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# Targeted HIV Screening at a Los Angeles Prenatal/Family Planning Health Center

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ABSTRACT

In 1988, the Los Angeles County Health Department conducted a blinded human immunodeficiency virus (HIV) seroprevalence study at a public prenatal (PN) and family planning (FP) center serving mostly Hispanic women in order to determine seroprevalence and to evaluate the center's targeted HIV screening program. Four women (0.13 percent) tested positive (3/1801 PN and 1/1167 FP). Three reported no risk factors; one reported a history of syphilis since 1978. Voluntary HIV testing was selectively offered to women who reported risk factors for HIV infection. Only 14 percent (96/685) of clients offered testing chose to do it: 28 percent (14/50) of clients classified as being at highest risk of infection, and 27 percent (16/59) of women who judged themselves to have some chance of being exposed to HIV. None of the four women who tested positive by blinded testing chose testing. While few women at this center were infected with HIV, higher risk women were not persuaded to be tested through a targeted screening program. Blinded HIV seroprevalence studies provide a tool for both tracking infection in a population and evaluating screening programs. (*Am J Public Health* 1991;81:619–622)

## *Introduction*

Women of childbearing age in the United States are at risk for human immunodeficiency virus (HIV) infection although their risk varies by locality, risk group, and race.[1–14] In 1987, the US Public Health Service (PHS) recommended that women with identifiable risks for HIV infection be routinely counseled and tested for HIV antibody.[15] Strategies for providing women of childbearing age with HIV counseling and testing include: 1) routine or universal screening, with informed consent, of women attending women's health clinics, such as prenatal (PN) or family planning (FP) clinics and 2) selective targeting of women identified as having risk factors for HIV infection. In the latter approach, risk factors for HIV infection are assessed during a counseling session and those patients reporting risk factors are offered voluntary testing. In areas with high rates of HIV seropositivity among women, this approach has not been shown to be effective in identifying most seropositive women.[3,4,8,10,16] Fewer data exist for areas with low or unknown rates of seropositivity among women, such as Los Angeles.

In 1988, the Los Angeles County Department of Health Services participated in the PHS Family of Surveys[17] and initiated a blinded HIV seroprevalence study at a large inner-city public health center which used a targeted approach for HIV counseling and testing in its PN and FP clinics. Results of blinded HIV testing were used to evaluate the extent to which the HIV counseling and testing program reached women who were either at risk for HIV infection or already infected.

## *Methods*

Consecutive sera remaining after routine syphilis testing during initial or annual visits of all women attending the PN clinic from March through September, and the FP clinic from March through November, 1988 (3,000 total) were blinded by the removal of personal identifiers and then tested for HIV antibody by a licensed enzyme linked immunosorbent assay (ELISA) kit. Repeatedly reactive specimens were confirmed with immunofluorescent antibody (IFA) (Laboratory Services Branch, California State Department of Health Services) and Western blot.

The clinics used a targeted HIV counseling and testing program. All patients were counseled by trained bilingual interviewers about risk factors for HIV infection and the availability of HIV testing. The interviewers used a questionnaire

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**TABLE 1—Definition of Risk for HIV Infection Used by Clinic Staff and by Investigators, and Prevalence of Risk Behaviors, Los Angeles, 1987–88**

| | Risk behaviors (+) for which clinic staff offered voluntary testing | Risk behaviors (+) for which women were classified as "high risk" by investigators | Women with risk behavior No. (%) |
|---|---|---|---|
| Intravenous (IV) Drug Use since 1978 | + | + | 8 (0.3) |
| Sex since 1978 with an IV drug user, bisexual man, or person with AIDS or HIV infection | + | + | 47 (1.6) |
| Receipt of money or drugs for sex in the last year | + | + | 12 (0.4) |
| Transfusion from 1978 through 1985 | + | | 107 (3.6) |
| Sex since 1978 with a prison inmate | + | | 172 (5.7) |
| Sex since 1978 with a man with hemophilia | + | | 0 (0) |
| Sex since 1978 with a man from Haiti or Central Africa | + | | 6 (0.2) |
| History of hepatitis | + | | 48 (1.6) |
| History of a sexually transmitted disease since 1978 | + | | 38 (1.3) |
| History of more than one sex partner in the last year | + | | 165 (5.5) |
| History of sexual assault | + | | 60 (2.0) |

**TABLE 2—Results of HIV Antibody Seroprevalence Study, Los Angeles, 1987–88**

| | | HIV Antibody Seroprevalence | | |
|---|---|---|---|---|
| | % of All Patients | No. HIV Positive | Total No. Tested | % Positive |
| *Clinic Type* | | | | |
| Prenatal | 60.0 | 3 | 1801 | 0.17 |
| Family Planning | 38.9 | 1 | 1167 | 0.09 |
| Unknown | 1.1 | 0 | 32 | 0 |
| *Risk For Infection* | | | | |
| No Risk Behaviors Reported | 77.0 | 3 | 2311 | 0.13 |
| "At Risk" (Any risk behaviors reported) | 23.0 | 1 | 689 | 0.15 |
| "High risk"* | 1.7 | 0 | 50 | 0 |
| Self-Assessed Risk of ≥ 1 in 100 chance** | 2.0 | 0 | 60 | 0 |

*Subset of "At Risk" group; these two groups were not mutually exclusive. See Table 1 for definitions.
**Self-assessment of risk of exposure was determined by interviewer asking patient "How likely do you think it is that you have been exposed to someone infected with the AIDS virus in such a way that you could be infected?" Patients were given the choice of answering "Very unlikely (less than 1 in 100 chance)", "Unlikely (1 in 10 chance)", "Uncertain (50-50 chance)", or "Certain (sure that you have been exposed to someone infected with the AIDS virus)."

as a guide to counseling and as a record of risk behavior information. To identify all women possibly at risk, the clinic chose to use a broad range of behaviors in its definition of risk (Table 1) and patients were also asked to assess their own risk (Table 2). Voluntary HIV testing was recommended and immediately offered to all women who requested testing and to those reporting any of the behaviors defined by the clinic to indicate possible risk.

The targeted HIV counseling and testing program was evaluated by using a unique study number to link the results of blinded seroprevalence testing to questionnaire information. Women were classified by their answers as being "at risk," "at high risk," or "not at risk." The "at risk" group was composed of those women who reported any of the broad range of risk behaviors which the clinic considered to place women at some risk of infection (the group that was offered HIV testing). A subset of "at risk" women, "high-risk" women, was defined by investigators to be at particularly high risk for HIV infection, using objective criteria (Table 1).

Confidence limits for proportions were calculated using the method published by Fleiss.[18]

## Results

A total of 1,801 consecutive specimens from the PN clinic, 1,167 consecutive specimens from the FP clinic, and 32 specimens for which clinic type was not known were tested for HIV antibody (Table 2). Of the patients for whom race was known (2,955), 87.3 percent (2,579) were Hispanic, 9.6 percent (285) White, 2.4 percent (71) Black, 0.5 percent (15) Asian, and 0.2 percent (5/2,955) other race. The median reported length of residence in the US was five years. The median age was 25 years with a range of 12–46 years; age was unknown for 29 women.

Four of the 3,000 specimens (0.13 percent, 95 percent confidence interval (CI) = 0.04, 0.37) were repeatedly reactive by ELISA and positive by IFA and Western Blot; three were from the PN clinic (0.17 percent, 95% CI = 0.04, 0.55), and one was from the FP clinic (0.09 percent, 95% CI = 0.00, 0.55) (Table 2). These positive specimens were from one White and three Hispanic patients, all of whom were in the 20–24 age group. The length of time that these patients reported residing in the US ranged from two to 12 years.

None of the four seropositive women chose voluntary HIV testing (Table 3). Only one of the four reported any risk factor for infection—a history of syphilis since 1978 (Table 2). Because this finding was of concern, we further investigated the center's testing strategy by determining the rate of acceptance of testing among those reporting risk behaviors.

While 23 percent of women reported one or more risk behaviors (were considered "at risk" by clinic staff) and 1.7 percent met the criteria for classification as "high risk," only 2.0 percent judged themselves to have more than a one in 100 chance of being exposed to HIV infection (Table 2). A high proportion of women who were "at risk" (92 percent) or even "high risk" (66 percent) assessed their own risk for being exposed to HIV infection to be "very unlikely" (less than a one in 100 chance) (Table 4). All four of the

**TABLE 3—Acceptance of Voluntary HIV Testing, by Risk Group**

| Risk Group | No. Accepted Voluntary HIV Testing | Total No. in Group* | % Accepted Voluntary Testing |
|---|---|---|---|
| Reported Risk Behaviors | | | |
| "At Risk" (Any risk behaviors reported) | 96 | 685 | 14.0 |
| "High risk" | 14 | 50 | 28.0 |
| Self-Assessed Risk | 16 | 59 | 27.1 |
| Tested Positive in HIV Seroprevalence Study | 0 | 4 | 0 |
| Tested Negative in HIV Seroprevalence Study | 110 | 2985 | 3.7 |

*Persons for whom acceptance of testing was not known were excluded from analysis

seropositive women also assessed their own risk as being "very unlikely."

Not only did the four seropositive women refuse HIV testing, but only 14.0 percent of women offered testing because of a history of risk behaviors ("at risk" group) consented (Table 3). Among the women who were classified as being "high risk" and among the women who judged their chance of exposure to be greater than one in 100, only 28.0 percent and 27.1 percent, respectively, selected voluntary testing.

## *Comments*

The prevalence of HIV antibody among prenatal and family planning patients attending this inner-city, mostly Hispanic, public health center in Los Angeles was low—0.13 percent (95% CI = 0.04, 0.37). The rate found in this study is consistent with the low prevalence of antibody reported from parturients (0.04 percent),[19] newborn screening (0.10 percent),[20] and FP clinics (0.1 percent, D. Hill, unpublished data) in Los Angeles County. Since the population in this study was predominantly Hispanic and immigrant, it should not be considered representative of all clinics with a high proportion of minority clients. But, as one of six large comprehensive public health centers in Los Angeles, it is an important site for monitoring HIV infection.

While the seroprevalence found at this center was reassuringly low for an urban area with a high incidence of AIDS, it is of concern that the program of targeted HIV screening did not identify the seropositive women in this study. Three of these four women reported no risk factors for infection. The rates of reporting of risk behaviors and acceptance of testing in this population may have been affected by cultural factors and/or lack of knowledge of risk behaviors of partners. Some women may have been tested already for HIV infection for immigration or other purposes. Acceptance of testing may have been affected in unknown ways by the counseling process; however, in this regard, the clinic is probably typical of urban, high-volume clinics.

Our data suggest that a strategy of selectively offering HIV voluntary testing only to those women who report risk factors for infection may result in a low rate of acceptance and may miss seropositive women. Similar data from several studies led the US Public Health Service's Immunization Practices Advisory Committee to recommend the universal screening of PN patients for hepatitis B.[21–26] Universal screening for HIV of all women pregnant or contemplating pregnancy has been recommended[1–4,16,27,28] because it identifies a high proportion of infected women; these women can be referred early to medical prophylaxis and treatment; and it results in the early identification and treatment of children born to HIV-infected mothers. Universal screening, with informed consent, has been conducted at some Los Angeles prenatal clinics since 1988.

Despite the benefits of universal screening, targeted screening may be used in localities with a low prevalence of HIV or without resources for adding large scale HIV testing and counseling to routine clinical practice. Efforts to identify seropositive women compete for limited resources with HIV prevention and other public health programs. In a 1988–89 random survey of urban hospitals, most did not offer HIV testing routinely to pregnant women.[28]

Those who design voluntary HIV screening programs for women should consider: local seroprevalence; available resources vs demand for testing and other services; local characteristics of women at risk for infection; strategies that result in high levels of acceptance of testing among women at risk; and strategies that provide counseling to seronegative women and effect behavioral changes that will prevent the future transmission of HIV.

The variety of strategies for screening women of childbearing age should be evaluated locally and over time. Blinded HIV seroprevalence studies provide valuable data about voluntary screening programs. In addition, they supplement acquired immunodeficiency syndrome case

**TABLE 4—Self-Assessment of Risk of Significant Exposure to HIV Infection, by Risk Group, Los Angeles, 1987–88**

| Self-assessment of Risk of Exposure | Risk Group | | | | | |
|---|---|---|---|---|---|---|
| | "High risk" | | "At Risk" | | No Risk Factors | |
| | No. | % | No. | % | No. | % |
| Very unlikely (<1 in 100 chance) | 33 | 66.0 | 633 | 91.9 | 2268 | 98.1 |
| Unlikely (1 in 10 chance) | 6 | 12.0 | 17 | 2.5 | 14 | 0.6 |
| Uncertain (50-50 chance) | 10 | 20.0 | 19 | 2.8 | 6 | 0.3 |
| Certain (sure was exposed) | 1 | 2.0 | 3 | 0.4 | 1 | 0.04 |
| No response | 0 | 0 | 17 | 2.5 | 22 | 0.7 |
| Total | 50 | 100 | 689 | 100 | 2311 | 100 |

surveillance by tracking trends in HIV infection among women over time. □

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