



HIV and AIDS Surveillance Among Inmates in Maryland Prisons

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ABSTRACT *The prevalence of those with human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS) is higher among inmates of correctional facilities than among the general population. This raises the need to identify inmates living with or at risk of HIV/AIDS and to provide counseling and appropriate services for HIV treatment and prevention. The Maryland Division of Corrections (DOC) offers voluntary testing to all inmates on entry and tests inmates when clinically indicated. We reviewed all 1998 HIV antibody tests and confirmed AIDS cases in the Maryland DOC. Inmate demographics, testing acceptance, rates of seropositivity, and AIDS cases and comparisons based on gender, race/ethnicity, and age were examined. Comparisons were also made to HIV testing and AIDS cases from the nonincarcerated Maryland population. Trends in DOC AIDS diagnoses and AIDS-related deaths over time were also examined. Of the inmates, 39% were voluntarily tested for HIV on entry to the Maryland DOC in 1998 (38% of males and 49% of females). Overall, HIV seropositivity was 3.3% (5% for females and 3% for males). The 888 cumulative AIDS cases diagnosed in the DOC inmate population were concentrated among males (90% vs. 77% statewide), African Americans (91% vs. 75% statewide), and among IDUs (84% vs. 39% statewide). Due to high rates of HIV and AIDS, inmate populations are a crucial audience for HIV/AIDS testing, treatment, and prevention efforts, especially women. Prison-based programs can identify significant numbers of HIV and AIDS cases and bring HIV prevention interventions to a population characterized by frequent high-risk behavior.*

INTRODUCTION

Epidemiological surveys indicate that the prevalence of HIV infection and of confirmed acquired immunodeficiency syndrome (AIDS) cases among inmates entering correctional facilities is higher than in the general US population. This disparity has persisted over time. The rate of confirmed AIDS cases among inmates has been higher than that in the general population for every year since 1991.¹ Surveys by the National Institute of Justice in 1992–1993 showed that the aggregate incidence rate of AIDS in prisons was 20 times greater than that of the general US population, with 363 cases versus 18 cases, respectively, per 100,000 adults.² The disparity

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continued following the expanded surveillance definition of AIDS in 1993, which added low T-cell count to the list of AIDS-defining conditions.

Aggregate and annual incidence rates of AIDS^{1,3,4} have consistently been five to six times higher in the inmate population than in the general population in 1994, 1996, and 1997. In Maryland, where the prevalence of AIDS is already high compared to the overall US population (with 31.9 cases per 100,000 population through December 1998 compared to 17.1 per 100,000), human immunodeficiency virus (HIV) and AIDS cases are more numerous among incarcerated individuals than nonincarcerated.^{5,6} Compounding the already high prevalence rate of HIV and AIDS in prisons and jails, the total number of inmates more than doubled between 1985 and 1995, from 313 per 100,00 US residents to 600 per 100,000 residents.⁷

AIDS cases in the United States continue to be disproportionately concentrated among males (although the proportion of cases among women is rising) and among African Americans. Men are also more likely to be incarcerated than women, and African Americans more likely to be incarcerated than whites.⁷ Through December 31, 1999, there were 733,374 adult/adolescent persons with AIDS reported to the Centers for Disease Control and Prevention (CDC) by state and local health departments (including US dependencies, possessions, and associated nations); of these, 609,326 (83%) were men, and 124,045 (17%) were women. In 1996, AIDS cases among African Americans exceeded those among whites for the first time (28,346 vs. 26,229, respectively). The disparity is even greater in Maryland, where African Americans represented 83% of new HIV cases in 1999, and 79% of all those living with AIDS.⁸

These trends carry important implications regarding HIV and AIDS in incarcerated populations. They suggest that prisons are an increasingly important location for HIV-seropositive individuals and individuals with AIDS, many of whom will be released back into their communities. The rates of HIV and AIDS in correctional facilities indicate that such facilities provide critical opportunities to monitor HIV seroprevalence in a high-risk population, gauge the extent of the HIV epidemic and of high-risk behavior in the home communities of inmates, and implement prevention programs and clinical interventions. Published interventions are now beginning to report evidence of postrelease risk behavior change.^{9,10}

The purpose of the present study was to examine the prevalence of HIV and AIDS in Maryland prisons and to characterize demographics and risk behaviors of individuals in the Department of Correction (DOC) system. Findings from HIV and AIDS surveillance in Maryland prisons, including the extent of voluntary and clinical testing and trends in AIDS cases, were used to compare incarcerated and nonincarcerated populations. Gender, race, and risk behavior characteristics of inmates with HIV and AIDS and the general population of Maryland were compared. Finally, we briefly describe prevention efforts currently under way with Maryland inmates.

METHODS

We reviewed demographic and risk behavior characteristics from all reported HIV tests conducted within the DOC for calendar year 1998 and all AIDS cases reported from within the DOC for the same year. These data were then compared to surveillance data for non-DOC test results and AIDS cases for the same period. Procedures for DOC and non-DOC testing and reporting are described below.

AIDS Case Reporting

There are 27 correctional facilities within the DOC of the Maryland State Department of Public Safety and Correctional Services (DPSCS), with an average daily population of 22,338 inmates. Disease reporting is centralized, with infectious disease nurses having responsibility for reporting AIDS cases to the DOC Office of Health Care Services, which submits reports to the Center for Surveillance of the state AIDS Administration. DOC reports are treated as a separate jurisdiction from the Maryland counties and Baltimore City.

HIV Testing

Those with HIV are identified either at Intake Testing, which is a voluntary testing program available to inmates after they are sentenced to a correctional facility, or when inmates visit prison clinics for treatment of symptoms that warrant HIV testing. Inmates participating in the voluntary counseling and testing program are also queried about HIV risk practices. Results of these voluntary tests are reported via a unique identifier number to the Counseling and Testing Services (CTS) program of the AIDS Administration. CTS maintains a database of test result information for the AIDS Administration. HIV test results from clinical testing within DOC are also reported via unique identifier number to CTS. We reviewed all reported HIV tests from 1998.

RESULTS

Demographic Characteristics of Inmates

Table 1 represents the demographic characteristics of the general DOC inmate population as of December 1998 as presented by the Maryland Department of Public Safety and Correctional Services. This is reasonably representative of the prison population at any time. Overall, African Americans (76%) and males (95%) comprise the majority of the inmate population.

Prevalence of HIV

Voluntary Testing in the Department of Correction and Elsewhere in Maryland During 1998, 38% of male inmates and 49% of female inmates elected to be tested for HIV infection. Of those tested, 3% of males and 5% of females were HIV seropositive, with an overall rate of 3.3% (Table 2). In contrast, 2% of nonincarcerated males and 1% of nonincarcerated females tested through CTS sites elsewhere were HIV positive (HIV+).

TABLE 1. Demographics of general population of inmates in Maryland by race and gender, 1998

Race	Male (%)	Female (%)	Total (%)
White	4,675 (22)	327 (29)	5,002 (22)
Black	16,300 (77)	806 (71)	17,106 (76)
Other	30 (<1)	2 (0)	32 (<1)
Unknown	198 (1)	0 (0)	198 (1)
Total	21,203 (100)	1,135 (100)	22,338 (100)

TABLE 2. Voluntary HIV testing in the Department of Correction (DOC) and elsewhere in Maryland, 1998

Sex	Entering inmates	Voluntarily tested (%)	No. HIV+ (%)	Non-DOC voluntary tests	No. HIV+ (%)
Male	12,271	4,613 (38)	145 (3)	29,693	520 (2)
Female	1,358	670 (49)	31 (5)	29,848	350 (1)
Total	13,629	5,283 (39)	176 (3.3)	59,541	870 (1.5)

Clinical Testing in the Department of Correction Inmates visiting DOC clinics with symptoms or reporting risk factors related to HIV infection are routinely tested. During 1998, of 1,630 male inmates tested, 191 (12%) were HIV positive, as were 38 of 246 female inmates (15%). The overall seropositivity rate was 12% (229 of 1,876 inmates tested). Not all of these tests represent new diagnoses, however, because inmates clinically tested may also have been tested in previous years.

Total HIV Testing/Diagnoses The total number of DOC inmates diagnosed with HIV infection during 1998 through voluntary testing and clinically based testing combined was 405 of 7,159 tested (5.7%). This is comparable to figures reported in 1996, when a total of 9,087 inmates were tested with 504 found to be HIV+ (5.5%).

Demographics and Risk Behaviors of Maryland Department of Correction HIV Cases Surveillance records identified 236 individual inmates as newly diagnosed with HIV in 1998. African Americans represented 76% of the prison population (Table 1), but represented 87% of those prisoners newly diagnosed with HIV in 1998. Females represented 5% of the prison population, but represented 15% of the prisoners with HIV (35 of 236) (Table 3).

Surveillance records in the AIDS Administration identified risk factors for 124 of the 236 individuals newly diagnosed with HIV in 1998 (52.5%). The predominant mode of transmission among both males and females (64% and 69%, respectively) was injecting drug use (IDU), which was also the largest category of exposure among inmates regardless of race, 65%. Tables 4 and 5 detail risk factors by sex and race.

AIDS Surveillance in Maryland Department of Correction

In Maryland, cases of adults and adolescents with AIDS increased steadily from 1986 to 1993. As of December 31, 1999, there were 20,149 cumulative cases,

TABLE 3. Prison HIV cases by gender and race, 1998

Race	No. male (%)	No. female (%)	Total (%)
White	22 (11)	2 (6)	24 (10)
Black	174 (87)	32 (91)	206 (87)
Other/missing	5 (2)	1 (3)	6 (3)
Total	201 (100)	35 (100)	236 (100)

TABLE 4. Prison HIV cases by exposure category and gender, 1998

Exposure	Male (%)	Female (%)	Total (%)
MSM	1 (1)	—	1 (1)
IDU	71 (64)	9 (69)	80 (65)
Heterosexual	30 (27)	4 (31)	34 (27)
Not specified/unknown	9 (8)	0 (0)	9 (7)
Total	111 (100)	13 (100)	124 (100)

IDU, injecting drug use; MSM, men who have sex with men.

including 1,004 cases from state correctional facilities⁶ and 19,145 cases in the general population.

Infection control practitioners are responsible for overseeing clinical programs for inmates with HIV/AIDS. In addition to the incident HIV infection rate reported, an average of 800 inmates with HIV infection were receiving care in DOC during 1998, compared to 766 in 1997 and 769 in 1996. During 1998, within this population of inmates with HIV infection, the number with AIDS was 283 (35%). The average standing population of inmates with HIV infection has been relatively constant, although the total number of inmates diagnosed with AIDS has increased from 211 (27%) in 1994 to 283 (35%) in 1998. The incidence of AIDS diagnoses in DOC increased from the 1980s to 1995, with 154 cases diagnosed that year. Since then, it fell to 114 cases in 1996, 98 in 1997, and 62 in 1998. In Maryland as a whole, new cases peaked in 1993 at 2,346, declining to 1,370 by 1998.

Demographics and Risk Behaviors of Those with AIDS Demographic and risk behavior characteristics of DOC inmates with AIDS are similar to the patterns found among DOC inmates with HIV in 1998. There were 888 cumulative AIDS cases in DOC through 1998. African Americans represented 92% of the males with AIDS, 83% of the females with AIDS, and 91% of all AIDS cases diagnosed through December 31, 1998. Females represented 5% of the prison population, but 10% of those with AIDS.

As with the 1998 HIV cases, the predominant mode of transmission was IDU for both males (83%) and females (93%), representing 84% of all AIDS cases. IDU was also the largest category of exposure among inmates regardless of race (84% among both whites and African Americans and 80% for Hispanics and others).

For African Americans, 55% of AIDS cases were diagnosed in those aged

TABLE 5. Prison HIV cases by exposure category and race, 1998

Exposure	White (%)	Black (%)	Hispanic/ other (%)	Total (%)
MSM	0 (0)	1 (1)	0 (0)	1 (1)
IDU	8 (89)	70 (63)	2 (50)	80 (65)
Heterosexual	1 (11)	31 (28)	2 (50)	34 (27)
Not specified	0 (0)	9 (8)	0 (0)	9 (7)
Total	9 (100)	111 (100)	4 (100)	124 (100)

IDU, injecting drug use; MSM, men who have sex with men.

31–40 years; for whites, it was 50%; and for Hispanics/others, it was 100%. Of the total cases diagnosed, 55% were in this age range.

AIDS-Related Deaths In Maryland, AIDS-related deaths accounted for more than one third of inmate deaths from all causes for 1994–1998. For this period, the total number of inmate deaths was 236, with AIDS-related deaths totaling 79 (33%). In 1998, 17 of 73 inmate deaths were AIDS related (23%), from a high of 26 of 56 deaths (46%) in 1995. Of the total number of inmate deaths, only 2 were of females, and both of these were from AIDS-related diseases.

DISCUSSION

We found higher HIV seroprevalence among incarcerated women than among incarcerated men. This is contrary to findings from nonincarcerated populations receiving testing, but consistent with data on incarcerated persons in other states. For example, in New York State, blinded seroprevalence surveys have consistently shown higher rates of HIV among women inmates; in 1996–1997, 18% of female inmates and 10% of male inmates were seropositive.¹¹ The difference in rates may be explained by a higher prevalence of IDU, as well as commercial sex work among female inmates, compared to the general population. Furthermore, seroprevalence rates tend to be higher in blinded surveys than in voluntary testing programs conducted in the same inmate populations. A 1991 blinded seroprevalence study among inmates entering the Maryland DOC found a seroprevalence of 7.9% among men and 15.3% among women and showed that refusers of testing were significantly more likely to test positive than were voluntary testers.¹²

Incarcerated men and women showed higher HIV seroprevalence than in the nonincarcerated test population. This is consistent with nationwide findings across other state and federal prison jurisdictions. Prison inmates, in Maryland and elsewhere, appear to represent a high-risk population with ongoing high rates of HIV and AIDS compared to other populations. Within the Maryland DOC, injecting drug use was clearly the primary risk behavior for HIV and AIDS. As noted above, risk factors were identified for only 52.5% of the inmates diagnosed with HIV in 1998, so it is unclear that this generalizes to the other inmate cases. However, IDU is also the primary risk behavior in Maryland as a whole according to CTS records.¹³ African Americans are disproportionately represented in HIV and AIDS cases in Maryland and across the United States. This trend also seems to exist within the incarcerated population. Although the number of African Americans incarcerated is already disproportionate, they make up an even larger percentage of DOC HIV and AIDS cases than the general prison population.

Health Care and Risk Reduction

AIDS cases and AIDS deaths have declined within the Maryland DOC, paralleling declines in the general population. However, the persistence of high rates of HIV relative to other tested populations and the large role of AIDS deaths among all deaths in DOC indicate the need to identify seropositive inmates and to provide effective interventions to reduce HIV/AIDS risk behaviors. This need is especially urgent for female inmates. Most inmates, both male and female, will eventually be released to their home communities. Identifying and providing appropriate health care for HIV+ inmates and providing risk reduction interventions to reduce the rate of risk behaviors after release are clearly necessary to reduce the public health impact of HIV and AIDS among prisoners and remain an important priority of DOC.

HIV/AIDS Counseling and Education in Maryland Prisons and Jails

Given the high rates of seropositivity and the many individuals with AIDS who are currently incarcerated, prison populations should be targeted for clinical services and secondary HIV prevention programs. Currently, HIV prevention programs include the individual client-centered HIV counseling session. Other programs that include more intensive group and individual sessions are thought to be more effective in long-term behavior change. One such program, Prevention Case Management (PCM), is funded by the AIDS Administration of the Maryland Department of Health and Mental Hygiene and was offered to inmates in 4 state DOC and 17 local jail facilities as of August 2000. The program was first implemented in 1996 and has undergone expansion and revision in response to needs assessment and outcome evaluation since that time.

The PCM program offers individual or group sessions or a combination of both to inmates who choose to participate. These sessions are conducted by trained social workers and cover a variety of topics. Four topics, however, are mandatory: Personalizing HIV Risk, Condoms and Other Devices, Substance Abuse, and Transitioning to the Community. Client contact logs are maintained by the social workers to document the intervention sessions with each individual client, and pre- and posttests are administered at the first and last sessions, respectively, to assess changes over time. The tests assess knowledge about HIV transmission and prevention; attitudes about condom use; self-efficacy to avoid sex and substance use behaviors risky for HIV; and postrelease behavioral intentions. Between June 1996 and June 1999, complete pre- and posttest records were available for 553 inmates.

Analysis of the pre- and posttest data for 1996–1999 shows that significant positive changes occurred for participants across this entire period. These included increases in positive attitudes about condom use, self-efficacy for condom use, self-efficacy to avoid risky substance use, and intentions to use condoms and reduce sexual risk postrelease.¹⁴

Programs such as PCM, and other intensive interventions, offer an opportunity to reach a high-risk audience. Despite these programs, the prevalence of HIV and AIDS among prison inmates, relative to the broader population, remains high. Wide-scale efforts to promote voluntary HIV testing of inmates and to recruit inmates into prevention programs such as PCM that offer intensive education and counseling for risk reduction serve a vital role in identifying HIV+ inmates and in motivating risk reduction among both seronegative and seropositive inmates.

CONCLUSIONS

Further reductions in HIV and AIDS will require greater efforts to locate seropositive individuals and to provide effective risk reduction interventions. Prisons and jails represent sites well suited to this purpose. They have a high concentration of seropositive individuals, high rates of risk behaviors among inmates, and some populations statistically overrepresented in HIV and AIDS cases (such as African Americans) are also incarcerated in disproportionate numbers. Thus, testing and prevention programs in prison are already well targeted to at-risk populations simply because of location. In addition, inmates identified as seropositive can be readily monitored for symptoms and disease progression, and treatment regimens can be carefully monitored as well. Thus, seropositive inmates who are identified and properly treated may be accustomed to their treatment regimen and better prepared

to continue once they are released. Finally, high rates of IDU reported by inmates represent a common transmission route for HIV and hepatitis C virus and emphasize the need for drug treatment and prevention. More resources for programs in these areas could have a significant impact in further reducing HIV and hepatitis C transmission among current and former inmates.

Further research is needed to determine if prevention programs such as PCM are effective in promoting actual risk reduction behaviors following release and if seropositive ex-inmates maintain treatment regimens. However, some existing research is encouraging.^{9,10,14} The opportunity that the prison setting presents for prevention, testing, and treatment is clear, and it is important for achieving further reductions in HIV and AIDS in the United States.

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