

Research article

## Survey of the knowledge, attitude and practice of Nigerian surgery trainees to HIV-infected persons and AIDS patients

Clement A Adebamowo\*<sup>1,3</sup>, Emma R Ezeome<sup>1,4</sup>, Johnson A Ajuwon<sup>2</sup> and Temidayo O Ogundiran<sup>1</sup>

Address: <sup>1</sup>Division of Oncology, Department of Surgery, University College Hospital, Ibadan, Oyo State, Nigeria, <sup>2</sup>Department of Preventive and Social Medicine, University College Hospital, Ibadan, Oyo State, Nigeria, <sup>3</sup>Department of Nutrition, Harvard School of Public Health, 665 Huntington Ave., Boston MA 02115 and <sup>4</sup>Current address: Department of Surgery, University of Nigeria, Nsukka

E-mail: Clement A Adebamowo\* - cadebamo@hsph.harvard.edu; Emma R Ezeome - ezeome@infoweb.abs.net; Johnson A Ajuwon - uchmed@skanet.com; Temidayo O Ogundiran - toogundiran@yahoo.co.uk

\*Corresponding author

Published: 30 August 2002

Received: 15 July 2002

BMC Surgery 2002, 2:7

Accepted: 30 August 2002

This article is available from: <http://www.biomedcentral.com/1471-2482/2/7>

© 2002 Adebamowo et al; licensee BioMed Central Ltd. This article is published in Open Access: verbatim copying and redistribution of this article are permitted in all media for any non-commercial purpose, provided this notice is preserved along with the article's original URL.

**Keywords:** AIDS, HIV, Surgery, Residents, Nigeria

### Abstract

**Background:** The incidence of HIV infection and AIDS is rising in Nigeria. Surgeons are at risk of occupationally acquired infection as a result of intimate contact with the blood and body fluids of patients. This study set out to determine the knowledge, attitude and risk perception of Nigerian surgery residents to HIV infection and AIDS.

**Methods:** A self-administered postal questionnaire was sent to all surgery trainees in Nigeria in 1997.

**Results:** Parenteral exposure to patients' blood was reported as occurring 92.5% times, and most respondents assessed their risk of becoming infected with HIV as being moderate at 1–5%. The majority of the respondents were not aware of the CDC guidelines on universal precautions against blood-borne pathogens. Most support a policy of routinely testing all surgical patients for HIV infection but 76.8% work in centers where there is no policy on parenteral exposure to patients' blood and body fluids. Most (85.6%) do not routinely use all the protective measures advocated for the reduction of transmission of blood borne pathogens during surgery, with the majority ascribing this to non-availability. Most want surgeons to be the primary formulators of policy on HIV and surgery while not completely excluding other stakeholders.

**Conclusions:** The study demonstrates the level of knowledge, attitude and practice of Nigerian surgery trainees in 1997 and the need for policy guidelines to manage all aspects of the healthcare worker (HCW), patients, and HIV/AIDS interaction.

### Background

After initial reports in 1981, Sub-Saharan Africa now has the highest prevalence of Human Immunodeficiency Vi-

rus (HIV) infection in the world with profound socio-economic impact. This has led to a heightened concern in the surgical community in terms of its impact on the practice



of surgery and safety of practitioners. This concern arises from the significant risk of infection through the parenteral route, lack of curative treatment, and the high frequency of exposure of surgeons to the body fluids of patients.

While most cases of infection in Africa are through heterosexual sexual transmission, there is inadequate documentation of the incidence of occupational HIV infection among health care workers. It has been estimated that at least 1 in 1500 surgeons is likely to be infected by HIV in the next 35 years [1] and that a surgeon's cumulative lifetime risk of HIV seroconversion ranges from 1% to 10% [2]. This risk arises from the frequent and intimate exposure to patients' body fluids through glove punctures, needlestick injuries, or ocular splashes and it is related to the prevalence of HIV infection in the community.

In this communication, we report the knowledge, attitude, and practices (KAP) of Nigerian surgery trainees to HIV infected persons in 1997. Studies from other parts of the world have addressed these issues, but due to differences in seroprevalence, amongst other factors, the results of studies conducted in one environment cannot be extrapolated to others [3-5]. Previous studies in this environment have either focused on health workers generally or on categories of health workers other than surgeons [6-8].

### Methods

A 50 item self-administered questionnaire, using a combination of closed- and open-ended questions, was developed after focus group discussions with a group of surgery residents attending a revision course at the University College Hospital (UCH), Ibadan, in August 1996. The questionnaire was pre-tested among surgery residents at the UCH and subsequently distributed to all the residents who were in training in the various institutions in Nigeria by a combination of postal and direct delivery during the months of September to December 1997. Consent was implied by the voluntary return of the questionnaire.

The questionnaire asked about demographic information, the prevalence of HIV infection in the respondent's area of practice, the prevalence among surgical patients and the respondent's likelihood of becoming infected after a single percutaneous injury with a needle. Respondents were asked about the frequency of percutaneous exposure to patients' blood that they have had in the year preceding the study. They were further asked to estimate their lifetime occupational risk of acquiring HIV infection, whether they have ever been exposed to the blood or body fluid of an HIV infected patient, and how often they have inadvertently operated on a patient with HIV or AIDS.

Respondents were also asked about the CDC guidelines for universal precautions against blood-borne pathogens [9], compliance with them, factors militating against compliance, and whether the current level of education prepared residents to adequately look after HIV positive patients. Respondents were also asked about their attitude to operations on HIV positive patients. Finally, respondents were requested to volunteer an opinion on several issues relating to policy on surgical treatment of patients with AIDS and HIV infection, patients' rights and AIDS, and who should be the primary formulators of policies on AIDS and surgical practice.

### Results

There were about 300 residents in training in the accredited (by either the National Postgraduate Medical College of Nigeria or the West African College of Surgeons) surgical training programs in Nigeria at the time of the study; they were contacted through the Chief Residents of in the institutions. Only 112 responded to the survey giving a response rate of 37.3%. Of these, 99.1% were male, with only one female. The mean age of the respondents was 32.2 +/- 3.57 (SD) years, and 58.0% were married. The respondents have been in surgical practice for periods ranging from 1 to 15 years; mean of 6.4 +/- 2.1 (SD) years. Only 15.2% of the respondents attempted to estimate the HIV prevalence in their area of practice and figures quoted ranged from 1% to 80% with a mode of 1%.

Slightly less than half (44.6%) of the respondents offered an estimate of the HIV seroprevalence rate in their surgical admissions, 52.0% said 1.0%. Most (88.4%) reported needlestick injuries (NSI) with a mode of 1-2 exposures in the year preceding the study while 32.1% have had instrument injuries with a mode of 1-2 incidents/year. Exposure to HIV positive blood was believed to be frequent (80.4%); 42.9% and 6.3% respectively believe that they had occasionally and often operated on HIV positive patients unknowingly. On the other hand, 22.7% and 3.6% respectively had operated occasionally and often on AIDS patients unknowingly. Positive serological status for HIV was confirmed in only 70.9% of these instances.

Forty four percent (44.0%) of respondents had an idea of the CDC guidelines for universal precautions against blood borne pathogens, 42.2% know it well, while 13.8% have no idea about it. Table 1 shows the frequency of use of protective devices and the patient categories in which they were used. 85.6% did not use some of these materials because they were often not available while 6.7% forgot to use them. Other reasons for non-utilization were "feeling that they are not needed" 2.2%, "do not know about them" 1.1%, while 4.4% gave no reason.



**Table 1: The frequency of use of protective measures and the categories of patients in whom they are used by Nigerian Surgery Trainees, 1997.**

No	Measure	Category of patients in which it is used in percentages					Total
		All patients	High risk patients	HIV+ patients	AIDS patients	Not at all	
1	Protective goggles	13.8	8.5	0.0	3.2	74.5	100
2	Plastic aprons	32.0	26.0	3.0	6.0	33.0	100
3	Double gloving	16.7	46.1	4.0	8.8	23.5	100
4	Indirect handling of sharps	54.0	18.0	6.0	4.0	18.0	100
5	Preference for cautery over sharps	14.9	12.6	6.9	6.9	58.6	100
6	Preference for staplers	0.0	3.3	3.3	1.1	92.3	100
7	Deliberate slowness	6.3	24.2	7.4	5.3	56.8	100
8	Compliance with CDC guidelines	22.0	22.0	6.1	9.8	40.2	100
9	No precaution	22.2	7.9	1.6	3.2	65.1	100

**Table 2: Factors that impede HIV testing of patients by Nigerian Surgery Trainees, 1997.**

Number	Factor	Response rate in percentages		
		Agree	Strongly agree	Do not agree
1	Expensive	44.2	14.4	41.3
2	Non-availability of testing kit	35.6	6.7	57.7
3	Preference for non-testing	12.5	3.8	83.7
4	Legal hindrances and barriers	10.5	4.8	84.8
5	Absence of hospital guidelines	53.5	17.8	28.7
6	Absence of country guidelines	50.5	8.1	41.4
7	Patient population has low risk for HIV	15.2	3.8	81.0
8	Patients refusal	27.6	5.7	66.7
9	Testing is cumbersome	16.2	1.0	82.9
10	Undue delay in obtaining result	30.8	9.3	59.8
11	All patients treated as if they are HIV+	20.0	10.5	69.5
12	Obtaining informed consent is difficult	36.9	11.7	51.5
13	Procedure is embarrassing for both doctor and patient	50.5	8.4	41.1

Some 68.5% considered their training to be inadequate preparation for the management of patients with HIV and 95.5% believed that there is need for a special educational program. Fifty eight percent (58.0%) and 78.2% would not perform elective surgery on HIV positive and AIDS patient respectively, while 14.4% and 31.7% would deny life saving surgery to patients with HIV and AIDS, respectively. Forty three percent (43.0%) would not perform surgery on HIV positive patients with a malignancy while 55.0% would not do it in AIDS cases. Rather fewer respondents, 5.5% and 26.9% considered that surgery in HIV positive or AIDS patients was too dangerous while 66.4% (HIV positive) and 59.3% (AIDS) considered that the risk was

high and the surgeon should be concerned about this. Most (91.1%) of the respondents did not think that an HIV positive surgeon should be barred from practice, and 53.2% thought that he should be barred from performing invasive procedures.

Table 2 shows the hurdles to HIV testing in the hospital of practice of the respondents. Absence of clear-cut hospital guidelines on the issue was the single most important reason why routine HIV testing was not done, followed by the absence of countrywide guidelines and the embarrassment that the procedure may have caused to both patient and doctor. Most of the respondents (73.2%) did not rou-



tinely take a detailed sexual and drug history from their patients in order to ascertain their risk for HIV status, yet 67.0% and 25.9% claimed that their units tested high risk patients for HIV always and sometimes, respectively.

At the time of the study, 45.5% of the respondents worked in units where the response to the surgical needs of an HIV positive patient awaiting elective surgery would be to limit his/her treatment to non-surgical or minimally invasive techniques; 26.8% worked in Units where the treatment would continue regardless of such considerations.

Most, (72.5%) respondents were unwilling to set up surgical practice in an area of high prevalence of HIV infection, and the risk of HIV infection would influence the advice that 71.4% of the respondents would give to doctors who are considering a career in surgery. Most (75.9%) believed that doctors who refuse to operate on HIV positive patients should not be sanctioned. Few (12.5%) have personally refused to operate on patients with HIV or AIDS while their hospital/surgical units have refused to operate on a patient with HIV or AIDS in 26.8% of instances.

A policy of selectively testing only "high risk" patients was supported by 37.5% of the respondents; 28.6% of respondents supported testing all surgical patients, 17.9% supported testing only for special procedures and where the test was clinically indicated for diagnosis and treatment; 14.3% wanted all hospital patients to be tested. Routine testing of all surgical patients was already being done in the centers where 6.3% of the respondents practiced. It was done only when it contributed to the diagnosis in the hospital of practice of 48.2% of the respondents, in 12.5% when the patient was considered to be high risk, and in 32.1% there was no guideline that the respondents are aware of.

Informed consent before HIV testing was not mandatory in centers where 81.3% of the respondents practiced. Only 32.1% thought that informed consent should be mandatory before testing patients for HIV and 61.6% thought that testing should be left to the doctors' discretion. Most (76.8%) worked in hospitals where there was no definite policy on parenteral exposure of a member of the health team to patients' blood or body fluid. About 55.4% of the respondents supported mandatory testing of all patients involved in situations where there was parenteral exposure to the blood of the patient by a member of the health team. Some 50.9% supported mandatory storing of patient's blood so that these could be tested for HIV in case of parenteral exposure without patients' prior consent.

About 41.1% believed that patients have a right to know his/her surgeon's HIV status and 42.9% would agree to be tested if a patient requested it. Some 28.6% of the respondents had been tested for HIV, but only 4.5% have ever told their patients their HIV status. The reason for the disclosure to the patient was not stated. The commonest reason for HIV testing among the respondents was as a requirement before blood donation. The respondents ranked surgeons as the most important stakeholder in the formulation of policy about surgery and HIV infection, followed by government, and medical ethicists. Human rights groups, patients' rights group and hospital administrators were ranked lowest.

### Discussion

The HIV sero-prevalence among antenatal clinic attendees in Nigeria has risen from 1.8% in 1991, to 3.8% in 1993, 4.5% in 1995 and 5.8% in the most recent survey in 2001 (Federal Ministry of Health of Nigeria). In this KAP study of Nigerian surgery trainees in 1997, the majority of the respondents showed a lack of awareness of the seroprevalence of HIV in their area of practice and poor perception of risk posed by exposure to patients with HIV. This lack of awareness has been reported in many other countries at the early stages of the HIV epidemic and among other categories of HCW in Nigeria [8,10] and previous studies of Nigerian HCW suggested that there is a positive association between risk perception and utilization of universal precautions [11].

The incidence of percutaneous exposure to patients' body fluids was similar to that reported from one of the training centers encompassed by this study two years earlier by Olubuyide and Olawuyi [12]. Non-availability of relevant devices remains the most important factor militating against the use of universal precautions. The percentage of our respondents reporting this was higher than that reported by others [12] probably because of the increased requirements of surgical compared to ward practice. Years of neglect and lack of new investment in the health sector coupled with poor policies have resulted in poorly staffed medical centers with inadequate, old and poorly functioning medical equipment [13]. Combined with the high HIV seroprevalence, the risk of occupationally acquired blood borne infections to HCW rises beyond the 0.3% to 0.4% risk of infection after a single percutaneous exposure that has been cited in studies done in Europe and America by 15 times or more [14].

Many of the respondents in this study would not operate on HIV positive patients. This aversion may be related to the perception of risk of infection, the non-availability of equipment to comply with universal precautions, inadequate training, the high seroprevalence of HIV, and their level of awareness. The attitude of HCW to patients with



HIV has been shown to change with intervention that increased their skills and confidence in dealing with HIV positive patients [15]. Such interventions might also equip HCW with the skills to counsel and test patients as required.

The risk of transmission of HIV from an infected health-care worker to a patient is 'vanishingly small' [16]. Given the dilemma between informed consent and discrimination, especially where the infection has been occupationally acquired, our respondents thought that while HIV positive surgeons should not be banned from surgery, they should be barred from performing invasive procedures. In other countries, the risk of infection from an infected HCW where universal guidelines have been followed has concluded that there is no significant risk of transmission; hence there is no need to limit the scope of practice of the HCW [17].

The attitude to patient testing, HCW testing, and the right of patients to the latter information were uniformly different among the respondents. This illustrates the need for policy discussions about the risk of HIV to the HCW, provision of a minimum set of equipment to meet the requirements for universal precautions, rigorous training and monitoring with sanction for non-use, and the identification, management and compensation of HCW with occupationally acquired HIV infection [7].

The respondents constituted 37% of all the surgery trainees in Nigeria at the time this study was conducted. It is possible that KAP to HIV infection affected the (non) response of the trainees who did not return the questionnaire. Since we do not have any information about non-responders, the direction and influence of this bias cannot be predicted; this represents a limitation of the study. Since previous studies of the KAP to HIV in our environment have been limited to a one institution or a few urban centers, we are unable to compare those response rates to our study [6-8, 11, 12, 15, 18]. Given the methodology, the study is also liable to recall bias, information bias, and reverse causation. Despite these limitations, however, we believe that the study reveals the KAP among surgery trainees in 1997 and can serve as a basis for comparing the change that has occurred since then given that the incidence and awareness of HIV infection is now higher.

### Competing interests

None declared.

### Authors' contributions

CAA conceived the study, designed the methodology, planned the focus group meetings, developed the questionnaires, distributed the questionnaires, collated them, drafted the manuscript and funded the study.

ERZ designed the methodology, planned the focus group meetings, developed the questionnaires, distributed the questionnaires, collated them and co-wrote the manuscript.

AJA performed the statistical analysis and co-wrote the manuscript

TOO collated questionnaires and co-wrote the manuscript

### Acknowledgements

The authors thank all the residents who participated in this study.

### References

- Palmer JD, Rickett JW: **The mechanisms and risks of surgical glove perforation.** *J Hosp Infect* 1992, **22**:279-286
- Lowenfels AB, Wormser GP, Ramesh J: **Frequency of puncture injuries in surgeons and estimated risk of HIV infection.** *Arch Surg* 1989, **124**:1284-1286
- Patterson JM, Novak CB, Mackinnon SE, Patterson G: **A Surgeons' concern and practices of protection against bloodborne pathogens.** *Ann Surg* 1998, **228**:266-272
- Chan R, Khoo L, Goh CL, Lam MS: **A knowledge, attitudes, beliefs and practices (KABP) survey on HIV infection and AIDS among doctors and dental surgeons in Singapore.** *Ann Acad Med Singapore* 1997, **26**:581-587
- Faris R, Shouman A: **Study of the knowledge, attitude of Egyptian health care workers towards occupational HIV infection.** *J Egypt Public Health Assoc* 1994, **69**:115-128
- Salihu N, Olaseha I, Adeniyi JD, Ajuwon AJ: **Knowledge and attitude of physicians and nurses about AIDS in Sokoto, Nigeria.** *Int J Health Educ* 1998, **36**:26-28
- Ezedinachi EN, Ross NW, Meremike M, Essien EJ, Edem CB, Ekure E, Ita O: **The impact of an intervention to change health workers' HIV/AIDS attitudes and knowledge in Nigeria: a controlled trial.** *Public Health* 2002, **116**:106-112
- Najem GR, Okuzu EI: **International comparison of medical students' perceptions of HIV infection and AIDS.** *J Natl Med Assoc* 1998, **90**:765-774
- Centers for Disease Control: **Recommendations for preventing transmission of human immunodeficiency virus and hepatitis B virus to patients during exposure-prone invasive procedures.** *Bull Am Coll Surg* 1991, **76**:29-37
- Tait AR, Tuttle DB: **Prevention of occupational transmission of human immunodeficiency virus and hepatitis B virus among anesthesiologists: a survey of anesthesiology practice.** *Anesth Anal* 1994, **79**:623-8
- Essien EJ, Ross MW, Ezedinachi ENU, Meremiku M: **Cross-national HIV infection control practices and fear of AIDS: a comparison between Nigerian and the USA.** *Int J STD Aids* 1997, **8**:764-771
- Olubuyide IO, Olawuyi F: **Self-reported incidence of accidental exposures to patients' blood and body fluids by resident doctors in Nigeria.** *J R Soc Health* 1995, **115**:235-6-243-3
- Hargreaves S: **Time to right the wrongs: improving basic health care in Nigeria.** *Lancet* 2002, **359**:2030-2035
- Consten ECJ, van Lanschot JB, Henny PC, Tinnemans JGM, van der Meer JTM: **A prospective study on the risk of exposure to HIV during surgery in Zambia.** *AIDS* 1995, **9**:585-588
- Ezedinachi EN, Ross MW, Meremiku M, Essien EJ, Edem CB, Ekure E, Ita O: **The impact of an intervention to change health care workers' HIV/AIDS attitudes and knowledge in Nigeria: a controlled trial.** *Public Health* 2002, **116**:106-112
- Bayer R: **Discrimination, informed consent, and the HIV infected clinician: We must ask whether patients' rights to avoid the remotest of risks should override clinicians' rights to practice as long as their skills remain unimpaired.** *BMJ* 1997, **314**:915-916

17. Gostin L: **A proposed national policy on health care workers living with HIV/AIDS and other blood-borne pathogens.** *JAMA* 2000, **284**:1965-1970
18. Sote EO: **AIDS and infection control: experiences, attitudes, knowledge and perception of occupational hazards among Nigerian dentists.** *Afr Dent J* 1992, **6**:1-7

### Pre-publication history

The pre-publication history for this paper can be accessed here:

<http://www.biomedcentral.com/1471-2482/2/7/prepub>

UNIVERSITY OF IBADAN LIBRARY

Publish with **BioMed Central** and every scientist can read your work free of charge

*"BioMedcentral will be the most significant development for disseminating the results of biomedical research in our lifetime."*

Paul Nurse, Director-General, Imperial Cancer Research Fund

Publish with **BMC** and your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours - you keep the copyright

Submit your manuscript here:

<http://www.biomedcentral.com/manuscript/>



**BioMedcentral.com**

[editorial@biomedcentral.com](mailto:editorial@biomedcentral.com)