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Using Arrest Charge as a Screening Criterion to Identify Undiagnosed HIV Infection among New Arrestees: A Study among Los Angeles County Jail Inmates

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Abstract

Despite high documented HIV prevalence, few jail systems offer universal HIV screening, nor is this always feasible. We evaluated undiagnosed HIV infection and HIV risk history by arrest charge among 1,322 new arrestees in order to examine whether specific charges may help prioritize jail-based screening programs. Undiagnosed HIV prevalence was 2.7% and 1.0% among males and females, with 32% and 45% reporting high HIV-risk histories. Risk history distinguished HIV-infected males but not females. Males with parole violations, sex, or theft

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Credit

N. Harawa assisted with study design, supervised study implementation, conceived of this analysis, and wrote the study findings. T. Bingham conceived of the study, oversaw implementation, and contributed to the interpretation of results and article preparation. Q. Butler supervised field staff, managed and analyzed survey data and assisted with article preparation. W. Cunningham assisted with conception of the research question and article preparation. K. Dalton contributed to the study conception and results interpretation. D. Mackellar and S. Behel were the study's Project Officers. They provided input and assistance with study implementation and feedback on article preparation.

Human Subjects Protection

Protocol approval for this study was received from institutional review boards at CDC, the Los Angeles County DHS, and the LASD Correctional Services Department.

Conflicts of Interest

This study involves no conflict of interest among any of the coauthors.

charges had high undiagnosed HIV infection relative to other males. A weaker trend was observed for females with parole violations, drug, or violent charges. These charges represented 30% and 66% of males and females studied and 56% and 100% of their undiagnosed HIV infections, respectively. Using arrest charge to target screening may efficiently increase HIV diagnosis in jail inmates.

Keywords

HIV epidemiology; Incarceration; HIV testing; Race/ethnicity; Gender

Introduction

The prevalence of HIV infection among the incarcerated US population is estimated to be three-to-five times higher than in the general population (Maruschak, 2006; Sabin, Frey, Horsley, & Greby, 2001). For example, 0.5% of state prisoners have an AIDS diagnosis compared to 0.015% of the general US population, and 1.9% of all inmates in state prisons are known to be HIV infected (Maruschak, 2006). Further, according to one estimate 20–26% of the HIV-infected US population pass through a correctional facility at some point in any given year (Hammett, Harmon, & Rhodes, 2002). Most of the association between incarceration and HIV infection is attributed to the sexual and drug risk factors associated with the illegal behaviors leading to arrest rather than to HIV transmission during incarceration (Brewer et al., 1988; Hammett, 2006; Macalino et al., 2004; Spaulding et al., 2002; Wohl et al., 2000). Hence, new arrestees are ideal candidates for HIV counseling and testing (Okie, 2007), and the Centers for Disease Control and Prevention (CDC) recommends routine offering of HIV testing during the medical intake process provided all inmates (Branson, 2007). Unfortunately, not all US correctional facilities have sufficient resources to implement universal routine testing, fewer than half of state prisons routinely test new entrants (Maruschak, 2006), and just 18.5% of jail inmates report having being offered an HIV test following jail entry (Maruschak, 2004).

In settings with insufficient resources to offer universal testing or very large inmate populations, selective screening of higher-risk inmates may facilitate the identification of previously undiagnosed, HIV-infected persons. Logistical issues and confidentiality concerns may preclude, however, the use of interviews or surveys to identify inmates at elevated HIV risk. For example, inmates may be reluctant to provide sensitive behavioral data, and overcrowded jail systems may lack the required space and personnel resources to solicit risk data in a confidential manner. If arrest charge is associated with HIV risk, using it as a screening criterion may reduce the need for soliciting sensitive risk behavior information at jail intake and provide an alternative to selection based on more controversial factors, such as race/ethnicity. Associations between arrest charge and undiagnosed HIV infection have yet to be assessed among new arrestees.

California and other inmate populations in the Western region have relatively low HIV prevalences compared to facilities in the Northeast and South. Hence, facilities in this and other lower-prevalence areas may be particularly appropriate for targeted HIV testing approaches. For example, the U.S. Bureau of Justice Statistics (BJS) indicates that 0.7% of male and 0.7% of female prisoners in California were known to be HIV infected in 2004, compared to a 4.1% and 2.1% known overall prevalence among prisoners in the Northeast and South (Maruschak, 2006). A 1999 blinded seroprevalence survey of inmates entering the California Department of Corrections prisons, found that 1.4% of men and 1.7% of women were HIV infected, indicating a significant proportion of undiagnosed infections among prisoners in the state. In these data, prevalences were highest in Blacks, followed by

Whites for male inmates and Latinos for female inmates. (California Department of Health Services [DHS], 2001). The large racial/ethnic disparities observed and the high rates of incarceration among Blacks (Bonczar & Beck, 1997) underscore the importance of the custody setting for addressing HIV infection in the Black community (Harawa & Adimora, 2008).

As part of a larger research project to estimate HIV incidence among high-risk groups in two highly impacted geographic areas of Los Angeles County (LAC), newly incarcerated inmates in two jail facilities were enrolled in a cross-sectional study. We use these data in a preliminary investigation to evaluate whether specific types of arrest charges are associated with HIV risk.

Setting

The Los Angeles County Sheriff's Department (LASD) operates the world's largest municipal jail system with approximately 180,000 inmates processed annually and approximately 300–900 inmates classified per day. The two jail facilities included in this study, Men's Central Jail and Twin Towers Correctional Facility (Tower 2), house approximately 8,600 inmates. At the time of this study, Tower 2 was the only facility to house female inmates, who represented 14% of the total jail population. Men's Central Jail was selected because its inmates represent about 50% of the LASD jail system's average daily inmate count (17,000–18,000 in 2004), whereas the other five County jails each contain smaller proportions (unpublished data; Inmate Reception Center, LASD; 6/05). Furthermore, with the exception of those inmates sent directly to separate facilities because of serious mental illness or medical problems, all housed male inmates spend at least the first hours or days of their jail stay at Men's Central Jail.

Participation was limited to residents of the Metro and South Service Planning Areas (SPA) of LAC. The Metro SPA, where Men's Central and Twin Towers Jail facilities are located, comprises downtown and surrounding neighborhoods, Hollywood, West Hollywood, and parts of East Los Angeles. Metro SPA has the county's largest number and prevalence of living male and female AIDS cases and the highest overall AIDS rates. The South SPA comprises South and South Central Los Angeles. It has the highest AIDS prevalence among women. Nearly half (48%) of all 1,413 LAC AIDS cases newly diagnosed in 2003 resided in these two SPAs, as did 22% of the LAC population (2005).

Materials and Methods

Subjects

Between July 2003 and March 2004, new entrants to Men's Central and Tower 2 Jails were sampled from inmate classification lists. These lists are composed primarily of new arrestees and persons incarcerated for longer periods if they were transferred from a state prison or the main County hospital's jail ward. Approximately equal numbers of inmates were recruited from each facility to assure an adequate sample of females. Inmates were sampled sequentially (i.e., sampled in the order listed) from daily classification lists until there were enough participants for study interviewers to enroll on a given day. During each four-day workweek, selected inmates who resided in zip codes within the South and Metro SPAs or who had missing zip code information were issued passes to leave their housing units and meet with study interviewers in a semi-private area. The interviewers described the study, assessed eligibility (ages 18 to 65 years and residence in Metro or South SPA), consented participants, conducted a face-to-face interview, and provided HIV pre-test counseling. All study interviewers were state-certified HIV testing counselors. The study focused on previously undiagnosed persons; however, no one was excluded based on HIV status.

Nevertheless, some inmates refused participation because they had previously tested HIV-antibody positive. Those inaccessible for security reasons (e.g., persons housed in segregated units because of membership in specific gangs, those charged with certain types of murder, or those deemed to be high profile) were not sampled.

Data Collection

The trained interviewers, not affiliated with the LASD, collected demographic, socioeconomic, sexually transmitted disease (STD) history and risk behavior data using a standardized survey instrument covering the period of the prior two years or since the participants' last negative HIV test, whichever was shorter. Interviewers used venipuncture to collect a blood specimen for HIV-antibody testing using serial enzyme immunosorbent assays and a Western blot. All participants later received an incentive packet worth approximately $5 that included popular food and hygiene items from the jail commissary. Testing results and HIV post-test counseling were provided in a similar manner.

When a potential participant did not appear on the first day that a pass was generated, up to two additional attempts were made to access him or her for enrollment or provision of HIV test results. Those who did not appear were either in court, on another pass (e.g., medical, visiting, or attorney room), or did not want to leave their housing areas at the time the pass was issued. Post-test counseling was provided as soon as the results were available (generally 3–4 days). Participants' survey responses and test results were kept strictly confidential and not shared with jail authorities except in those instances where participants wanted to receive HIV-related medical services and provided written permission to disclose their results to Sheriff's Department medical-services staff. Just one newly identified HIV-infected inmate did so. Participants not providing this permission at posttest could also request another HIV test and care at any later point or contact study staff on release for referrals in the community. The study protocol was approved by institutional review boards at CDC, the LAC Department of Health Services (DHS), and the LASD Correctional Services Department.

Data on arrest charge – categories

After enrollment, respondents' arrest charge descriptions were obtained by study staff from inmate information available to the public via the LASD website. Although inmates are frequently charged with multiple crimes and charges may later be added, modified, or dropped, per LASD procedures, one arrest charge is selected by the arresting officer(s) and represents the most serious criminal charge at the time an inmate is booked. Using this information, participants were classified into one of the following *six arrest charge* categories: (1) *drug charges* related to the possession, use, or sale of illegal narcotics; (2) *sex charges* included non-violent charges, primarily prostitution and lewd conduct; (3) *violent charges* included charges such as assault, battery, robbery, rape, and attempted murder; (4) *theft charges* involved stolen property not including robbery; (5) *parole violations* included charges for violating prison-parole terms; and (6) *public disorder charges* included charges that did not fit the above categories (e.g., driving while under influence, carrying a concealed weapon, failure to appear in court). Driving while under the influence charges were included in the *public disorder* category because the vast majority of these arrests involve alcohol rather than drug use.

Demographic and HIV risk history data

We examined two demographic variables, which were obtained via the survey but are also readily available at jail intake: race/ethnicity and age category. We also created one dichotomous HIV-risk variable with individuals reporting *any* of the following in the past two years or since their last HIV test categorized as having a "high-risk history" for HIV:

diagnosed STD, injection drug use, exchanging sex for drugs or money, and sex with one or more of the following: an injection drug user (IDU), man (for males), man who has sex with men (for females), sex worker, or HIV-positive person. The risk assessment period of "in the last two years" or "since the last HIV test" was selected to capture risky behaviors contributing to previously undiagnosed infections, while minimizing the need for respondents to recall distal events.

Analyses

Because of our interest in identifying persons with undiagnosed infection, participants reporting a prior positive HIV test were excluded from this analysis. We first evaluated the sample distributions of age group, race/ethnicity, high-risk history, arrest charge, and HIV infection by sex. We then calculated the prevalence of undiagnosed HIV infection within arrest charge and high-risk history categories, by sex with 95% confidence limits (CL) based on the Wilson score method without continuity correction (Newcombe, 1998). Logistic regression was then used to examine associations of arrest charge with undiagnosed HIV infection and high-risk history, before and after controlling for age category (18–24, 25–34, and 35–44 years) and Black race. In addition, crude and adjusted odds ratios were estimated for associations between arrest charge and HIV risk history to determine whether arrest charge was also associated with factors known to place individuals at risk for HIV infection. Logistic regression analyses were conducted separately for males and females and were restricted to participants less than 45 years of age because all HIV infections were found in this group. All analyses were conducted using SAS version 8.0 (Cary, N.C.).

Results

Screening & Recruitment

From July 2003 through March 2004, we identified 6,117 potentially eligible inmates -- based on a zip code that was located in an eligible SPA or missing -- from the daily inmate classification lists. Of these inmates, 273 were determined to be ineligible based on initial screening, 45 refused eligibility screening, and eligibility could not be determined for 2,854 because they had missing zip codes and were transferred or released prior to screening or were inaccessible for security reasons. This left 2,945 known SPA-eligible residents. Just 16% of these refused participation; an additional 29% were released, in court, transferred, or otherwise unavailable when recruitment was attempted; 4% were not accessible for security reasons; and enrollment was not attempted for 3%. In total, 1,403 enrolled in the study, representing 48% of the known SPA-eligible inmates identified and 84% of the confirmed eligible inmates directly offered participation. Eighty-one (6%) of the 1,403 respondents had a self-reported prior HIV diagnosis, an insufficient blood specimen for testing, missing paperwork, incarceration beyond 30 days, or a residential zip code that was later found to be in an ineligible area, leaving 1,322 recently arrested inmates for this analysis. Fourteen of these 81 were excluded based on a self-reported prior HIV diagnosis; however, we note that that some of the inmates who refused study participation altogether likely did so because they had been previously been diagnosed with HIV.

Sample Characteristics

Most participants were less than 45 years of age and nearly 90% were Black or Latino (Table 1). The sample's age distribution was representative of the jail's general population; the racial/ethnic distribution included more Blacks and Latinos. For example, in January 2004, 86% of those jailed were under 45 years of age, and 81% of males and 73% of females were Black or Latino (unpublished data, LASD). Blacks and Latinos were almost equally represented among male study participants, whereas 65% of female participants were Black. The most common arrest categories were drug (31%) and public disorder (26%)

charges for males, and drug charges (45%) for females (Table 2). Nearly 80% of both male and female respondents were charged with felonies (data not shown). High-risk histories for HIV were reported by 32% of males and 45% of females. Paying for sex (11%), having sex with another man (9.2%), and having an STD (9.0%) were the most commonly reported HIV risks for males. Receiving money (30%) or drugs (16%) for sex and being diagnosed with an STD (15%) were the most commonly reported risks for females.

HIV Prevalence

Twenty-three undiagnosed HIV infections were identified, for a prevalence of 2.7% [95% CL = 1.6, 4.4%] among males and 1.0% [95% CL = 0.4, 2.0%] among females (Table 1). The highest levels of infection were found among Blacks, males ages 25–44 years, and females ages 35–44 years (Table 1). No participants over the age of 44 years had undiagnosed HIV infection. Although males with a high HIV-risk history (one or more self-reported HIV risk factors) were much more likely to have undiagnosed HIV than those not reporting such a history (7.9% vs. 0.2%), undiagnosed infection did not differ according to HIV-risk history among females (0.9% vs. 1.0%). Among HIV-infected inmates, 94% of males (compared to 32% of uninfected males) and just 43% of females (compared to 45% of uninfected females) reported a HIV-risk history.

Associations between Arrest Charge and HIV Prevalence

Compared to the overall prevalence for their respective sample, HIV prevalence was elevated among men arrested for parole violations and non-violent sex- or theft-related charges [combined prevalence = 5.1%; 95% CL = 2.6, 9.5%]. See Table 2 for data on the HIV prevalences within each arrest charge category. HIV-positive males with these charges represent 56% of all male undiagnosed HIV infections (9 out of 16 cases). None of the previously undiagnosed HIV infections were identified among men arrested for violent crimes.

Among women, HIV prevalence was elevated among inmates arrested for drug-related charges, violent crimes, and parole violations [combined prevalence = 1.5%; 95% CL = 0.6, 3.0%] (See Table 2). HIV-positive females with these charges represent 100% of all female undiagnosed infections (7 out of 7 cases). No previously undiagnosed HIV infections were identified among women arrested for sex, theft, or public disorder charges.

Eleven of the 14 (79%) HIV-positive participants excluded from the analysis because of a prior diagnosis also had arrest charges that fell into the higher risk categories identified for males and females. Given there were no positive results among those age 45 years and over and only one among the 18–24 year old age group, we repeated the analyses in Table 2 for participants ages 25–44 (n=448 females and 275 males). These prevalence estimates are generally increased over the full sample analysis, but their relative levels remain the same with two exceptions. In this age range, males with theft charges have a higher HIV prevalence than parole violators (10.0% vs. 7.0%) and no infections are identified among women with arrest charges for violence (data not shown).

The crude odds of infection for male participants arrested for parole violations or for theft or sex charges was 3.2 [95% CL (1.2, 8.8)] times greater than for male participants arrested for all other charges combined. After controlling for age and Black race among males less than 45 years of age, the observed odds ratio was 3.8, 95% CL (1.3, 11). Because all females with undiagnosed HIV infection fell into the drug, violent, or parole violation categories, the crude or adjusted odds ratios comparing women in these categories to all others are undefined with p-values that approach statistical significance.

As expected, given the positive association observed between arrest charge and HIV infection in males and the absence of one in females, arrest charge was associated with self-reporting a high-HIV risk history for men [adjusted OR = 2.1, 95% CL (1.4, 3.2)] but not for women [adjusted OR = 0.89, 95% CL (0.6, 1.3)].

Discussion

Our findings indicate important associations between both sociodemographic and arrest-related factors and HIV infection. HIV prevalence was higher in males than females and highest in Blacks, followed by Whites among both male and female inmates. Further, the largest portion of HIV infections was identified in the 35–44 year-old age group for both sexes. Male and female parole violators, males arrested for sex or theft charges, and females arrested for drug or violent charges were more likely to have undiagnosed HIV infection than males and females arrested for other reasons. Parole violations sex and theft charges involved just 30% of arrests, but nearly 60% of undiagnosed HIV infections among male arrestees. Parole violations, drug, and violent charges involved two-thirds of female arrests and 100% of female HIV infections, with drug arrests representing 45% of arrests and 57% of infections; however, imprecise estimates caution against strong conclusions in females.

These data provide preliminary evidence that, in jail settings where universal routine screening is not feasible, selective screening for HIV based on arrest charge should be further explored as a strategy for identifying undiagnosed infections. Based on these findings and assuming that 15% of inmates elect not to test, a routine, opt-out LASD screening program targeting arrestees with these charges would generate approximately 54,000 HIV tests each year. This compares to over 150,000 tests for a universal opt-out screening program, resulting in nearly 100,000 fewer annual tests. Given that no undiagnosed HIV infections were found among participants who were over 45 years of age, targeted jail-based HIV screening programs might consider screening only arrestees ages 18–44 years.

Although small numbers of HIV-positive females produced imprecise estimates, we note that arrest charge was better able to distinguish females with undiagnosed HIV than was self-reported STD and risk behavior history. Similarly, a recent jail-based CDC demonstration project to implement expanded HIV testing in 10 US jail systems found that nearly half of the HIV-infected inmates identified did not report any high-risk behaviors (MacGowan et al., 2007) and a study of female prisoners in Rhode Island indicated that sexual risk behaviors did not predict HIV seroconversion (Rich et al., 1999). Hence, a screening program based on reported risk may be inefficient for identifying HIV-infected female inmates, and the potential utility of arrest charge for identifying high-risk inmates should be further explored.

In a study of early syphilis identification among arrestees in a Baton Rouge, LA jail, syphilis diagnosis was associated with arrest charges of cocaine possession among females and felony theft among males. Moreover, a lack of association was found for charges of felony theft for females and those related to cocaine, marijuana, or alcohol for males, consistent with our data. Inconsistent with our data were associations of early syphilis with prostitution for females (Kahn, Scholl, Shane, Lemoine, & Farley, 2002). We are not aware of any studies focusing on the association between criminal charges and undiagnosed HIV disease. However, six published US-based studies or reports on incarcerated populations do provide some results consistent with our findings. McClelland, Teplin, Abram, & Jacobs found that female inmates with prior arrests or drug charges reported elevated levels of HIV risk behaviors (2002). Rich et al. found low HIV prevalence among males arrested for violent sexual offenses (2002) and high prevalence among female inmates with prior incarcerations

(1999). Carpenter, Longshore, Annon, Annon, & Anglin found a relatively high HIV prevalence among commercial sex workers in their study of LASD jail inmates but did not stratify their findings by sex (1999). Further, unstratified data from the HIV seroprevalence survey conducted with California state prisoners also found elevated prevalences in those with multiple prior incarcerations and low prevalences in those arrested for violent crimes or driving under the influence (California Department of Health Services, 2001).

The strongest corroboration of our findings comes from the U.S. Department of Justice, Bureau of Justice Statistics (BJS) 2002 Survey of Inmates in Local Jails and a voluntary inmate-testing program carried out by the LAC Sexually Transmitted Disease (STD) Program. BJS examined self-reported HIV prevalence in a sample of nearly 4,400 previously tested jail inmates weighted to represent the US jail population (Maruschak, 2006). Inmates held on violent, drug, property, and other offenses were compared, with the "other" offense category including both public disorder and parole violation charges. Like us, they found comparatively high prevalences among males charged with property offenses and females charged with drug and violent offenses and comparatively low prevalences among males charged with violent offenses and females charged with property offenses (Unpublished data, BJS, Washington, DC., March 7, 2007). We compiled data from LAC STD Program's published reports of HIV infection among low-security general population males (n=645) and self-identified homosexual and male-to-female transgender inmates (n=1,082) tested in Men's Central Jail in 2004 and 2005. Similar to our findings for males, HIV prevalence was elevated among inmates charged with non-violent sexual offenses and parole violations compared to inmates charged with violent and alcohol or drug-related offenses (2004 (2005).

Despite multiple potential HIV risks related to sex work, we found no undiagnosed HIV infection among female participants arrested for sex charges. This finding contrasts with the high undiagnosed HIV prevalence among males arrested for sex charges, but is consistent with available data indicating low undiagnosed HIV infection among female sex workers in California (California DHS, 2005). Because HIV risk and drug use often coincide among sex workers (Cotten-Oldenburg, Jordan, Martin, & Kupper, 1999; Grella, Annon, & Anglin, 2000; McClelland et al., 2002), it is possible that those highest-risk sex workers in our study fell into the "drug-related" arrest charge category. In addition, because individuals arrested for prostitution in California receive court-ordered HIV testing (Hodge, 2004) and often have high recidivism rates, women in this group may be less likely than other women to have *undiagnosed* HIV infection. Many states authorize or require HIV testing of persons charged with or convicted of sex-related crimes (Hodge, 2004). Hence, inmates charged with prostitution may be tested regardless of whether or not targeted HIV screening programs include them. Therefore, we suggest that policy considerations based on these findings focus on how to target new arrestees not already routinely tested through other mechanisms.

Our findings are subject to a number of limitations. First, eligibility could not be determined for more than half of the potentially eligible inmates identified because they were either released or transferred to another facility prior to recruitment. This may include large numbers of persons with minor charges or the ability to post bail. Second, many of our estimates are imprecise. Third, we only collected data on the primary arrest charge, which prevented us from conducting a detailed examination of the associations between undiagnosed HIV and other crimes participants were charged with. Finally, HIV risk behaviors and prior HIV diagnoses may have been underreported because of concerns regarding stigma or fear of being subjected to additional criminal charges.

Although many of our findings are consistent with other data (California DHS, 2001; Carpenter et al., 1999; Kahn et al., 2002; Maruschak, 2006; McClelland et al., 2002; Rich, Hou et al., 2001; Rich et al., 2002; Sexually Transmitted Disease Program. Los Angeles County DHS, 2004; 2005), we urge caution in generalizing them to correctional facilities elsewhere. For example, we would expect to find an association between HIV and arrest for drug charges among both male and female inmates in parts of the U.S. where HIV prevalence is higher among IDUs. The HIV epidemic in Los Angeles, as with much of the Western region of the United States (Harawa et al., 2004; HIV Epidemiology Program. Los Angeles County DHS, 2004), occurs primarily among men who have sex with men (MSM) with heterosexual IDUs composing just 9% of reported AIDS cases in 2004 (2004). Thus, before widely implementing any new program for identifying those inmates most likely to have undiagnosed HIV infection, correctional facilities should consider similar surveys and cost-effectiveness analyses comparing this and other types of targeted HIV screening strategies under consideration.

HIV prevalence tends to be lower among inmates who volunteer for HIV testing than among those who are tested through unlinked seroprevalence surveys (Behrendt et al., 1994; Hoxie et al., 1998; Lachance-McCullough, Tesoriero, Sorin, & Lee, 1993; Lachance-McCullough, Tesoriero, Sorin, & Stern, 1994). Consistent with this are data from a voluntary HIV testing program that took place in Men's Central and Twin Tower's jails during the same time period as our study and identified a much lower HIV prevalence than we did among both males (0.40%) and females (0.33%) (unpublished data; Office of AIDS Programs and Policy; 4/06). These findings further emphasize the need for strategies to determine which inmates to routinely screen for HIV infection. Because participation in our study was directly offered to all selected arrestees and just 16% of potentially eligible participants refused, our study operated more like a screening program in which testing is routinely offered to all inmates, some of whom may opt out, rather than a voluntary testing program that provides services only to those who request testing or respond to a general call for volunteers. Data from other opt-out screening programs indicate similar rejection rates, including 16% in Wisconsin prisons and 14% in Rhode Island jails and prisons (Behrendt et al., 1994; Hoxie et al., 1998; MacGowan et al., 2006).

During the study period, the median inmate stay prior to release or transfer from LAC jail facilities was two to three weeks for males and just one to two weeks for females (unpublished data; Inmate Reception Center, LASD; 6/05). Many inmates, however, are jailed for even shorter periods, as evidenced by the large percentage of potentially eligible participants who were released or transferred prior to study recruitment. Because jail populations are so highly transient, a screening program involving rapid HIV testing at intake is the ideal way to ensure that at-risk entrants actually receive testing, results, and post-test counseling. Furthermore, jail-based HIV screening programs need transitional services to either link newly diagnosed persons to community-based care provider or to treatment and care in the jail or prison facility where they are housed (MacGowan et al., 2007).

Recent CDC testing recommendations encourage routine provision of opt-out HIV testing in nearly all medical settings including correctional facilities (Branson, 2007). However, other recommendations to offer or mandate HIV testing for all inmates have existed for years and gone largely unheeded by jail systems (Braithwaite & Arriola, 2003; Centers for Disease Control and Prevention, 2003; Spaulding et al., 2002). A recent, large CDC-funded demonstration project to implement jail-based rapid HIV testing in four U.S. areas lead to testing just 6% of the approximately 550,000 jail entrants booked during the 18-month study period. The average testing program cost per newly diagnosed HIV infection varied from $2,451 to $25,288, depending primarily on the prevalence of undiagnosed inmates in each

area (MacGowan et al., 2007; Shrestha et al., 2007). Hence, targeted screening approaches that successfully identify inmates subgroups with higher undiagnosed prevalences will have a large impact on the cost-effectiveness of jail-based HIV testing programs.

The high prevalence of HIV among incarcerated populations necessitates increased HIV identification among inmates. The burden for their ultimate care that rests with local public authorities calls for innovative and collaborative approaches that recognize the challenges and competing security and inmate-care priorities faced by correctional systems. In settings like LASD's, where the number of daily bookings exceeds 500 on many days, it may not be feasible to test all inmates or to interview each one for risk-based HIV screening. Low staffing levels in smaller systems could also mean processing delays, overcrowding, and security risks resulting from universal HIV screening. In 2004, 68,932 publicly funded HIV tests were conducted throughout all of Los Angeles County (unpublished data, C. Chavers, August 24, 2006). Given that routine testing of all new LASD jail entrants would require testing an additional 150,000 individuals annually, alternative approaches should be considered prior to expending the public resources required for such an effort. Larger studies to identify strategies for efficiently identifying inmates at elevated risk for undiagnosed HIV and successfully linking them to HIV services post-release (Rich, Holmes et al., 2001) can help to ensure that this important population receives appropriate HIV counseling, testing, and follow-up care.

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Abbreviations

HIV	human immunodeficiency virus
AIDS	Acquired Immunodeficiency Syndrome
DHS	Department of Health Services
STD	sexually transmitted disease
LAC	Los Angeles County
LASD	Los Angeles Sheriff's Department
CDC	Centers for Disease Control and Prevention
IDU	injection drug user
MSM	men who have sex with men
CL	confidence limits
OR	odds ratio

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Table 1

Intake characteristics and undiagnosed HIV prevalence of newly incarcerated male and female* inmates from Metro and South service planning areas (SPAs), Los Angeles, CA July 2003 to March 2004

	Males (n = 592)	Male Undiagnosed HIV prevalence	Females (n = 730)	Female Undiagnosed HIV prevalence
	% of sample	%	% of sample	%
Overall	*100*	*2.7*	*100*	*1.0*
Age in years				
18–24	39	0.4	18	0.8
25–34	25	4.0	27	0.5
35–44	22	5.7	35	2.0
45+	14	0.0	21	0.0
*Race/ethnicity***				
Black/African American	42	4.9	65	1.3
Hispanic/Latino	50	1.0	20	0.0
White	5	2.9	10	0.0
Other****	3	0.0	5	2.5
*High-risk HIV history*****				
Yes	32	7.9	45	0.9
No	68	0.2	55	1.0

* Five male and one female participant identified as transgender but were housed in the respective male and female facilities.

** Does not add to 100% because race/ethnicity information was missing for 5 males and 3 females.

*** Other includes Native American/Alaska Native and those selecting “Other” and writing in multiple or no race/ethnicities.

**** Participants reporting diagnosed STD, injection drug use, exchange sex, or sex any of the following: an injection drug user, man (for males), a man who has sex with men (for females), a sex worker, or an HIV-positive individual.

Table 2

Previously undiagnosed HIV infection by arrest charge among newly incarcerated male and female inmates from Metro and South service planning areas. Los Angeles, CA, July 2003 to March 2004.

	n (%)	# HIV positive	% HIV positive	95% confidence limits
All Males	592	16	2.7	1.7, 4.3
Male arrest charge[*]				
Drug[1]	183 (31)	3	1.6	0.6, 4.7
Sex[2]	11 (2)	3	27.2	9.7, 56.6
Violent[3]	80 (14)	0	0	0.0, 4.6
Theft[4]	89 (15)	3	3.4	1.2, 9.4
Parole violation[5]	78 (13)	3	3.8	1.3, 10.7
Public disorder[6]	151 (26)	4	2.6	1.0, 6.6
All Females	730	7	1.0	0.5, 2.0
Female arrest charge[*]				
Drug[1]	326 (45)	4	1.2	0.5, 3.1
Sex[2]	76 (10)	0	0	0.0, 4.8
Violent[3]	76 (10)	1	1.3	0.2, 7.1
Theft[4]	92 (13)	0	0	0.0, 4.0
Parole violation[5]	78 (11)	2	2.6	0.7, 8.9
Public disorder[6]	82 (11)	0	0	0.0, 4.5

[*] Arrest charge reflects the arresting officer's hierarchical assessment of the most serious criminal charges.

[1] Drug charges related to the possession, use, or sale of illegal narcotics;

[2] Sex charges included non-violent charges, primarily prostitution and lewd conduct;

[3] Violent charges included charges such as assault, battery, robbery, rape, and attempted murder;

[4] Theft charges involved stolen property not including robbery;

[5] Parole violations included charges for violating prison-parole terms; and

[6] Public disorder charges included all charges not fitting the above categories.