

# Human Immunodeficiency Virus Needlestick Injury: Knowledge and Management in a Population of Nigerian Anaesthetists

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## ABSTRACT

**Objective:** To determine the knowledge of HIV transmission and of post exposure management, following an HIV-infected needlestick injury, in a population of Nigerian anaesthetists. **Subjects and Method:** A cross-sectional, prospective assessment was conducted voluntarily in anaesthetists at an annual healthcare provider's forum, and at a major general hospital, using a structured questionnaire. **Results:** 63 Anaesthetists participated in the study. One anaesthetist knew the percentage of infected HIV needlestick injury that would result in HIV infection. ALL the high risk body fluids were correctly identified by 7 (11.1%) respondents. Twelve (19.0%) knew the correct immediate management when injured by a HIV-infected needlestick. Fifty eight (92.1%) were aware of post exposure prophylaxis (PEP), 25 (39.7%) had a PEP policy in their institutions and 57 (90%) knew when to commence PEP. **Conclusion:** Nigerian anaesthetists, though acutely aware of post exposure prophylaxis, are not aware of the fluids at risk and have not demonstrated adequate knowledge in the management, when injured by a HIV-infected needlestick.

**Key Words:** HIV, needle-stick injury, anaesthetist, knowledge, management

## Introduction

The commonly lethal course of human immunodeficiency virus (HIV) infection has caused it to become the most aggressive pandemic currently challenging modern medicine. An average of 5 needle stick injuries has been reported in doctors annually.<sup>1</sup> Fifty-two health care workers (HCW) have been confirmed to have contracted HIV infection occupationally in the United States of America, with one documented case of an anesthesiologist being infected by a hollow bore needle stick injury.<sup>2,3</sup> Anaesthetists are susceptible to HIV-infected needle stick injury because they are frequently involved in the use of needles and the performance of invasive procedures. The overall possibility of occupationally acquiring HIV from a HIV infected needlestick has been reported to be three per thousand injuries (0.3%).<sup>4,5</sup> Depth of injury, visible contamination with the source patient's blood, a procedure involving a needle placed directly in the source patient's vein or artery and exposure to a source patient who died of acquired immunodeficiency syndrome

within 2 months, have all been identified by the Centers for Disease Control and Prevention (CDC) as significant risk factors for occupationally acquired HIV infections after percutaneous exposure to HIV-infected blood.<sup>6</sup> In patient populations with low (0.1%), average (1.3%), and high (25%) seroprevalence of HIV infection, the estimated 1-yr risks of HIV infection per full time equivalent (FTE) in anaesthesia personnel are 0.00013%, 0.0016%, and 0.032%, respectively, and the 30-yr risks are 0.0038%, 0.049%, and 0.94%, respectively.<sup>7</sup>

This study was designed to determine the knowledge and management following a HIV-infected needlestick injury in a population of Nigerian Anaesthetists.

## Materials and Methods

A cross-sectional, prospective assessment was conducted voluntarily in anaesthetists at an annual healthcare provider's forum, and at a cosmopolitan general hospital using a structured questionnaire. The modification of the questionnaire administered by Diprose et al was used.<sup>8</sup>

The following questions were asked:-

1. What percentage of needlestick injuries from known HIV patients would result in HIV infection in the recipient?
2. Which of the following constitute high risk body fluids?

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Breast milk, cerebrospinal fluid, faeces, saliva, synovial fluid, urine, peritoneal fluid, pleural fluid and vomitus, assuming they are not blood stained?

3. What would you do immediately after a needlestick injury?
4. Are you aware of post exposure prophylaxis (PEP)?
5. Is there any policy in place in your institution concerning PEP?
6. When do you start PEP?

Data was entered into a database and analyzed using the Statistical Package for Social Studies (SPSS®) version 10.0. Differences between grades of anaesthetists were analysed using a chi-squared test.

**Results**

63 Anaesthetists participated in the study of which 40 (63.5%) were male and 23 (36.5%) female. The various grades of anaesthetist are shown in Fig 1. Only one (1.6%) anaesthetist knew the percentage of needlestick injuries from known HIV patients that would result in HIV infection in the recipient (Fig 2).

All the "high risk" body fluids were correctly identified by 7 (11.1%) of the respondents (Fig 3). Fig 4 shows the immediate response to needlestick injury. Twelve (19.0%) knew the correct immediate management when injured by a HIV-infected needlestick.

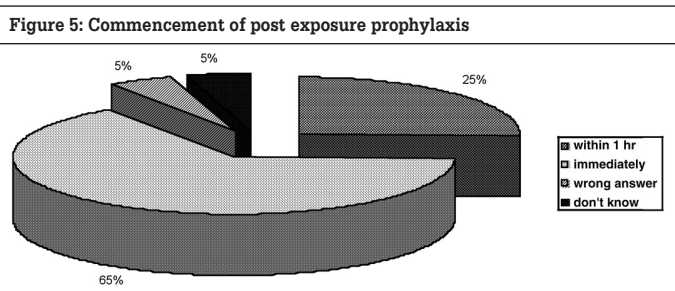
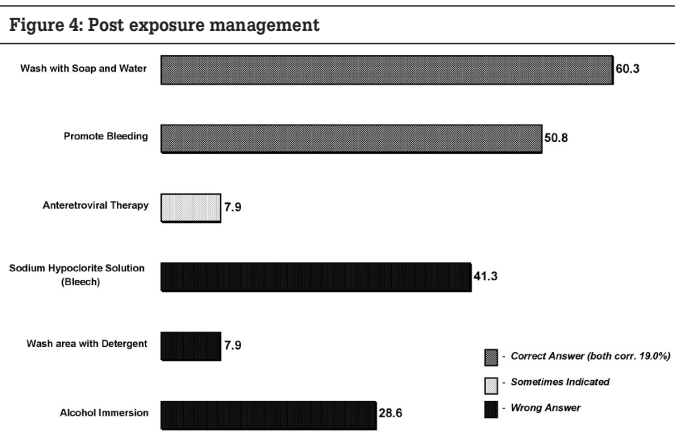
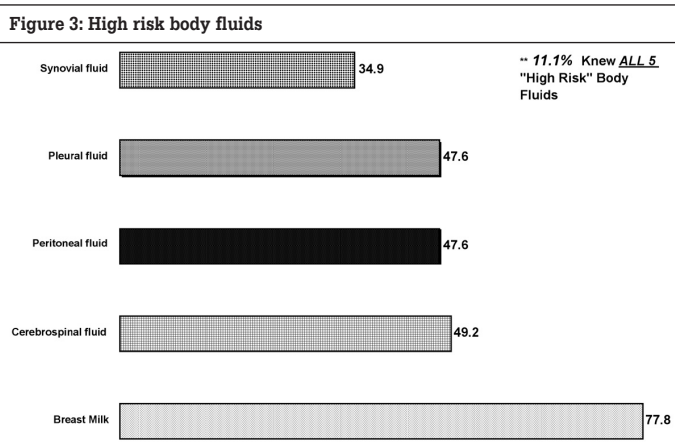
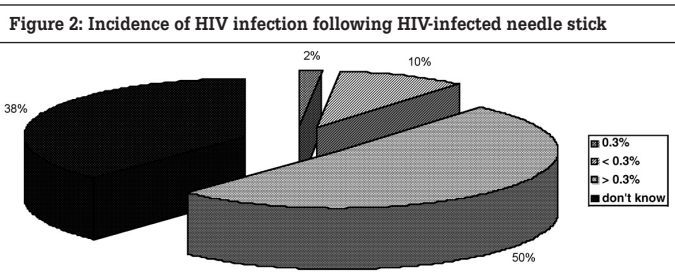
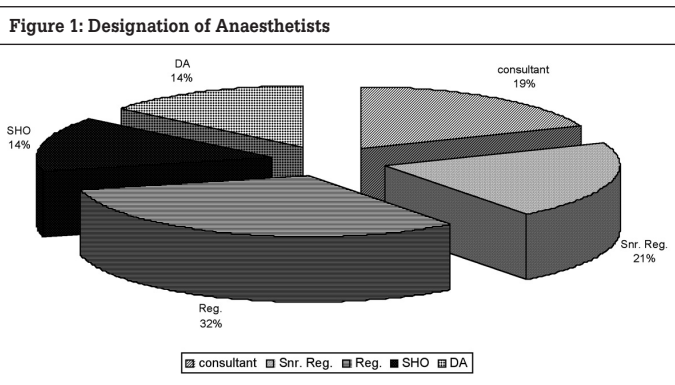
Fifty eight (92.1%) were aware of post exposure prophylaxis (PEP) and 25 (39.7%) had a PEP policy in their institutions.

Commencement of post exposure prophylaxis is shown in Fig 5.

**Discussion**

Nigerian anaesthetists are well informed about post exposure prophylaxis, but awareness concerning the percentage of needlestick injuries from a known HIV-infected patient, and the recognition of high risk body fluids was very poor amongst the population studied. Only one anaesthetist knew that the incidence of acquiring HIV from an infected needle stick was 0.3%. This result is similar to a telephone survey of surgeons by Duff et al, in which none of the twenty six participating surgeons knew the correct answer. Diprose and colleagues obtained a value of 34% in their study of anaesthetists.<sup>8,9</sup> Slightly over 10% of the respondents could correctly identify all the high risk body fluids correctly as against 35% in the work by Diprose et al.<sup>8</sup> In their study there was a statistically significant difference between the trainees and consultants. This was not the case in our study.

These results are alarming because the vast majority of the people living with AIDS (PLWA) reside in sub-Saharan Africa. Anaesthetists are at risk of percutaneous injuries, because of their frequent exposure to needles and other sharp instruments. Spinal analgesia is commonly performed, thus exposing the anaesthetist frequently to cerebrospinal fluid, one of the high risk fluids. In the United States, Greene et al studied percutaneous injuries in anaesthesia personnel and noted that needle devices were responsible for all the contaminated percutaneous injuries reported by anaesthesia personnel, with 59% being preventable.<sup>7</sup> Gounden and



Moodley in South Africa studied exposure of human immunodeficiency virus among healthcare workers and they observed that hollow-bore needles were the second commonest cause of contaminated percutaneous injuries (CPI) (33.3%).<sup>10</sup> They also noted that a significant number of these injuries were secondary to venepuncture and drip insertion (28.6%)

Adequate knowledge of the immediate response to percutaneous needlestick injury was demonstrated by 19% of the anaesthetists. The center for disease control (CDC), recommended washing of cuts with soap and water, flushing of splashes to the nose, mouth, or skin with water and irrigation of the eyes with clean water, saline, or sterile irrigants.<sup>11</sup>

Kushimo et al in a similar survey noted that the actions anaesthetists instituted after needlestick injury included flushing with saline (46%), flushing with hypochlorite (68%), and the institution of PEP (52%).<sup>12</sup>

There was a 92.1% awareness of PEP in our study which is similar to the study of Chen et al who noted a 93% awareness of PEP amongst junior doctors in Australia.<sup>13</sup>

There is a general lack of preparedness in relationship to PEP because only 37.7% of respondents admitted to having a PEP department at their institutions. Our results compare with those of Amanor-Boardu et al at the university college hospital (UHC), Ibadan, Nigeria, who reviewed the preparedness of teaching hospitals in Nigeria for the prevention of occupational exposure to HIV.<sup>14</sup> They conducted a nationwide survey involving thirteen hospitals and noted that only 38% of the hospitals had guidelines in place for the management of HIV-infected needlesticks. Presently, the majority of the teaching hospitals appear to be involved in the management of the HIV infected patient. There is a need for the education of anaesthetists concerning needlestick injury, and the institution of hospital protocols in the event of such injuries occurring in our hospitals.

Commencement of PEP within one hour was answered correctly by 25.4% of responders, but an additional 65.1% recommended immediate initiation of PEP following the injury with a HIV-infected needlestick. An equally poor response was obtained by Diprose et al who noted that only 15% of the anaesthetic population that he studied knew the correct answer. A telephone survey conducted on surgeons by Duff et al<sup>9</sup> investigating post exposure prophylaxis for staff exposed to HIV, in which 38.5% of the surgeons knew that PEP should commence with an hour of injury, yielded slightly higher results. This higher result might be explained by the fact that surgeons have a higher rate of needle stick injuries and occupationally acquired HIV infection.<sup>15</sup>

The results from this study are in agreement with similar earlier studies, and they show that despite continuous education on the prevention and management of HIV infection, there is a dearth of information amongst anaesthetists and other health care workers. It is imperative that knowledge regarding high-risk body fluids and appropriate management of HIV-infected needlestick injury should be emphasized. Furthermore, the departments of occupational health in our institutions should play a more active role in the dissemination of information and post exposure prophylaxis.

## Conclusion

HIV infection is now in its third decade of existence with no obvious cure in sight. Prevention remains the order of the day. There is an absolute need to educate Nigerian anaesthetists so as to impact positively on the knowledge and management of HIV-infected needlestick injury.

## References

1. Veeken H, Verbeek J, Houweling H, Cobelens F. Occupational HIV infection and health care workers in the tropics. *Trop Doct* 1991; 21: 28-31
2. B.G. Evans, D. Abiteboul. PHLS Communicable Disease Surveillance Centre, London, England Euro surveillance 1999 Volume 4 / Issue 3 ; 29 – 32
3. Busby J. Through the valley of many shadows: HIV infected physicians. *Tex Med* 1991; 87:36-46.
4. Marcus R. Surveillance of health care workers exposed to blood from patients infected with the human immunodeficiency virus. *New Eng J Med* 1988; 319:1118-23.
5. Tokars JI, Marcus R, Culver DH. Surveillance of HIV infection and zidovudine use among health care workers after occupational exposure to HIV-infected blood. *Ann Int Med* 1993; 118:913-9.
6. Cardo DM, Culver DH, Ciesielski C, Srivastava PU, Marcus R, Abiteboul D, Heptonstall J, Ippolito G, Lott F, McKibben PS, Bell DM, Centers for Disease Control and Prevention, and Needlestick Surveillance Group: A case-control study of HIV seroconversion in health care workers after percutaneous exposure. *N Engl J Med* 1997; 337:1485-90.
7. Greene ES., Berry AJ., Jagger J, Eileen H, Arnold WP., Bailey MK et al Multicenter Study of Contaminated Percutaneous Injuries in Anesthesia Personnel. *Anesthesiology* 1998; 89: 1362 -72, 1998
8. Diprose P, Deakin CD, Smedley J. Ignorance of post-exposure prophylaxis guidelines following HIV needlestick injury may increase the risk of seroconversion. *Br. J. Anaesth.* 2000; 84:767-770
9. Duff SE, Wong CKM, May RE. Surgeons and occupational health departments' awareness of guidelines on post-exposure prophylaxis for staff exposed to HIV: telephone survey. *BMJ* 1999; 319: 162-178.
10. Gounden YP, Moodley J. Exposure to immunodeficiency virus among healthcare workers in South Africa. *International Journal of Gynaecology & Obstetrics* 2000; 69: 265-270.
11. Centers for disease control. Universal precautions for prevention of transmission of Human immunodeficiency virus, hepatitis B virus and other blood borne pathogens in healthcare settings. *MMWR* 1988; 377-382.
12. Kushimo OT, Akpan SG, Desalu I, Merah NA, Ilori IU. Knowledge, Attitude and Practices of Nigerian Anaesthetist in HIV infected patients – A survey (in press)
13. Chen MY, Fox EF, Rogers CA. Post-exposure prophylaxis for human immunodeficiency virus: knowledge and experience of junior doctors. *Sex Transm Inf* 2001; 77: 444-445.
14. Amano-Boadu SD, Abdu-Salam A, Sanusi AA, Dare L. Prevention of Occupational Exposure to HIV: Preparedness of Teaching Hospital in Nigeria. *African Journal of Anaesthesia and Intensive Care.* 2003; 5 (1): 18-23
15. Evans BG, Abiteboul D. PHLS Communicable Disease Surveillance Centre, London, England. 1999; 3: 29-32.