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Author(s): Maria Gańczak , MD, Dr med; Peter Barss , MD, ScD

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CONCISE COMMUNICATION

Fear of HIV Infection and Impact of Training on the Attitudes of Surgical and Emergency Nurses Toward Inpatient HIV Testing

Maria Gańczak, MD, Dr med; Peter Barss, MD, ScD

This study evaluates the association between the degree of fear of human immunodeficiency virus (HIV) infection and support for different HIV testing policies. A strong fear of acquiring HIV infection at work was widespread among a sample of 601 Polish surgical and emergency nurses. Most favored inappropriate HIV testing of all surgical patients and inpatients. Previous training about HIV and acquired immunodeficiency syndrome (AIDS) and experience caring for HIV-positive patients had a significant impact on reducing support for testing of all inpatients but not for testing of surgical patients.

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The number of people living with human immunodeficiency virus (HIV) is increasing all over the world and many of these individuals will need surgical treatment.¹ The healthcare workers (HCWs) most frequently reported with occupationally acquired HIV infection have been nurses,^{2,3} and fear of HIV infection is understandably high among this group. As a result, many nurses support controversial HIV testing policies, such as universal preoperative testing or testing of all inpatients. Nurses believe that knowledge of patients' HIV seropositivity would cause them to be especially careful and to take supplementary precautions that would decrease the risk of acquiring HIV infection. According to this view, such precautions are not, for many reasons, taken routinely.^{4,5} However, the World Health Organization and the Centers for Disease Control and Prevention advise against universal HIV testing of inpatients.⁶⁻⁹ These organizations believe that all patients admitted to a hospital should be considered high risk, and if standard precautions are followed, it is not necessary to test patients, because knowing that a patient harbors an infection should not change the routine behavior of HCWs.

Although much has been published about whether HIV antibody testing of inpatients is necessary, and public debate on this issue continues,⁹⁻¹¹ no studies have been published on nurses' opinions regarding the matter. Concerned about the degree of fear of acquiring HIV infection at work among surgical and emergency nurses and the potential impact of such fear on support for inappropriate HIV testing, to the possible detriment of standard precautions, we decided to evaluate the association between the degree of fear of HIV infection and support for different HIV testing policies. As a guide to possible implementation of HIV and acquired

immunodeficiency syndrome (AIDS) training and practical experience for nurses with HIV-positive patients, we wanted to verify the impact of such interventions on support for appropriate testing policies of inpatients and surgical patients.

METHODS

Study hospitals. A descriptive and analytical survey was conducted among nurses from 7 hospitals (2 academic, 5 municipal) in the Polish city of Szczecin and 11 hospitals in the surrounding county of Western Pomerania. Hospitals were selected from a health department list using a random-number table. At the selected hospitals, all wards representing surgical specialties and emergency departments participated.

Data collection. An anonymous questionnaire was developed for the survey, using guidelines from a US study.¹¹ The survey had questions regarding the age and sex of the nurse, type of hospital, number of patients with HIV infection treated, attendance at HIV/AIDS training sessions, level of concern about acquiring HIV infection at work, number of injuries caused by sharp instruments and devices per year, opinions about HIV testing of patients, and belief about whether testing should be mandatory. Questionnaires were mailed to hospital administrators from January through March 2003. To ensure a high response rate, personal contact was made by telephone with the head nurses from each hospital, asking them to help motivate every nurse to participate. Furthermore, each head nurse was present on her ward while the questionnaire was administered, and she requested that all nurses be present on that day to complete it. Each participant responded independently.

Data analysis. SPSS (SPSS) and Statistica PL (StatSoft) statistical software were used for data analysis. Categorical data were assessed by χ^2 tests and χ^2 tests for trend for more than 2 categories. *P* values of less than .05 were considered statistically significant, and 95% confidence intervals (CIs) were calculated as appropriate. A small number of responses (1%-2%) were missing for some questions. The actual number of responses for each item was included in the results, so sample sizes vary from 588 to 601 respondents. To compare nurses with and without training and experience, we grouped all nurses who had had 1 or more training courses together as having experienced the training intervention and we grouped all nurses with occupational experience of 1 or more known HIV-positive patients as having experienced that intervention. Since these occupational experiences had not been organized in a systematic manner for educational purposes, we used the term "intervention" and placed it in quotation marks.

RESULTS

Participants. No nurse present at the time of the survey refused to participate; the final sample included 601 nurses.

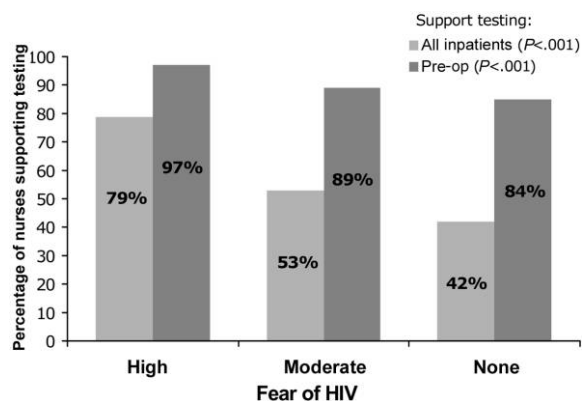


FIGURE 1. Support among surgical nurses for human immunodeficiency virus (HIV) testing for all inpatients (592 respondents) and all surgical patients (pre-op) (588 respondents) according to degree of fear of occupationally acquired HIV infection, West Pomerania, Poland, 2003. *P* values are χ^2 for trend.

Five hundred ninety-five (99%) of the nurses were female. The median age of participants was 38 years old (range, 20-58 years old); 367 (61%) were 35-55 years old, 228 (38%) were 20-35 years old, and 6 (1%) were 55-58 years old. The proportion of nurses from different types of hospitals were as follows: urban nonteaching hospital, 257 (43%); urban teaching hospital, 115 (19%); and rural hospital, 229 (38%). Location of work was as follows: surgical ward, 350 (58%); operating room, 98 (16%); emergency department, 85 (14%); and admitting area, 68 (11%). The contributions of different surgical wards were as follows: general surgery, 182 (30%) of the participating nurses; obstetrics-gynecology, 72 (12%); and subspecialties, 96 (16%). Subspecialties included orthopedics, ophthalmology, urology, otolaryngology, neurosurgery, transplantation, and vascular surgery.

Training, experience, and history of injury. One or more sessions of HIV/AIDS training without occupational experience was reported by 322 (54%) of 596 nurses. One or more occupational experiences caring for known HIV-positive patients and no HIV training was reported by 31 (5%). One hundred twenty-six (21%) reported both training and experience, and 117 (20%) reported neither training nor experience. Two hundred seventy-six (46%) nurses reported that they had sustained at least 1 percutaneous injury in the preceding year; 501 (83%) reported that they always used gloves during work with patients.

Fear of HIV infection and attitudes toward HIV testing. Five hundred ninety-two nurses responded regarding their fear of HIV infection. A high degree of fear of acquiring HIV infection at work was reported by 64% of nurses (95% CI, 60%-68%; 378 of 592), moderate fear by 32% of nurses (95% CI, 28%-36%; 188 of 592), and no fear by 4% of nurses (95% CI, 2%-6%; 26 of 592). HIV testing of all inpatients was supported by 70% of nurses (95% CI, 66%-73%; 417 of 597) and preoperative testing of all surgical patients by 94% of

nurses (95% CI, 92%-96%; 556 of 593) (*P* < .001). Nurses' support for HIV testing of all inpatients varied significantly according to their degree of fear of acquiring HIV infection at work (Figure 1), with a dose-response effect evident (ie, greater fear was associated with greater support for testing). Testing all inpatients was favored by 79% of nurses with high fear (95% CI, 75%-83%; 299 of 378), by 53% of nurses with moderate fear (95% CI, 46%-60%; 100 of 188), and by 42% of nurses with no fear (95% CI, 22%-63%; 11 of 26) (χ^2 for trend, *P* < .001). No differences were found according to age (*P* > .42), type of hospital (*P* > .99), number of injuries in the past year (*P* > .41), or glove use (*P* > .05). Although support for preoperative HIV testing was high among all nurses, it was significantly higher among nurses with a high fear of occupationally acquired HIV infection (97% [95% CI, 95%-98%]; 365 of 375) compared with those with a moderate fear (89% [95% CI, 84%-93%]; 167 of 188) and no fear (84% [95% CI, 64%-93%]; 21 of 25) of acquiring such an infection (Figure 1). Again a dose-response effect was evident (χ^2 for trend, *P* < .001). No differences were found in support for preoperative testing according to age (*P* > .14), type of hospital (*P* > .22), or number of injuries in the past year (*P* > .39).

HIV training, HIV experience, and attitudes toward HIV testing. Although support for HIV testing of all inpatients was relatively high in both groups, there was significantly less support among nurses with HIV/AIDS training or experience with at least 1 known HIV-positive patient, and there was even less support among nurses with both training and experience (χ^2 for trend comparing nurses with neither intervention to those with either training or experience or both, *P* < .001). The percentages of nurses reporting support for HIV testing of all inpatients were as follows: no intervention,

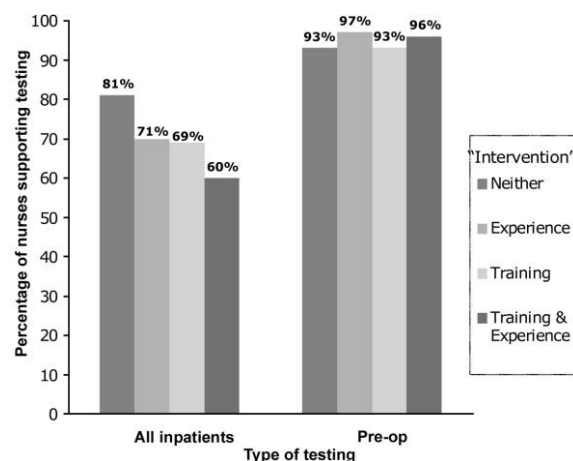


FIGURE 2. Support among surgical nurses for human immunodeficiency virus (HIV) testing for all inpatients (*P* < .001) and surgical patients (pre-op) (*P* = .56) by HIV training and experience ("interventions"), West Pomerania, Poland, 2003 (596 responses). *P* values are χ^2 for trend, no intervention, one intervention, and both interventions.

81% (95% CI, 74%-88%; 95 of 117); experience only, 71% (95% CI, 54%-86%; 22 of 31); training only, 69% (95% CI, 64%-74%; 221 of 322); both training and experience, 60% (95% CI, 52%-69%; 76 of 126) (Figure 2). No difference was found in support for preoperative HIV testing among nurses who had or lacked some combination of HIV training or experience.

Other variables. HIV training had no impact on the degree of fear of infection among nurses ($P > .86$). In the group of nurses reporting high fear, 75% (95% CI, 69%-81%; 284 of 378) had participated in HIV/AIDS training, compared with 75% of nurses (95% CI, 70%-79%; 160 of 214) in the moderate fear and no fear groups.

Experience with HIV-infected patients had no impact on the degree of fear among nurses ($P > .26$). In the group of nurses with high fear, 27% (95% CI, 23%-32%; 102 of 378) had experience with HIV-infected patients, compared with 23% of nurses (95% CI, 17%-29%; 49 of 214) in the moderate fear and no fear groups.

Combined effects of both training and experience did not differ significantly from the effect of either alone ($P = .27$) (ie, there was no reduction in fear; however, sample sizes were small in some subgroups for this analysis).

Of all nurses, 235 (39%) reported that HIV tests should be mandatory for all inpatients. No differences were found by age, type of hospital, HIV experience, or HIV/AIDS training ($P > .20-.97$).

DISCUSSION

Surgical nurses from our survey favored preoperative HIV testing of patients. Opinions on HIV testing of all inpatients among nurses with less personal involvement were less radical. Higher degrees of fear were correlated with increased support for both types of testing. Lack of knowledge among nurses about their actual risk of infection and about post-exposure prophylaxis may be the main reason for a high degree of fear¹²⁻¹⁴; in our survey, 25% of respondents reported that they had never received any HIV/AIDS training. Knowledge and practice could reduce the high degree of fear.¹³⁻¹⁵ Indeed, both HIV/AIDS training programs and practical experience working with at least 1 known HIV-positive patient positively influenced nurses' attitudes toward HIV testing of all inpatients, and the combined effect of both was greater than that of either alone. Thus, we recommend that all surgical nurses, and probably other HCWs, receive effective training in methods to minimize the risk of occupational HIV infection, including an understanding of the limitations, potential hazards, and appropriate uses of HIV testing. These HCWs should also receive practical experience working with known HIV-positive patients, but training should preferably be received in a structured and coordinated educational setting, which would be expected to be more effective than random experience, as reported in this survey. Since training and experience together were more effective than either alone,

if both could be administered in a coordinated manner, better results might be expected.

On the other hand, many of the nurses in our survey with HIV/AIDS training and/or experience had not changed their attitudes toward preoperative testing, and these interventions had no impact on the high degree of fear. Therefore, existing education about bloodborne infections should probably be improved. Ongoing training, delivered by evidence-based teaching methods, including participatory workshops to modify attitudes, needs to be coordinated by different health-care professionals, who can collaborate and share their personnel and resources. Furthermore, nurses and hospital administrators need to be aware that routine HIV testing of patients is not as effective in reducing occupational risk of infection as are proper engineering, administrative and work practice controls, and personal protective equipment.¹⁶⁻¹⁹ In the study hospitals, 17% of the nursing staff did not regularly use gloves, and safety devices such as retractable needles for injections were not available. Because of the number and variety of hospitals selected for random sampling, we believe that nurses in this report are representative of other nurses in the study region, which is in northwestern Poland near Berlin, Germany, and borders the Baltic Sea. The results can probably be generalized to other regions of Poland.

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From the Department of Hygiene, Epidemiology and Public Health, Faculty of Health Sciences, Pomeranian Medical University, Szczecin, Poland (M.G.); and the Department of Community Medicine, Faculty of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates (P.B.).

Address correspondence to Peter Barss, MD, ScD, United Arab Emirates University, Department of Community Medicine, PO Box 17666, Al Ain, United Arab Emirates (peter.barss@uaeu.ac.ae).

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