Recommendations on Infection Control Practice for HIV Transmission in Health Care Settings

Scientific Committee on AIDS
co-sponsored by the Hong Kong Advisory Council on AIDS
and
the Centre for Health Protection,
Department of Health

January 2005

About the Scientific Committee on AIDS (SCA)

The Scientific Committee on AIDS (SCA) was renamed from the former Scientific Working Group on AIDS. Its terms of reference and membership are as follows:

SCA has the following terms of reference :

(a) to advise on the effective surveillance of HIV/AIDS, and the monitoring of the situation as it relates to Hong Kong;
(b) to advise on the development of effective clinical and public health programmes on HIV/AIDS in Hong Kong;
(c) to establish rationale and develop principles on the effective prevention, treatment and control of HIV infection in Hong Kong;
(d) to promote the development of research agenda on HIV/AIDS and its related areas in Hong Kong; and
(e) to promote regional and international collaboration of research activities in HIV/AIDS. (Note : new item proposed by SCA members)

Membership 2002 – 2005

Chairman :	Prof	LAU Yu-lung
Members :	Dr	CHAN Kin-keung, Eugene
	Prof	CHEN Char-nie, *JP*
	Dr	JONES Brian
	Dr	LAI Sik-to, Thomas
	Prof	LAM Tai-hing
	Prof	LEE Shiu-hung, *JP*
	Dr	LI Chung-ki, Patrick, *BBS*
	Dr	LIM Wei-ling, *JP*
	Dr	LIN Che-kit
	Dr	LO Kuen-kong
	Dr	LO Wing-lok, *JP*
	Prof	NG Mun-lun
	Prof	SETO Wing-hong
Secretaries :	Dr	WONG Ka-hing
	Mr	WONG Man-kong

Correspondence
Address : 5/F, Yaumatei Jockey Club Clinic
145 Battery Street, Yaumatei, Kowloon, Hong Kong
Tel : (852) 2304 6100
Fax : (852) 2337 0897
E-mail : aca@dh.gov.hk

Recommendations on Infection Control Practice for HIV Transmission in Health Care Settings

Background

1. Human Immunodeficiency Virus (HIV), the cause of Acquired Immune Deficiency syndrome (AIDS), is transmitted through sexual contacts, exposure to infected blood or blood components, needle stick injury, and perinatally from an infected mother to neonate. Transmission of HIV from infected patients to health care workers (HCW) has been documented after parenteral or mucous membrane exposure to blood. The risk of transmission from an infected HCW to patients is very low; estimated to be less than 0.5%.[1] Albeit the minimal risk, the transmission of HIV in health care setting is often a cause of anxiety. HCW should be familiar with precautionary measures to further minimize the potential risk of HIV transmission in health care settings.

Definition and Scope

2. Standard precaution (SP) is the core concept for the prevention of HIV transmission in all health care settings. SP is defined as a set of precautionary measures including good hand hygiene practices and use of protective barriers during routine patient care carried out by health care workers (HCW).[2] SP encompasses precautions in the handling of blood, all body fluids, secretions and excretions; and avoidance of contamination of non-intact skin and mucous membrane. In this connection, HCW is defined as any person whose activities involve contact with patients or with blood or other body fluids from patients in a health care setting. [3]

3. The setting of infection control for the prevention of HIV can be a) in-patient, b) ambulatory care setting like out-patient clinics and Accident and Emergency Departments, c) Special settings like the dental clinics, surgical theatres. The principles of SP can be adapted for use in community settings like schools, elderly homes and other care institutions. The recommendations highlighted here are intended primarily for use in health care settings, including both in-patient and out patient settings.

4. The scope of infection control for HIV prevention is vast in health care settings. Apart from SP, there are the following dimensions: environmental infection control practices, consideration of work restrictions, occupational safety and health advice, post exposure management of exposed HCW and immunizations against vaccine-preventable diseases and community application of infection control practices.

5. The recommendations highlighted relate specifically to HIV infection. HCW are advised to treat this as general principles on the prevention of HIV in health care settings. Specific protocols shall be developed as appropriate. Local and international infection control guidelines should be consulted for specific details. This guideline

replaces the one on "Prevention of Transmission of HIV in Health Care Settings" edited by the Scientific Committee of Advisory Council on AIDS in 1995.

Principles

6. The recommendations on infection control for the prevention of HIV in health care settings are based on the following principles:

(a) In the context of infection control, HIV is treated as a bloodborne pathogen. The recommended practices therefore apply to HIV as much as they apply to the control of other bloodborne infections in health care settings.

(b) SP is the core practice recommended for HCW in all settings in relation to the prevention of bloodborne infections including HIV and tuberculosis.

(c) HCW who are at risk of contracting HIV should receive occupational advice on case by case basis.

(d) Risk assessment is the most vital tool in the management of HCW after exposure to HIV. The provision of post exposure prophylaxis, including antiretroviral therapy, should follow thorough risk assessment and counseling tailored to the need of the injured.

(e) A surveillance system should be in place to monitor the potential risk of HIV transmission in health care settings. This would involve primarily the reporting of needle stick injury.

(f) Training and education of HCW on infection control practices are of paramount importance. This should be started well before HCW enter their clinical practice, and should include an effective governance system for promoting the compliance of HCW.

(g) For infection control of transmission of tuberculosis associated with HIV in health care settings, transmission based precaution in addition to standard precaution should be applied.

Overview and Specificities of Standard Precaution

7. SP is the result of a synthesis of Universal Precautions (UP) and Body Substance Isolation (BSI) into a single set of precautionary measures in health care settings. This is a consensus among infection control experts of Hospital Infection Control Practices Advisory Committee (HICPAC), US CDC.

8. UP, as originally defined by US CDC in 1985, applied only to blood and body fluids that have been implicated in the transmission of blood borne infections (semen and vaginal secretions), body fluids with an unknown risk of HIV transmission (amniotic, cerebrospinal, pericardial, peritoneal, pleural and synovial fluids) and to body fluids that contaminated with blood. However, it did not apply to faeces, nasal secretions, sputum, sweat, urine or vomitus which were later included under the recommendations of Body Substance Isolation. In the early 1990s, some countries like Australia adopted a broader definition of UP and applied the latter to all blood and body substances considered to be potentially infectious. These two guidelines

were united in 1994 in order to avoid confusion. Today, most patients with conditions that require disease specific precautions are now all covered under SP.

9. The specific recommendations of SP in this document are adapted from the US guidelines on hospital and health care personnel infection control practice.[2, 4] These precautions, under category 1B, are practices strongly recommended for all hospitals by HICPAC, US CDC. The recommendations must be augmented by hospital administrative policies especially in education and adherence to precautions, environmental infection control, occupational health and post-exposure management of exposure.

10. SP covers the following practices:

(a) Handwashing

Hands must be washed before and after patient contact. Hands must be washed immediately after touching blood, body fluids and removal of gloves. Plain soap and water are used for routine handwashing.

(b) Protective barriers

Disposable gloves must be worn when there is a direct contact or possibility of contact with blood, body fluids, mucous membrane and non-intact skin of all patients. Gloves should preferably be changed after patient contact and before administering care to another patient. Gloves must be changed whenever they are torn and when a needle-stick or other injury occurs and when they are visibly dirty with blood.

Mask, eye protection or face shield, and gown must be worn as appropriate during procedures and patient care activity that may result in splashing of blood and body fluids.

(c) Sharps handling

Precautions should be taken to prevent injuries caused by needles, scalpels and other sharp instruments. Used needles should not be recapped and if recapping of needles is unavoidable, 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. The sharps box should not be overfilled. Sharps boxes that have been used should be placed in red plastic bags and disposed of as medical waste.

Good work practices should also be adopted in the operation rooms to prevent sharps injury. Some of these should include using instruments, rather than fingers, to grasp needles, retract tissue, and load or unload needles and scalpels; to give verbal announcements when passing sharps; to avoid hand-hand passage of sharp instruments by using a basin or neutral zone; to use alternative cutting methods such as blunt electrocautery and laser devices when appropriate and to use round-tipped scalpel blades instead of sharp-tipped blades.[5]

The use of new technology and devices to prevent needle stick injury should be adopted whenever possible. This includes the needleless system, the retractable lancet and the close blood collecting system.

(d) Patient-care equipment handling

Patient-care equipment soiled with blood, body fluids, secretions, and excretions should be handled in a manner that prevents skin and mucous membrane exposures.

Reusable equipment should not be used for the care of another patient until it has been properly cleaned and reprocessed. Single-use items should be properly discarded.

Used linen soiled with blood, body fluids, secretions, and excretions should be handled in a manner that prevents skin and mucous membrane exposure.

(e) Patient placement

Patient who contaminates the environment should be placed in a private room. If a private room is not available, infection control officer should be consulted regarding placing the patient in alternative area.

Environmental IC Procedures

11. The environment is a potential source of health-care-associated bloodborne infections. Decontamination of the environment and equipment is an essential infection control practice in every setting. This fundamentally consists of disinfection, sterilization and handling of medical wastes.

12. All contaminated equipment should be disinfected according to established disinfectant policy formulated by local hospitals (Queen Mary Hospital. Infection Control Manual, November 1999). Reference shall be made to the guidelines published by US CDC, HICPAC. [6]

13. Heating is an effective mean of disinfection. HIV is inactivated by moist heat at 60^{o}C in 30 minutes. Chemical disinfectant like sodium hypochlorite (household bleach), 2% glutaraldehyde and ortho-phthalaldehyde (OPA) can be used in the disinfection of contaminated article.

14. Environment spilled with blood and body fluids should be cleaned immediately. Disposable absorbent material held in gloves should be used. The infected site should be cleansed with 10,000 ppm hypochlorite solution. Ordinary environmental surface such as wall, floor and other surface have not been associated with transmission of HIV. Common housekeeping procedures are adequate for cleaning environmental surface.

15. Medical wastes should be handled according to established policy of the institution. Articles contaminated with infected material should be appropriately

discarded, bagged and labeled before sent for decontamination and processing. They should be sent for incineration or disposed in special landfill as recommended by Environmental Protection Department guideline.[7]

Work Restriction and Occupational Health Advice

16. Work restriction is an important concept not only from the point of view of management of hospital infection outbreak and alert contact tracing but also in preventing further transmission of infection through granting leave to infected HCW or deployment to low risk work areas. Work restriction protocol should be developed in health institution. The protocol should include work-exclusion policies, designation of personnel who have authority to relieve duties, responsibility of infected staff in early reporting of conditions and list of potentially transmissible infectious disease.

17. Currently, general work restrictions of HCW infected with HIV are not recommended. However, HCW infected with these conditions should be restricted from exposure-prone invasive procedures. [8]

18. Specific recommendations for HIV infected HCW have been formulated by the Hong Kong Advisory Council on AIDS (ACA). (ACA. HIV Infection and the Health Care Workers – Recommended Guidelines, 1994, December 2003). The general principles include:

(a) adherence to standard precautions

(b) promotion of voluntary HIV testing in case of risk exposure

(c) referral to Expert Panel for advice on work restriction on a case-by case basis

(d) confidentiality and disclosure on need-to know basis

19. Immunization against preventable infection is an essential component of occupational safety practices in infectious disease. Hepatitis B vaccination with post-vaccination serological testing is recommended for all susceptible HCW. [9] Vaccine should be provided to HCW before blood exposure. Immunization against other bloodborne infections like Hepatitis C and HIV is currently not available.

20. Occupational safety and health advice should be constantly promoted in HCW. These occupational health advice include those on occupational risks of the infectious disease, patient care practices, isolation precautions, post exposure management, counseling and vaccination. HCW should be educated on occupational safety and this can be achieved through training.

Post Exposure Management

21. Post exposure management refers to practices to minimize health risk whenever HCW have been exposed to occupational hazards. The occurrence of accidental bloodborne exposure is not uncommon but is less hazardous under strict

adherence to standard infection control practice. Most accidental exposure happened in health care settings but exposure in community setting may occur.

22. The main emphases of post exposure management are risk assessment and counseling of exposed HCW. Each and every case should be evaluated by its own circumstances especially as regards to the provision of post-exposure prophylaxis (PEP). HIV PEP should be recommended to HCW who has high risk of contracting the infection after occupational exposure to HIV.

23. The Scientific Committee on AIDS and Scientific Working Group on Viral Hepatitis Prevention had issued its recommendations on the management and post exposure prophylaxis of needlestick injury or mucosal contact to HBV, HCV and HIV. (Scientific Committee on AIDS, Hong Kong Advisory Council of AIDS. Recommendations on the Management and Postexposure prophylaxis of Needlestick Injury or Mucosal Contact to HBV, HCV and HIV. March, 2003) This is in line with the guideline published by CDC. [9] The guiding principles are:

(a) an integrated approach should be taken by considering collectively the most important bloodborne infections, i.e. HBV, HCV and HIV

(b) risk assessment is the basis for the prescription of post-exposure prophylaxis

(c) scientific evidence, international developments and local perspectives should be taken into consideration when recommending practice

IC in Special Settings

24. SP comprising barrier protection, handwashing and sharps disposal should be routinely practised by HCW in special settings such as surgical and other invasive intervention settings. The main aim is to avoid cross infection from HIV infected blood, blood contaminated fluids and other body substances that potentially transmit the HIV virus. Protocols should be established through the incorporation of SP and the development of standards pertinent to the requirements of such settings. Transmission-based precaution would need to be introduced whenever appropriate.

25. In the handling of dead bodies, apart from the minimal practice of SP, adopted precautions may also be disease-specific, in line with recommendations to achieve transmission-based precautions. For the specifics and details of the prevention of HIV transmission in these specific health care settings, one should consult the relevant local and international guidelines and references. [5, 10-15]

Supporting the Implementation of Precautionary Measures

Surveillance

26. Surveillance is the most important initial step in infection control. A surveillance system should be in place in a health care setting to encourage reporting and documentation of occupational exposure to HIV especially through needle-stick injury. The collected data should be analyzed and disseminated in such a way that it

will enhance evaluation of the effectiveness of the HIV infection control programme in health care settings. The development of measurable outcome indicators for HCW safety programmes is recommended. [16]

Training and education

27. Training and education for HCW is the cornerstone of all effective infection control programme. Training on infection control precautionary measures should be provided to all staff at all levels. HIV/AIDS education should be focused on mode of HIV transmission, use of standard precautions to prevent HIV infections, issues of stigma and discrimination, human rights and obligations. Besides, training programme should address the expressed anxiety of HCW about getting infected and support them to comply with the best practices of infection control. Training programmes are best carried out by infection control committees set up in the particular setting.

Auditing

28. An effective governance system for auditing the compliance with SP by HCW is indispensable in maintaining the standards of infection control practice in health care settings. This can be achieved by regularly monitoring clinical practices of HCW through a customized, comprehensible check-list. The infection control committee should hold regular meetings to assess the extents of compliance and the reasons for not complying. While the attitude of such auditing exercise should be non-judgemental, HCW who do not practise according to the recommendations of SP should not be penalized but encouraged to adhere to the precautionary measures.

Annex 1

Community Application of IC Practices - Infection Control in Community Setting With Potential Exposure to Bloodborne Pathogens

Infection control in school / workplace

The recommended principles of infection control for health care settings generally apply. For bloodborne pathogens including HIV and hepatitis, disregarding the status of the individual, standard precautions should be adopted. For specific infectious diseases which are air-borne, spread by droplet and contact; transmission based precautions should be practised.

All staff and pupils in schools should be familiar with these precautionary measures. In case of the prevention of bloodborne diseases in schools, pupils should be taught about the prevention methods and transmission routes of HIV, hepatitis B and C. Knowledge about sexually transmitted diseases and proper use of condoms should also be introduced. Specific details of precautionary measures and prevention advice should be referred to the Guidelines on the Prevention of Blood-Borne Diseases in Schools (Department of Health and Education Department, 2001). Handwashing and gloving when administering first-aid are practices that should be followed.

Infection control in social service

Infection control in social service settings where there is provision of personal care like elderly home is gaining importance recently. With the expansion of the elderly population, there is a shift of patients with chronic conditions from hospital to home care in the community. Infection control practices in this kind of setting are not well structured.

In the prevention of bloodborne infections, barrier precautions with the use of gowns, gloves and masks in the care of patients under SP should be practised. If the patient is suspected to be suffering from other infectious diseases that have specific transmission pattern, transmission based precaution in addition to SP should be applied. Specific details of infection control in social service settings can be found in General Guidelines on Working with People with HIV/AIDS (Social Welfare Department, 2004) and guideline published by US CDC; Infection Control in Home Care. [17]

Infection control relating to injection drug use in community setting

Needle sharing among injection drug users (IDU) is an important route of HIV transmission. Infection control targeting risk behaviours of IDU should be promoted in community settings.

IDU should be encouraged to stop sharing of drug equipment, to use sterile needles and syringes and to use bleach to disinfect needles and syringes that will be reused. [18, 19] Disposal of injection equipment should be handled with precautions to avoid sharps exposure. HIV testing shall be promoted in IDU both for supporting effective clinical care and public health control of the infection.

HIV infection control in correctional facilities

HIV infection control in correctional facilities has been receiving due attention recently. The reasons are two fold: (a) the practice of risk behaviours related to HIV transmission like coerced sexual activity, injection drug use is cause for concern; and (b) HIV transmission has been shown to occur in correctional setting overseas. Standard precautions should be implemented as first line defense against occupational transmission of HIV. [18] Guideline has been drawn up by the Correctional Services Department in this regard.

HIV counseling and testing of inmates are recommended by CDC. [20, 21] There should be protocol in maintaining confidentiality and results disclosure. Infected inmates with HIV infection should be referred to appropriate medical care for follow up.

Annex 2

List of local Hong Kong guidelines used in this recommendation:

Queen Mary Hospital. Infection Control Manual, November 1999.

Advisory Council of AIDS of Hong Kong. HIV Infection and the Health Care Workers – Recommended Guidelines, December 2003.

Scientific Working Group on Viral Hepatitis Prevention, Department of Health, Hong Kong. Recommendations on Hepatitis B Vaccination Regimens in Hong Kong. March 2004.

Scientific Committee on AIDS and Scientific Working Group on Viral Hepatitis Prevention, Hong Kong. Recommendations on the Management and Postexposure prophylaxis of Needlestick Injury or Mucosal Contact to HBV, HCV and HIV. March, 2003

Infection Control Standing Committee, Dental Division, Department of Health, Hong Kong SAR, 1999. Basic Protocol.

Department of Health, Hospital Authority, Food and Environmental Hygiene Department, Hong Kong. Precautions for handling and disposal of dead bodies. January 2002 (4th edition).

Department of Health and Education Department. Guidelines on the Prevention of Blood-Borne Diseases in Schools. http//: www. aids.gov.hk.

Reference

1. Bell DM. Occupational risk of Human Immunodeficiency Virus infection in health care workers: An overview. Am J Med 1997; 102 (Suppl 5B), 9-15.

2. Garner J S. Hospital Infection Control Practices Advisory Committee. Guideline for isolation precaution in hospitals. Infect Control Hosp Epidemiol 1996; 17, 53-80.

3. Chin J, Editor, Control of Communicable Diseases Manual, 1995, Seventeenth Edition

4. Bolyard EA, Tablan OC, Williams WW, Pearson ML, Shapiro CN, Deitchman SC. Guideline for infection control in health care personnel, 1998. Am J of Infection Control 1998; 289-355.

5. US CDC, Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program; http://www.cdc.gov/sharpssafety/wk_operational_education.html; 2004, July 28.

6. US CDC, Hospital Infection Control Practices Advisory Committee. Guidelines for Environmental Infection Control in Health-Care Facilities. MMWR 2003; Vol 52

7. Environmental Protection Department, HKSAR. Draft Code of Practice For the Management of Clinical Waste For Small Clinical Waste Producers, Nov 2001.

8. US CDC, Recommendations for Preventing Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Patients During Exposure-Prone Invasive Procedures. MMWR 1991; 40 (RR08); 1-9

9. US CDC, Updated US Public health service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001; 50(RR-11): 1-52.

10. US CDC, Guidelines for Infection Control in Dental Health Care Settings – 2003. MMWR December 19, 2003/52(RR 17); 1-61.

11. Rhodes RS, Bell DM, editors. Prevention of transmission of bloodborne pathogens. Surg Clin North Am 1995; 75: 1047-217.

12. Short LJ, Benson DR. Special considerations for surgeons. In: Devita VT, Hellman H, Rosenberg SA, editors, editors. AIDS: etiology, diagnosis, treatment, and prevention. Philadelphia: Lippincott-Raven; 1997. p.665-73.

13. US CDC. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients: recommendations of CDC, the Infectious Disease Society of America, and the American Society of Blood and Marrow Transplantation. MMWR Morb Mortal Wkly Rep 2000; 49: 1-125.

14. Simonds RJ, Holmberg SD, Hurwitz RL, et al. Transmission of human immunodeficiency virus type 1 from a seronegative organ and tissue donor. N Engl J Med 1992; 326:726-32.

15. US CDC. Guidelines for Preventing Transmission of Human Immunodeficiency Virus Through Transplantation of Human Tissue and Organs. MMWR, 1994/43(rr-8); 1-17.

16. Gold J, Tomkins M, Melling P, Bates N. Guidance Notes on Health Care Worker Saftey from other Blood Borne Infections. Health, Nutrition and Population (HNP) Discussion Paper, May 2004.

17. US CDC Infection Control in Home Care; MMWR 2001; Vol 7, No 2, p 1- 10.

18. US CDC Update: Reducing HIV Transmission in Intravenous-Drug Users Not in Drug Treatment – United States; MMWR 1990/39(31); 529,536-538.

19. US CDC Drug Use and HIV/AIDS; http://www.thebody.com/cdc/factdrug.html

20. US Department of Justice, Issues and Practices 1996-1997 Update: HIV/AIDS, STDs, and TB in Correctional Facilities, July 1999, p xiv – xv.

21. US CDC HIV Prevention in the US Correctional System, 1992/41(22); 389-391,397.