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Effectiveness and feasibility study of routine HIV rapid testing in an urban methadone maintenance treatment program

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Abstract

Background—Universal Human Immunodeficiency Virus (HIV) testing and treatment are strategies to decrease AIDS-related morbidity and mortality and to reduce HIV transmission.

Objective—This study examined the feasibility and effectiveness of routine HIV rapid testing implemented in the largest New York City (NYC) Methadone Maintenance Treatment Program (MMTP).

Methods—A routine HIV rapid testing program performed by medical providers without pretest counseling or the provision of incentives was compared to HIV rapid testing done by referral to HIV counselors with pretest counseling and incentives over the prior 12 months.

Results—Routine HIV rapid testing proved feasible and effective when performed by the medical staff in the setting of a large urban MMTP. The program increased HIV testing in all genders, race/ethnicities, and ages. HIV-positive individuals were diagnosed and successfully linked to care. The elimination of HIV prevention counseling may have facilitated expanded testing.

Conclusion—This study confirms that routine HIV rapid testing without HIV-prevention counseling or the provision of incentives for patients is feasible on a large scale in a busy, urban methadone clinic.

Keywords

HIV testing; methadone maintenance; opt-in testing; opt-out testing

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Introduction

Transmission of HIV among drug users, through drug and sexual risks, continues to be an important public health issue and one of the driving forces behind the persistence of the HIV epidemic in this population (1). To identify new HIV infections, the US Center for Disease Control and Prevention (CDC) issued revised recommendations for HIV diagnostic testing in outpatient health-care settings in 2006, recommending routine HIV testing (2). Rapid HIV testing is one modality used to achieve this recommendation and provides HIV test results within 20 min so patients do not return for a second visit to receive their HIV test results, thereby increasing the number of individuals who learn of their HIV status (3).

Recent work in the NIDA Clinical Trials Network has demonstrated that HIV testing can successfully be implemented on-site in substance abuse treatment settings and such treatment is cost-effective (4–6). Despite these recommendations, actual scale-up of routine testing has been slow and fraught with many challenges (7,8). Methadone Maintenance Treatment Programs (MMTP) have a high prevalence of individuals who engage in risky drug and sexual practices that could lead to the acquisition of HIVand are a logical population for expanded HIV testing (9–11). The Beth Israel Medical Center MMTP is the oldest and largest hospital-based methadone program in the United States, treating approximately 8000 opioid-dependent unduplicated patients annually in New York City. In any given year, an estimated 1500 new patients enter treatment and 1500 patients leave treatment. Many of its 18 hospital-based outpatient clinics are located in the New York City (NYC) zip codes with the lowest incomes and highest HIV prevalence in the United States. In 2010 the reported HIV prevalence in the Beth Israel MMTP was 14% (12).

The MMTP clinic at Beth Israel has provided on-site HIV testing for a number of years. Prior to the introduction of routine on-site HIV testing, the MMTP offered confidential on-site testing to patients requesting testing and targeted testing of patients identified by substance abuse counselors as being high risk. Patients were referred to a certified HIV counselor, an appointment was made on-site and HIV pre- and post-test counseling was provided with an incentive ($4 transportation card) at the time of the HIV rapid test. After the release of the 2006 CDC recommendations, the program switched to a routine model, in which the on-site MMTP medical provider offered and performed HIV rapid testing with routine medical care at entry and at the annual physical without HIV counseling or the provision of incentives.

This transition from targeted to routine testing modalities provides a unique opportunity to examine changes in HIV testing uptake in MMTP before and after this change. Access to clinical care, prevention counseling and support services were immediately available to all persons with positive HIV test results.

Methods

The geographic location of the MMTP clinics, the ongoing HIV risk behaviors in the clinic population and the almost 20% annual turnover in the MMTP population all combine to make routine HIV testing warranted. A retrospective review was performed to evaluate the

effectiveness of targeted vs. routine on-site HIV rapid testing in patients of HIV-unknown or HIV-negative status. These data were located in several electronic record systems: AVATAR (Netsmart Technologies, Great River, NY) used for dispensing methadone, EAGLE (American Healthware, a subsidiary of Siemens Technology, Malvern, PA) used for registering and billing patients and AIRS (AIDS Institute Reporting System, New York State Department of Health) used for HIV program reporting.

Demographic information for the 12 months of targeted testing (11/1/07–10/31/08) and for the 12 months after the implementation of routine testing (11/1/08–10/31/09) was collected. Patients with known HIV or who stated they previously tested positive were excluded from this study. HIV rapid testing for both periods was performed using CLIA (Clinical Laboratory Improvement Amendments) waived HIV rapid tests.

In the 12-month targeted testing period, HIV rapid testing was done by referral to certified HIV counselors, either when a patient was identified as at risk or by patient request. An appointment was scheduled on-site with the HIV counselor, who obtained a signed informed consent. The counselor performed the HIV rapid test with pre- and post-test HIV counseling and provided a $4 transportation card as an incentive.

In the 12-month routine testing period, HIV rapid testing was offered by a medical provider (physician or physician assistant) on admission to MMTP, at the mandatory annual physical, and if high-risk behavior was identified in patients of unknown-HIV status or who had previously tested HIV-negative. Patients were able to continue to request HIV testing at their own discretion. HIV counseling was not required, though literature was provided and patient questions were answered. Incentives for HIV testing were not provided during the routine testing period.

In both the targeted and routine HIV testing, written consent for HIV testing was obtained. Both testing periods utilized the Uni-Gold Recombigen rapid HIV test. This test is FDA-approved and only requires blood from a finger stick or oral fluid from a swab. Blood from a finger stick was the predominant method used in the methadone program in the targeted testing group. Blood already drawn for the annual physical was utilized in the routine testing group. If HIV-positive, a confirmatory Western Blot test was sent to the lab and the MMTP interdisciplinary team provided intensive HIV case management for all new HIV-positive patients identified to link them to care.

A retrospective chart review was performed on all newly diagnosed HIV-positive individuals from 1 November 2007 to 31 October 2009, the 2-year period included both testing periods. Data were analyzed using SAS v9.1. Categorical variables were analyzed with the chi-square test. Odds ratios were computed and reported with their 95% confidence intervals. p Values <0.05 were considered statistically significant.

Results

In the 12 months of targeted HIV rapid testing, 1559 rapid HIV tests were performed. Of these, 438 (28%) were duplicates (i.e. the same individuals were identified and tested two or more times in the same year). The remaining 1121 patients represented 14% of the total

7875 patients on methadone during this 12-month period. Three of the 1121 (0.27%; 95% CI: 0.13, 0.52) were newly diagnosed with HIV. Although all HIV-positive patients received their rapid test results, only one patient received his confirmatory blood test, and none adhered to their first HIV medical appointment.

In the 12 months after routine HIV rapid testing was implemented, 2810 HIV tests were administered with only 110 (4%) duplicates. The 2700 patients tested represent 34% of the 7870 distinct MMTP patients in the 12 months during routine HIV testing. Eight of the patients (0.29%) were newly identified as HIV-positive (Table 4, patients 4–11). All eight newly HIV-diagnosed patients received their confirmatory blood test result and five adhered to their first HIV medical appointment.

Significantly more patients were tested for HIV after implementation of routine rapid testing compared with the targeted testing ($p < 0.0001$, OR: 3.2: 95% CI: 2.9–3.4). This increase occurred despite the removal of incentives (specifically, transportation vouchers), but was linked to fewer duplicate tests. Increased uptake of the HIV rapid test among MMTP patients in all age groups, all races/ ethnicities and both genders occurred. Odds ratios for the individual sociodemographic groups ranged from 2.9 to 4.6 (Tables 1–3).

Discussion

Routine HIV rapid testing on admission and annually as part of routine medical care in a MMTP without HIV-prevention counseling or incentives is feasible in a large urban methadone program and increases uptake in HIV testing. The benefit of on-site HIV testing within the methadone program is consistent with a recent randomized controlled trial by Metsch and colleagues that reported an increase in HIV testing when conducted on-site in addiction treatment programs (5).

In this study, prior to routine testing, 14% of patients were tested, and after the implementation of routine testing, 34% of patients were tested. Although routine HIV testing at medical visits dramatically increased the uptake of HIV testing among the MMTP population, more than half of the MMTP patients were not tested in this study. Although individuals refusing HIV testing were not asked about the rationale for refusing, the denial of risk factors and the fear of an HIV diagnosis are often the principal reasons for not testing (13). Both the targeted and routine testing methods relied upon opt-in approaches where the patient is asked if he or she wishes to have the test. The use of an opt-out approach, where everyone is informed they will be tested unless they opt-out of testing, rather than this opt-in approach has the potential to significantly increase the acceptance of HIV testing (14). A recent study, however, examining opt-out testing in a community health center in New York City (a similar population) demonstrated an HIV testing uptake similar to the opt-in testing done in this study (34% in this study vs. 35% in the opt-out study) (15). That study by Cunningham and colleagues highlighted that the operationalization of routine optout testing is difficult in many of these health settings and, as a result, may not be the solution to increase HIV testing in some populations. Until large health systems can operationalize opt-out testing, systems will rely upon focused interventions and novel methods to improve opt-in testing, as presented in this study. How testing is presented to MMTP patients may be a

crucial determinant of the acceptance of HIV testing and social networks may be a means to identify individuals at high risk of infection and to encourage them to undergo HIV testing (16).

In two years with 3821 patients tested, only 11 new HIV infected patients were found. This study was conducted in a particularly high-risk population within high prevalence areas in NYC, and so the yield for detecting previously undiagnosed HIV infection was expected to be higher in this context. This discrepancy could be the result of some sampling error because approximately two-thirds of patients were not tested; however, all HIV-negative or HIV-unknown status patients were offered HIV testing and so the sample evaluated was at random. It may also be that the number of people who inject drugs who remain undiagnosed for HIV is not as high as previously estimated. This would be consistent with overall trends demonstrating a decline in HIV infection among people who inject drugs in NYC (17). Retention in methadone maintenance treatment has also been shown to decrease HIV risk behaviors and thereby HIV infections; therefore, a lower detection rate in this population may be due to retention in methadone treatment (18,19).

Prior to routine testing, HIV-prevention counseling and the provision of incentives for testing by HIV counselors resulted in approximately 14% of patients being tested annually with 28% of those receiving duplicate testing. After the institution of routine testing performed by the medical staff, 34% of patients were tested with only approximately 4% of those receiving duplicate testing. All patients who requested duplicate testing in a given year because of perceived risk or for other reasons were allowed to have a duplicate test. The interesting observation in this retrospective study was that, without incentives, there was a decline in duplicate testing. It is not known based on these data if individuals without any additional risk behaviors were obtaining duplicate testing simply for the $4 incentive or if incentives motivated individuals at risk who needed a duplicate test but would not have obtained that test except for the incentive. The use of incentives to improve acceptance of HIV testing remains an important question for future research.

Annual HIV screening of only 34% of MMTP participants, while an improvement, still falls short of the annual testing goal. A significant barrier to testing was the requirement, due to staffing constraints, that HIV rapid testing be performed by the MMTP medical staff who were also responsible for the patient phlebotomy, obtaining the informed consent and any documentation of results, without the assistance of support staff. Time constraints and the medical providers' motivation likely contributed to the limited uptake of HIV testing.

In this study all newly diagnosed HIV-infected patients had previously tested HIV-negative. MMTP chart review revealed two of the newly identified HIV-infected patients were resistant to the MMTP staff's efforts to help them engage in HIV care. Chart review revealed that linking the patients to off-site HIV clinical care was often a lengthy process taking months to years, even though most remained in methadone maintenance treatment during that time. The difficulty in linking patients to HIV clinical care reinforces the need for low-threshold HIV services to be developed and integrated on-site into the methadone program.

This study is subject to several limitations. First, as a retrospective, non-randomized study, it is difficult to ascertain some of the factors that affected the uptake of HIV testing during the time period under investigation. For example, only one-third of the patients were tested, and it is unclear whether some patients refused because they did not perceive themselves to be at risk, whether some were tested elsewhere, whether others simply did not want the methadone program to be involved in testing them or whether providers did not offer testing for various reasons. Second, the actual denominator of individuals offered testing during the period in question is unknown. Third, because the study compares one time period of testing to another time period, it is clearly possible that other temporal factors that are not accounted for in the analysis could have influenced the uptake of HIV testing among patients and providers. Medical providers, for example, experienced changes in documentation requirements over the course of this review that may have influenced HIV testing uptake from one time period to the next. Finally, this sample focuses on an urban methadone population in NYC and may not be generalizable to other methadone or addiction treatment settings. Despite these limitations, this study does demonstrate that a very large urban methadone maintenance program was able to implement routine HIV testing and to identify new HIV cases. Given the clinical importance and cost effectiveness of implementing on-site HIV testing in this population, the blending of HIV testing into the routine admission and annual physical examinations as done in this study may be an important method to increase the uptake of HIV testing in this population (3–5).

Conclusions

This study confirms that routine HIV rapid testing without HIV-prevention counseling or the provision of incentives for patients is feasible on a large scale in a busy, urban MMTP. Furthermore, routine testing increases HIV testing of MMTP patients in all patient groups, and increases patient awareness of their HIV status. Further data are needed regarding reasons many are not tested as part of routine testing and the etiology of the reductions in duplicate tests. Nonetheless, routine testing identified new HIV-infected cases, most of whom were linked to HIV primary care and were able to access HIV therapy. Further studies are required to examine to what extent opt-out testing could be operationalized in this setting and improve HIV testing rates.

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Declaration of interest

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Table 1

Gender.

Gender	Targeted testing	Routine testing	*p* Value	OR (95% CI)
Male	790/5674 (14%)	1754/5058 (34%)	<0.0001	3.2 (2.9, 3.6)
Female	333/2201 (15%)	752/2217 (34%)	<0.0001	2.9 (2.5, 3.3)

Table 2

Race/ethnicity.

Race/ Ethnicity	Targeted testing	Routine testing	*p* Value	OR (95% CI)
Black	277/2560 (11%)	590/1936 (30%)	<0.0001	3.6 (3.1–4.2)
Hispanic	576/3847 (15%)	1393/3885 (36%)	<0.0001	3.2 (2.8–3.6)
White	192/2009 (10%)	647/1983 (33%)	<0.0001	4.6 (3.8–5.5)
Total	12%	34%	<0.0001	

Table 3

Age.

Age range	Targeted testing 14% tot tested	Routine testing 34% tot tested	*p* Value	OR (95% CI)
18–25	36/142 (25%)	64/138 (46%)	<0.0001	2.6 (1.5–4.2)
26–35	177/846 (21%)	363/848 (43%)	<0.0001	2.8 (2.3–3.5)
36–45	373/2218 (17%)	854/2086 (41%)	<0.0001	3.4 (3.0, 3.9)
46–55	380/2944 (13%)	947/2920 (32%)	<0.0001	3.2 (2.8–3.7)
56–65	121/1510 (8%)	415/1621 (26%)	<0.0001	3.95 (3.2–4.9)
66–75	18/224 (8%)	57/265 (22%)	<0.0001	3.1 (1.8–5.5)
Average age	44.47	46.34	<0.0001	

Table 4

Newly diagnosed HIV cases.

Pt	1	2	3	4	5	6	7	8	9	10	11
Sex	F	M	M	M	M	M	M	M	M	M	M
Age	47	35	46	43	54	66	42	48	56	29	62
Race	W	H	H	H	H	B	H	B	B	H	H
IDU	No	No	No	Past	Recent	Recent	Recent	Recent	Past	Recent	Recent
HIV Care	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
TimeMTP	31 mths	15 mths	25 mths	12 mths	Admit	Admit	Admit	Admit	Admit	Admit	6 yrs
Prior HIV test	Neg × 3	Neg × 3	None	None	None	None	None	None	None	None	None
Dose (mg)	50	105	90	120	70	70	70	90	80	120	120
Tox Resul	Neg	alc, op, coc, benz	alc, op, coc, benz	alc, op, coc, benz	op, coc	op	op, coc	op, coc	coc	alc, op, coc, benz	op, coc
Psych Dx	No	schizdepr	No	anx	No	No	anx panic	No	No	schiz, depr	No
ART	Yes	No	No	Yes	U	Yes	Yes	U	U	U	Yes
HCV		+	−	+	+	+	+	−	+	+	+
Resid	SRO	H	Apt	H	Apt	Apt	H	Apt	H	H	Apt
Boro	Bkl	Brx	NY	Brx	Brx	NY	Bkl	Brx	Qns	Brx	NY
Empl	N	N	N	N	Y	N	N	Y	Y	Y	N

MTP – methadone maintenance treatment program; routiniz – routinization; pop – population; Hisp, H – Hispanic; B – black; W – white; Tot – total; IDU – intravenous drug use; incarc – incarcerated; LTC – lost to contact; Tox Res – toxicology results; alc – alcohol; op – opiates; coc – cocaine; benz – benzodiazepines; psych – psychiatric; Dx – diagnosis; depr – depression; schiz – schizophrenia; anx – anxiety; VL – HIV viral load; ART – antiretroviral treatment; U – Unknown; HCV – hepatitis C virus antibody status; Resid – residence; SRO – single room occupancy; H – house; Apt – apartment; Boro – borough; Bkl – Brooklyn; Brx – Bronx, QNS – Queens, Empl – employment