

Feasibility and Acceptability of Rapid HIV Testing in Jail

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ABSTRACT

For correctional HIV testing programs, delivery of HIV test results can be difficult because of short incarceration times for many inmates. Rapid HIV testing enables immediate delivery of test results and can be performed in conjunction with risk reduction counseling. The objective of this study was to determine the feasibility and acceptability of rapid HIV testing within the Rhode Island Department of Corrections jail. Jail detainees were randomly asked to participate in the study. The study included: (1) completing a questionnaire that investigated HIV risk behavior, incarceration history, HIV testing history, and attitudes toward routine HIV testing in jail and toward partner notification services; (2) individualized HIV risk reduction counseling; and (3) the option of rapid HIV testing with delivery of test results. One hundred thirteen inmates were asked to participate and 100 (88%) participated. Among the subjects, there was a high frequency of incarceration and subjects were at significant risk of HIV infection, yet there was low perceived risk. Ninety-five percent of participants underwent rapid HIV testing. Of those, 99% had negative test results and one subject had a preliminary positive result. All subjects received rapid test results and individualized risk reduction counseling. The majority of subjects supported routine HIV testing in jail and the concept of partner notification services. In this population of jail detainees, rapid HIV testing was feasible and highly acceptable. Further studies are needed to successfully incorporate rapid HIV testing into jail HIV screening programs.

INTRODUCTION

APPROXIMATELY ONE-QUARTER of persons infected with HIV in the United States do not know they are infected.¹ Strategies to increase testing rates and diagnosis of HIV are urgently needed. HIV testing within jails and prisons provides access to persons who are at

increased risk of HIV infection and who may be marginalized from traditional healthcare settings.^{2,3} There is a high prevalence of HIV infection among persons incarcerated in the United States. According to the Bureau of Justice Statistics, at the end of 2003, 2.0% of state prison inmates were HIV positive. When stratified by gender, a higher proportion of female

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prison inmates were HIV positive (2.8%) compared to male prison inmates (1.9%).⁴ The HIV prevalence within the Rhode Island Department of Corrections central jail was estimated to be 1.8% between 1998–2000.⁵ In 1 year alone, approximately 25% of individuals infected with HIV in this country passed through the correctional system.⁶

HIV testing within correctional systems can be offered: (1) when inmates request HIV testing; (2) based on increased risk of infection as assessed by the correctional institution; or (3) routinely, to all inmates regardless of perceived risk. Currently, the majority of testing occurs if requested by the inmate or if inmates are perceived to be at increased risk of infection.² Because all persons who enter the correctional system are at one time or another held in a jail system, routine HIV testing in jails offers the most comprehensive approach to HIV screening. However, HIV testing programs are less common in jails where the length of incarceration is often brief.⁷

The Rhode Island Department of Corrections (RIDOC) has a central jail serving the entire state. Routine HIV testing has been offered in this jail since 1991 and approximately one-third of all positive HIV tests in Rhode Island have come from this correctional facility.^{8,9} While the testing program has been successful, barriers to test result delivery and counseling exist in the jail setting.¹⁰ The average length of time an individual awaits trial is 17 days making delivery of HIV test results prior to release difficult for many of those tested.¹¹ Furthermore, posttest counseling cannot occur if the inmate has been released prior to test result delivery.

The Food and Drug Administration (FDA) approval of rapid HIV tests, utilizing either blood or oral fluid specimens, has created new opportunities for screening programs. Rapid testing technology provides final negative and preliminary positive test results in approximately twenty minutes.¹² It is now possible to deliver results immediately in conjunction with post-test counseling and risk reduction interventions. Rapid HIV testing programs have successfully delivered point-of-care test results in a variety of settings including labor and delivery, outpatient clinics, and emergency rooms.^{13–16} Experience with rapid HIV testing in jails is limited. One recent study showed

rapid testing in a jail was feasible but had a relatively low acceptance rate.¹⁵

We sought to determine the feasibility and acceptability of rapid HIV testing including test result delivery and risk reduction counseling in a jail setting.

MATERIALS AND METHODS

Jail inmates of the RIDOC were eligible for the study. Males were randomly selected to participate within 48 hours of jail entry. Once selected, the inmate was notified by a correctional officer to report to the medical clinic. Upon arrival, the inmate met with a research assistant in a private room. The study was explained and the inmate was informed their participation was completely voluntary.

If willing to participate, informed consent was obtained. If not willing to participate, a reason for refusal was solicited by the research assistant and subjects returned to their cell ward. Participants were offered an OraQuick[®] rapid HIV test (OraSure Technologies, Bethlehem, PA) using whole blood obtained by fingerstick. Testing was performed by the research assistant who had been trained in the rapid HIV testing procedure. Testing was followed by a risk reduction counseling session in which a questionnaire was completed. The questionnaire collected information on demographics, HIV testing history, sexual history, injection drug use history, and attitudes toward HIV testing in the jail setting and partner notification of positive HIV test results. After the counseling session, rapid test results were delivered in conjunction with additional result-specific counseling. Subjects had the option of participating in the risk reduction counseling session and completing the questionnaire without being tested for HIV. All participants were provided information regarding HIV testing and counseling sites within the community and a “fact sheet” about HIV infection.

A protocol was created for confirmatory testing in the event of a preliminary positive rapid HIV test. All persons with positive preliminary tests were to be seen by the HIV clinical nurse the following day for confirmatory testing to be completed. Results were to be delivered

with appropriate linkage to HIV care in the jail or in the community if the inmate had already been released.

The study protocol was approved by the Institutional Review Board (IRB) of The Miriam Hospital and the RIDOC Research Review Committee.

RESULTS

Participation

One hundred thirteen male inmates were asked to participate and 100 (88%) participated. Reasons for declining study participation included not wanting to miss dinner, shower, time to play cards, or did not wish to know the result of an HIV test. One participant was already known to be HIV positive and declined testing but completed the questionnaire.

Demographics and incarceration history

The median age was 29 (range, 18–60). Forty-six percent were white, non-Hispanic. Twenty-five percent were black, non-Hispanic. Seventeen percent were Hispanic and 10% were Native American/Alaskan Native. The median number of lifetime incarcerations was 5 (range, 1–43). The median number of incarcerations within the previous 12 months was 2 (range, 1–7).

HIV testing history

Ninety-five percent (95/100) had previously been tested for HIV (excluding the current in-

carceration). The median number of previous HIV tests was 5 (range, 0–25). Eighty-seven percent of those previously tested (83/95) had been tested at the RIDOC. Twenty-nine percent (28/95) had only been tested for HIV in the incarcerated setting. Seventy-nine percent (75/95) had at least one previous HIV test for which they did not receive the results. Of those previously tested at the RIDOC, 76% (63/83) had not received HIV test results on at least one occasion (Table 1).

Risk assessment

Seventy-six percent (75/99) did not consider themselves to be at risk for HIV infection (excluding one subject already infected with HIV). The median number of lifetime sexual partners was 10 (range, 1–500). During the 6 months prior to incarceration, the median number of sex partners was 1 (range, 0–95), 44% (44/99) admitted to multiple sex partners, 52% (52/99) never or rarely used condoms, 21% (21/99) sometimes used condoms, and 23% (23/99) always or almost always used condoms. Thirty-three percent (33/100) reported ever having a sexually transmitted disease (STD). Twenty-three percent (23/100) reported ever injecting drugs. Of those who reported injection drug use, 52% (12/23) had injected during the 6 months prior to incarceration and of those, 67% (8/12) admitted to sharing needles (Table 2).

HIV testing results

Ninety-five percent (95/100) of participants agreed to undergo rapid HIV testing with the

TABLE 1. HIV TESTING HISTORY (*n* = 100)

<i>Median No. previous HIV tests</i>		5	<i>Range, 0–25</i>
		<i>No.</i>	<i>%</i>
Previously tested for HIV		95/100	95
	Previously tested at the RIDOC	83/95	87
At least one previous HIV test for which never received results	Previous testing only in incarcerated setting	28/95	29
		75/95	79
	Previous HIV testing at the RIDOC without delivery of test results	63/83	76

RIDOC, Rhode Island Department of Corrections.

TABLE 2. HIV RISK ASSESSMENT

Sexual history (<i>n</i> = 99)		
Median # lifetime sexual partners	10	(range 1–500)
Median # of sex partners in 6 months prior to incarceration	1	(range 0–95)
	<i>No.</i>	<i>%</i>
Do not consider themselves at risk for HIV infection	75	76
Multiple sex partners in 6 months prior to current incarceration	44	44
Condom usage		
Never/rarely	52	52
Sometimes	21	21
Almost always/always	23	23
Self-reported STD history	33	33
IDU history (<i>n</i> = 100)		
History of IDU	23	23
IDU in 6 months prior to current incarceration (recent IDUs) (<i>n</i> = 23)	12	52
Of recent IDUs, admitted sharing needles within prior 6 months (<i>n</i> = 12)	8	67

STD, sexually transmitted disease; IDU, injection drug use.

OraQuick® Rapid HIV test in addition to completing the questionnaire. Five subjects refused testing. Reasons for test refusal included already being HIV positive (*n* = 1), not being comfortable with the tester and testing environment, having had a recent HIV test, did not feel at risk for HIV infection, and not liking needles or fingersticks. Of those tested, 99% (94/95) had negative rapid test results and one subject had a preliminary positive test result which was identified as a false-positive on confirmatory testing (Table 3).

When the preliminary positive result was obtained, a second OraQuick® rapid test was performed which was also reactive. Confirmatory

testing including a serum HIV enzyme-linked immunosorbent assay (ELISA) and an HIV plasma viral load were completed by jail medical staff and both tests were negative. It was concluded that the preliminary positive rapid tests were false-positives. The subject was released from jail prior to confirmatory test results being available. Results were delivered to the subject in the community following his release.

Delivery of HIV test results and HIV counseling

One hundred percent (95/95) of participants who underwent rapid testing received results during the testing session. One hundred per-

TABLE 3. STUDY ENROLLEMENT AND HIV TESTING RESULTS

	<i>No.</i>	<i>%</i>
Selected to participate	113	
Participated	100	88
Tested for HIV with rapid test (<i>n</i> = 100)	95	95
Rapid test results (<i>n</i> = 95)		
Negative test	94	99
Preliminary positive test	1	1
Received rapid test results	95	100
Received HIV counseling (<i>n</i> = 100)	100	100

cent (100/100) of study participants received HIV counseling and risk reduction counseling.

Attitudes toward routine testing and partner notification

Ninety-six percent (96/100) thought the RIDOC was a good place to offer routine HIV testing. In a hypothetical question asked of participants who underwent rapid HIV testing, 95% (90/95) stated that if they tested positive for HIV, they would be willing to talk with a counselor in order to inform their contacts that they should be tested for HIV. In a more specific question, 92% (83/90) of the subjects who would agree to talk with a counselor for partner notification purposes thought that this could be a health counselor from the state Department of Health who would notify their contacts of the need for HIV testing without identifying the source patient.

DISCUSSION

This study demonstrated that rapid HIV testing in a jail setting was feasible and highly acceptable to inmates. Ninety-five percent of subjects accepted rapid HIV testing and of those tested, 100% received test results and risk reduction counseling. The subjects were at increased risk for HIV infection given many engaged in sex with multiple partners, low rates of condom usage and almost one-quarter reported a history of injection drug use. One in 10 was an active injection drug user and the majority of active injectors admitted to sharing needles. Despite significant HIV risk behavior, only one-quarter of subjects perceived themselves to be at risk of infection. Low perceived HIV risk contributes to low testing rates among at-risk individuals.¹⁷

These data support routine HIV screening in jail. Approximately one third of the subjects who had been previously tested for HIV were tested only in the incarcerated setting providing evidence that individuals who cycle through the correctional system may be marginalized from traditional healthcare resources and HIV testing sites in the community. Almost all subjects agreed jail is a good place to perform routine HIV testing.

Currently, when an inmate enters the RIDOC jail, HIV testing is offered and, if accepted, testing is performed with a standard ELISA/Western blot algorithm. Comprehensive HIV care is provided within the RIDOC jail and prison to persons who are newly diagnosed and to persons with known infection. Because the turnover rate in the jail population is high and many inmates are released before HIV test results are available, an unacceptably high percentage never receive results. On questioning about previous testing experiences at the RIDOC, many inmates stated they believed "no news was good news." However, failure to deliver HIV test results, even negative results, eliminates any possibility of posttest risk reduction counseling.

Rapid HIV tests have the advantage of point-of-care test result delivery. Negative results can be delivered immediately in conjunction with primary prevention counseling. Persons with preliminary positive test results can be linked to care for confirmatory testing and receive secondary prevention counseling which is critical to reducing transmission of HIV. We successfully delivered all rapid test results during the testing session and provided counseling to all subjects.

Significant numbers of persons tested for HIV with traditional testing methods never return for their results.¹⁸⁻²⁰ This can be improved with rapid testing, especially for those testing negative. A recent study demonstrated that 95% of persons undergoing rapid HIV testing received their test results compared to 43% of persons who underwent standard HIV testing.²¹ However, this study was not able to evaluate the delivery of confirmatory test results for persons with a preliminary positive rapid test. The challenge of delivering confirmatory test results after rapid HIV testing remains. Whether rapid tests are being performed in the incarcerated setting, health care setting, or in the community, subjects who test positive need to return at a later time to receive confirmatory test results. This represents an obstacle to the delivery of HIV testing services and was demonstrated with the one study subject who had a preliminary positive test result. The subject was released from prison prior to confirmatory test results being available. While we were successful in de-

living his confirmatory test results in the community, continuity of care for persons being released from jail can be difficult to maintain. Rapid HIV testing protocols are in need of point-of-care confirmatory testing methods.

Notably, subjects were very supportive of the concept of a partner notification program. When asked about a scenario in which the subject being interviewed hypothetically tested positive for HIV, the majority of subjects stated they would want to participate in a partner notification program intended to inform recent contacts of their positive HIV status. Subjects agreed that recent contacts should be referred for testing.

While this study supports the incorporation of rapid testing technology into HIV screening programs in jails, implementation of such a program presents challenges.

When is the best time to offer a rapid HIV test? If testing is offered upon entrance to a jail, all inmates will have the opportunity to accept testing. However, this may be a time of significant emotional stress when one does not want to be tested for HIV and many persons may be acutely intoxicated or in withdrawal thus precluding the ability to provide informed consent. Rapid HIV testing requires trained personnel, resources, and time. Jail administrators and correctional officers must believe in the benefits of an HIV screening and risk reduction program in order for it to be successfully implemented. Importantly, rapid HIV testing strategies must be shown to be cost effective compared to standard testing protocols. Delivery of confirmatory results for persons testing positive may be problematic if they have already been released. Delivery of confirmatory results and appropriate linkage to HIV care if needed requires accurate contact information and possibly community outreach resources. Confidentiality of HIV test results must also be ensured within the correctional setting. Without confidential HIV testing, inmates will not utilize voluntary HIV testing programs given the stigma associated with being HIV infected. This study has several limitations. We enrolled and tested a small number of subjects and our study was limited to only men. Understanding these issues among incarcerated women is important. It was difficult to evaluate confirmatory testing procedures for preliminary posi-

tive results since there was only one reactive rapid test. The high acceptance rate of rapid HIV testing may be related to the level of familiarity and comfort inmates of the RIDOC have with HIV testing. Because routine testing programs have been in place for 15 years in the RIDOC and there is high recidivism within the correctional system, inmates in Rhode Island may be more willing to undergo HIV testing compared to incarcerated individuals in other jail systems. Our results may not be generalized to other jail systems given variability in jail size, number of detainees, security, and resources dedicated to medical expenditures across the United States. Finally, while the majority of subjects were in favor of the concept of an HIV partner notification program, further studies must be performed to determine if inmates would voluntarily participate if such a program existed.

An alternative explanation accounting for our high acceptance rate in comparison to other studies may be the result of our methodology. Subjects were offered participation in a semi-private setting in the absence of other inmates. In a previous study with a lower acceptance rate (46%) by Kendrick et al.,¹⁵ subjects were offered rapid testing in a communal room where other inmates were present although testing results were delivered privately. When developing rapid testing programs in jails, tests should be offered in a setting designed to maximize acceptance.

Rapid HIV testing is a feasible and acceptable tool for use in correctional settings. Further studies are needed to determine how to optimize rapid HIV testing within the context of HIV screening programs in jails. Ideally, voluntary routine screening will be offered in conjunction with comprehensive counseling, prompt linkage to care and a partner notification system. Jails provide an opportunity to test, counsel, and engage our community's at-risk individuals.

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REFERENCES

1. Fleming PL, Byers RH, Sweeney PA, et al. HIV prevalence in the United States, 2000. Presented at the 9th Conference on Retroviruses and Opportunistic Infections. Seattle, WA: 2002.
2. Spaulding A, Stephenson B, Macalino G, et al. Human Immunodeficiency Virus in correctional facilities: A review. *Clin Infect Dis* 2002;35:305–312.
3. Conklin TJ, Lincoln T, Flanigan TP. A public health model to connect correctional health care with communities. *Am J Public Health* 1998;88:1249–1250.
4. Maruschak LM. HIV in prisons, 2003. NCJ publication no. 210344. Bureau of Justice Statistics, US Department of Justice, Office of Justice Programs. Washington, D.C.: 2005
5. Macalino GE, Vlahov D, Sanford-Colby S, et al. Prevalence and incidence of HIV, hepatitis B virus, and hepatitis C virus infections among males in Rhode Island Prisons. *Am J Public Health* 2004;94:1218–1223.
6. Hammett TM, Harmon MP, Rhodes W. The burden of infectious disease among inmates of and releaseses from US correctional facilities, 1997. *Am J Public Health* 2002;92:1789–1794.
7. Hammett TM, Maruschak LM, Harmon P. 1996–1997 update: HIV/AIDS, STDs, and TB in correctional facilities. Washington, D.C.: National Institute of Justice, Bureau of Justice Statistics, and Centers for Disease Control and Prevention; 1999. NCJ. Publication 176344.
8. Flanigan TP, Rich JD, Spaulding A. HIV care among incarcerated persons: A missed opportunity. *AIDS* 1999;13:2475–2476.
9. Desai AA, Latta ET, Spaulding A, et al. The importance of routine HIV testing in the incarcerated population: The Rhode Island experience. *AIDS Educ Prev* 2002;14(Suppl B):45–52.
10. Cohen J, Lally MA, Raz L, et al. Inmates' attitudes towards rapid HIV testing at the Rhode Island Department of Corrections. Presented at the 42nd Annual Meeting of the Infectious Diseases Society of America. Boston, MA: 2004.
11. State of Rhode Island and Providence Plantations Department of Corrections. <www.doc.state.ri.us/facilities/intake.htm> (Last accessed September 2, 2005).
12. Centers for Disease Control and Prevention. Quality assurance guidelines for testing using the OraQuick[®] rapid HIV-1 antibody test. <www.cdc.gov/hiv/rapid_testing/materials/qa-guide.htm> (Last accessed September 2, 2005).
13. Bulterys M, Jamieson DJ, O'Sullivan MJ, et al. Rapid HIV-1 testing during labor: A multicenter study. *JAMA*. 2004; 292: 219–23.
14. Forsyth BW, Barringer SR, Walls TA, et al. Rapid HIV testing of women in labor: Too long a delay. *J Acquir Immune Defic Syndr* 2004;35:151–154.
15. Kendrick SR, Kroc KA, Couture E, et al. Comparison of point-of-care rapid HIV testing in three clinical venues. *AIDS* 2004;18:2208–2210.
16. Kendrick SR, Kroc KA, Withum D, et al. Outcomes of offering rapid point-of-care HIV testing in a sexually transmitted disease clinic. *J Acquir Immune Defic Syndr* 2005;38:142–146.
17. Couturier E, Schwoebel V, Michon C, et al. Determinants of delayed diagnosis of HIV infection in France, 1993–1995. *AIDS* 1998;12:795–800.
18. Centers for Disease Control and Prevention. Update: HIV counseling and testing using rapid tests—United States, 1995. *MMWR Morb Mortal Wkly Rep* 1998; 47:211–215.
19. Schluter WW, Judson FN, Baron AE, et al. Usefulness of human immunodeficiency virus post-test counseling by telephone for low-risk clients of an urban sexually transmitted diseases clinic. *Sex Transm Dis* 1996;23:190–197.
20. Tao G, Branson BM, Kassler WJ, et al. Rates of receiving HIV test results: Data from the US National Health Interview Survey for 1994 and 1995. *J Acquir Immune Defic Syndr* 1999;22:395–400.
21. Wurcell A, Zaman T, Zhen S, et al. Acceptance of HIV antibody testing among inpatients and outpatients at a public health hospital: A study of rapid versus standard testing. *AIDS Patient Care STDs* 2005;19: 499–505.

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