

**Prevention of Transmission of HIV in Health Care Settings**  
**Guidelines and Practices**

**First edition by**  
Scientific Working Group on AIDS in 1992

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*Scientific Committee*  
*of the*  
*Advisory Council on AIDS*  
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**Prevention of Transmission of HIV in Health Care Settings – Guidelines and Practices** was first prepared by the Scientific Working Group on AIDS in 1992. It was revised in July 1995 by the Scientific Committee on AIDS, one of the three committees of the Governor-appointed Advisory Council on AIDS. The revision was made owing to the new development of infection control practices in the past few years. The situation will be kept under review by the Committee, taking into consideration local as well as international development in this area.

Scientific Committee on AIDS

July 1995

## *Scientific Committee on AIDS 1995 / 96*

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## **Background**

Acquired Immune Deficiency Syndrome (AIDS) is caused by a human RNA retrovirus known as the human immunodeficiency virus (HIV). The virus appears to cause chronic and probably life long infection. A person may have a mild, “flu-like” illness within the first few weeks after the initial infection and then be asymptomatic for years. The HIV causes a progressive destruction of the body’s immune function, predisposing an individual to a variety of infections, malignancies and neuropsychiatric abnormalities. A diagnosis of AIDS is made when an HIV infected individual develops diseases associated with severe immune deficiency.

HIV is transmitted through sexual contacts, exposure to infected blood or blood components, and perinatally from an infected mother to neonate. HIV has been isolated from blood, semen, saliva, tears, urine, vaginal secretion, cerebrospinal fluid, synovial fluid, breast milk and amniotic fluid. However, only blood and blood products, semen, vaginal secretion and breast milk have been linked to the transmission of HIV.

Based on the information available, transmission of HIV can and does occur in health care settings. Transmission of HIV from infected patients to health care workers has been documented after parenteral or mucous membrane exposure to blood. However, this risk is low (<0.5%) and can be minimized through adherence to routine infection control measures. Patient to patient transmission through invasive equipment or through HIV infected blood, blood products, organs, tissues or semen may also occur but can be prevented by proper sterilization of instruments and through donor screening, routine testing of donated blood for HIV antibody and heat or chemical treatment of factor VIII or IX to inactivate HIV. The risk of transmission from an infected health care worker to patients is estimated to be extremely low. To date, there has been only one documented incident of HIV transmission from a health care worker to patients. Restriction of practice depending on types of procedure, techniques, skills and medical conditions of the infected health care worker should further minimize the risk.

## **Guidelines and practices relating to HIV in health care settings**

The prevalence of HIV infection appears to be low in Hong Kong (<0.1%). Because it is often impossible to know when an individual has been infected with HIV or other blood-borne pathogens, and in light of the high prevalence of hepatitis B virus infection in the community, guidelines and practices that reduce health care workers' exposure to blood and body fluids of all patients should be developed. Appropriate work practices, including protective barriers to prevent parenteral, mucous membrane and non-intact skin exposure to blood and certain body fluids (amniotic fluid, pericardial fluid, pleural fluid, peritoneal fluid, synovial fluid, cerebrospinal fluid, semen and vaginal secretion) of all patients, should be adopted. The risk of HIV transmission from faeces, nasal secretion, sputum, sweat, tears, urine and vomitus without overt blood staining is extremely low or non-existent. As all available evidence indicates that percutaneous injury with sharps is the most common mode of blood-borne pathogen transmission in health care settings, all sharps and potential sharps should be handled with extreme care.

Health care workers who consider themselves at increased risk of HIV infection should arrange confidential testing. Those who are infected must seek appropriate medical advice to ensure they pose no risk to patients.

When performing invasive procedures, higher risk of blood-borne pathogens transmission is expected. Health care workers must be protected from mucocutaneous exposure to the patient's blood and the patient must be protected from intraoperative wound contamination. The use of special precautionary measures based on the nature of surgical procedures is justifiable.

The following recommendations outline work practices and barrier techniques that should be adopted in in-patient and out-patient settings, including Accident and Emergency Department and ambulatory care settings. The recommendations are based on current available information. Infection Control Committees of all health care institutions are urged to familiarise themselves with these recommendations and adapt them in light of local circumstances and requirements. The adopted precautions should then be widely disseminated to all health care workers.

## **Precautions for General Care**

### **(a)Protective Barriers**

#### **(i)Gloves**

Gloves should be worn for direct contact with blood and body fluids, as well as contact with mucous membrane and non-intact skin of all patients. They should also be worn when handling contaminated items or surfaces.

When performing phlebotomy procedures, there may be a possibility of contamination with blood. If there is a likelihood of hand contamination with blood, the wearing of gloves is advisable.

If gloves are worn, they should be changed after contact with each patient and before administering care to another patient, whenever torn and when a needle-stick or other injury occurs.

General purpose utility gloves such as rubber household gloves may be used for housekeeping chores involving potential blood contact, as well as for instrument cleaning and decontamination procedures. Utility gloves should be decontaminated and reused if still in satisfactory condition.

#### **(ii)Masks and Protective Eyewear**

Masks and protective eyewear or face shields should be worn when the splashing of blood and body fluids is anticipated.

#### **(iii)Gowns and Aprons**

Gowns or aprons should be worn during procedures that are likely to cause the spattering or splashing of blood and body fluids.

### **(b)Hands**

All skin defects should be covered with waterproof dressing. Hands must be washed after examining patients or touching potentially contaminated articles and before

taking care of another patient.

Hands and other skin surfaces should be washed with soap and water immediately and thoroughly if contaminated with blood or other body fluids.

#### (c) Rooms

A single room may be indicated for a patient with profuse bleeding that is likely to cause environmental contamination, or when patient hygiene is poor, for example, when a patient contaminates the environment with blood, secretion or excretion.

Individuals with known HIV infection often suffer from other infectious diseases, such as tuberculosis. They should be placed on isolation precautions as recommended by the Infection Control Committee of individual hospital.

#### (d) Sharps

Precautions should be taken to prevent injuries caused by needles, scalpels and other sharp instruments or devices during procedures, when cleaning instruments, during disposal of used needles and handling sharp instruments after procedures.

**USED NEEDLES SHOULD NOT BE RECAPPED.** If recapping of needles is necessary, a 'scoop' technique or a needle recapping device should be used.

All used sharps should be placed in a puncture-resistant sharps box which should be located in the area where it is used. Do not overfill the sharps box.

Used sharps boxes should be placed in red plastic bag and disposed of as medical waste.

#### (e) Specimens

All patients' specimens should be placed in sturdy leak-proof containers with secure lids to prevent leaking during transport. Care should be taken when collecting and handling specimens to avoid contamination of the outside of the containers and the laboratory request slips accompanying the specimens. When the primary container is subject to leakage, or the specimen is to be transported between institutions, a secondary leakproof container such as a zip lock clear plastic bag should be used.

Request slips should be placed outside of the secondary container.

(f) Accidental Exposure to Blood or Body Fluids

In case of penetrating injury or mucocutaneous exposure to blood and body fluids, the injured or exposed areas should be washed with copious amount of running water. Minor penetrating injury should be encouraged to bleed.

All incidents of exposure to blood or body fluids, either parenteral or mucous membrane exposures, should be reported. Appropriate serologic testing, medical evaluation and follow-up should be performed in accordance with institutional policy for hepatitis B. Advice could be sought from the AIDS Unit of the Department of Health, the individual hospital's Infection Control Unit, Staff Clinic or Accident & Emergency Department.

(g) Decontamination of Articles and Environment

All equipment to be used should be disinfected in accordance with hospital disinfectant policy.

HIV is sensitive to heat. Studies showed that it is inactivated by moist heat at 60°C in 30 minutes. It is also inactivated rapidly after exposure to commonly used chemical disinfectants at concentration much lower than those used in routine hospital practice. Depending on the amount of blood and mucus present on the surface to be cleaned and disinfected, a solution of sodium hypochlorite (household bleach) in concentration ranging from 1,000 ppm (1:50 dilution) to 10,000 ppm (1:5 dilution) available chlorine is effective.

Thorough cleansing before disinfection or sterilisation is an important part of all decontamination procedures. Heating is the most effective method of disinfection. For heat sensitive items, immersion in 1,000 ppm hypochlorite solution for at least 10 minutes should be effective. For metal devices which might be corroded by repeated exposure to hypochlorite solution, 2% glutaraldehyde for 10 minutes is recommended.

Spills of blood and body fluids should be cleaned up as soon as possible. They should be removed with disposable absorbent material held in a gloved hand. The spill site should then be wiped down with paper towel soaked in 10,000 ppm hypochlorite solution. This should be rinsed off to reduce the risk of surface damage, particularly if

used on metal surface.

No special precautions are necessary for dishes, drinking glasses and eating utensils. Individuals with known or suspected HIV infections should have their meals served with ordinary eating utensils. These can be cleaned together with those used by other patients in accordance with the institutional policy. There is no need to use disposable items.

Environmental surfaces such as wall, floor and other surfaces have not been associated with the transmission of HIV. Common housekeeping procedures are adequate for cleaning environmental surface.

#### (h) Laundry

All used linen should be bagged at the location where it is used. Linen should not be sorted or rinsed in patient care areas. There is no need to use disposable linen for HIV-infected patients.

Linen soiled with blood or body fluids should be disinfected with 1,000 ppm hypochlorite solution for 30 minutes and then bagged and sent to the laundry. Alternatively, untreated soiled linen can be placed in alginated bags for treatment in the laundry.

Linen should be washed with detergent in hot water. The temperature of the items in the machine should be maintained at over 80° C for at least 10 minutes.

#### (i) Waste Disposal

Wastes should be disposed of in accordance with the established institutional policy. Medical wastes should be discarded into red plastic bags with minimal handling. They should be sent for incineration or stored in a designated location to be collected by USD/RSD staff.

Blood, excretion and secretion may be carefully poured down a drain connected to the sewer system.

## **Precautions for Invasive Procedures**

Invasive procedures are those diagnostic or therapeutic procedures that involve surgical entry into tissues, body cavities or organs, or repair of major traumatic injuries. As it is recognised that the risk of accidental exposure to blood and body fluids during these procedures cannot be reduced to zero under current technology, depending on the types of operation, the length of operation, blood loss and the requirement of irrigation, special precautionary measures may be required. In general, when performing "exposure-prone" procedures, or procedures which are predicted to last longer than 3 hours, and result in blood loss greater than 300 ml, in addition to the procedures adopted routinely to prevent cross-infection, the following barrier protection should be used :

(a) The surgical team should wear two pairs of gloves. (b) Protective eyewear should be worn to avoid conjunctival contamination. (c) A disposable plastic apron should be worn by the scrubbed team under their gowns and by other staff in the theatre.

## **Precautions for Dialysis**

Patients with suspected or known HIV infection who require haemodialysis or peritoneal dialysis can be dialysed in any hospital based or free standing dialysing unit that uses standard infection control precautions. A single room is preferable for HIV infected patient undergoing haemodialysis. Haemodialysis machines should be disinfected with 500 - 750 ppm hypochlorite solution for 30-40 min. or 4% formalin overnight.

## **Precautions for Endoscopy**

All endoscopists must wear gloves, gown, mask and protective eyewear. All procedures should be performed in rooms with adequate ventilation. For bronchoscopy, as far as practicable, the rooms should have negative pressure with  $\geq 6$  air changes per hour. Use totally immersible endoscopes as far as possible. The endoscope should be cleaned and disinfected at the beginning of the first procedure of the day and after each procedure.

In between cases, after thorough cleaning which should include irrigating and

brushing of channels, the endoscope and all internal channels should be soaked in 2% glutaraldehyde for at least 5 min. (at least 30 min. for bronchoscopy). After the glutaraldehyde soak, the channels should be rinsed with sterile water followed by wiping the insertion tube with 70% alcohol.

Use autoclavable biopsy forceps and cytology brushes. A separate pair of biopsy forceps and cytology brush should be used for each patients. Do not use a needle to remove biopsy materials from biopsy forceps.

### **Precautions for Dental Surgery**

Blood, blood contaminated saliva and gingival fluids from all patients should be considered infective and appropriate barriers should be used during dental procedures in all health care settings. Procedures adopted routinely for all practices must be adequate to prevent cross-infection.

Please refer to documents on prevention of cross infections in dental settings promulgated by the Hong Kong Dental Association or the Department of Health.

### **Precautions in Clinical Laboratories**

Blood, serum, unfixed tissue and tissue fluids from all patients should be considered potentially infective. Minimal risk of HIV transmission is presented by urine, saliva and faeces without overt blood staining, though they may contain other pathogens. Laboratory access should be restricted to authorised staff only. Eating, drinking, smoking and the application of cosmetics should be prohibited in the laboratory. Laboratory coats, gloves or other protective clothing should be worn to prevent contamination of exposed skin and soiling of clothing. Protective clothing should be changed if visibly contaminated with blood or body fluids, and should always be removed before leaving the laboratory.

Care should be taken when opening specimen containers to prevent splashing or spattering. Routine procedures with blood and body fluids can be performed on an open bench. However, processing of specimens which are likely to create splash should be carried out with gloved hands in a biological safety cabinet. Alternatively, laboratory personnel should wear protective barriers including gloves, masks, protective eyewear to prevent the contamination of skin or mucous membrane. Centrifuges with sealed buckets, safety cups or sealed heads should be used to prevent

the escape of liquids or aerosols. Mechanical pipetting devices must be used for the manipulation of all liquids in the laboratory. Mouth pipetting must not be allowed. Laboratory and quality control reagents containing or derived from blood or blood products should be considered potentially contaminated. Needles and syringes should be used only when necessary and in a situation in which there is no alternatives. The use of plastic pipettes should be encouraged. Care should be taken to prevent injuries caused by needles, scalpels, glass slides and other sharp or breakable instruments or devices. Needles should not be recapped or manipulated by hand. Disposable needles and other sharp items should be placed in a puncture-resistant sharps box for disposal after use. These containers should be located as close as practical to areas where they will be used.

Laboratory work surfaces should be decontaminated with 1,000 ppm hypochlorite solution on a daily basis and following spillage of blood or body fluids. For large spills of cultured or concentrated infectious agents, the contaminated area should be first flooded with 10,000 ppm hypochlorite solution before cleaning, and then wiped down with disposable towels in a gloved hand.

Automated machines should have designs to avoid splashing or be adequately screened. There should be a closed system from specimen presentation to safe discharge of effluent, and should accept periodic disinfection readily. As far as possible, equipment should be decontaminated before they are sent for mechanical or electrical servicing.

Tissue or serum specimens to be stored should be clearly and permanently labelled as potentially hazardous. Infective waste from the laboratory should be autoclaved before disposal or sent for incineration.

Precautions for Autopsy and Disposal of Dead Bodies

See the guidelines '- Precautions for handling and disposal of dead bodies'