This Operational Instruction should be read in conjunction with the Standard Precautions document. (Operational Instruction OP 1331/00).

Transmission of blood-borne viruses (BBV), such as Human Immunodeficiency Virus (HIV) Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) may be contracted by exposure to blood or other body substances; or by exposure to blood through contaminated needles or other sharp instruments.

Prospective studies of Health Care Workers (HCWs) occupationally exposed to HIV have estimated the average risk of HIV transmission after an exposure to HIV-infected blood is 0.3% (3 in 1000), and after a mucous membrane exposure is 0.09% (9 in 10,000). Adherence to Standard Precautions remain the first line of protection for health care workers (HCW) against occupational exposure to BBV.

Definition of an occupational exposure:

(As per NHMRC 1996 – Infection Control in the Health Care Setting)

Recipient: Person exposed to blood or body substance.

Source: The person whose blood or body substance was inoculated into, or splashed onto the recipient. May not always be identifiable.

Exposure: Contact with blood or body substance contaminated with blood. The following categories are used to assess the risk:

Non-Parenteral exposure: Intact skin visibly contaminated with blood or body substance.

(i) Intradermal (superficial) needle injury considered not to be contaminated with blood or body fluid.

(ii) Superficial wound not associated with visible bleeding caused by an instrument considered not to be contaminated with blood or body substance.

(iii) Prior wound or skin lesion contaminated with a body substance other than blood, e.g. urine.
**Possible Parenteral Exposure:**
(i) Intradermal (superficial) injury with a needle contaminated with blood or body substance.
(ii) A wound not associated with visible bleeding produced by an instrument contaminated with blood or body substance.
(iii) Prior wound or skin lesion contaminated with blood or body substance.
(iv) Mucous membrane or conjunctival contact with blood or body substance.

**Definite Parenteral Exposure:**
(i) Skin penetrating injury with a needle contaminated with blood or body substance.
(ii) Injection of blood/body substance not included under “Massive Exposure”.
(iii) Laceration or similar wound which caused bleeding and is produced by an instrument that is visibly contaminated with blood or body substance.
(iv) In laboratory settings, any direct inoculation with human immunodeficiency virus (HIV) tissue or material likely to contain HIV, Hepatitis B virus (HBV) or Hepatitis C virus (HCV) not included above.

**Massive Exposure:**
(i) Transfusion of blood.
(ii) Injection of large volume of blood/body substance (>1ml).
(iii) Parenteral exposure to laboratory specimens containing high titre of virus.

**Sharps:** Any objects capable of inflicting a penetrating injury.

**REPORTING THE BLOOD OR BODY FLUID EXPOSURE**

Health care facilities should ensure that there is an established and efficient local system for reporting and managing potential exposures of HCWs to blood and body substances. The system must maintain strict HCW confidentiality.

Any reported incident by a HCW of potential exposure to BBV must be clearly documented by the supervisor/employer. In addition, the supervisor/employer must comply with the Western Australia Occupational Safety and Health Regulations, 1996.

**MANAGEMENT OF AN OCCUPATIONAL BLOOD OR BODY FLUID EXPOSURE**

If the employee has suffered a possible parenteral, definite parenteral or massive exposure the following steps must be taken:

- Ensure initial first aid has been performed
- Identify source individual if possible or the source of the sharp
- Assess risk status of source individual
• Management of the recipient.
• Use of anti-retroviral drugs.

ENSURE INITIAL ACTION/FIRST AID HAS BEEN PERFORMED

• If the skin is penetrated by a contaminated sharp object, wash the skin well with soap and water, (alcohol based hand rinses or foams 60% - 90% alcohol by weight, should be used when water is not available).

• Should blood get onto the skin, wash the area well with soap and water (irrespective of whether there are cuts or abrasions).

• If the eyes are contaminated, rinse the eyes gently but thoroughly with water or normal saline; and

• If blood is sprayed into the mouth, spit out the blood and then rinse the mouth with water several times.

All sharps injuries/blood exposure incidents are to be reported to an immediate supervisor or occupational health officer immediately after the incident. Ensure an accident report form is completed. Incidents which do not occur at work should be reported to the local doctor or the Emergency Department at the nearest hospital.

Regardless of the source of exposure, the recipient should immediately be examined and the risk assessed by a physician or trained health care worker with experience in the management of blood-borne infections (HIV, HBV or HCV). Prophylaxis should be offered on the basis of the risk of infection associated with the injury or exposure.

ASSESS THE SIGNIFICANCE OF THE INJURY BASED ON:

• the nature and extent of the injury
• the nature of the item that caused the injury, e.g. gauge of the needle
• the nature of the body substance involved
• the volume of the material the HCW contacted and
• the HIV, HBV, HCV status of the source if known.

IDENTIFY SOURCE INDIVIDUAL IF POSSIBLE OR THE SOURCE OF THE SHARPS

Immediate management of the HCW after exposure to an incident is paramount to allay the anxiety of the recipient and to ensure rapid initiation of prophylaxis if necessary. However, the administration of prophylactic drugs depends on the exposure and the information about the source’s blood/body substance. In the case of massive, definite or possible parenteral exposure, the health status of the source should be investigated.
ASSESS RISK STATUS OF SOURCE INDIVIDUAL

If the status of the source individual is unknown the following blood tests should be undertaken from the source:

- HIV antibody
- HBsAg
- HCV antibody

Testing of the source patient must follow the accepted guidelines, that is, pre- and post-test counselling must be given by a medical practitioner or a person trained in the management of occupational exposures and informed consent obtained before testing is undertaken.

If the patient is unable to give consent, attempts should be made to obtain consent from the next of kin. However, if this is not possible the Medical Practitioner can order tests if deemed at high risk. In addition, the Medical Practitioner must sign the laboratory request forms. If informed consent is refused, immediately contact the source’s Consultant. Testing should not be performed if consent is refused.

If known source is negative for HIV, HBV, HCV and the incident involved non-parenteral or doubtful exposure, then no further testing or examinations are required apart from the possibility of counselling and collecting blood from the recipient. However, the source may be in a window period of incubating a blood-borne disease, therefore further testing of the recipient in three and six months time should be organised.

MANAGEMENT OF THE RECIPIENT (see Flow Chart – Appendix A)

The recipient should be assessed and examined to confirm the nature and seriousness of the exposure and counselled about the possibility of transmission of a blood-borne virus.

ADMINISTRATION OF PROPHYLACTIC TREATMENT

HIV

Treatment for an exposure to possible or definite HIV, should commence as soon as possible and preferably within hours of exposure and after appropriate counselling.

The Commonwealth Department of Health and Family Services has approved a range of drugs under the Highly Specialised Drugs Program, for the treatment of HIV. **Recommended protocols for the administration of HIV prophylaxis should be assessed on a case by case basis in consultation with a clinician experienced in the administration of HIV drugs.** In Western Australia advice and counselling can be obtained from the Immunology staff at the Royal Perth Hospital, Sir Charles Gairdner Hospital and Infectious Diseases staff at Fremantle Hospital.

Limited data indicate that combination therapy (including a protease inhibitor) may provide maximum protection against HIV following a significant occupational exposure. Factors such as probable drug resistance profile of HIV from the source patient, medical conditions and concurrent drug therapy will be considered when a specialist recommends HIV chemoprophylaxis.
**Access to HIV treatment**

Each regional hospital must have available the recommended starter pack containing Zidovudine (AZT) and Lamivudine (3TC), (i.e. Combivir) to enable administration of the drugs within 72 hours of an occupational exposure if indicated.

Each Regional Hospital should identify and disseminate to all hospitals within its area the processes to access immediate HIV treatment drugs.

Each District Health Service should implement mechanisms to educate all healthcare workers within its area on the ways to access HIV treatment drugs following an occupational exposure.

Protocols/procedures should be developed and available within all units of a hospital to ensure that staff are fully aware of the medical officer/team/or person nominated responsible for assessing/advising each individual blood borne exposure incident.

**Recommended treatment is as follows:**

**Needlestick injuries:**

*Starter pack - used only when ordered by a nominated HIV specialist as above. Preferably within hours but no later than 72 hours*

Combivir ® (Zidovidine 300mg with Lamivudine 3TC 150mg bd) for a period of four weeks.

The starter pack contains sufficient drugs to treat for seven days.

For further doses of the drug, rural areas need to contact their regional pharmacist who will contact RPH Pharmacy if necessary. Metropolitan hospitals should contact RPH Pharmacy (9224 1120) direct.

The consultation/consent process must include information on the following:

(a) The occurrence of HIV infection is dependent upon the nature and extent of the exposure.

(b) The use of zidovudine soon after exposure has been shown in a study of post-exposure prophylactic therapy to reduce the risk of HIV transmission by about 80% and is therefore recommended for high-risk injuries, particularly if the source patient has HIV infection. Combination anti-retroviral therapy is likely to be more effective than zidovudine monotherapy but at the present time no data is available.

(c) Side effects of zidovudine such as nausea, headaches, fatigue and gastrointestinal upset occur in about one third of individuals.

(d) There is no evidence of long term toxicity from short courses of anti-retroviral drugs in humans but this cannot be discounted.

(e) The use in pregnancy of HIV therapy (if appropriate). – If high risk, consider Zidovudine – no known adverse outcomes reported but need consultation with expert clinician before being instituted.
Doctors should stress to the recipient the importance of strict compliance with the treatment regimen.

The recipient should be followed up to ascertain any febrile illness that occurs within three months after exposure. Such an illness – particularly one characterised by fever, rash or lymphadenopathy – may indicate primary infection with HIV.

The recipient who is initially seronegative should be retested for HIV antibody at six weeks and retested three months after exposure and finally after six months.

The recipient should be informed about the risk of transmission of HIV, especially during the first three months, by which time most infected persons are expected to have developed HIV antibodies.

A decision on the use of anti-retroviral therapy must be made by the HCW with the assistance of the medical practitioner. This should take into consideration the nature and extent of the exposure to the source patient’s blood or body fluids and the HIV infection status of the patient. The final decision should also take into consideration the balance of benefit/toxicity likely to be derived from the use of anti-retroviral therapy.

During the period of surveillance (ie three months) the recipient should be advised to:

• Not donate plasma or blood, body tissue, milk or sperm until approved by the evaluating physician.

• Protect sexual partners from contact with blood, semen or vaginal fluids by using condoms.

• Avoid pregnancy until HIV status is known, and

• Consider work practices for health care workers to reduce risk of possible transmission.

• Not share needles.

SOURCE AT HIGH RISK OF HIV (BUT HIV ANTIBODY NEGATIVE)

• This refers to rare situations where it is suspected that the source individual is in the “window” period of HIV infection. In these situations the source individual should be followed for up to three months for counselling to ascertain whether they develop HIV antibodies.

• The recipient should have baseline testing for HIV antibody and may be tested for HIV antibody at six weeks and finally repeated at three months in the event that the source is identified as HIV positive.

• In the event of the source being identified as a potential BBV high risk individual, consideration needs to be given to the use of antiviral therapy for recipient. This decision should be made after consultation with a clinician at the Immunology Unit, Royal Perth, Sir Charles Gairdner Hospital or Infectious Diseases Unit at Fremantle Hospital.

• If necessary, further information, support and counselling should be arranged.
SOURCE HEPATITIS B POSITIVE (HbsAg POSITIVE)

The recipient should be investigated to determine the nature of protection that should be provided.

If the recipient has been previously vaccinated and has responded, no further action is recommended as protection is long lived, and an anamnestic reaction occurs if there is exposure to virus.

If the recipient has not been previously vaccinated for Hepatitis B.

- Take blood for estimation of Hepatitis B core antibody (anti-HBc), anti-HBs and HBsAg.

- These tests will indicate whether the recipient has previously been infected with Hepatitis B. If the recipient has previously been infected, then no further action is required unless HBsAg positive, when work practices should be changed to exclude the carrying out of exposure prone procedures.

Where the recipient has not been infected with Hepatitis B and is negative for anti-HBs or has levels which are non-protective (<10 IU/L), Hepatitis B immunoglobulin (HBIG) should be given within 48 hours of injury when:

- The source individual is HBSAg positive.

- The source individual is unknown, or

- The results of tests on the source individual and recipient are unavailable within 48 hours.

Persons eligible for HBIG should commence a vaccination course at the same time. Three doses of vaccine at 0, 1 and 6 months are required. If the employee has suffered a possible non-parenteral or doubtful exposure, offer Hepatitis B vaccination after consultation with the nominated clinician.

SOURCE HEPATITIS C ANTIBODY POSITIVE

- At present, apart from washing the infected area with soap and water (as for HIV and HBV) at the time of injury there is no known treatment that can alter the likelihood of transmission.

- The incident of exposure should be reported to the immediate line manager, who should arrange a medical assessment.

- Follow-up should be undertaken by a specialist with knowledge of HCV infection.

- The reasons for following up of recipients are to ascertain whether HCV infection occurs and to provide support and treatment.

- The recipient should be tested for anti-HCV at 0, 3, 6, 9 and 12 months.
ACTION TO BE TAKEN IF A HEALTH CARE WORKER HAS A PENETRATING INJURY WITH A SHARP OBJECT FROM AN UNKNOWN SOURCE

In most instances it will be impossible to make an informed decision about the use of anti-retroviral therapy. The decision will therefore depend on the probability that the sharp object was contaminated with blood from a patient infected with HIV.

Reasonable efforts should be made to identify the source. Appropriate follow-up should be determined on an individual basis depending on:

- Type of exposure
- Likelihood of source being positive for a blood pathogen, and
- Prevalence of HIV, HBV and HCV in the community from which the needles or instruments come.

PREVENTION OF OTHER POTENTIAL PATHOGENS

Appropriate follow-up should also determine the risk of tetanus. Depending on the circumstances of exposure, the following may need to be considered.

- Tetanus immunoglobulin.
- A course of adult diphtheria and tetanus (ADT), or
- ADT booster.

BIBLIOGRAPHY

- New South Wales Health Department, Draft Circular of Health Care Workers potentially exposed to HIV, hepatitis B and hepatitis C, AIDS/Infectious Diseases Branch, New South Wales Health Department 1996.
- Western Australia Occupational Safety & Health Act 1984 and Regulations 1996.

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COMMUNICABLE DISEASE CONTROL BRANCH
MANAGEMENT OF MASSIVE, DEFINITE OR POSSIBLE PARENTERAL EXPOSURE TO BLOOD OR BODY SUBSTANCES

Assess Source individual or likely source (if source individual unknown).

HIV known positive or known high risk.

Determine anti-HBsAg status of exposed individual.

Immediate referral to Clinical Immunologist for counselling and antiviral post-exposure prophylaxis.

Test Source individual blood.

Source individual
HIV positive.

Source individual
HBs Ag positive or likely source known high-risk for hepatitis B.

1. If the exposed individual anti-HBsAg status is unknown, give HBIG and booster dose of vaccine.
2. If the exposed individual is immune, routine follow-up at six months.
3. If the exposed individual is anti-HBsAg negative and previously immune give booster hepatitis B vaccine.
4. If non-immune/failed immunisation commence hepatitis B vaccination course and HBIG.

Source individual
anti-HCV positive or likely Source known high-risk hepatitis C.

Give hepatitis B vaccination if indicated.

Routine follow-up.

Source individual tests negative. or Likely Source low-risk for HIV, hepatitis B and hepatitis C.

Give hepatitis B vaccination if indicated.

Follow-up if indicated.

Source individual and origin of sharp unknown.

NB: If the source may be in the window period for hepatitis C or HIV, follow-up testing is recommended for the source as well as the exposed individual.