CONCISE COMMUNICATION

# Rationale against Preoperative Screening for HIV in Polish Hospitals: A Prevalence Study of Anti-HIV in Contrast to Anti–Hepatitis C Virus and Hepatitis B Surface Antigen

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We describe the prevalence of anti–human immunodeficiency virus (anti-HIV) among a sample of 1,652 surgical and gynecologic patients in Polish hospitals, contrasting it with the prevalence of hepatitis B surface antigen (HBsAg) and anti–hepatitis C virus (anti-HCV) to assess the rationale for preoperative testing. No anti-HIV–positive samples were found; the prevalence of anti-HCV was 0.9%, slightly higher than the prevalence of HBsAg of 0.6%. Universal preoperative screening of hospital patients for HIV is currently not warranted according to the Centers for Disease Control and Prevention guidelines. However, the seroprevalence of HIV should be reassessed periodically.

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Testing for human immunodeficiency virus (HIV) antibodies is an important component of programs designed to limit the spread of the epidemic.[1] The US Centers for Disease Control and Prevention (CDC) recommend HIV screening in healthcare settings for persons aged 13–64 years as part of routine medical care, irrespective of lifestyle, perceived risk, or local prevalence of HIV.[2] New guidelines incorporate "opt-out" testing: patients are notified that testing will be performed unless they explicitly decline. Separate informed consent for HIV testing is no longer required, and counseling is not offered. The new guidelines further state that healthcare providers should continue to initiate screening until the prevalence of undiagnosed HIV infection in the patient population has reached less than 0.1%. In the absence of existing data on the prevalence of HIV, voluntary HIV screening can be initiated to establish the diagnostic yield as less than 1 case per 1,000 patients screened, at which point such screening is no longer warranted.

The prevalence of HIV among surgical patients has been studied in several countries;[3-5] however, data are lacking for Central Europe, including Poland. Despite this, universal preoperative HIV testing is advocated by surgical personnel, possibly because of a fear of occupational transmission.[6]

Surgeons argue that, with the prevalence of HIV infection in the general Polish population at 0.07%—a rate that has been stable since 1990, with 600–800 new infections per year[7]—maintaining a permanently high level of surgical protection is unrealistic because of inapplicability and cost. However, in light of financial shortfalls faced by Polish healthcare institutions and the global economic crisis, universal preoperative HIV testing should be considered worth implementing only when it has been evaluated as an efficient, cost-effective means of prevention.

The objective of the study was to assess the prevalence of anti-HIV among surgical and gynecologic patients admitted to randomly selected hospitals. In addition, the prevalence of hepatitis B surface antigen (HBsAg) and anti–hepatitis C virus (anti-HCV) was determined and contrasted with the prevalence of HIV. It is hoped that data generated in this study will be useful for assessing the rationale for opt-out preoperative HIV testing and for reducing concerns about occupational transmission of HIV.

## METHODS

The study population consisted of adult surgical and gynecologic patients hospitalized during the period from February 2008 through January 2009. The facilities were selected from a list of hospitals in the West Pomeranian region of Poland obtained from the local health department. A multistage stratified sampling method was used. Hospitals were stratified into urban and rural categories to ensure a representation of different levels of service. With the use of a random-number table, 6 urban (2 teaching and 4 municipal) and 10 rural hospitals were selected, which comprised 50% of the hospitals in the study area. A pilot study was performed in a selected urban teaching hospital.[8] Next, proportionate sampling of wards was performed for each hospital, taking into account the numbers of surgical and gynecologic wards in each hospital. Blood samples were collected from 50 consecutively admitted patients in each selected ward.

An anonymous questionnaire was created that included each patient's demographic data, risk factors for contracting a bloodborne infection, type of ward, and type of procedure performed (elective or urgent). Trained nurses interviewed patients directly after obtaining consent and offered testing for HIV, hepatitis B virus, and HCV.

A blood sample was obtained by means of venipuncture at the time of admission to the hospital. The ELISA test system, version 3.0 (Abbott Laboratories), was used to detect HBsAg, anti-HCV, and anti-HIV. Testing was performed in 2 laboratories. The study received ethical approval from the Pomeranian Medical University Ethical Committee.

Statistical analysis was performed with STATISTICA PL software (StatSoft). Statistical significance was assessed by means of a $\chi^2$ test with Yates correction or a Mann-Whitney test. A $P$ value of less than .05 was considered to indicate a statistically significant difference.

TABLE 1. Sex and Age of Surgical and Gynecological Patients in West Pomerania, Poland

| Age group | All patients ($n$ = 1,652) | Male patients ($n$ = 534) | Female patients ($n$ = 1,118) | $P$ |
|---|---|---|---|---|
| <20 years | 35 (2.1) | 13 (2.4) | 22 (2.0) | >.66 |
| 20–29 years | 249 (15.1) | 70 (13.1) | 179 (16.0) | >.14 |
| 30–39 years | 260 (15.7) | 77 (14.4) | 183 (16.4) | >.34 |
| 40–49 years | 321 (19.4) | 99 (18.5) | 222 (19.9) | >.57 |
| ⩾50 years | 787 (47.6) | 275 (51.5) | 512 (45.8) | <.04 |

NOTE. All data are no. (%) of patients.

## RESULTS

Of the 1,900 patients eligible for the study, 1,652 (86.9%) consented to participate; 1,118 of the study subjects (67.7%) were female. The median age was 49 years (range, 14–93 years). The sex and age distribution of the study population is given in Table 1. Almost one-half the participants (762 patients [46.1%]) were treated at urban hospitals (544 patients [32.9%] at teaching hospitals and 218 patients [13.2%] at municipal hospitals), whereas 890 participants (53.9%) were treated at rural hospitals. Over two-thirds of the participants (1,124 patients [68.0%]) were admitted to surgical wards, and the rest were admitted to gynecologic wards. Over one-fourth of the participants (462 patients [28.0%]) were from Szczecin; 569 participants (34.4%) were from towns of less than 25,000 inhabitants; 426 participants (25.8%) were from rural areas; and for 195 participants (11.8%), the data were incomplete. For 1,195 participants (72.3%), the surgery was elective.

Of the 1,652 patients, 1,049 (63.5%) had undergone surgery before hospitalization, 915 (55.4%) had undergone dental procedures during which bleeding had occurred, 236 (14.3%) had received a blood transfusion before hospitalization, 234 (14.2%) had tattoos, 105 (6.4%) stated that they had risk factors regarding sexual partner(s), and 26 (1.6%) were intravenous drug abusers. None of the patients stated that they were homosexual.

There were no HIV-positive serologic results (Table 2); 1 result was in doubt and was invalidated by means of the Western blot test. In the latter case, despite the study protocol, information about the patient's positive ELISA test result was passed from the laboratory to the surgical ward, where he was confronted with the result.

Serologic evidence of either HBsAg or anti-HCV was present in samples obtained from 23 (1.4%) of 1,652 patients. Fourteen (60.9%) of these 23 patients had been admitted for elective surgery. One (0.06%) of the 1,652 study participants tested positive for anti-HCV and HBsAg, 13 patients (0.8%) tested positive for anti-HCV, and 9 patients (0.5%) tested positive for HBsAg. There was no significant difference between the prevalence of HBsAg and the prevalence of anti-HCV in the study population ($P > .40$).

Of the 13 HCV-positive patients, 8 had undergone surgery before hospitalization, 6 had undergone dental procedures during which bleeding had occurred, 1 had received a blood transfusion before hospitalization, and 1 had tattoos. All 9 HBsAg-positive patients had undergone surgery before hospitalization, 7 had undergone dental procedures during which bleeding had occurred, and 1 had received a blood transfusion before hospitalization. The HCV- and HBsAg-positive patient had undergone surgery before hospitalization, had undergone dental procedures during which bleeding had occurred, and had received a blood transfusion before hospitalization. The risk factor variables did not have a significant association with the presence of HCV or HBsAg ($P > .06$).

## DISCUSSION

Anonymous seroprevalence surveys may provide the most accurate and comprehensive means of determining the rates of infection caused by bloodborne pathogens.[9] There were no HIV-positive patients among 1,652 surgical and gynecologic patients surveyed; the seroprevalence of anti-HCV was 0.9%, slightly higher than the seroprevalence of HBsAg of 0.6%. The number of patients tested was more than the 1,000 recommended by the CDC[1,2] for purposes of establishing the diagnostic yield as less than 1 case per 1,000 patients screened; however, the desire to establish a more precise seroprevalence for HIV influenced our choice to use a larger sample.

Supporters of routine preoperative HIV testing believe that it would enable early detection of infection among patients whose disease would otherwise go undetected, which would help to limit the spread of the virus in the community.[9] However, in Poland, most HIV infections (70.1%) are detected in persons aged 20–39 years,[10] whereas the median age of the study participants was 49 years; only 509 (30.8%) of 1,652 participants were 20–39 years old. Therefore, preoperative HIV testing does not sufficiently cover the age group that most needs to be tested. Moreover, Poles can be tested anonymously and without charge in 1 of 29 voluntary AIDS counseling and testing centers, which disproportionately serve young people.[11] There are also anonymous telephone hotlines for HIV counseling. In addition, HIV testing is offered to all pregnant women in Poland. Some researchers caution against the large-scale adoption of routine opt-out testing.[12]

TABLE 2. Prevalence of Hepatitis B Surface Antigen (HBsAg), Anti–Hepatitis C Virus (Anti-HCV), and Anti-HIV among Surgical and Gynecological Patients in West Pomerania, Poland

| Type of serological marker | No. (%) of patients ($n$ = 1,652) | 95% Confidence Interval |
|---|---|---|
| Anti-HIV | 0 (0) | 0–0.23 |
| HBsAg only | 9 (0.54) | 0.29–1.03 |
| Anti-HCV only | 13 (0.79) | 0.46–1.34 |
| HBsAg and anti-HCV | 1 (0.06) | 0.01–0.34 |
| HBsAg or anti-HCV | 23 (1.39) | 0.93–2.08 |

Because of a low seroprevalence of HIV among Polish surgical patients, the potential value to surgical teams of routine preoperative testing is limited. Any benefits probably outweigh costs and may be counterbalanced by a false sense of security associated with increased risk of nonadherence to standard precautions. Additional issues of note include the possibility that screening will yield false-negative results during the incubation period of the virus, as well as the possibility of false-positive and false-negative results, depending on the sensitivity and specificity of tests applied to large population groups.[13] Moreover, established standards of confidentiality might not be sustained, as seen in our study.

In the light of the absence of HIV-positive cases among patients observed in this study, the risk of acquiring HIV at the workplace seems to be lower for Polish surgical staff than for surgical staff in countries with high prevalence.[5] Thus, we hope that our results will help to reduce the fear of occupational transmission of HIV among surgical staff in Poland.

Potential biases did exist in our study. Samples were not tested from all individuals who were eligible for the study, and it could be argued that those tested were not representative of the hospital patient population. In addition, patients who underwent emergency surgery were not included. Although our HIV, hepatitis B virus, and HCV infection rates may be representative of the rates in other regions of Poland, variation may also be expected. Finally, the patient population evaluated included only surgical patients and excluded other hospitalized individuals who could be at greater risk of contracting HIV.

On the basis of these data and according to the CDC revised guidelines,[2] preoperative HIV screening is not warranted in Polish hospitals, because the prevalence of undiagnosed HIV infection among patients has been less than 1 case per 1,000 patients screened. However, the seroprevalence of HIV should be reassesed periodically. When HIV testing is performed, greater efforts are needed to ensure confidentiality.

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## REFERENCES

1. Branson B. Current HIV epidemiology and revised recommendations for HIV testing in health-care settings. *J Med Virol* 2007; 79(Suppl 1): S6–S10.
2. Branson BM, Handsfield HH, Lampe MA, et al. CDC revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep* 2006; 55:1–17.
3. Weiss ES, Cornwell EE III, Wang T, et al. HIV and hepatitis testing and prevalence among surgical patients in an urban university hospital. *Am J Surg* 2007; 193:55–60.
4. Dresing K, Pouwels C, Bonsack S, et al. HCV, HBV and HIV infections: risk for surgeon and staff—results and consequences of routine screening in emergency patients [in German]. *Chirurg* 2003; 74:1026–1033.
5. Wanyenze RK, Navavvu C, Namale AS, et al. Acceptability of routine HIV counseling and testing, and HIV seroprevalence in Ugandan hospitals. *Bull World Health Organ* 2008; 86:302–309.
6. Gańczak M, Barss P. Fear of HIV infection and impact of training on the attitudes of surgical and emergency nurses toward inpatient HIV testing. *Infect Control Hosp Epidemiol* 2007; 28:230–233.
7. UNAIDS. AIDS epidemic update 2007. Geneva, Switzerland: UNAIDS. Updated November 26, 2007. Available at: http://www.unaids.org/en/KnowledgeCentre/HIVData/EpiUpdate/EpiUpdArchive/2007/default.asp. Accessed June 1, 2009.
8. Gańczak M, Szych Z. Infections with HBV, HCV and HIV in patients admitted to the neurosurgical department of a teaching hospital. *Neurol Neurochir Pol* 2008; 42:231–237.
9. Gostin LO. HIV screening in health care settings: public health and civil liberties in conflict? *JAMA* 2006; 296:2023–2025.
10. Nitka A, Rosińska M, Janiec J. AIDS and HIV infection in Poland [in Polish]. *Przegl Epidemiol* 2008; 62:357–368.
11. Ankiersztejn-Bartczak M. Anonymous and free of charge HIV testing: experience of counseling and testing center in Warsaw [in Polish]. *Kontra* 2007; 2:1–3.
12. Holtgrave R. Costs and consequences of the US Centers for Disease Control and Prevention's recommendations for opt-out HIV testing. *PLoS Med* 2007; 4:e194. http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0040194. Accessed June 1, 2009.
13. Vermund SH, Wilson CM. Barriers for HIV testing. *Lancet* 2002; 360: 1186–1187.