Review Article

Healthcare Workers and HIV Health Issues

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Abstract

Should healthcare workers (HCWs) be routinely tested for HIV? The authors reviewed the literature on the risk and incidence of HIV transmission from HCW to patients and offer recommendations for HIV testing in HCWs in Singapore. Management of HCWs who are tested seropositive for HIV infection is also discussed in this paper.

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Introduction

This paper aims to present a comprehensive review of issues related to HIV testing in healthcare workers (HCWs) and proposes appropriate measures in response to implications of a positive test result. It reflects an attempt to address the need to protect patients, preserve public confidence in the healthcare system while at the same time, strive to ensure that the confidentiality and employment rights of the HCW with HIV infection are respected and protected.

Risk of HIV Transmission from HCW to Patients

Current data suggest that the risk for HIV transmission from a HCW to a patient is low and exceedingly rare in the order of 2.4 to 24 per million procedures.[1-3] This is considerably lower compared to other blood borne viruses (BBV) such as hepatitis B and hepatitis C.[1,4] There have been 3 reports of possible transmission of HIV from infected HCWs performing exposure prone procedures (EPP) including a Florida dentist,[5] a French orthopaedic surgeon[6] and a Spanish gynaecologist.[7] Genetic testing demonstrated the relatedness of the HIV virus to the HCW. In all 3 cases, the transmission could not be established with certainty but was deemed plausible.

Several studies of patients exposed to potential risk of transmission of HIV during EPP have failed to identify any patients who have become infected by this route.[8-11] In the UK, data from patient notification exercises, which involved tracing patients who were managed by HCWs with HIV supports the conclusion that the overall transmission of HIV from infected HCWs to patients is very low. There was no detectable transmission of HIV from an infected HCW to a patient in 28 patient notification exercises involving 7000 patients tested from 1988 to 2003 in the UK.[12] On the contrary, there is evidence to suggest that there is a far greater risk of transmission of HIV from infected patients to HCWs than from HCWs to patients. As of 2002, there had been 106 cases reported worldwide of HCWs in whom seroconversion was documented after occupational exposure to HIV from patients.[13]

Infection control recommendations on universal precautions require that blood and body fluids of all patients be handled with the assumption that they contain blood-borne pathogens. Provided that universal precautions are strictly adhered to, the majority of procedures in the healthcare setting pose no risk of transmission of BBV from an infected HCW to a patient. [1,14]

Although all breaches of the skin or epithelia by sharp instruments are by definition invasive, many clinical procedures are considered to pose no risk of transmission of the virus from an infected HCW to the patients, as they do not provide an opportunity for the blood of the HCW to come into contact with the open tissues of the patient.

The situation in which BBV can be transmitted from a HCW to a patient is limited to EPP. EPP are defined as invasive procedures where there is a risk that injury to the HCW may result in the exposure of the patient's open tissues to the blood of the HCW.[1] Examples include procedures where the worker's gloved hands may be in contact with sharp instruments, needle tips or sharp tissues such as spicules of bone or teeth inside a patient's open body cavity, wound or confined anatomical space where

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the hands or fingertips may not be completely visible at all times. These would be the procedures that HCWs with HIV should refrain from performing.

Procedures where the hands and fingertips of the HCWs are visible and outside the patient's body at all times, and procedures where there is no possible injury to the worker's gloved hands, provided routine precautions are followed, are not considered to be exposure-prone. Examples of non-EPP include venipuncture, setting and maintaining intravenous lines, minor surface suturing, incision of abscesses, routine vaginal or rectal examination and uncomplicated endoscopies.[14] These non-EPP can be performed by a HCW with HIV under appropriate infection control precaution.

To date, available evidence supports the notion that routine patient care activities performed by a HCW with HIV pose no measurable risks to the patient.

Recommendations for HIV Testing

As a general recommendation to all individuals regardless of their professional background, it is important to know one's HIV status because there are important health benefits to this knowledge. Those who are HIV-negative should take steps to make sure they stay negative. For those infected with HIV, current treatment advancements can greatly improve health and prolong life. Likewise, if one knows that one is HIV-positive, one can take precautions to protect one's partner.

The HCW with HIV may have an increased risk for exposure to certain conditions, in particular tuberculosis. Protection of the infected HCW should be made in conjunction with his/her physician and based on the HCW's specific duties in the workplace. Consideration should also be placed on the prevalence of tuberculosis in the community and the degree to which precautions designed to prevent the transmission of tuberculosis are taken in the workplace.[15]

The risk of HIV transmission from infected HCWs to their patients is extremely low, except under certain specific circumstances. However, since all HCWs are ethically obligated to minimise the risk of, if not to avoid, bringing harm to their patients, they ought to ascertain their HIV status if they believe that they have been exposed to infection with HIV. If tests reveal that they are HIV-positive, knowledge of the positive status allows them to take reasonable measures to avoid subjecting patients to the risk of infection. This is especially pertinent if the infected HCW's scope of work places him or her at significant risk of infecting patients during the process of care. Nevertheless, as for any patient, the health information of a HCW should be accorded due right of medical confidentiality, only to be breached under exceptional circumstances when the duty to warn or inform a third party is substantial.

Mandatory testing of HCWs for HIV antibody has not been shown to significantly contribute to further reduction of the already low risk of transmission of the virus to patients, and is therefore not recommended. The current assessment of risk of infected HCW transmitting the HIV during EPP does not justify the diversion of resources that would be required to implement mandatory HIV screening.[1]

HIV testing of HCWs should be performed on a voluntary basis with appropriate pre- and post-test counselling provided. HIV testing in Singapore can be conducted at several anonymous testing sites and most healthcare settings including hospitals and private clinics on a named patient basis. Table 1 lists the anonymous testing sites approved by the Ministry of Health in Singapore.

Table 1. List of Ministry of Health Approved Anonymous Testing Sites in Singapore

- AFA (Action for Aids), DSC Clinic, Kelantan Lane, Block 31, #01-16
- Anteh Dispensary, 368, Geylang Road
- Cambridge Clinic, Kreta Ayer Road, Block 31, #01-16

To ensure confidentiality, employers are encouraged to engage a specific team or doctor to undertake the HIV testing process of their employees who wish to be voluntarily tested. Likewise, the healthcare policy of an institution pertaining to HIV testing, and the HIV test itself, should be made available and easily accessible to its employees. It is vital to ensure confidentiality so that HCWs can confidently discuss the relevant risk factors and the consequences of the result. The test results should be handled exclusively by the designated team or doctor and should not be accessible to the employer.

Routine and mandatory pre-employment screening for HIV of all HCWs is not recommended.

Management of HCW with Positive HIV Test Result

The doctor who conducts HIV testing on a HCW has the responsibility to ensure confidentiality regardless of the test result (except when disclosure is mandated by statutes). A HCW who is tested positive should seek further medical evaluation and counselling, and his subsequent handling of the information with respect to his professional duties must not rely on his own assessment of the risk posed to patients.

Currently, there are no anti-discriminatory laws in Singapore protecting the HIV-infected worker, including HCWs. It is generally accepted that employers should not terminate the employment of HCWs on the basis of their HIV status. There are guidelines available for employers for continued employment of the infected employee.[16] In general, HIV-infected HCWs should not be disallowed

from performing routine patient care. Any decision to impose restrictions or job reassignment consequent to the knowledge of the HIV infection must be supported by reliable epidemiological data indicating a significant risk of harm to patients, and should be carried out through a fair process, without breaching the medical confidentiality of the staff concerned.

It is recommended that a panel discussion be conducted in assessing the risk posed to patients by a HCW. The assessment of risk will be guided by principles laid in definition of EPP. Recommendations on these procedures are summarised in Tables 2 to 4. In general, there are no restrictions to performing invasive procedures that fall under category 1 and 2 while restrictions are necessary for procedures that fall under category 3. All HCWs with HIV must seek appropriate medical advice and risk assessment. This is of particular importance for those who perform procedures. The physician-in-charge of treating the HCW with HIV can seek the recommendation of an expert panel through the employer or health authority without revealing the identity of the HCW.

In the management of the HCW with HIV, it is recommended that members of the panel should include experts from various groups to represent a balanced perspective. It may include the following: the patient's treating physician, an Infectious Disease (ID**)** expert, a representative from Infection Control team, and an expert knowledgeable in the nature of the procedures performed by the infected HCW. As sensitive information will be discussed at the panel discussion, the panel and its members must ensure strict adherence of confidentiality and the subject's rights.

The expert panel will be responsible for the following:

a. Assessing the risk of HIV transmission from infected HCW to patients based on principles laid in defining EPP.
b. Recommending re-deployment of the infected HCW, where necessary.
c. Deciding, where necessary, on referring to a higher professional regulatory body
d. Monitoring the progress of therapy and consider re-adjustment of job scope of the HCW based on any new evidence available. This includes adjustment to higher EPP categories in cases of good response to therapy (robust CD4 count response, persistently suppressed viral load, etc.) with further supportive evidence and understanding of transmission risk under such circumstances.

Table 2. Category 1 – List of Procedures for Which There is a Minimum Risk of Transmission

- History taking and/or physical examinations
- Routine rectal or vaginal examinations
- Minor surface suturing
- Insertion of peripheral line*
- Elective peripheral phlebotomy*
- Sigmoidoscopy and colonoscopy
- Hands-off supervision during surgical procedures and computer-aided surgery
- Psychiatric evaluations†

* If done in an emergency situation (i.e. during acute trauma or resuscitation efforts), peripheral phlebotomy moves to category 3.

† If there is no risk present of biting or of otherwise violent patients.

Adapted from: Reitsma AM, Closen ML, Cunningham M, Minich HNF, Morena JD, Nichols RL, et al. Infected physicians and invasive procedures: safe practices management. Clin Infect Dis 2005;40:1665-72. We recognise that practices generally differ in different areas of practice. It is vital that the panel consists of experts in a similar field to guide risk assessment.

Table 3. Category 2 – List of Procedures for Which Transmission is Theoretically Possible but Unlikely

- Minor local procedures such as abscess drainage or biopsies under local anaesthesia
- Insertion and maintenance of epidural and spinal anaesthesia lines
- Bronchoscopy
- Upper gastrointestinal tract endoscopy
- Percutaneous cardiac procedures such as cardiac catheterisation and angiography and subcutaneous procedures such as pacemaker implantation
- Percutaneous and other minor orthopaedic procedures
- Minor vascular procedures (i.e. embolectomy and vein stripping)
- Minor gynaecological procedures
- Male urological procedures
- Amputations
- Breast augmentation procedure
- Minimum exposure plastic surgical procedures
- Thyroidectomy and/or biopsy
- Endoscopic ear, nose and throat surgery
- Ophthalmologic surgery done under local anaesthesia
- Assistance with uncomplicated vaginal delivery*
- Laparoscopic procedures
- Thorascoscopic procedures†
- Nasal endoscopic procedures‡
- Routine arthroscopic procedures§
- Plastic surgery‖
- Insertion of, maintenance of, and drug administration into arterial and central venous lines
- Endotracheal intubation and use of laryngeal mask

* Making and suturing episiotomy fall under category 3

† If circumstances require moving to an open procedure (laparotomy or thoracotomy), may fall under category 3

‡ If moving to an open procedure is required, may fall under category 3

§ If opening of joint indicated and/or use of power instruments (drills), falls under category 3

‖ If the procedure involves bones, major vasculature, and/or deep body cavities, falls under category 3

Adapted from: Reitsma AM, Closen ML, Cunningham M, Minich HNF, Morena JD, Nichols RL, et al. Infected physicians and invasive procedures: safe practices management. Clin Infect Dis 2005;40:1665-72. We recognise that practices generally differ in different areas of practice. It is vital that the panel consists of experts in a similar field to guide risk assessment.

Table 4. Category 3 – List of Procedures for Which There is Definite Risk of Transmission or That are Exposure Prone Procedures

- Trauma surgery
- Orthopaedic procedures
- Abdominal surgery
- Cardiothoracic surgery
- Open extensive head and neck surgery involving bones·
- Neurosurgery
- Obstetrical/gynaecological surgery
- Transplantation surgery
- Plastic surgery with extensive cosmetic procedures as well as those involving bone reconstruction
- Any open surgical procedure of >3 hours in duration, probably necessitating glove change
- Non-elective procedures performed in the emergency department such as open resuscitation efforts, vaginal or rectal examination in presence of pelvic fracture, deep suturing to arrest haemorrhage and internal cardiac massage
- Anaesthesiology such as administration of general anaesthesia, preparation of narcotic drugs, placement of venous and arterial catheters, intubation of patients, and artificial respiration
- Psychiatric evaluations and care of violent and/or biting patients
- Interaction with patients in situations in which risk of biting of physician is significant (i.e. interactions with violent patients or patients experiencing an epileptic seizure)

Adapted from: Reitsma AM, Closen ML, Cunningham M, Minich HNF, Morena JD, Nichols RL, et al. Infected physicians and invasive procedures: safe practices management. Clin Infect Dis 2005;40:1665-72. We recognise that practices generally differ in different areas of practice. It is vital that the panel consists of experts in a similar field to guide risk assessment.

(Transmission risk have been proven and documented as well as procedures that are considered as highly likely to be exposure prone. Documented transmission specifies for other blood borne viruses such as hepatitis B and C. It is recommended that practice restrictions for HIV- infected HCW should be less extensive than restrictions for hepatitis B and C infection because HIV is less transmissible.)

e. Determining whether screening patients previously managed by the infected HCW ("look back") is necessary. As far as possible, patients should only be notified if they have been at significant risk of bleed-back from the particular EPP performed on them by an infected HCW. Issues of compensation and cost must also be discussed.

The panel will communicate its findings and recommendations to the authority that engages its service. This could be the Ministry of Health or the authorised administrative body of a hospital.

Treatment of the Infected HCW

All HCWs with HIV must be given appropriate expert medical advice and holistic care including social and psychological support. Confidentiality will be maintained at the highest possible level and treatment will be provided according to the latest national and international recommendations and evidence in discussion with the HCW.

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Postscript: *This work was initiated by the ID Chapter of the Fellow of Academy of Medicine Singapore (FAMS). The Chapter FAMS represented in this paper includes A/Prof Leo Yee Sin, Dr Lee Cheng Chuan and Dr Asok Kurup. This paper is endorsed by the Society of Infectious Diseases-Singapore (SIDS) and the Infection Control Association of Singapore. The 3 bodies advocate that HIV should be considered like any other infectious diseases. While this paper addresses only the HIV issues, the ID Chapter advocates that HIV in HCWs should be addressed in the same context as other BBV. The Chapter of Infectious Disease Physicians of College of Physicians, Singapore recognises the strong view of the minority that disapproves of HIV exceptionalism and feels that all BBV should be dealt with concurrently using the same policy.*

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