothing.

5.4.2 Bed Linen

- Protect mattress and pillows with a plastic cover.

- Ensure covers on mattresses and pillows are intact

- Ensure covers on pillows and mattresses are intact

- Treat unsoiled linen as per Linen Guidelines (ICR 8).
5.4.3 Crockery and cutlery

No specific precautions are necessary for crockery from a patient with a BBVI if a dishwasher is available. If no dishwasher is available, they should be washed with hot water and detergent, dry with disposable paper towel and keep for use by that patient.

5.4.4 Needles and syringes

- A sharps tray must be used when attending patients.
- Dispose of needles and syringes as a single unit promptly into a designated Sharps container.
- Do not re sheath needles.
- Do not separate needles and syringes.
- Sharps containers must be correctly assembled.
- Never empty small sharps containers into large sharps containers.
- Do not overfill sharps containers.
- Sharps containers must be locked when 2/3 full. A coded cable tie must be put on bin before removal from ward/unit. (See section 5.2.1)

5.4.5 Blood Collection

Minimise venepuncture, blood collection procedures should be carried out by trained and experienced staff (see phlebotomy precautions, section 5.8).
5.4.6 **Laboratory Specimens**

Place in a screw-capped and leak-proof container, ensuring that screw caps are closed securely.
Place in a sealed “Biohazard” plastic bag. Inform laboratory staff of high-risk specimens.
Or
Clearly identify all blood specimens from high risk patients with red stickers on both form and specimen container.

5.4.7 **Blood Spills**

Apply a chlorine releasing agent 10,000 ppm available chlorine 1% e.g Presept 2.5g tablets x 7: 1 litre of water before wiping up. If spillage is on the floor or other horizontal surface use Precept granules. To wipe up blood spillages use disposable latex gloves, plastic apron, and paper towels.
Wash area with detergent and water. Discard disposable equipment into a yellow health-care risk waste bag. After removal of PPE, perform hand hygiene.

5.4.8 **Intravenous Therapy**

♦ Wear apron and gloves.
♦ Use goggles and mask if risk of splashing is anticipated.
♦ Use strict precautions in the disposal of sharps.

5.4.9 **Surgical Instruments and Equipment**

- Notify CSSD.
- Place in designated leak-proof CSSD container
- Process in a washer /disinfector following CSSD Guidelines.
5.4.10 Dialysis Machines:

- Clean, disinfect and isolate designated dialysis machine for HBV positive patient.
- Keep designated HBV dialysis machine separate from other dialysis machines.
- Routine disinfection only necessary for dialysis machines used for HIV/HCV positive patients.
- See separate Dialysis policy.

5.4.11 Blood Sugar Analysis Equipment

Use appropriate Glucometer equipment and follow local guidelines and manufacturers instructions for cleaning and disinfection.

5.4.12 Blood Gas Analyser

Following each use the Blood Gas Analyser should be cleaned and disinfected in accordance with local guidelines and manufacturers instructions.

5.4.13 Transfer of Patients to Specialised Departments

Make prior arrangements with the person in charge of the department, e.g. Theatre, Endoscopy, X-ray, Pulmonary Function. If a patient is known BBVI positive and urgent investigation is required, the appropriate Department manager must be informed.

6.0 Phlebotomy Guidelines to Minimise the Risk of Nosocomial Transmission of BBVI.

These guidelines refer to the taking of blood from any patient whether in a risk group for BBVI or not. Users of this section should refer to other relevant sections in this document.
Immunisation with hepatitis B vaccine of all staff in the department is strongly recommended.

The wearing of PPE reduces the risk of exposure of skin or mucous membranes of HCWs when handling blood and potential BBVI infective materials.

Cover broken skin with a waterproof dressing before using gloves.

Wear gloves, disposable plastic apron and goggles, if risk of splashing is anticipated.

Hand hygiene is essential before and after each procedure and on removal of gloves.

Gloves must be removed between each patient contact.

Take precautions to prevent needlestick injuries when using and disposing of used needles, by disposing of them immediately after use.

Do not resheath used needles. Discard all syringes and needles as a single unit into a sharps container.

Do no bend, break or otherwise manipulate needles before or after use.

Sharps containers must be correctly assembled.

Sharps containers must be locked when 2/3 full and tagged with numbered cable ties.

Use a vacuum collection system “Monovette” or "Vacuette" at all times during venepuncture, unless poor access precludes their use.

Identify specimens from known or suspected patients with Hepatitis B hepatitis C and HIV either by writing “Inoculation Risk” on both specimen container and form or with red stickers on both specimen container and form and place in a “Biohazard bag”.

Avoid spillage of blood while collecting samples. If a spillage does occur, wear PPE while mopping up spillage with a chlorine releasing agent.
Guideline Title: Guideline for the prevention of infection with Hepatitis B, HIV and other Blood Borne Viral Infections.

7.0 Terminal Disinfection of ward/room of patient with BBV.

- Because of the danger of HBV being infectious in microscopic particles it is necessary to wash all surfaces and equipment using a chlorine releasing agent 10,000 ppm available chlorine 1% e.g. Presept i.e. 2.5g tablets x 7: 1 litre of water.
  - Wash area with detergent and water
  - Discard PPE into Healthcare Risk Waste (Yellow) bag.
  - After removal of PPE perform hand hygiene.
  - If in doubt about decontamination of any equipment contact Infection Control Nurse/Domestic Supervisor.

8.0 Surgical Procedures on “High Risk” patients or patients with BBVI.

The consultant in charge of the patient should be responsible for ensuring that all members of the team are informed of the infection risk and this must be discussed with relevant HCWs.

- Unnecessary equipment should be removed to reduce the amount of decontamination required after operation.
- Disposable drapes should be used.
- Pre-operative shaving should be avoided.
• Wound drainage should be minimised if possible. If wound drainage is necessary a closed system is recommended.

• Blood should be cleaned off the patient’s skin as far as possible at the end of operation, and a wound dressing used that will contain exudate within an impervious outer covering.

• The scrub team should wear a disposable water impermeable gown. The sleeves of the gown should also be water impermeable if gross contamination of sleeves with blood is likely.

• The surgical team must cover unhealed cuts or lesions with a waterproof dressing, and wear two pairs of gloves.

• Spectacles preferably with sidepieces, goggles or visor should be worn to avoid conjunctival contamination or splashing.

• Needles, syringes and disposable sharp instruments must be discarded into Sharps containers. Syringe and needles must not be re-sheathed.

• Surgical instruments and other equipment should be handled with care during and after the operation.

• Notify CSSD.

• Process in a washer/disinfector according to CSSD guidelines.

• Where a washer/disinfector is not available, instruments should be washed immediately by the scrub nurse wearing scrub attire and autoclaved.

• Blood stained disposable linen, swabs, or any other soft material must be put into a Yellow Healthcare Risk Waste bag and tied with a red coded cable tie. Any blood stained items likely to leak or penetrate a yellow healthcare risk waste bag must be put into a 30 or 60 litre yellow healthcare risk waste bin closed and tagged with a red coded cable tie before leaving the theatre.

• Saturated linen or clothes should be put into a Yellow Healthcare Risk Waste bin, closed and tagged with a red coded cable tie for disposal.
If there is any blood stained non-disposable linen it must be placed into an alginate/water soluble bag then into RED laundry bag and sent to the laundry.

Floors and surfaces in the areas likely to be contaminated with blood or body fluids should be decontaminated with chlorine releasing agent e.g. Presept 10,000 ppm ie 2.5 g tablets x 7:1 litre water. Presept granules maybe used for 2 minutes to absorb and decontaminate blood spillage on floor.

Walls and other surfaces do not require cleaning unless contaminated with blood.

9.0 Guidelines for the Prevention of BBVI in Maternity Units.

The same precautions for known or “high risk” patients are necessary for delivery or caesarean section as described in section 8.0.

- Staff should wear eye protection for ALL deliveries, regardless of the clients risk status.
- The labour ward must be decontaminated and cleaned and may be used immediately.
- The placenta must be placed into a placenta bag and then into a placenta bin.
- All bloodstained materials must be placed into a Yellow Healthcare Risk Waste bag and sealed with a red coded cable tie.

Post natal care.

- Although the risk of transmission of infection to other patients is small, it is advisable to provide mother and baby with a single en suite room if available.
- The mother should be reassured that she is not a hazard to her child and can be allowed normal visiting. However, although the risk from breast milk is small, mothers should be discouraged from breast-feeding.
• The mother may use communal toilet facilities and communal rooms. Appropriate risk assessment should be carried out. Baths must be cleaned afterwards with an appropriate Chlorine releasing agent.

• Mothers should be advised to inform staff if toilet facilities have been contaminated with blood.

• If possible, blood should be cleaned from the baby while still in the labour room. A plastic apron and gloves should be worn when bathing the baby initially, but afterwards Standard Precautions should be observed.

10.0 Guidelines for the Prevention of BBVI in the A/E Dept.

Users of this section should refer to other relevant sections in this document. All patients attending the A/E Dept., with blood loss or for invasive procedures should be considered as a risk to staff for BBVI. The risk of inoculation injury or contamination with blood is greater when managing patients with major bleeding especially during an emergency.

Therefore the following guidelines should be adhered to:
• All staff should be made aware of the risks and the precautions to be taken.

• Staff are strongly advised to have the hepatitis B vaccination.

• PPE i.e. gloves, aprons, gowns, masks and goggles must be easily accessible.

• Gloves and plastic aprons must be worn by all staff having contact with patients blood or body fluids e.g. venepuncture, intravenous procedures, invasive procedures and/or wound dressings.

• When dealing with major bleeding, gloves, plastic apron and/or water repellent gown, mask and goggles should be worn.

• Double gloving is advised when dealing with major bleeding for suturing purposes and for invasive procedures.

• Blood and body fluid spillage should be removed with a Chlorine releasing agent 10,000 ppm available chlorine 1% e.g. Presept 2.5g tablets x 7: 1 litre of water and then mopped up with paper towels. Presept granules
may be used for 2 minutes to absorb liquid blood spillages on floors or horizontal surfaces. Ensure adequate ventilation when using hypochlorite disinfectants.

- Wash area with detergent and water
- All blood stained contaminated disposable equipment must be discarded into a Yellow Healthcare Risk Waste bag.
- All staff involved in the cleaning process must wear PPE.
- Hand hygiene must be performed after removing PPE.
- Blood stained disposable linen, swabs, or any other soft material must be put into a Yellow Healthcare Risk Waste bag and tied with a red coded cable tie. Any blood stained items likely to leak or penetrate a yellow Healthcare Risk Waste bag must be put into a 30 or 60 litre yellow Healthcare Risk Waste bin, closed and tagged with a red coded cable tie before leaving the A/E dept.
- If there is any blood stained non-disposable linen it must be placed into an alginate/water soluble bag and then into a RED laundry bag and sent to the laundry.
- Saturated linen or clothes should be put into a Yellow Healthcare Risk Waste bin, closed and tagged with a red coded cable tie for disposal.

For management of Innoculation Injuries please refer to Guideline for the Management of Sharps/Needlestick Incidents and other exposure incidents, ICR 10.

11.0 Protocol After Death:

- Wear appropriate PPE i.e. apron, gloves, and goggles or visor masks if splashing with blood stained fluids are anticipated.
- Ensure there is no leakage of blood or blood products.
Guideline Title: Guideline for the prevention of infection with Hepatitis B, HIV and other Blood Borne Viral Infections.

- Laying out procedures are carried out in the usual manner.
- Drainage tubes and I/V /Central Lines should be sealed and disposed of into the Healthcare Risk Waste.
- Cannulae, Catheters and Drains should be removed and disposed of into the Healthcare Risk waste, unless an autopsy is to be performed.
- Waterproof dressings should be applied to all wounds.
- Wound dressings should be re-padded not redressed.
- The body is labelled in the usual way and placed in a plastic cadaver bag, prior to transfer to the mortuary.
- Inform the mortuary staff.
- The cadaver bag may be opened at the neck to allow relatives to view the body. The cadaver bag should not be visible to those viewing the body. **N.B. Nursing and mortuary staff must deal with the use of cadaver bags sensitively and compassionately**
- If an autopsy is necessary, it must be discussed with a Consultant Pathologist.
- Relatives do not need to wear protective clothing when viewing the body.

12.0 Frequency of Review

13.0 Method used to review operation of Standard Operating Procedure/Guideline

14.0 References

Guideline Title: Guideline for the prevention of infection with Hepatitis B, HIV and other Blood Borne Viral Infections.

MMWR 1998; 47 (No. RR-7): 1-33

8.0 Appendices

N/A