CONTROL OF VIRAL HEPATITIS AND HUMAN IMMUNODEFICIENCY VIRUS INFECTIONS

1 INTRODUCTION

Transmission of blood-borne viruses in the health-care setting generally arises from the accidental inoculation of blood or contact with other body fluids from an infected individual. It is not possible to identify all persons infected with hepatitis B or human immunodeficiency virus (HIV). The major risk is of infection passing from patient to health care worker but procedures should also protect patients from infected health care workers.

All blood should be handled in a safe and uniform manner, conforming to a standard practicable for all patients. Cerebrospinal fluid, pleural, pericardial or peritoneal fluids, vaginal secretions, semen and any blood stained fluid should be handled with the same precautions.

Any additional precautions should be based on a risk assessment of the likelihood of exposure to blood during specific procedures and the prevalence of blood-borne viruses in the population served.

All hepatitis B and HIV positive individuals, patients or health care workers, are entitled to confidentiality, information and support in relation to their infection. Hepatitis B and HIV do not prevent most individuals following most occupations.

2. VIRAL HEPATITIS

2.1 HEPATITIS A

Commonly known as infectious hepatitis, this infection is endemic world-wide, spread by the faecal-oral route with an incubation period of about two to six weeks. Infection may be asymptomatic or an acute icteric disease.

Faecal shedding of virus peaks in the prodromal phase but has disappeared one week after the onset of illness. Hepatitis A IgM antibody is usually present at the onset of clinical disease and detectable for about ten weeks.IgG antibody then persists and confers immunity for many years. A vaccine is now available. Human normal immunoglobulin (HNIG) offers short term protection against infection with hepatitis A to those in close contact with cases and to those travelling to areas where infection is prevalent.

2.2 HEPATITIS B

Formerly known as serum hepatitis, this blood and sexually transmitted infection may be followed by long term carriage. Prevalence varies, low in the UK ,where less than 0.1% of the general donor population are carriers, but higher in the Far East.

The incubation period normally ranges from six weeks to six months. Infection varies from asymptomatic (65% cases) to acute total hepatic necrosis (1%). Most adults with acute hepatitis B recover fully and become immune but 10% develop a carrier state, i.e. HBsAg positive for more than six months, and of whom a further 5-10% have persistent "e" antigenaemia (HBeAg), correlating with high risk infectivity. Persistent "e" antigenaemia is commoner in those infected in early life.

Summary of serological markers, infectivity and immunity

Hepatitis B surface antigen (HBsAg)	+ e antigen (HBeAg)	= high infectivity
HBsAg	+ e antibody (anti HBe)	= low infectivity
Hepatitis B core IgM (anti-HBcIgM)		= acute hepatitis B
Hepatitis B surface antibody (anti-HBs)		confers immunity

Active immunisation

Immunisation is recommended for individuals at increased risk due to occupation, lifestyle, close contact with case or carrier.

Hepatitis B vaccine contains HBsAg prepared from yeast cells using recombinant DNA technology. It prevents infection in individuals who produce antibodies (anti-HBs) to the surface antigen. About 80-90% vaccinees respond; fewer individuals over the age of 40 years do so.

In the **standard course** doses are spaced at 0,1 and 6 months. An **accelerated course** may be used where more rapid immunisation is required,e.g., for travellers or following exposure to the virus; doses are spaced at 0, 1 and 2 months with a booster dose at 12 months for those at continuing risk.

Anti-HBs levels should be checked 2-4 months after the vaccine course has been completed. A further dose is recommended for poor responders (anti-HBs 10-100 iu/l). Non responders (anti-HBs <10 iu/l) may be tested for hepatitis B markers and given a repeat course.

Levels of anti-HBs gradually fall after vaccination and delayed testing could therefore lead to categorisation as a poor or non-response. In these circumstances, it is recommended that a booster dose of vaccine should precede the determination of anti-HBs levels. Booster doses should be considered following subsequent significant exposure or given to those at continuing risk 3-5 years after the primary course, whichever is the sooner.

The procedure for hepatitis B vaccination and follow-up is summarised in Appendix 1, and its use for HBV prophylaxis for reported exposure incidents in Appendix 2. See also section 12.

Passive immunisation

Specific hepatitis B immunoglobulin (HBIG) may be used in conjunction with hepatitis B vaccine to confer passive/active immunity after exposure. See Appendix 2. HBIG is also given to babies born to mothers who are HBeAg positive, who are HBsAg positive and without e antigen or antibody, or who have had acute hepatitis B during the pregnancy. See section 9.

2.3 HEPATITIS C

Blood-borne transmission is well documented,but knowledge of the mechanisms of transmission and persistence in the community remains incomplete. The incubation period following parenteral infection is about 6-8 weeks. The acute illness is clinically mild and not associated with fulminant hepatitis. However, 20% acute infections progress to chronic liver disease.The standard serological assay detects anti-HCV by six months after onset. Anti-HCV IgG sera may be viraemic. Babies born to mothers with a high level of viral activity are at greater risk of acquiring the infection at or around birth.

Up to 1:200 blood donors may be anti-HCV positive. High rates of sero-positivity have been recorded in people who have received multiple transfusions e.g. those with clotting disorders and drug misusers who have regularly shared needles. There is no recognized effective treatment which remains largely symptomatic. No vaccine is available.

Routine screening for serological markers of Hepatitis C infection is not indicated at the present time. Those at risk of the infection should have their liver function tests checked if the clinical picture indicates. Serological tests for Hepatitis C are indicated where liver function tests are persistently abnormal and there is no evidence of any other surgical or infective reason for this.

2.4 HEPATITIS D

A blood-borne infection occurring only in association with hepatitis B.

2.5 HEPATITIS E

Spread by the faecal-oral route, hepatitis E is associated with water-borne epidemics in developing countries. The incubation period is about 40 days. The illness may be fulminant in pregnant women. Diagnosis is currently by exclusion.

3. HUMAN IMMUNODEFICIENCY VIRUS INFECTION

The acquired immunodeficiency syndrome, AIDS, was first described in 1981. Its causative virus, human immunodeficiency virus(HIV), then known as LAV or HTLV3, was identified in 1983.

3.1 Virus and the immune response

HIV is a retrovirus composed of ribonucleic acid (RNA). By means of an enzyme called reverse transcriptase, deoxyribonucleic acid (DNA) copies of the virus are formed and incorporated into the DNA of the host cell, which then elaborates further virus which infects more and more cells.
Many if not most of the clinical features of HIV infection result from the immune deficiency induced by a reduction in numbers of a subset of lymphocytes known as helperT or CD4 cells. HIV binds to these cells, is incorporated into their DNA and also destroys them. Meanwhile, in response to exposure to HIV, the CD4 cells stimulate B lymphocytes to produce antibodies. These antibodies act as a marker of infection but have little neutralising activity. **HIV-antibodies are normally detectable three months after infection has occurred.**
HIV-1 is the predominant virus worldwide, HIV-2 having been found mainly in Africa.

3.2 Transmission

HIV infection may be transmitted:

- through sexual intercourse
- from the use of needles and syringes contaminated with infected blood (or much less commonly by exposure to infected blood or blood products via transfusion)
- from an infected mother to her baby, before or during childbirth or through breast feeding.

3.3 Risk factors

Personal risk factors

- Homosexual or bisexual males who have indulged in unprotected sexual acts
- Intravenous drug abusers who have shared injecting equipment
- Persons who have had penetrative sexual contact with others from areas of high prevalence
- Persons who have received unscreened blood transfusions in areas of high HIV prevalence
- Haemophiliacs who have received untreated blood products
- Sexual partners of the above
- Children born to HIV positive mothers

Geographical factors

- Local: where prevalence is known to be high
- International: sub-Saharan Africa; other countries with known high prevalence of HIV

HIV is relatively difficult to transmit and survives poorly outside the body. It is not transmitted via the respiratory or enteric routes, casual person to person contact,food,water or insects.

3.4 Clinical features

A few weeks after infection with HIV, a small number of people develop a self-limiting glandular fever-like illness; most remain asymptomatic. HIV antibody becomes detectable at this time; the person continues to carry the virus.

After a period, usually some years, of apparent good health, patients may develop a persistent generalised lymphadenopathy (PGL), followed by weight loss, chronic diarrhoea, minor opportunistic infections candidosis and progression to AIDS. The average time from initial infection to the development of AIDS is about 8 years though progress can be much quicker.

AIDS itself may be characterised by unusual, severe or persistent infections due to Pneumocystis carinii (pneumonia), salmonella (enteritis and septicaemia), mycobacteria, e.g.,M avium-intracellulare and M tuberculosis, cytomegalovirus (CMV), toxoplasma, giardia, cryptococci; Kaposi's sarcoma or lymphoma; dementia.

Zidovudine (AZT) is an antiviral drug with activity against HIV by inhibition of reverse transcriptase. It does not however eradicate HIV from the body but may delay the progression of the disease. Its use for post-exposure prophylaxis is controversial. It is toxic and expensive.

Infections and other AIDS-related conditions are treated appropriately. Long term prophylaxis may also be used.

4. TESTING FOR HIV INFECTION: COUNSELLING, CONSENT & CONFIDENTIALITY

4.1 Introduction

Doctors are expected in all normal circumstances to be sure that their patients consent to the carrying out of investigative procedures. In certain circumstances this may be given implicitly, in others, such as giving a specimen of blood for a named condition, explicit consent is required.

The spectrum of individuals for whom **HIV antibody testing** may be performed includes those participating in anonymous unlinked surveys, self-referrals and those in whom consideration of HIV infection is part of a diagnostic process. Testing provides epidemiological data of the incidence of HIV infection and greater knowledge of its natural history thus enabling the planning of care, management and allocation of resources.

4.2 Counselling

For individuals, a negative test can bring enormous relief.For those found positive, the psychological and social sequelae should not be underestimated.

The information and counselling needs of people considering self-referral or whose doctor suggests that a test is indicated will range from those (perhaps the majority in most clinical settings) who require little more than information and discussion to those who need specialised counselling. Counselling may therefore be given by a variety of health care professionals, e.g., doctors, midwives and/or specialist counsellors. Specialist counsellors are trained to provide pre-test and post-test counselling and the extensive support of those positive from the shock of first discovery to all the details of social support available throughout the ensuing years.

The following points should covered as appropriate when HIV testing is being discussed:

- What exactly the test is, i.e. a blood test for HIV antibody, which is normally detectable three months after infection has occurred.
- The difference between HIV infection and AIDS
- Medical benefits of knowing HIV status
- How HIV infection is transmitted
- Safer sex
- Safer injecting
- Follow up and support networks
- The situation of a spouse or other sexual partner should be considered before testing and a joint decision is preferable.
- If found positive, the individual should consider carefully if and when to tell other persons, including family, general practitioner and dentist.
- Medical confidentiality
- If more time is needed to think it over
- Does the person need to see a specialist counsellor?
- How and when the person will get the result
- Employment issues
- Insurance issues

4.3 Consent

A doctor not obtaining prior and explicit consent by the patient for HIV-antibody testing must be able to demonstrate that in the pertaining circumstances the omission was in the best interests of the patient's health (General Medical Council,1993), and may face the task of informing an unprepared patient.

The laboratory request form must be signed by the requesting clinician or authorised specialist counsellor. The laboratory proceeds with testing on the understanding that adequate counselling and explicit consent have been given.

4.4 Confidentiality

All persons working in a health care setting have a duty not to disclose information about patients to other unauthorised persons.

Informing other health care professionals: In respect of HIV infection, the patient will normally give consent to the doctor principally responsible for his/her care for other members of the health care team to know his/her status. It is emphasised that all health professionals, such as other doctors, dentists, nursing and laboratory staff, are under the obligation of confidentiality, which continues after the patient's death.

Only in exceptional circumstances if the health of any team member is put at risk should information be disclosed without consent.

If wished, the identity of the patient may be further protected by the use of the soundex code instead of the patient's name. (see Appendix 3)

4.5 Informing the patient's spouse or other sexual partner

The doctor may consider it a duty to ensure that the sexual partner of an HIV-positive patient is informed in order to safeguard him/her from a possibly fatal infection.

4.6 Counselling services

1 HIV Testing & Counselling Service (MDHA)
Jeremy Christey, Linwood, Butlers Green Rd,
Haywards Heath. Telephone: 0444 417417

2 Mid-Downs Genito-urinary Clinic
Outpatients Dept 4, Crawley Hospital, West Green Drive,
Crawley. Telephone: 0293 618849

5. PATHOLOGY INVESTIGATIONS

5.1 Collection of blood and other specimens from patients known or suspected to be hepatitis B or HIV positive

It is courteous and facilitates the handling especially of urgent requests to inform Pathology when it is intended to send specimens from patients presenting a high risk of HBV or HIV infection.

Investigations should be restricted to those essential for patient management.
Blood and blood-stained fluids are potentially infective.

Specimens from high risk patients must only be taken by trained and experienced staff, wearing gloves (with additional protective clothing if indicated).

5.2 Specimen enclosure, labelling and transport

Each specimen container and request form must show the identity and source (location) of the patient. If wished, the identity of the patient may be further protected by use of the soundex code instead of the patient's name (Appendix 3).

- The container must be closed **securely**.
- A **Danger of Infection** label must be affixed to both container and request form.
- The container must be placed in the appropriate compartment of the transport bag.
- The request form (if separate) must be placed in the adjoining pocket.
- The bagged specimens must be placed and sent to the laboratory in Pathology transport containers.

Only the warning label need be clearly visible during transport and in reception. In this way, the confidentiality of the clinical material may be maintained. Individual boxes for 'Danger of Infection' specimens are also available from Pathology reception.

6. NOTIFICATION OF HEPATITIS AND HIV INFECTION

6.1 Viral Hepatitis

Viral hepatitis is notifiable under the Public Health (Infectious Diseases) Regulations 1988 to the local Consultant for Communicable Disease Control (CCDC), (tel. no. 0444 441666 ext 2138).

6.2 AIDS

AIDS is not a notifiable disease. Doctors are invited to report all cases of AIDS, in strict medical confidence, to the Director, PHLS Communicable Disease Surveillance Centre, 61 Colindale Avenue, London, NW9 5EQ. Special AIDS clinical report forms can be obtained from CDSC (tel. no. 081 200 6868), or the CCDC.

Doctors are further invited to report all cases of AIDS to the CCDC, who is the District AIDS Reporting Physician, by sending a copy of the completed special AIDS clinical report form as is recommended good practice in South Thames Region. Information may be given using Soundex code .(Appendix 3)

6.3 HIV

HIV carriage is reported by the consultant microbiologist.

The above information is used for the purposes of epidemiology and future planning.

Preliminary positive results are normally given to the requesting clinician by the consultant microbiologist.

7. HOSPITAL CARE

7.1 Standard infection control measures

The following standard measures exemplify good practice and should be undertaken when caring for all patients:

- Hands should be washed after contact with each patient, immediately after direct contact with body fluids and after wearing gloves
- Latex/vinyl gloves should be worn when in direct contact with blood or body fluids, mucous membranes or non-intact skin
- Suitable protective clothing should be worn if clothes are likely to become soiled when handling blood or body fluids, e.g. disposable apron, overalls
- Mask and eye protection should be worn if it is likely that the face will be splashed by blood or body fluids
- Linen, grossly soiled by blood or body fluids, should be placed in a red alginate-stitched polythene bag, followed by a red outer terylene bag. Red terylene bags should not be labelled.
- Sharps(needles,scalpels, blades etc.) must be placed directly into a rigid,puncture-proof sharps container. Needles must not be resheathed. Boxes must not be overfilled. The container must conform to British Institute standard. A coded tie should be attached.
- Clinical waste should be placed in yellow polythene bag/container, secured with a coded tie and stored securely before disposal.
- Normal daily and terminal cleaning should take place unless otherwise specified by a member of the Control of Infection Team.
- All blood spillages should be cleaned up by nursing staff using chlorine-based disinfectant granules or hypochlorite detergent solution.

7.2

Single room isolation is not generally necessary for those infected with HIV. The decision to adopt isolation measures must be based on clinical assessment and the need for privacy in individual cases. Isolation may be indicated if the patient suffers uncontrollable bleeding, is incontinent, is mentally disturbed or confused or where a secondary infection presents a risk to others.

Any extra precautions which may need to be taken for a particular patient will be advised by a member of the Control of Infection Team

8. PREVENTION OF HEPATITIS & HIV INFECTION IN THE OPERATING THEATRE

8.1 Introduction

The incidence of nosocomially-acquired hepatitis far exceeds that of HIV infection. Hepatitis B is preventable by immunisation. **Standard** measures offer protection; additional precautions may be taken with high risk or known HIV antibody or HBsAg-positive patients but the largest risk comes from unrecognised cases. Seropositives may reject assistance from fear of attracting particular attention.

The risk of acquiring **hepatitis B** may exceed 30% after a single exposure to HBeAg-positive blood by sharps injury without prophylaxis. Unlike HIV, there seems to be a significant risk of contracting hepatitis B virus (HBV) by exposure of non-intact skin or mucous membrane.

Surgeons, anaesthetists and other staff considered at risk, through involvement in invasive prone procedures, should be vaccinated.

The risk of seroconversion after exposure to known **HIV-infected blood** is about 0.4%. Transmission has usually been associated with hollow needles and larger volumes of blood. By August, 1992 neither seroconversion after injury with suture or other solid needle nor after exposure to normal skin or mucous membranes had been reported.

8.2 Operating theatre procedure: high risk patients

- Maintain patient confidentiality.
- It is unnecessary to place the patient last on the operating list though this may aid subsequent theatre decontamination.
- Only experienced surgeons and other theatre staff should be present in the theatre.
- Double gloves, high efficiency masks/shields, eye protection, boots, impervious gowns (or plastic aprons, if appropriate) should be used.
- Unnecessary equipment should be removed from the theatre.
- Disposable drapes should be used; the mattress covered with a plastic sheet.
- Pre-operative shaving should be avoided and depilatory cream considered.
- Sharps should not be passed from hand to hand.
- Suction bottles should contain liners.
- Swabs should be counted on a polythene sheet on the floor.
- Closed, rather than open, drainage is recommended.
- Anaesthetic circuitry should be disposable or decontaminated appropriately.
- Sharps must be disposed of into yellow sharps container (standard practice).
- Disposables and waste should be placed in a yellow polythene bag and secured with coded tie (standard practice).
- Surgical instruments (autoclavable) should be placed, unwashed, in De-con bag and then in white nylon box for return to HSDU.
- Other instruments should be decontaminated appropriately.
- Linen and theatre clothing should be placed in red alginate-stitched polythene bag, followed by a red outer terylene bag and sent to the laundry.
- Floors and surfaces within the contamination zone should be cleaned with hypochlorite detergent Walls and other surfaces do not need cleaning unless visibly contaminated with blood.
- Blood spillages should be cleaned using granular chlorine-based disinfectant, e.g. Presept.
- The nurse handling the patient in the recovery room should wear gloves and plastic apron.

9. PREVENTION OF HEPATITIS & HIV INFECTION IN THE MATERNITY DEPT.

9.1 Antenatal screening

In the United Kingdom the Department of Health recommends antenatal **hepatitis B** screening for:

- all ethnic groups other than Caucasians
- also Caucasians from Southern and Eastern Europe
- all those with a personal, family or occupational history suggestive of increased exposure to hepatitis B virus (HBV).
- all those with recent acute HBV infection

Hepatitis B markers

The detection of hepatitis B surface antigen (HBsAg) indicates HBV infection or carriage.
Further HBV markers to assess the infectivity of the mother and the risk of transmission to her baby will be performed by the laboratory.

HBeAg denotes a high risk of infectivity.
Anti-HBe denotes a low risk.

All patients, but especially the following groups, should be offered **HIV** screening:

- intravenous drug users
- residence in sub-Saharan Africa or other area of known high prevalence
- sexual partners of known HIV-positive men, bisexual men and as above.

Appropriate counselling is essential.

9.2 Transmission

Hepatitis B is mainly passed from person to person by infected blood, semen or vaginal fluids.
Transmission from mother to baby occurs perinatally.
A hepatitis B carrier mother, regardless of e antigen/antibody status, may breast feed if her baby is vaccinated against hepatitis B (see below).

- **HIV** is transmitted vertically via the placenta, at delivery or from breastfeeding. In Western countries the rate of vertical transmission is about 15%.
- Passively transferred HIV antibody in the baby persists for about 18 months.
- Breastfeeding is contraindicated.

9.3 Infection Control Procedures

Standard infection control measures to avoid contamination with blood and body fluids should be followed throughout pregnancy. (See Control of infection policy COI 14 section 7.1)

At **delivery** additional measures are as operating theatre procedures (section 8.2)
Care must be taken when cutting the umbilical cord.
The placenta should be placed in a heavy-duty yellow polythene bag for incineration.
Mechanical, not mouth, mucus extraction should be used.
The baby should be cleaned as soon as possible after birth.

9.4 Baby

Babies whose mothers are hepatitis B or HIV positive are followed up by the Paediatricians.

Hepatitis B vaccine should be given to **all** babies born to mothers who are HBsAg-positive or who have had acute hepatitis B during pregnancy. The first dose of vaccine, 10mcg(0.5ml) intramuscularly, should be given at birth or as soon as possible thereafter.

Vaccine is obtainable from Pharmacy. Liaison with the Paediatrician and General Practitioner is essential to ensure completion of the course, i.e. 2nd dose at 1 month, 3rd dose at 6 months and anti-HBs levels at one year.

Hepatitis B immunoglobulin (HBIG) should be given to all babies whose mothers are HBeAg-positive, who are HBsAg-positive without e markers or have had acute hepatitis B during pregnancy.

HBIG, 200 iu in 2ml intramuscularly as a single dose, should be given at a contralateral site at the same time as the hepatitis B vaccine. HBIG is obtained from the Central Public Health Laboratory by the consultant microbiologist, normally received well before the EDD and transferred with accompanying documentation from the Microbiology Department to the labour ward a few days before delivery.

10. CARE IN THE COMMUNITY

Confidentiality must be maintained at all times

HIV and hepatitis B surface antigen (HBsAg) carriers in the community present no risk to others from normal day to day contact.

Social activities such as eating out, religious services, etc. should not be restricted.

- Health care staff attending to patients at home should be aware of the inoculation risk status of the patient and follow the guidelines for hospital care.
- Items like razors and toothbrushes which could become contaminated with blood must not be shared.
- Crockery and cutlery can be washed in hot soapy water.
- Soiled clothing and bed linen can be washed at home. The combined effects of dilution, temperature and detergent ensure satisfactory decontamination.
- Non-infected waste is discarded into bin liners and disposed of normally.
- Blood-stained /infected waste, including non-flushable tampons/sanitary towels, should be burnt or placed in yellow plastic bags to be collected and incinerated via the Health Authority. The community nurse will arrange this.
- Urine and faeces can be flushed down the domestic lavatory.
- Blood spillages (from anyone) should be carefully cleaned up using bleach(hypochlorite). Bleach (1:10 dilution) may also be used to decontaminate surfaces which have been exposed to blood or tissue fluids.
- Equipment on loan should be decontaminated, if necessary, by nursing staff prior to collection.
- Social workers: no protective clothing required.
- Meals on wheels: no protective clothing required.

Further help and information

Infection Control Nursing Service

Mrs L Sarosi) Princess Royal Hospital: telephone 0444 441881 ext GRO-C

Mrs K Taylor) Crawley Hospital: telephone 0293 527866 ext GRO-C

or radiopage via PRH. switchboard

Sussex AIDS Centre

West Sussex office,

PO Box 1434, Worthing, BN11 1TN

Contact: Simon Pearson *Home Care Worker* telephone 0903 215622

(See also:Directory of HIV/AIDS Services in West Sussex)

11. LAST OFFICES

When a person known or suspected to be infected with HIV dies, either in hospital or elsewhere, they should be treated with the respect and dignity commonplace in the "last offices" as performed on any other patient. In the community "last offices" are carried out by the undertakers.

The handling of bodies dying with an infectious disease, including AIDS, is covered by the Public Health Act (Control of Infection) 1984, and the Public Health (Infectious Diseases) Regulations 1988. The CCDC, as proper officer to the local authority, should be informed of all such deaths to ensure that appropriate measures are taken and that the position with respect to any media attention is prepared for.

Confidentiality must be maintained as in life. It may be appropriate to complete the death certificate in more general diagnostic terms. In this case the box offering "further information" must be ticked.

Relatives and friends who wish to view the body should do so soon after death if possible. If there is a need to view the body at a later stage, this can be arranged.
Relatives should be told there is a risk of infection and advised to refrain from kissing or hugging the body. It is not appropriate to tell relatives of the patient's diagnosis.

Staff who carry out last offices should wear latex gloves and a plastic apron.
The body should be straightened and the eyes and mouth closed.
Unless the case has been notified to the Coroner, all drains, catheters, intravenous lines, etc. should be removed and disposed into yellow plastic bags for incineration.
Sharps should be disposed of into sharps containers.
Leaking wounds should be closed with occlusive dressings and leaking orifices packed.
Wash any parts of the body that are soiled.
Attach identity bracelets to the ankle and wrist.
The body should be clad in a disposable shroud and enclosed in a cadaver bag. Labels should be attached in such a way that they can be read through the cadaver bag.
Attach a 'Notification of Death' and a 'Danger of Infection' label to the outside of the bag.

Protective clothing is not necessary for mortuary attendants and porters who handle the body enclosed in the cadaver bag.

If there is a need to view the body later, and this cannot be done through the cadaver bag, the bag may be opened by a member of the mortuary staff, wearing gloves and plastic apron.

Mortuary staff and undertakers must be informed of the inoculation risk but not the actual diagnosis. The discreet use of 'Danger of Infection' labelling on the bag ensures this information is passed on.

The embalming of known or suspected HIV bodies is not recommended, and could contravene the Public Health (Infectious Diseases) Regulations 1988, but if held to be essential, particular attention must be given to avoiding contamination, and the work must be done by experienced staff wearing protective clothing. Advice should be sought from the CCDC where this is being considered.

12. MANAGEMENT OF ACCIDENTAL EXPOSURE TO BLOOD OR BODY FLUIDS

12.1 Significant exposure may be defined as:

- **percutaneous:** needlestick or other contaminated sharp object injury, a bite which causes bleeding or other visible skin puncture
- **mucocutaneous:** exposure to blood.

Percutaneous exposure is of higher risk than mucocutaneous and exposure to blood more serious than exposure to other body fluids. Intact skin offers adequate protection. Exposure to vomit, faeces and sterile or uncontaminated sharp objects poses no risk.
Circumstances leading to exposure should be identified and all possible steps taken to avoid repetition.

12.2 Post-exposure procedure

- Immediately wash site of exposure liberally with soap and water but without scrubbing. Irrigate exposed mucous membranes or conjunctivae with water. Encourage bleeding.
- Report to head of department
- Record details in Accident Book.
- Report incident as soon as possible to Occupational Health Department. Out-of hours advice may be obtained from the Consultant Microbiologists.

12.3 Source Patient

If identifiable, the patient should be assessed for risk factors for hepatitis and HIV infection. With the patient's informed consent , blood from the patient should be tested for hepatitis B surface antigen(HBsAg) and then stored for two years. Hepatitis C and HIV testing are **not** routinely indicated, but patients at high risk of HIV infection, negative at the time of the incident, should be retested 3 months later.

12.4 Health Care Worker

All health care workers will be encouraged to provide a blood sample following exposure to known HBV, HCV or HIV-positive patients. Any health care worker may have a sample taken for storage for a minimum of two years following any exposure should they so wish

Hepatitis B: Action taken by the Occupational Health Department will depend on the HBsAg status of the source (if known) and the hepatitis B vaccination status of the health care worker. This may include hepatitis B vaccine, course or booster, and, occasionally, hepatitis B immunoglobulin (HBIG). HBIG is obtained by the consultant microbiologist and should be given within 48 hours of exposure.

Hepatitis C: A serum taken six months after exposure may be tested. If positive, the sera from health care worker and source patient taken at the time of the incident will be tested for hepatitis C.

HIV: Following exposure to a known HIV positive source, follow-up sera will be taken and tested 3 and 6 months after exposure.

Zidovudine for post-exposure prophylaxis is not considered a necessary component of post-exposure management.

12.5 Community needlestick injuries: significant exposure

- Although the needles involved in community needlestick injuries are often believed to have been discarded by injecting drug users, this will not always be so.
- Exposed persons with no history of hepatitis B vaccination or one dose only should be offered an accelerated course of hepatitis B vaccine. See Appendix 2.
- The risk of acquiring HIV infection in these circumstances is thought to be negligible and the patient should be reassured.

13. HEALTH CARE WORKERS INFECTED WITH HEPATITIS B AND HIV

13.1 Health care workers have an ethical duty to protect patients. All those performing exposure prone procedures should be immunised against hepatitis B. If found to be HBeAg or HIV-positive they must obtain advice on modifying their work practices.

The NHS Injury Benefits Scheme provides temporary or permanent benefits for all NHS employees who lose remuneration because of an injury or disease attributable to their NHS employment.

13.2 Exposure prone procedures

These are defined as the surgical entry into tissues, cavities or organs or repair of major traumatic injuries, cardiac catheterisation and angiography, vaginal or caesarean deliveries or other obstetric procedures during which sharp instruments are used; the manipulation, cutting or removal of any oral or perioral tissues including tooth structure, during which bleeding may occur.
This definition does **not** include minor surface suturing, incision of abscesses, endoscopies, taking blood, giving injections or setting up lines.

13.3 Hepatitis B

Health care workers performing exposure prone procedures should be immunised against hepatitis B, unless immunity as a result of natural infection or previous immunisation has been documented. Their response to the vaccine should subsequently be checked.

If HBeAg positive, they should not perform procedures in which injury to the worker could result in blood contaminating the patient's open tissues. If HBsAg positive, but not HBeAg positive, they need not be barred from any area of work unless they have been associated with transmission of hepatitis B to patients whilst HBeAg negative.

Employers should make every effort to provide alternative employment should this be needed. A UK Advisory Panel has been set up to be consulted when specific occupational advice is needed and cannot be obtained locally.

True non-responders ,the few health care workers in whom there are genuine contraindications to vaccine and those who have not completed the course due to a severe reaction remain susceptible to infection.Regular testing may be considered in certain circumstances at the discretion of the Occupational Health Department.

13.4 HIV

The available data suggests that the risk of transmission of HIV to patients from HIV infected health care workers is very low. Nevertheless, those who believe they may have been exposed to infection in whatever circumstances must seek medical advice and diagnostic HIV antibody testing if applicable. Those who are infected must seek appropriate medical and occupational advice to ensure they pose no risk to patients.

Personal physicians or occupational health physicians who are aware that infected health care workers under their care have not sought or followed advice to modify their practice must inform the employing authority and appropriate regulatory body.

HIV-infected health care workers are entitled to the same rights of confidentiality as any patient seeking or receiving medical care.

13.5 Notification of patients

Official guidance reflects the need to protect patients, who have been exposed to the risk of HIV infection from an infected health care worker, to retain public confidence and to provide safeguards for the confidentiality of the HIV infected health care worker.

Patients who have been exposed to this risk should be notified, offered reassurance and counselling, and an HIV antibody test on request. This exercise will be co-ordinated by the Department of Public Health Medicine.

APPENDIX 3 SOUNDEX CODING

The Soundex code may be used to protect the anonymity of patients with their laboratory requests. It also provides an alternative to supplying the surname when reporting AIDS cases or HIV positives to CDSC under the voluntary confidential reporting schemes. The confidentiality of the report is assured as no Soundex code is unique to a single surname, but if the code is used in combination with the patient's date of birth duplicate reports can be readily detected. It also makes possible the linking of AIDS and laboratory reports relating to the same individual.

Soundex surname coding

Please read all eight rules before attempting to code a name.

1. First letter of surname is always retained, followed by 3 digits as follows:

A,E,I,O,U,Y,H and W	are not given a code number.
B,F,P,V	Code 1
C,G,J,K,Q,S,X,Z	Code 2
D,T	Code 3
L	Code 4
M,N	Code 5
R	Code 6

2. Consonants after initial letter are coded to the numbers above in the order in which they occur.
   e.g. HOLMES H-452 ADONOMI A355

3. The code always has three digits only, so further consonants in long names are ignored: zeros are used for the remaining digits in short names.
   eg. VONDERLEHR V-536 BAILEY B-400 SHAW S-000

4. Double consonants and adjacent consonants from the same letter group are treated as one.
   eg. BALL B-400 JACKSON J-250

5. A consonant immediately following a surname initial from the same letter group is ignored.
   e.g. SCANLON S-545

6. Abbreviated prefixes are coded as if they were spelt out in full.
   e.g. McIlaney=MACILHANEY M-245
   St. John=SAINT JOHN S-532

7. An apostrophe is ignored and the whole of double-barrelled names are coded as a single name.
   e.g. O'NEILL O-540 EL ERYAN E-465 KING-SMITH K-525

8. Consonants from the same letter group separated only by W or H are treated as one.
   e.g. BOOTH-DAVIS B-312

Note: It is very helpful if you can give the initial of the first name as well.
e.g. John BALL J,B-400

If you have any queries about these codings please ring CDSC on 081-200-6868 and ask for any of the following extensions: 4420, 4463, 4563 or 4815.

A PC programme to convert surnames to soundex codes is available from the CCDC