

MMWR

Late Versus Early Testing of HIV --- 16 Sites, United States, 2000--2003

Knowledge of human immunodeficiency virus (HIV) serostatus has been an important element of HIV-prevention and -treatment efforts (1). In 2000, among the estimated 850,000--950,000 persons living with HIV in the United States, approximately one fourth (180,000--280,000) were unaware that they were HIV infected (2). In addition, many persons with HIV are tested late in the course of infection, usually as a result of illness (3). During 1994--1999, among persons who had HIV diagnosed, 43% were tested late in the infection (i.e., had acquired immunodeficiency syndrome [AIDS] diagnosed within one year of HIV diagnosis) (4). Late testing results in missed opportunities for prevention and treatment of HIV. To characterize HIV-testing patterns among HIV-infected persons, CDC analyzed data from a multisite interview project. During May 2000--February 2003, persons at 16 U.S. sites who were tested early in the course of HIV disease (early testers) were compared with persons who were tested late in the course of HIV disease (late testers). This report summarizes the results of the analysis, which indicate that late testers were more likely than early testers to be black or Hispanic, less educated, and exposed to HIV through heterosexual contact. Reducing the incidence of both new infections and HIV-associated morbidity and mortality will require earlier testing and improved access to prevention and care services for persons infected with HIV. A new CDC initiative, "Advancing HIV Prevention: New Strategies for a Changing Epidemic," is aimed at reducing barriers to early diagnosis of HIV infection and increasing access to quality medical care, treatment, and ongoing prevention services (5).

CDC's Supplement to HIV/AIDS Surveillance (SHAS) project is an ongoing, cross-sectional, multisite interview study that began in 1990 (6). SHAS data collected by 16 state or local health departments* were analyzed. Trained personnel conducted face-to-face interviews with persons aged ≥ 18 years with HIV/AIDS who were reported recently to local or state HIV/AIDS reporting systems. Facility- (eight sites) and population-based (eight sites) methods were used to recruit participants (6). The date of AIDS diagnosis was obtained from the HIV/AIDS reporting system. Early testers were defined as persons who reported that they had their first positive HIV test ≥ 5 years before the diagnosis of AIDS or had ≥ 5 years without a diagnosis of AIDS after their first positive HIV test. Late testers were defined as persons who had their first positive HIV test ≤ 1 year before the

diagnosis of AIDS. The following groups were excluded from the analysis: persons who tested >1 year but <5 years before AIDS diagnosis, persons who were not followed for an adequate follow-up time (i.e., <5 years after a positive HIV test without a diagnosis of AIDS being made), and persons for whom the relation between the HIV testing and AIDS diagnosis dates could not be determined.

Among persons interviewed during May 2000--February 2003, characteristics of early and late testers were compared. Chi-square testing was used to examine the association between late testing and sex, age, race/ethnicity, mode of HIV exposure, level of education, history of having an HIV-negative test before the first positive HIV test, reasons for getting tested, and type of testing site where diagnosed initially. Data were not validated by chart review.

Of 7,584 persons invited to participate, 5,980 (79%) completed the interview (range by state: 57--1,071), of which 4,290 (72%) were men, 3,324 (56%) were black, 1,285 (22%) were white, and 1,160 (19%) were Hispanic. Overall, 2,281 (38%) HIV exposures were attributed to men having sex with men (MSM), 2,166 (36%) to heterosexual transmission, 1,010 (17%) to current or former injection-drug use (IDU), and 477 (8%) to MSM/IDU.

Of the 5,980 persons interviewed, 4,127 (69%) had received an AIDS diagnosis, and 1,853 (31%) had HIV that had not progressed to AIDS (HIV [non-AIDS]). Of the 1,853 persons with HIV (non-AIDS), 519 (28%) had HIV diagnosed for >5 years and were classified as early testers; the remaining 1,334 (72%) persons with HIV (non-AIDS) were excluded from the analysis because of inadequate follow-up time. Among the 4,127 persons in whom AIDS had been diagnosed, 1,054 (24%) early testers and 1,877 (45%) late testers were included in the analysis; 860 (21%) persons with AIDS who tested positive for HIV >1 year but <5 years before AIDS diagnosis and 336 (8%) persons for whom it was not possible to determine the relation between HIV testing and AIDS diagnosis dates were excluded from the analysis.

Compared with the 1,573 early testers, the 1,877 late testers were significantly more likely to be younger (aged 18--29 years), to be black or Hispanic, to have been exposed to HIV through heterosexual contact, to have a high school or less education, or to have tested negative for HIV previously before their first positive HIV test ([Table](#)). When the analysis was restricted to persons from SHAS sites that conduct integrated HIV/AIDS surveillance, the demographic characteristics of participants by sex, race/ethnicity, and mode of exposure were similar to the overall population. The majority of late testers received HIV testing because of illness (65%), and the majority of early testers were tested because of self-perceived risk (29%) or because they wanted to know their HIV status (19%) ([Figure](#)); 87% of late testers and 69% of early testers had their first positive HIV test at an acute or referral medical care setting, and 8% of the late testers and 22% of early testers were tested anonymously.

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Editorial Note:

The findings in this report indicate that racial/ethnic minority populations, heterosexuals, or persons who have low education are more likely to test late for HIV. The majority of late testers sought testing because of illness; early testers were tested for several reasons, including perceived risk, desire to know their HIV status, and routine check-up in addition to illness. Late testers were more likely to have been tested previously; persons who tested negative might have assumed they were safe and therefore did not retest for a long time. Early testers were more likely to have been diagnosed initially through anonymous testing, illustrating the importance of this option to promote early HIV testing. Many persons with HIV (non-AIDS) were excluded from the analysis because follow-up time was insufficient for them to be classified as early testers; these persons probably will be classified eventually as early testers. Therefore, the association between young age and late testing might be a reflection of the study design.

Approximately half of the persons with AIDS had their first positive HIV test ≤ 1 year of AIDS diagnosis, reflecting the need for greater emphasis on earlier diagnosis of HIV infection. These data are consistent with previous population-based estimates of late testing and diagnosis among persons with AIDS (4). Persons who test late in the course of HIV infection are not able to benefit fully from antiretroviral therapy and prophylaxis to prevent opportunistic infections and, thus, are more likely to progress to AIDS (2, 7).

The findings in this report are subject to at least five limitations. First, the overall prevalence of late testing among all HIV-infected persons could not be estimated because the testing status of persons who were not interviewed in SHAS could not be assessed. Second, some sites participating in SHAS reported only AIDS cases and could not assess testing of HIV (non-AIDS) cases. Third, because treatment might delay progression to AIDS, some persons who would have been classified as late testers without treatment might have been misclassified as early testers or excluded. Fourth, SHAS interviews a convenience sample of persons reported to state/local health departments, and the results might not be generalizable to the entire infected population; however, a previous comparison of persons interviewed in SHAS with those reported through surveillance documented that the two groups were similar demographically (8). Finally, SHAS data are subject to recall and interviewer/interviewee biases inherent in interview studies.

Late testing results in missed opportunities for preventing HIV infections. During the time between HIV infection and diagnosis, infected persons can transmit HIV to others when they engage in practices that put their partners at risk. HIV transmission could be reduced by increasing awareness of HIV status through early testing. Knowledge of HIV serostatus promotes adoption of safer sexual practices (9). For persons in whom HIV is diagnosed, condom use might increase and the number of sex partners decrease (9). In addition, HIV-positive persons and HIV-discordant couples (i.e., one person is HIV-infected and the other is uninfected) might reduce unprotected intercourse and increase

condom use more than HIV-negative persons (9). Finally, earlier diagnosis and entry to care are associated with better prognosis and survival. Among HIV-infected persons with CD4⁺ cell counts of 201--350 cells/ μ L, initiating antiretroviral therapy was associated with reduced mortality, compared with delaying such therapy until <200 cells/ μ L (7).

One of the goals of CDC's national HIV Prevention Strategic Plan (goal no. 2) is to increase the proportion of HIV-infected persons in the United States who know they are infected (10). In April 2003, CDC announced a new initiative, "Advancing HIV Prevention: New Strategies for a Changing Epidemic," with strategies to reduce barriers to early diagnosis of HIV infection (5). These strategies include making voluntary HIV testing a part of routine medical care in many settings, identifying and implementing new models for testing in nonmedical settings, and preventing new infections by working with HIV-infected persons and their partners to reduce transmission. In November 2002, the Food and Drug Administration approved a rapid test for HIV detection; in January 2003, this test was categorized as a waived test under the Clinical Laboratory Improvement Amendments. Rapid tests create new opportunities to expand HIV testing to nontraditional and high-prevalence settings (e.g., emergency rooms, correctional facilities, community outreach settings, mobile testing sites, street outreach programs, social venues, and public service sites). The new rapid testing technologies will allow screening test results to be given during initial patient encounters so clients do not have to return for test results unless test results are positive, when confirmatory testing is required. To reduce transmission of HIV infection, public health agencies should understand the factors associated with late testing and design programs that target specific populations at risk for late testing for HIV (e.g., heterosexuals and members of racial/ethnic minority groups).

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