Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 6, July, 2021: 4866 – 4874

Research Article

Prevent Transmission of HIV in Hospitals: Adopt Universal Precautions

*Dr Versha Prasad, ** Dr Praveen Katiyar

Abstract

Obligation of establishments to provide safe working environment. —Every establishment, engaged in the healthcare services and every such other establishment where there is a significant risk of occupational exposure to HIV, shall, for the purpose of ensuring safe working environment, —(*i*) provide, in accordance with the guidelines, —(*a*) Universal Precautions to all persons working in such establishment who may be occupationally exposed to HIV; and (*b*) training for the use of such Universal Precautions; (*c*) Post Exposure Prophylaxis to all persons working in such establishment who may be occupationally exposed to HIV or AIDS; and (*ii*) inform and educate all persons working in the establishment of the availability of Universal Precautions and Post Exposure Prophylaxis. Health Care Personnel and Exposure The definitions of HCP and occupational exposures are unchanged from those used in 2001 and 2005. (5, 6) The term HCP refers to all paid and unpaid persons working in healthcare settings who have the potential for exposure to infectious materials including body substances (e.g., blood, tissue, and specific body fluids), contaminated medical supplies and equipment, or contaminated environmental surfaces. HCP might include, but are not limited to, emergency medical service personnel, dental personnel, laboratory personnel, autopsy personnel, nurses, nursing assistants, physicians, technicians, therapists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care but potentially exposed to blood and body fluids (e.g., clerical, dietary, housekeeping, security, maintenance, and volunteer personnel). Recommendations for the Management of HCP Potentially Exposed to HIV Exposure prevention remains the primary strategy for reducing occupational blood borne pathogen infections. However, when occupational exposures do occur, PEP remains an important element of exposure management. HIV PEP The recommendations provided in this report apply to situations in which a healthcare provider has been exposed to a source person who either has, or there is a reasonable suspicion of, HIV infection. For Prevention and control A two-tiered approach to precautions is used to interrupt the mode of transmission of infectious agents. *Standard precautions:* these refer to work practices that are applied to all patients receiving care in health facilities, regardless of their diagnosis or presumed infectious status so as to minimize the risk of transmission of infectious agents in all situations. Standard precautions minimize the likelihood of transmission of infectious agents between HCWs and patients, and from patient to patient. *Transmission-based precautions***:** Transmission-based precautions are precautions required to be taken based on the

[1]M.B.B.S., MBA (Gold Medallist), Asst. Professor, University Institute of Health Sciences, C.S.J.M. University, Kanpur
[2]M.B.B.S., PhD, MBA, Asst. Professor, University Institute of Health Sciences, C.S.J.M. University, Kanpur

route of transmission of organisms like contact precautions, airborne precautions, etc. If successfully implemented, standard and transmission-based precautions prevent any infection from being transmitted.

Introduction

The Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (Prevention and Control) Act, 2017, came into force on September 10, 2018. It aims to prevent and control the spread of HIV and AIDS in the country and provides for penalties for discrimination against those affected by the virus. Introduced by senior Congress leader Ghulam Nabi Azad in 2014, the Bill was passed by the Rajya Sabha on March 22, 2017, and a month later by the Lok Sabha on April 12. It received the assent of the President on April 20, 2017.India has the third largest HIV-infected population with an estimated 2 million people. The country aims to decrease new infections by 75 per cent between 2010 and 2020 and eliminate AIDS by 2030. [1] An Act to provide for the prevention and control of the spread of Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome and for the protection of human rights of persons affected by the said virus and syndrome and for matters connected therewith or incidental thereto.

WHEREAS the spread of Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome is a matter of grave concern to all and there is an urgent need for the prevention and control of said virus and syndrome;

AND WHEREAS there is a need to protect and secure the human rights of persons who are HIV positive, affected by Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome and vulnerable to the said virus and syndrome; AND WHEREAS there is a necessity for effective care, support and treatment for Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome;

AND WHEREAS there is a need to protect the rights of healthcare providers and other persons in relation to Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome;

AND WHEREAS the General Assembly of the United Nations, recalling and reaffirming its previous commitments on Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome, has adopted the Declaration of Commitment on Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (2001) to address the problems of Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome in all its aspects and to secure a global commitment to enhancing coordination and intensification of national, regional and international efforts to combat it in a comprehensive manner;

Universal precaution" is the international term used by the medical industry to describe the set of measures introduced to allow medical staff to safely handle material that may carry blood or body fluids infected with diseases. "Universal precautions" are designed to prevent infection from inoculation; contact with mucous membranes such as mouth or eye, or through skin damages such as cuts.

With the advancement in health care technologies, the quality and the quantity of the health services have improved a lot. At the same time the health care providers such as doctors, nurses, technicians etc. Are more and more exposed to the professional risks due to working

environment of the hospital. The common hazard / risks, which may occur in hospital, are hospital acquired infections, radiation, fire, engineering.[2]

Both legal and ethical expect are involved by dealing with risk specially hospital acquired infections the life of the employee is associated with such conditions for which he/she may pose the responsibility in hospital in a view of the above it is also imperative to consider the matters which are closely related to *Responsibility* and accountability of the employer towards its employee, *Responsibility* and accountability of the employee, *Standard Practices* to be fallowed to prevent such hospital hazard/risks, *Legal and ethical* responsibility of the employer to keep secret or disclose such risks and Professional risk liability and compensation in case it is proved.

Discussion

Universal precautions are the general guidelines developed by CDC Atlanta Centre for The Disease Control USA and Recommended by WHO Geneva to minimise the risk of infection from blood borne pathogens including Hepatitis B, and HIV infections in health care workers. Although all health care workers are exposed to get these diseases but workers engaged in fallowing areas are potentially are at high risks: -Blood Transfusion Unit, Intensive care unit, Dialysis unit, Medical laboratories, Operation Theatre, Microbiology, Dissection Room Ward for infected patients and Sterilization and Disinfection room.[2,3]

OBLIGATION OF ESTABLISHMENTS

Confidentiality of data **—**Every establishment keeping the records of HIV-related information of protected persons shall adopt data protection measures in accordance with the guidelines to ensure that such information is protected from disclosure. *Explanation*. — For the purpose of this section, data protection measures shall include procedures for protecting information from disclosure, procedures for accessing information, provision for security systems to protect the information stored in any form and mechanisms to ensure accountability and liability of persons in the establishment.

HIV and AIDS policy for establishments. **—**The Central Government shall notify model HIV and AIDS policy for establishments, in such manner, as may be prescribed.

General responsibility of establishments. — (*1*) The provisions of this Chapter shall be applicable to all establishments consisting of one hundred or more persons, whether as an employee or officer or member or director or trustee or manager, as the case may be: Provided that in the case of healthcare establishments, the provisions of this sub-section shall have the effect as if for the words "one hundred or more", the words "twenty or more" had been substituted.(*2*) Every person, who is in charge of an establishment, referred to in sub-section (*1*), for the conduct of the activities of such establishment, shall ensure compliance of the provisions of this Act.

Grievance redressal mechanism. —Every establishment referred to in sub-section (*1*) of section 20 shall designate such person, as it deems fit, as the Complaints Officer who shall dispose of complaints of violations of the provisions of this Act in the establishment, in such manner and within such time as may be prescribed.

SAFE WORKING ENVIRONMENT *Obligation of establishments to provide safe working environment.* —Every establishment, engaged in the healthcare services and every such other establishment where there is a significant risk of occupational exposure to HIV, shall, for the

purpose of ensuring safe working environment, —(*i*) provide, in accordance with the guidelines, —(*a*) Universal Precautions to all persons working in such establishment who may be occupationally exposed to HIV; and (*b*) training for the use of such Universal Precautions; (*c*) Post Exposure Prophylaxis to all persons working in such establishment who may be occupationally exposed to HIV or AIDS; and (*ii*) inform and educate all persons working in the establishment of the availability of Universal Precautions and Post Exposure Prophylaxis.[4]

Definition of Health Care Providers - Care Personnel and Exposure The definitions of HCP and occupational exposures are unchanged from those used in 2001 and 2005. The term HCP refers to all paid and unpaid persons working in healthcare settings who have the potential for exposure to infectious materials including body substances (e.g., blood, tissue, and specific body fluids), contaminated medical supplies and equipment, or contaminated environmental surfaces. HCP might include, but are not limited to, emergency medical service personnel, dental personnel, laboratory personnel, autopsy personnel, nurses, nursing assistants, physicians, technicians, therapists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care but potentially exposed to blood and body fluids (e.g., clerical, dietary, housekeeping, security, maintenance, and volunteer personnel). The same principles of exposure management could be applied to other workers with potential for occupational exposure to blood and body fluids in other settings.[5]

Hospital policies that protect you from HIV and other infectious diseases

To prevent the spread of HIV, hospitals follow strict infection prevention and control guidelines. All blood and body fluids from patients are treated as potentially infectious:

- Syringes and needles are ‘single use’ and disposed of in approved sharps containers.
- Reusable medical devices are decontaminated and sterilised after each patient use.
- Many medical devices are disposed of after single use.
- Healthcare workers wear protective equipment including gowns, gloves and eyewear when carrying out any procedures involving a patient’s blood or body fluids.
- All spilt blood and body fluids are cleaned up according to strict cleaning guidelines.
- Laundry is cleaned according to strict Australian Standards (AS/NZS 4146:2000).
- Hospital workers and HIV
- Hospital workers can become infected with HIV if they accidentally prick themselves with a needle or other sharp instrument contaminated with HIV. However, only a very small number of hospital workers around the world have become infected with HIV in this way.
- Preventive treatment, which may reduce the chance of HIV getting into the bloodstream, is available for healthcare workers who have accidentally pricked themselves with a needle or other sharp instrument contaminated with HIV. This is known as post-exposure prophylaxis, or PEP. The health of healthcare workers in this situation is monitored closely.
- Protecting hospital workers from HIV
- If a hospital worker has an accident involving your blood, you may be asked to allow the hospital to test your blood for HIV, hepatitis C and hepatitis B.
- By testing your blood, the hospital will know how to manage the health of this person. For example, if your blood tested positive for HIV, this could include a recommendation to give post-exposure prophylaxis (PEP) to the staff member.

- PEP is the use of antiretroviral drugs to prevent HIV following a high-risk exposure. Ideally, PEP is commenced within 72 hours of an exposure. PEP has been shown to significantly reduce the risk of HIV infection following exposures to HIV.
- In such circumstances, if you were unaware of your status and your blood tested positive for HIV, hepatitis B or hepatitis C, it would also enable you to access the appropriate treatment for your condition.
- There are new drugs available for treatment of hepatitis C that result in cure of that infection. Both hepatitis B and HIV have treatments available that can keep people with these infections well.

Risk of health Care Worker to develop Hospital- acquired Infection can be made negligible if a worker observes proper safety measures. Practising good infection control measure is a key to protect these diseases. Medical experts emphasize that the careful practice of infection control procedures, including universal precautions (i.e., using protective practices and personal protective equipment to prevent transmission of HIV and other blood borne infections), protects patients as well as healthcare providers from possible HIV transmission in medical and dental settings. Healthcare personnel are at risk for occupational exposure to blood borne pathogens including HIV.[6] Important factors that influence the overall risk for occupational exposures to blood borne pathogens include the number of infected individuals in the patient population and the type and number of blood contacts. Transmission of HIV to patients while in healthcare settings is rare; however, proper sterilization and disinfection procedures are required.

Management of Post exposure

Recommendations for the Management of HCP Potentially Exposed to HIV Exposure prevention remains the primary strategy for reducing occupational blood borne pathogen infections. However, when occupational exposures do occur, PEP remains an important element of exposure management. HIV PEP The recommendations provided in this report apply to situations in which a healthcare provider has been exposed to a source person who either has, or there is a reasonable suspicion of, HIV infection. These recommendations reflect expert opinion and are based on limited data regarding safety, tolerability, efficacy, and toxicity of PEP. If PEP is offered and taken and the source is later determined to be HIV-negative, PEP should be discontinued and no further HIV follow-up testing is indicated for the exposed provider provided in the so-called “window period” before seroconversion (i.e., the period of time between initial HIV infection and the development of detectable HIV antibodies), to date, no such instances of occupational transmission have been detected in the United States. Hence, investigation of whether a source patient might be in the “window period” is unnecessary. [7]

RECOMMENDATIONS

High-Risk Exposure

- If, after counselling, the patient indicates that the exposure was high risk for HIV transmission, clinicians should administer the first dose of post-exposure prophylaxis (PEP) if that has not already been done and recommend completion of the 28-day PEP regimen.[8]

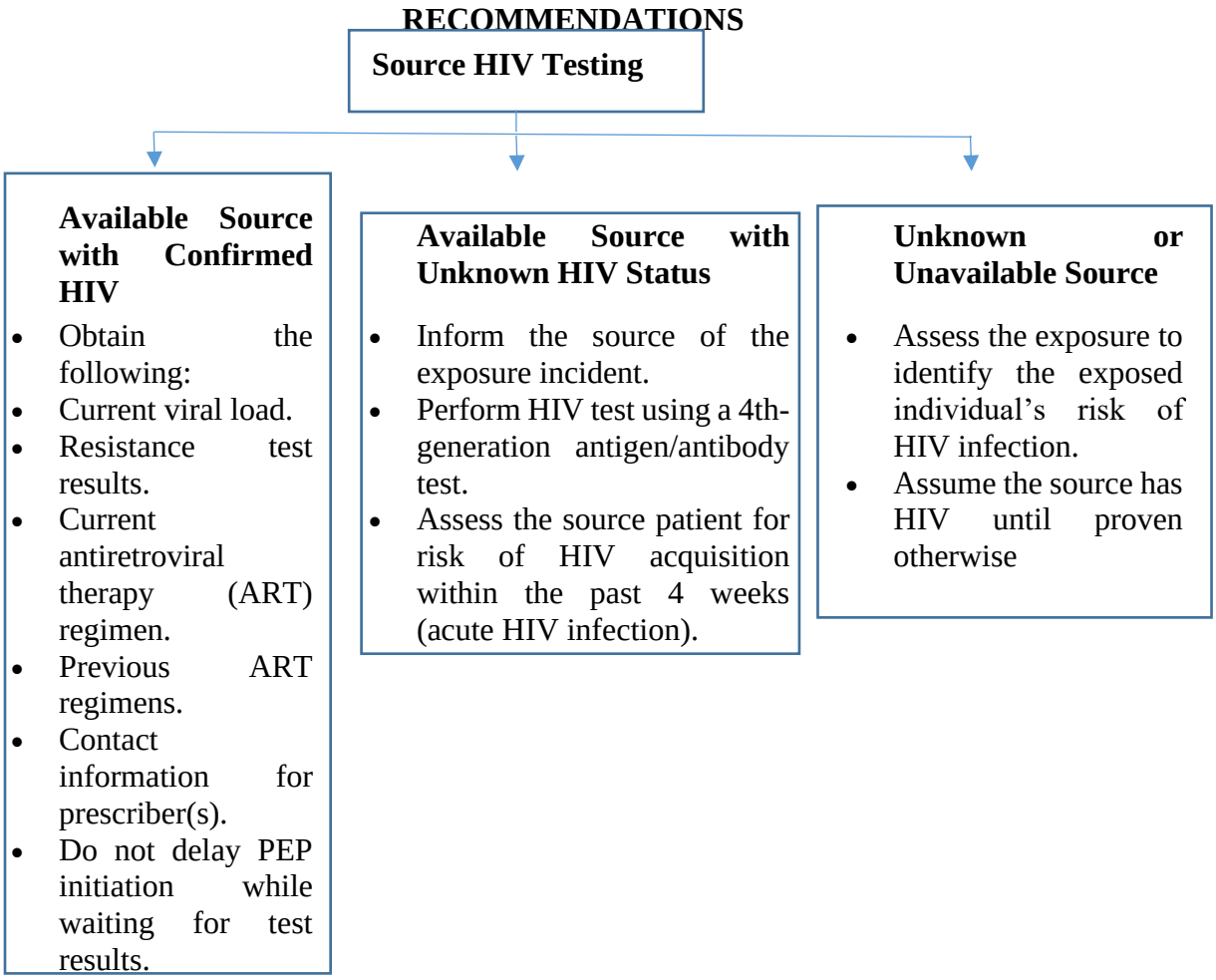
RECOMMENDATIONS

Continue PEP Until Source's HIV Status Is Confirmed

Clinicians should recommend that the exposed individual continue PEP for up to 28 days until the source's HIV sero status is confirmed negative. Clinicians should perform plasma HIV RNA testing in the source if: (i)The screening test result is nonreactive, but the source reports possible exposure to HIV within the previous 4 weeks (e.g., through unprotected sex or needle sharing).(ii)The screening test result is reactive and the confirmatory assay is indeterminate. If a source's confirmatory antibody-differentiation immunoassay is positive or plasma RNA test results are positive, then clinicians should recommend that the exposed individual complete the 28-day PEP regimen. Clinicians should discontinue PEP if the source of an exposure has no evidence of plasma HIV RNA (i.e., undetectable viral load, defined as <200 copies/mL) and the confirmatory antibody-differentiation immunoassay result is negative, consistent with a false-positive initial test.

If the Source Is Known to Have HIV

If the source is known to have HIV, clinicians should recommend that the exposed individual continue PEP if the source is not taking antiretroviral therapy (ART) or if the source's viral load is not known, is detectable, or, in the case of a consensual sexual exposure, cannot be confirmed to be undetectable at the time of exposure. If the source is known to have HIV, and if the medical record is available, clinicians should obtain the source's viral load, ART history, and antiretroviral (ARV) drug resistance profile to inform decisions regarding formulation or completion of the 28-day PEP regimen. (i) If this information is available, the clinician should consult with an experienced HIV care provider to select a 28-day PEP regimen that will have maximal effectiveness against the source's strain of HIV. Initiation of PEP should not be delayed while acquiring this information. The regimen can be adjusted later, once the medical record is available. (ii) If the medical record is not available, clinicians should query the source for this information.If the exposure is evaluated as high-risk and the source's viral load cannot be confirmed as undetectable at the time of a consensual exposure, clinicians should recommend completion of the PEP regimen.[8,9]**Consensual sexual exposure *only*:** If the source is known to have HIV and an undetectable viral load (<200 copies/mL) at the time of the exposure and is taking. **Nonreactive HIV Test Result in Source** Clinicians should perform plasma HIV RNA testing in the source if the screening test result is negative, but the source reports possible exposure to HIV within the previous 4 weeks (e.g., through unprotected sex or needle sharing). If a source's plasma RNA test result is positive, then clinicians should recommend that the exposed individual compete the 28-day PEP regimen. Clinicians should discontinue PEP if the source has no evidence of plasma HIV RNA (i.e., undetectable viral load) and the confirmatory antibody-differentiation immunoassay result is negative, consistent with a false-positive initial test.



Prevention and control

A two-tiered approach to precautions is used to interrupt the mode of transmission of infectious agents. **Standard precautions:** these refer to work practices that are applied to all patients receiving care in health facilities, regardless of their diagnosis or presumed infectious status so as to minimize the risk of transmission of infectious agents in all situations. Standard precautions minimize the likelihood of transmission of infectious agents between HCWs and patients, and from patient to patient. **Transmission-based precautions:** Transmission-based precautions are precautions required to be taken based on the route of transmission of organisms like contact precautions, airborne precautions, etc. If successfully implemented, standard and transmission-based precautions prevent any infection from being transmitted. *1.**Use of Barrier Precautions*** Barrier precautions is used to prevent skin and mucus membrane to be exposed to blood or other body fluids from any patients when such exposure is anticipated. Barrier precautions include gloves, masks, protective eyewear, face shield, gown, apron etc. Barrier precautions should be changed after contact with each patient and if any barrier is torn of needle stick and other injury occurred.*2.**Hand and Skin Washing*** Hand or any skin in contact with body fluid should be washed

thoroughly with soap under running water. This is a most easy and economical practice.*3.* ***Prevent Injury*** Precaution to be taken to prevent injury caused by needle, scalpel and other sharps. Never try to recapping or reinsert the hypodermic disposable needle in its bag n cap /sheet.[10] It is the commonest mode of needle stick injury in the health care workers. All used disposable needle, syringe must be discarded in puncture resistant container after use preferably wide mouth plastic container with a cap.***4. Adequate Resuscitation Devices*** All the resuscitation Devices used in these types of patients should be made available in plenty and discarded after use e.g. Plastic disposable airway, endotracheal tube and ventilation device.***5. Beware of your own skin*** If health care workers have exposed skin lesion or weeping dermatitis, they should refrain from all direct contact and handling equipment until the condition resolved. If it is not possible strict barrier precaution should be used.***6. Sterilization*** Sterilize all reusable device end surfaces such as OT instruments, Linen, hand paces, mortuary equipment, instruments used in pathological laboratory with appropriate germinal and steriliser preferably autoclave.***7. Hospital waste management*** Biohazard waste generated in the hospital to be aggravated at the point of generation. Safe methods for handling, collection and transportation to be followed by staff as prescribed by rules from by ministry of environment and forest and central pollution control board.[11] ***8. Caution to pregnant Women*** If health care worker developed HIV during pregnancy, the infant is at risk of infection resulting to prenatal transmission. As for as possible pregnant women should avoid handling AIDS patients.

9. Notification of health care worker who are exposed accidentally (i) Exposed area must be washed with soap and water. Blood and other body fluid must be removed and clean under running tap water with soap. ***(ii)*** Notify the accident to hospital authority (iii) and exposed person is evaluated for serological evidence of HIV infection as soon as possible after accident. If found positive immediately after infection, it can be concluded that the accident is not a cause of seropositive result as it takes minimum 2 weeks for seroconversion. If found negative then evaluation is repeated after ½ month, 3 months,6 months and 12 months after exposure. If still negative it can be concluded that HIV transmission did not occur. If found positive after 2 weeks, the opinion of expert to be sought.***10.*** **Information and training** in order to protect Hospital Worker, the Hospital authorities must provide general information about the danger to be faced in practises, the ways in which AIDS and Hepatitis are transmitted and must give general training with mass awareness to the hospital staff.[12,13] It can be concluded that hospital staff and authorities other are equally responsible and accountable for transmission of these hospital - acquired information. Legally hospital is bound to provide such facilities to its staff, which prevent the transmission, but morally staff is also equally responsible if the staff does not fallow standard practices. Professional risk liability and compensation is another controversial issue, which is very difficult to prove in the event of detecting positive cases as attributability is not actually established.[14] The only answer of many question is Universal Precautions.

References

1.THE HUMAN IMMUNODEFICIENCY VIRUS AND ACQUIRED IMMUNE DEFICIENCY SYNDROME (PREVENTION AND CONTROL) ACT, 2017 ACT NO. 16 OF 2017

2. HIV - infection control in hospitals - Better Health Channel *https://www.betterhealth.vic.gov.au › health › hiv-and-..*

3.Prevention of HIV Transmission in Health Care Settings *https://www.who.int › hiv › pub › toolkits › HIV t. . Protecting Healthcare Personnel from HIV*

4.Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis Infection Control and Hospital Epidemiology Vol. 34, No. 9 (September 2013) Infographic: Exposed to HIV? The clock is ticking! Take Action! pdf icon[PDF – 3.5 MB]

5.Visit the CDC Sharps Safety site for resources to help healthcare facilities prevent needlesticks and other sharps-related injuries to healthcare personnel.

6.Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis MMWR June 29, 2001 / 50(RR11);1-42.
7.Exposure to Blood What Healthcare Personnel Need to Know pdf icon[PDF – 330 KB] July 2003

8.High vs. Low Risk Activities for HIV Transmission Estimating Transmission Risk by Exposure Type By James Myhre & Dennis Sifris, MD Medically reviewed by Latesha Elopre, MD, MSPH on July 24, 2020

9.Unconsented HIV Testing in Cases of Occupational Exposure: Ethics, Law, and Policy

Ethan Cowan, MD, MS and Ruth Macklin, PhD

10. Google Scholar | Crossref | Medline | ISI Nelsing, S. , Neilsen, T.H. , Nielsen, J.O. (1997) Non-compliance with universal precautions and the associated risk of muco-cutaneous blood exposure among Danish physicians . Infection Control and Hospital Epidemiology 18:10, 692–698 .

11. Google Scholar | Crossref | Medline Green-McKenzie, J. (2001) Infection control practices among correctional healthcare workers, effects of management attitudes and availability of protective equipment and engineering controls . Infection Control and Hospital Epidemiology 22:9, 555–559 .

12. Harris, A.D. , Samore, M.H. , Nafziger, R. , Dirosario, K. , Roghmann, M.C. , Carmeli, Y. , (2000). A survey on handwashing practices and opinions of healthcare workers . Journal of Hospital Infection 45: 318–321 .

13. Google Scholar | SAGE Journals | ISI Bott, J. (1999) HIV risk reduction and the use of universal precautions . British Journal of Midwifery 7:11, 671–675 .

Google Scholar | Crossref | Medline14.Blake, S.M. , Windsor, R.A. , Lohrmann, D.K. , 14. Gay, N. , Ledsky, R. , Richman, A. , Jones, S.B. , Banspach, S.W. (1999) Factors associated with occupational exposure and complication with universal precaution in an urban school district . Health Education and Behaviour 26: 5, 734–750 .

8.Elliot DeHaan, MD, Lead Author, on behalf of Medical Care Criteria Committee of the New York State Department of Health AIDS Institute (NYSDOH AI).