

# High-Volume Rapid HIV Testing in an Urban Emergency Department

Yvette Calderon, M.D., M.S.,<sup>1,2</sup> Jason Leider, M.D., Ph.D.,<sup>1,2</sup> Susan Hailpern, M.S., Dr.P.H.,<sup>2</sup>  
Robert Chin, M.D.,<sup>3</sup> Reena Ghosh, B.A.,<sup>1</sup> Jade Fettig, M.S.,<sup>1</sup> Paul Gennis, M.D.,<sup>1</sup>  
Polly Bijur, Ph.D.,<sup>2</sup> and Laurie Bauman, Ph.D.<sup>2</sup>

## Abstract

New Centers for Disease Control and Prevention (CDC) guidelines recommend routine HIV screening in locations including emergency departments. This study evaluates a novel approach to HIV counseling and testing (C&T) in a high-volume inner-city emergency department in terms of the number of patients who can be recruited, tested, test positive, and are linked to care. This prospective evaluation was conducted for 26 months. Noncritically ill or injured patients presenting to an inner-city emergency department were recruited. Patients used a multimedia program that facilitated data entry and viewed previously evaluated HIV counseling videos. Demographic characteristics, risk factors, and sexual history were collected. Data were collected on the number of patients tested, number of HIV-positive patients identified, and number linked to care. Demographic characteristics of the participants were as follows: 48.7% males, mean age  $32.6 \pm 11.3$ , 34.6% Hispanic, and 37.9% African American. Of the 7109 eligible patients approached, 6214 (87.4%) agreed to be HIV tested. There were 57 newly diagnosed or confirmed HIV-positive patients, representing a seroprevalence of 0.92%. Of those testing positive, 49 (84.2%) were linked to care and had a mean initial CD4 count of 238 cells/mm<sup>3</sup>. In conclusion, a video-assisted rapid HIV program in a busy inner-city hospital emergency department can effectively test a high volume of patients and successfully link HIV-positive individuals to care, while providing high-quality education and prevention messages for all those who test.

## Introduction

**I**N SEPTEMBER 2006, the Centers for Disease Control and Prevention (CDC) issued recommendations stating that HIV testing should become a routine part of medical care, as a means to increase HIV screening, identify patients with unrecognized HIV infection, detect HIV infection earlier, and link patients to clinical services.<sup>1</sup> The widespread availability of rapid testing makes achieving these goals increasingly possible.

However, in settings such as emergency departments and urgent care clinics where treatment is incident-specific and health care professionals often do not have an ongoing relationship with their patients, providing routine HIV testing can be difficult. In addition, HIV counseling and testing is time consuming and strains the already limited resources of those working in these emergent care environments.<sup>2</sup> While the CDC no longer requires prevention counseling as a part of HIV

screening, the populations served by inner city emergency departments and urgent care clinics are most in need of prevention messages.<sup>3</sup> These patients are less likely to have ongoing access to health care and would greatly benefit from exposure to HIV education. Additionally, while recommending the de-linking of counseling and testing if necessary, the CDC does acknowledge that patients might be more likely to think about HIV and consider their risks at the time of testing, creating an opportune time to provide prevention messages.<sup>1</sup> Consequently, it is essential to develop an effective, streamlined method of HIV counseling and testing for emergency departments and urgent care settings.

If counseling and prevention messages could be disseminated using multimedia, it would allow emergency departments to achieve an increase in testing without having to sacrifice the opportunity to provide education about HIV. Previous studies have validated the effectiveness of using video as a pretest and posttest counseling tool.<sup>4</sup> In this

<sup>1</sup>Jacobi Medical Center, Bronx, New York.

<sup>2</sup>Albert Einstein College of Medicine, Bronx, New York.

<sup>3</sup>North Central Bronx Hospital, Bronx, New York.

context, HIV counseling refers to conveying the information necessary to obtain informed consent in the state of New York. This includes explaining that HIV is the virus that causes AIDS; mechanisms of HIV transmission; the only way to know one's HIV status is to be tested; that HIV testing is voluntary; anonymous and confidential HIV testing options; the process of partner notification and reporting to the Department of Health; and the meaning of positive and negative test results.<sup>5</sup> The advantage of using video education is that it is available in several languages, can be repeated as often as necessary and gives patients the opportunity to learn communication and negotiation skills with little or no embarrassment by viewing interactions between actors.<sup>6,7</sup> Additionally, studies demonstrate that patients had better retention of information provided via video than by other methods of instruction.<sup>8-10</sup>

Currently, counseling and testing are the primary methods of HIV prevention. Once individuals are infected the next prevention efforts, as recommended by the CDC,<sup>1</sup> should be to inform them of their status and immediately link them to treatment services. Immediate treatment can decrease the patient's viral load and lessen the possibility of transmission to others.<sup>11</sup> It is also beneficial because it can enhance the patients' quality of life as well as provide them with consistent risk reduction messages from medical providers.<sup>12-15</sup> Linkage to care for HIV-positive individuals has proven difficult<sup>15,16</sup> and of those patients diagnosed with HIV, 42% to 59% do not receive routine medical care.<sup>16</sup> Both the benefits and difficulties of linking HIV-positive individuals to medical care underscore the need to develop a more streamlined system of immediately enrolling patients in treatment programs.

The objectives of this study were to evaluate a novel approach to routine HIV screening in a high-volume inner-city emergency department in terms of the number of patients who can be tested, test positive, and are linked to care. Project B.R.I.E.F. (Behavior intervention, Rapid HIV test, Innovative video, Efficient cost and health care savings, Facilitated seamless care) was designed specifically to address the at-risk population that utilizes the emergency department for their urgent health care needs. This new model integrates the use of video, computer programs, and public health advocates (PHAs) who are responsible for patient recruitment, focused counseling when needed and linkage to care, in providing counseling and testing in a time-efficient manner. Project B.R.I.E.F. was also evaluated with respect to the acceptability and feasibility of the model, as well as its ability to convey information and the ease of the data collection.

## Methods

### Study design

This prospective cross-sectional study was conducted from October 2005 to December 2007. Stable patients presenting to an inner-city municipal hospital urgent care area (UCA) and emergency department were recruited. Previously developed and evaluated videos for HIV pretest and posttest counseling based on New York State Department of Health requirements were used. There were 1.5-2 full-time equivalent PHAs trained in HIV counseling, who actively recruited patients to participate in the rapid HIV testing program by

approaching patients in their rooms and offering the test. All patients had the right to decline testing and no incentives were offered. Data on demographic characteristics, risk factors, and sexual history were collected from those patients who both agreed to and refused testing. Data were also collected on the number of patients tested, number of HIV identified patients, and number linked to care. The risk factor and sexual history data collected included information on alcohol use, drug use, homelessness, condom use, number of sexual partners and sexual practices (see Appendices). In keeping with the program's objective of providing a brief model of counseling and testing (C&T), patients were prompted to answer either the satisfaction survey or the knowledge measure, not both. Patients randomized to a satisfaction survey provided data on their satisfaction with the model, including the ability of the videos to convey information, how they would prefer HIV testing in the future and the helpfulness of rapid HIV testing in the emergency department. Patients who were randomized to complete the knowledge measure answered a series of questions about material covered in pretest and posttest counseling, providing data on the amount of HIV education conveyed by the videos (see Addendum).

Patients who chose to participate in the intervention watched a pretest video after which point the PHA returned to answer any further questions and obtain informed consent for HIV testing. Patients were tested using the OraQuick *ADVANCE*<sup>®</sup> Rapid HIV- 1/2 Antibody Test (Abbott Diagnostics, Abbott Park, IL) and watched a posttest HIV prevention education video while the test was running. The PHA returned after approximately 20 minutes to answer questions about HIV prevention, provide more focused counseling tailored to the needs of the individual based upon their self-reported risk factor profile, and deliver the test results.

The data collected on HIV positive patients included CD4 and viral load levels at the time of diagnosis, time interval between diagnosis and the patient's first medical clinic appointment, time interval between diagnosis and the patient being placed on treatment, baseline resistance to antiretroviral treatment, reasons for the patients' emergency department visit, admitting diagnosis, presence of comorbid diseases, the number of patients eligible for highly active antiretroviral treatment (HAART), the number of patients eligible patients started on HAART and the outcomes of treatment. All medical data collected on positive patients were obtained through chart reviews by their medical provider. As a quality assurance measure, a PHA performed chart reviews on a random sampling of 80 patients who stated they were recently tested for HIV.

### Subjects

All clinically stable English- and Spanish-speaking patients 13 years of age and older presenting to the emergency department between the hours of 8 AM and 10 PM were eligible. Patients were excluded from the study if they were clinically unstable (patients who were hemodynamically unstable, undergoing resuscitation or in too much pain as determined by the attending physician), unable to understand the consent process, had been tested for HIV within the past 6 months, or had a previously confirmed HIV diagnosis.

### Recruitment

A nontargeted approach was used and recruitment for HIV testing was integrated into the UCA and emergency department. Advertisements for HIV testing were placed in the waiting rooms and triage areas, and brochures were offered to patients upon registration. Recruitment was performed in a routine fashion. The overall program goal was to approach all registered patients in the UCA, emergency department, and those waiting to be seen by a physician during the time periods a PHA was on duty. Stable patients were recruited to participate in the study. Consent for HIV testing was obtained from those patients who agreed to participate. A retrospective review of the nursing logs was used to assess the number of patients that were available to be approached during the emergency department shifts when a PHA was present to conduct testing.

### Multimedia

The multimedia part of the intervention includes two videos and a computer program component. The videos provide educational material and essential counseling elements while the computer program provides the mechanism for accurate and efficient data acquisition. It takes each patient approximately thirty minutes to complete the entire intervention.

**Video intervention.** Videos were used to administer both pretest and posttest HIV counseling as defined by New York State law. The effectiveness of each video had been evaluated in previous studies.<sup>4</sup> The pretest video was used to obtain consent for testing. It conveyed information regarding HIV transmission, the definition of AIDS and HIV infection, nature and meaning of the HIV test, benefits of testing, reporting, partner notification, and the definition of voluntary and mandatory testing.

The posttest video delivered risk reduction counseling and education. The content of the video included information about the interpretation of HIV results, partner notification and domestic violence, condom demonstrations, methods of encouraging partners to get tested and reinforced the use of condoms as a positive behavior.

**Computer intervention.** A computer program was designed to ease the process of data acquisition. Before and after patients viewed the videos they used a touch screen computer to answer questions regarding demographic information, sexual history and risk factors. They were also randomized to fill out either a patient satisfaction survey or an HIV knowledge test. The program immediately printed out a list of the patient's risk factors after he/she finished entering the data. The PHAs were then able to determine if the patient was at high risk for contracting HIV, and while giving the results could provide the patient with additional, tailored counseling.

### Positive patient protocol

For all patients who tested preliminary positive the PHA ran a whole-blood rapid HIV test and ordered a Western blot, in accordance with standard Health and Hospitals Corporation (HHC) procedure. The PHA then informed the patient of his/her result and helped the patient fill out partner notification forms.

### Linkage to care

Patients who tested positive between 9 AM and 5 PM on weekdays, were escorted by a PHA to the Adult Care Services (ACS) HIV clinic within the hospital where they were seen by a provider. Patients who tested positive outside of those hours were given an appointment to return to the emergency department on the next available business day, during which the PHA would walk them to the HIV clinic. The PHAs remained with the patients until they were seen by the provider. The PHAs followed up with the patients who tested on off-hours, to ensure that they kept their follow-up appointment.

### Results

The demographic characteristics of the participants were as follows: 48.7% males, mean age  $32.7 \pm 11.4$  years, 37.9% African American, and 34.6% Hispanic (Table 1). During the hours the PHAs were present, 65,214 patients were available for them to recruit for testing. Of the 8257 (12.7%) patients that were approached, 1148 were ineligible for testing and of the 7109 (86.1%) eligible patients, 6214 (87.4%) accepted testing. The most common reason for eligible patients to decline testing was "I feel I am not at risk", accounting for 48.9% of refusals. Of the patients who accepted testing, 4405 (71.0%) had previously tested for HIV and 2809 (42.6%) had received prior HIV counseling.

Of those patients who were randomized to the posttest knowledge survey, 3604 (93.5%) received a score of 60% or higher and 2770 (71.9%) received a score of 80% or higher. Of the patients who were randomized to the posttest satisfaction survey, 96.3% felt the videos answered their questions regarding HIV testing, 98.6% thought rapid HIV testing in the emergency department was helpful and 95.1% felt the PHA made the process easier for them. When asked how they would prefer HIV counseling in the future, 74.4% stated they would prefer a process that includes both the videos and the PHA. Additionally, 75.9% of patients felt they learned a moderate or large amount of new information, and 72.5% felt

TABLE 1. DEMOGRAPHIC INFORMATION (N=6214)

Age		32.69 ± 11.38 range: 13–85
Gender	Male	3025 (48.7%)
	Female	3180 (51.2%)
Race/ethnicity	White	423 (6.8%)
	African American	2342 (37.9%)
	Hispanic	2139 (34.6%)
	Asian	110 (1.8%)
	Other	423 (6.8%)
	Missing	747 (12.1%)
Language	English	5263 (84.8%)
	Spanish	899 (14.5%)
	Other	27 (0.4%)
HIV tested before	Yes	4405 (71.0%)
	No	1776 (28.6%)
Prior HIV counseling	Yes	2809 (42.6%)
	No	2139 (55.9%)

Frequencies may not total 6214 due to missing data.

the videos gave them a moderate to large amount of information to change their sexual practices.

There were 57 newly diagnosed or confirmed HIV-positive patients of whom 39 (68.4%) were males, the average age was 37.7 years, and 47 were naïve to HIV treatment. There were 11 patients who knew their HIV status but requested testing in order to be linked to care or to confirm previous results; 10 of these patients (90.9%) were successfully linked to care at our clinic. Among the patients who tested positive, the most common reasons for visiting the emergency department on the date of diagnosis were HIV testing, respiratory distress, and sexually transmitted disease (STD) or genitourinary disorder. Compared to the 2.3% ( $n = 142$ ) of patients who tested negative, 23.3% ( $n = 13$ ) of positive patients reported having sexual intercourse with an HIV-positive partner. Also, 37.5% ( $n = 21$ ) of positive patients reported past non-intravenous drug use, versus 26.6% ( $n = 1635$ ) of patients who tested negative.

Of 57 positive patients, 49 (84.2%) of them were linked to care, with linkage to care being defined as being seen by an HIV specialist provider at an outpatient clinic. Of the 49 patients linked to care, 44 were seen at ACS. Of those followed by our clinic, 34 were eligible for HAART according to the guidelines set forth by the Department of Health and Human Services<sup>17</sup> and 27 (79.4%) were placed on HAART treatment. The mean time interval from date of diagnosis to the first medical clinic visit was 20.5 days (range, 0–696 days). The mean time interval from date of diagnosis to initiation of HAART was 31.2 days. After placement on HAART, 15 patients had a viral load less than 400 copies per milliliter, 8 of whom had a viral load less than 50 copies per milliliter (Table 2). Baseline resistance to antiretroviral treatment data was available for 20 of the newly diagnosed patients, 2 of whom were infected with strains of HIV that had genotypic resistance to HIV medications.

In the first 16 months of the program, risk factor data were collected and available for patients who both agreed to or refused testing. For those patients refusing HIV testing because they felt they were not at risk, 116 (50.9%) had a primary care physician, 30 (13.1%) had an STD, 35 (15.3%) had used nonintravenous drugs in the past and 113 (49.3%) have had sexual intercourse without a condom.

### Limitations

There are several limitations to Project B.R.I.E.F., namely that the videos are aimed at an adult audience and are only

available in English and Spanish. Consequently, the videos may not be culturally and linguistically sensitive to the needs of adolescents and the elderly. Additionally, there is no auditory version of the questions; use of the multimedia component of the program assumes a minimal reading level. For patients who cannot read the questions, the PHA must obtain the data by hand. For patients with other disabilities, the PHA tests the patient and uses the conventional methods of providing counseling. Also, the program does not have data on positive patients who receive treatment and were followed by other clinics. As with many studies, it may be difficult to generalize these results to other hospitals or settings because they were based on a specific patient population.

### Discussion

Project B.R.I.E.F. consists of integrated HIV C&T in the emergency department/UCA during standard and off-hour shifts with immediate linkage to clinical care. The program has redesigned the traditional model of HIV C&T specifically to address the vulnerable, at-risk population that utilizes the emergency department for their urgent health care needs. It allows for an increase in the number of people tested without sacrificing the opportunity to provide education and prevention messages. The results of this study indicate that as a model for rapid HIV testing in the emergency department, the Project B.R.I.E.F. program is both feasible and acceptable to the patient population. This suggests that the emergency department is a valid site for HIV C&T. Nearly all the patients tested felt that rapid HIV testing in the emergency department was helpful and that the PHA made the process easier for them. The majority of those tested preferred the B.R.I.E.F. model to any other model of HIV C&T.

The videos were well received, and effective in conveying information about HIV. Nearly three quarters of those tested scored 80% or higher on the posttest knowledge measure that assessed their comprehension of the pretest and posttest counseling material presented to them. In all, 75.9% of the patients felt they learned a moderate to large amount of new information from the videos and that the information learned influenced them to change their sexual practices. The patients' receptiveness to the information presented in the videos and their preference for the use of a PHA and video when testing in the future demonstrates a high level of acceptability of the B.R.I.E.F. model to deliver HIV C&T.

TABLE 2. PATIENT SATISFACTION DATA

# of patients randomized to satisfaction survey		n = 3941
Felt they learned something new	Moderate amount	1160 (29.4%)
	Large amount	1832 (46.5%)
Felt video gave information to change sexual practices	Moderate amount	977 (24.8%)
	Large amount	1881 (47.7%)
Felt videos answered their questions regarding HIV testing		3795 (96.3%)
Able to view video in preferred language		3853 (97.9%)
Thought rapid testing in the emergency department was helpful		3882 (98.6%)
Felt PHA made testing process easier for them		3746 (95.1%)
How would they prefer HIV C&T in the future?	Just watch videos	509 (12.9%)
	Just talk to PHA	477 (12.1%)
	Watch video and talk to PHA	2929 (74.4%)

PHA, public health advocate; C & T, counseling and testing.

The use of multimedia also ensures that education and prevention messages are accessible to a large population of patients with varying literacy levels. According to the 2003 National Assessment of Adult Literacy, 30 million adults with "below basic prose literacy" are unable to do much more than sign a consent form or search a document to determine what they can or cannot consume before undergoing a medical test.<sup>18</sup> In the Bronx, 46% of the population is functionally illiterate and 33% are marginally literate.<sup>19</sup> In such a setting it is beneficial to use multimedia to disseminate information. Videos are an effective method of making health education available to patients regardless of their level of literacy.

It is interesting to note the wide difference between the number of patients who stated they were previously tested (71.0%) and those who reported receiving prior HIV counseling (42.6%). There are several reasons that could account for this discrepancy, the most likely of which is that the percentage of patients who said they had previously tested, was falsely elevated. According to a recent survey, 23% of Americans believe that they are tested for HIV during routine check-ups or each time their blood is drawn.<sup>20</sup> None of the 80 patients were found to have documentation of previous HIV testing in our hospital network. However, the discrepancy between those patients who state prior testing and prior counseling could also be attributed to the way in which patients view new streamlined methods of HIV counseling. Some institutions may only provide written counseling materials or quickly run through a script or list of facts, as a method of conveying HIV education. Many patients may not register or perceive these types of information delivery as actual pretest counseling. By providing the essential elements pre-test counseling as defined by New York State law, via video before the PHA obtains informed consent, the B.R.I.E.F. model ensures that patients fully understand the testing process and are aware of the care and services they are about to receive.<sup>4</sup>

The feasibility of the B.R.I.E.F. program is demonstrated by the high percentage of both patients who accepted testing and patients who were identified as positive and subsequently linked to care. Of the 7109 eligible patients approached, 87.41% accepted testing and 57 patients tested positive. Identifying positive patients is imperative to combating the HIV epidemic because knowledge of one's positive serostatus often leads to a reduction in risky behavior. Studies have shown that persons aware of their HIV positive status are 68% less likely to engage in unprotected intercourse with uninfected partners.<sup>21</sup> Additionally, the transmission rate is 3.5 times higher for individuals unaware of their serostatus as compared to individuals who know they are positive.<sup>22</sup> This difference in transmission rates is not only attributed to a change in behavior but also the benefits of positive patients being placed in medical care. Early detection and immediate

linkage to clinical care can significantly improve the patient's quality of life. The success of antiretroviral therapy allows patients to live longer, healthier lives if the therapy is started before advanced immune dysfunction occurs.<sup>23,24</sup> Of the 57 positive patients identified, 49 were linked to care, 5 of whom were seen at outside clinics. Out of the 44 patients seen at ACS, 34 met the criteria for HAART treatment and 25 were placed on HAART. At their most recent follow-up examinations the clinic found that 15 of those patients had a viral load less than 400 copies per milliliter. Of those 15 patients, eight had an undetectable viral load (<50 HIV-1 RNA copies per milliliter). The average of 20.54 days to be linked to medical care and 32.73 days to initiate HAART (if eligible), as well as the excellent response of many patients to their treatment, are indicative of the efficacy with which the B.R.I.E.F. program links patients to care. Immediate linkage to care has become an increasingly crucial component of HIV prevention and patient care over the past 10 years due to advances in research that have made HAART more effective.

While these findings demonstrate the benefits of linking patients to care, the remainder of the data on the HIV positive patients illustrates the continued need for an increase in testing. On average, the patients who tested positive had made 8.9 visits to the North Bronx Healthcare Network (NBHN) before being diagnosed with HIV and had an initial CD4 count of 238 cells/mm<sup>3</sup> (Table 3). Of those patients, 27 developed AIDS less than 1 year after diagnosis. These numbers indicate that patients are being diagnosed late in the course of their disease.

However, the success of Project B.R.I.E.F. is encouraging. Compared to other testing sites,<sup>25-27</sup> it seems to be one of the more effective programs at providing rapid HIV testing in urban emergency departments and addressing the needs of that particular patient population. Recent studies have had varying degrees of success recruiting patients into emergency department HIV testing programs with 40%–60% of patients accepting testing.<sup>25-29</sup> However, Haukoos et al.<sup>30</sup> found that 93% of patients would have accepted an offer of HIV testing from a physician in the emergency department; this suggests that patient acceptance can be drastically increased depending on the context in which the test is offered. It is possible that the high rate of acceptance among patients tested through the B.R.I.E.F. program is due to the fact that the test is offered after patients watch an informational video. While using an opt-in approach and obtaining written informed consent as mandated by New York State law the PHAs were still able to offer testing to a substantial number of patients (8257). This is partly due to the use of video counseling, which allows the PHAs to perform parallel testing, enabling them to recruit a greater number of patients and focus their efforts on counseling high-risk negatives and ensuring that positive patients

TABLE 3. DATA ON HIV-POSITIVE PATIENTS

	Male (n = 39)	Female (n = 18)	Total (n = 57)
Average age	39 (range: 23–58)	35 (range: 13–56)	37.7 (range: 13–58)
# NBHN visits prior to Dx	5.41	18.06	8.92
# NBHN visits 1 year prior to Dx	1.95	2.56	2.14
Initial CD4 count (cells/mm <sup>3</sup> )	216.13	276.44	238.40
Initial viral load (copies/mL)	141,949.23	160,372.78	147,767.19

NBHN, north bronx healthcare network.

are linked to care. Also, compared to other EDs offering rapid HIV testing using an opt-out approach or streamlined C&T, testing through the B.R.I.E.F. program achieves high acceptance rates, testing for 100% of patients who are offered the opportunity, identifies a substantial amount of positive patients and links them to care, all while continuing to provide the health education most needed by this vulnerable patient population. Although patients are more likely to be receptive to prevention messages at the time of testing, most other programs do not provide standard posttest counseling to patients who test negative.<sup>1</sup> Although Program B.R.I.E.F. all patients were provided with risk reduction counseling and HIV education in addition to the pretest information required by New York State law. In addition, most programs only collect risk factors for patients who test positive. The multimedia component of Program B.R.I.E.F. eases the acquisition of all patient data, and risk factor information is available for all those who test.

The success of Project B.R.I.E.F. demonstrates that it is not necessary to delink counseling and testing in order to achieve an increase in the number of people aware of their serostatus. Furthermore, the B.R.I.E.F. program illustrates that maintaining the education and counseling component of testing is feasible in emergency departments. This is of utmost importance because testing in emergency departments is a vital component of the fight against HIV/AIDS. Testing in hospitals, emergency departments, outpatient, and community clinics account for greater proportions of positive test results compared to private physicians and HMOs.<sup>31</sup> According to the 2000–2003 Supplement to the HIV/AIDS Surveillance Report, hospitals, emergency departments, outpatient, and community clinics accounted for 31% of HIV tests but 48% of positive results.<sup>31</sup> For several reasons, urban emergency departments are ideal sites for reaching populations most vulnerable to contracting HIV. First, emergency departments have access to at-risk populations. Small studies looking at the prevalence of HIV-1 infected adult patients presenting to inner-city emergency departments, using anonymous testing, have demonstrated that 3%–17% of patients are unaware they are HIV positive.<sup>32–35</sup> Second, emergency departments provide disease prevention information and do so effectively.<sup>36, 37</sup> Third, emergency departments located in urban areas have a unique trusting relationship with their communities, as they often provide routine primary health care for many inner-city patients. With the use of a small, dedicated PHA staff and a multimedia rapid HIV testing model, emergency departments can increase serostatus awareness in these populations, while continuing to provide them with education and prevention messages.

### Acknowledgment

Supported by the Research Supplement for Underrepresented Minorities (PA-01-079) with the National Institute of Child Health and Human Development.

### Author Disclosure Statement

No competing financial interests exist.

### References

1. Branson BM, Handsfield HH, Lampe MA, et al. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep* 2006;55:1–17; quiz CE11–14.
2. Brock TP, Smith SR. Using digital videos displayed on personal digital assistants (PDAs) to enhance patient education in clinical settings. *Int J Med Inform* 2007;76:829–835.
3. Lyons MS, Lindsell CJ, Ledyard HK, et al. Health department collaboration with emergency departments as a model for public health programs among at-risk populations. *Public Health Rep* 2005;120:259–265.
4. Calderon Y, Haughey M, Bijur PE, et al. An educational HIV pretest counseling video program for off-hours testing in the emergency department. *Ann Emerg Med* 2006;48:21–27.
5. Public Health Law. Article 27F: HIV and AIDS Related Information. Sections 2780–2787: New York State Legislature; 2005 r.
6. Evans AE, Edmundson-Drane EW, Harris KK. Computer-assisted instruction: An effective instructional method for HIV prevention education? *J Adolesc Health* 2000;26:244–251.
7. Kiene SM, Barta WD. A brief individualized computer-delivered sexual risk reduction intervention increases HIV/AIDS preventive behavior. *J Adolesc Health* 2006;39:404–410.
8. Reznik M, Sharif I, Ozuah PO. Use of interactive videoconferencing to deliver asthma education to inner-city immigrants. *J Telemed Telecare* 2004;10:118–120.
9. Weston J, Hannah M, Downes J. Evaluating the benefits of a patient information video during the informed consent process. *Patient Educ Couns* 1997;30:239–245.
10. Fureman I, Meyers K, McLellan AT, et al. Evaluation of a video-supplement to informed consent: Injection drug users and preventive HIV vaccine efficacy trials. *AIDS Educ Prev* 1997;9:330–341.
11. Hisada M, O'Brien TR, Rosenberg PS, et al. Virus load and risk of heterosexual transmission of human immunodeficiency virus and hepatitis C virus by men with hemophilia. The Multicenter Hemophilia Cohort Study. *J Infect Dis* 2000;181:1475–1478.
12. National HIV Testing Day at CDC-funded HIV counseling, testing, and referral sites—United States, 1994–1998. *MMWR Morb Mortal Wkly Rep* 2000;49:529–532.
13. CDC posts new HIV testing, referral guidelines. *AIDS Alert* 2002;17:8–10, 12.
14. Advancing HIV prevention: New strategies for a changing epidemic—United States, 2003. *MMWR Morb Mortal Wkly Rep* 2003;52:329–332.
15. Molitor F, Walsh RM, Leigh JP. Determinants of longer time from HIV result to enrollment in publicly funded care and treatment in California by race/ethnicity and behavioral risk. *AIDS Patient Care STDs* 2002;16:555–565.
16. Molitor F, Kuenneth C, Waltermeyer J, et al. Linking HIV-infected persons of color and injection drug users to HIV medical and other services: The California Bridge Project. *AIDS Patient Care STDs* 2005;19:406–412.
17. Services DoHaH. Guidelines for the Use of Antiretroviral Agents in HIV-1 Infected Adults and Adolescents. [http://aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL\\_PDA.pdf](http://aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL_PDA.pdf) (Last accessed July 21, 2008).
18. National Assessment of Adult Literacy. In: U.S. Department of Education IES, National Center for Education Statistics, 2003.
19. Adult Literacy Estimates for Bronx County. [www.casas.org/lit/litcode/Detail.CFM?census\\_\\_AREAID=2068](http://www.casas.org/lit/litcode/Detail.CFM?census__AREAID=2068) (Last accessed July 18, 2008).

20. Kaiser Family Foundation. Survey of Americans on HIV/AIDS. [www.kff.org/hiv/aids/7140.cfm](http://www.kff.org/hiv/aids/7140.cfm) (Last accessed July 18, 2008).
21. Marks G, Crepaz N, Senterfitt JW, et al. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *J Acquir Immune Defic Syndr* 2005;39:446–453.
22. Branson B. Current HIV epidemiology and revised recommendations for HIV testing in health-care settings. *J Med Virol* 2007;79(Suppl 1):S6–10.
23. Palella FJ, Jr., Deloria-Knoll M, Chmiel JS, et al. Survival benefit of initiating antiretroviral therapy in HIV-infected persons in different CD4+ cell strata. *Ann Intern Med* 2003;138:620–626.
24. Palella FJ, Jr., Baker RK, Moorman AC, et al. Mortality in the highly active antiretroviral therapy era: Changing causes of death and disease in the HIV outpatient study. *J Acquir Immune Defic Syndr* 2006;43:27–34.
25. Lyss SB, Branson BM, Kroc KA, et al. Detecting unsuspected HIV infection with a rapid whole-blood HIV test in an urban emergency department. *J Acquir Immune Defic Syndr* 2007;44:435–442.
26. Brown J, Shesser R, Simon G, et al. Routine HIV screening in the emergency department using the new US Centers for Disease Control and Prevention Guidelines: Results from a high-prevalence area. *J Acquir Immune Defic Syndr* 2007;46:395–401.
27. Rapid HIV testing in emergency departments—Three U.S. sites, January 2000–March 2006. *MMWR Morb Mortal Wkly Rep* 2007;56:597–601.
28. Merchant RC, Seage GR, Mayer KH, et al. Emergency department patient acceptance of opt-in, universal, rapid HIV screening. *Public Health Rep* 2008;123(Suppl 3):27–40.
29. Mollen C, Lavelle J, Hawkins L, et al. Description of a novel pediatric emergency department-based HIV screening program for adolescents. *AIDS Patient Care STDs* 2008;22:505–512.
30. Haukoos JS, Hopkins E, Byyny RL. Patient acceptance of rapid HIV testing practices in an urban emergency department: Assessment of the 2006 CDC recommendations for HIV screening in health care settings. *Ann Emerg Med* 2008;51:303–309, 309 e301.
31. Janssen RS. HIV testing: Rationale for changing recommendations. *Top HIV Med* 2007;15:6–10.
32. Kelen GD, Shahan JB, Quinn TC. Emergency department-based HIV screening and counseling: Experience with rapid and standard serologic testing. *Ann Emerg Med* 1999;33:147–155.
33. Hutchinson AB, Corbie-Smith G, Thomas SB, et al. Understanding the patient's perspective on rapid and routine HIV testing in an inner-city urgent care center. *AIDS Educ Prev* 2004;16:101–114.
34. Goggin MA, Davidson AJ, Cantril SV, et al. The extent of undiagnosed HIV infection among emergency department patients: Results of a blinded seroprevalence survey and a pilot HIV testing program. *J Emerg Med* 2000;19:13–19.
35. Alpert PL, Shuter J, DeShaw MG, et al. Factors associated with unrecognized HIV-1 infection in an inner-city emergency department. *Ann Emerg Med* 1996;28:159–164.
36. Rothman RE, Ketlogetswe KS, Dolan T, et al. Preventive care in the emergency department: Should emergency departments conduct routine HIV screening? A systematic review. *Acad Emerg Med* 2003;10:278–285.
37. Rothman RE. Current Centers for Disease Control and Prevention guidelines for HIV counseling, testing, and referral: Critical role of and a call to action for emergency physicians. *Ann Emerg Med* 2004;44:31–42.

Address correspondence to:  
 Yvette Calderon, M.D., M.S.  
 Jacobi Medical Center  
 1400 Pelham Parkway Building 6  
 Bronx, NY 10463

E-mail: Yvette.Calderon@nbhn.net

#### Appendix A: Rapid HIV Testing in the Emergency Department\*

1. Date: \_\_\_\_\_ Time In: \_\_\_\_\_ Time Out: \_\_\_\_\_
2. MR#: \_\_\_\_\_
3. Patient Name: \_\_\_\_\_
4. Patient Tel #: \_\_\_\_\_ cell #: \_\_\_\_\_
5. Gender:  Male  Female
6. Marital Status:  Single  Married  Divorced  Separated  Widowed
7. Insurance:  Medicaid  Medicare  Private Insurance  Not Insured
8. Age: \_\_\_\_\_
9. Patient's Address: \_\_\_\_\_
10. Do you consider yourself to be:
  - White/Caucasian
  - Black/African American
  - Asian
  - American Indian/Alaska Native
  - Native Hawaiian or Other Pacific Islander
  - Multiracial
  - Unknown or Not reported

\*Some questions from Carey *et al.*, 2002 and other adapted from the DOH 100 questions and answers about HIV/AIDS [Carey, MP, Schroder, KEE. Development and psychometric evaluation of the brief HIV knowledge questionnaire. *Prevention* 14,174–184, 2002].

11. Which language do you prefer speaking in:

- English  
 Spanish  
 French  
 Mandarin/Cantonese  
 Albanian  
 Russian

Other: \_\_\_\_\_

12. Have you been HIV tested before?  Yes  No

13. Have you received HIV counseling prior to getting HIV tested in the past?  Yes  No

14. How many times have you had an HIV test? \_\_\_\_\_

15. Did you get your results each time you were tested in the past?  Yes  No

16. Do you have a doctor/or clinic you go regularly to?  Yes  No

17. During past HIV counseling did you get information on how to have safe sex?  Yes  No

#### Past Sexual History

How many Sexual Partners have you had this past year (circle one)

18. Number of male partners: 0 1 2 to 5 greater than or equal to 6

19. Numbers of female partners: 0 1 2 to 5 greater than or equal to 6

Have you had intercourse over the past 3 months:

20. Vaginal:  Yes  No

21. Anal:  Yes  No

22. Condom use over the past 3 months: (circle one)

Never Almost never Sometimes Almost every time Every time

Have you ever had unprotected sex with:

23. A partner who had HIV  Yes  No

24. A partner who was a drug user  Yes  No

25. A partner who exchanged sex for money or drugs  Yes  No

26. Currently, do you have one partner?  Yes  No

27. Patient's risk factors (circle all risk factors that apply)

*For the purposes of this project it would be helpful for us to know whether you have experienced any of the following:*

**Have you ever:**

- Had a sexually transmitted disease?  
 Had Hepatitis (any type A, B or C)?  
 Used drugs in the past (smoke, sniff, or take pills)?  
 Used IV drugs in the past?  
 Used street drugs before having sex?  
 Had more than 3 drinks before having sex?  
 Had transfusions?  
 Had a needle stick exposure?  
 Had sex without a condom?  
 Been homeless in the past 6 months?  
 Exchanged sex for money or drugs?

---

**Do you now:**

- Use drugs (smoke, sniff, or take pills)  
 Use drugs (IV drugs-heroin)  
 Use alcohol (check one)  
 Never  
 Occasionally  
 Weekends  
 Daily  
 Sometimes drink alcohol before having sex?  
 No risk factors  
 Other \_\_\_\_\_

#### Appendix B: Quality Assurance Measures\*

##### A. Patient Satisfaction Questionnaire

1. Did you feel you learned something new about safe sex?

- No  Small amount  Moderate amount  Large amount

2. Did the video give you information that may help you change your sexual practice?

- No  Small amount  Moderate amount  Large amount

\*Some questions from Carey *et al.*, 2002 and other adapted from the DOH 100 questions and answers about HIV/AIDS [Carey, MP, Schroder, KEE. Development and psychometric evaluation of the brief HIV knowledge questionnaire. *Prevention* 14,174-184, 2002].



- 3. Did the video answer your questions regarding HIV testing?  Yes  No
- 4. Did you view the video in the language you prefer?  Yes  No
- 5. If no, which language would you have preferred?  
 French  Mandarin/ Cantonese  Albanian  Russian  Other:\_\_\_\_\_
- 6. Do you think rapid HIV testing in the Emergency Department is helpful?  Yes  No
- 7. Did the Public Health Advocate made it easy to get tested for HIV in the Emergency Department?  
 Agree  Neither agree or disagree  Disagree  Strongly disagree
- 8. Would you prefer rapid HIV counseling and testing with:  
 Video alone  Public Health Advocate alone  Combination of video and Public Health Advocate

*B. Educational test Survey for the patient: (circle correct answer)*

- |  |      |       |
|--|------|-------|
| 1. Latex condoms reduce the risk for HIV transmission                            | True | False |
| 2. Using alcohol or non-injected drugs increase your risk of getting HIV         | True | False |
| 3. You are legally required to give your doctor information on all your partners | True | False |
| 4. Having a sexually transmitted disease increases your risk of getting HIV      | True | False |
| 5. A patient should wait until he/she becomes sick before getting tested for HIV | True | False |

