

# Factors Associated with a Willingness to Accept Rapid HIV Testing in an Urban Emergency Department

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**Abstract** Emergency Departments (EDs) provide primary healthcare to many underserved persons without access to preventive healthcare elsewhere. We conducted a cross-sectional study to test the hypothesis that patients are more likely to express a willingness to accept rapid HIV testing in the ED if they lack access to preventive healthcare elsewhere. Medicaid insurance, younger age, lack of a usual place of healthcare, high perceived HIV risk, and actual HIV risk were associated with increased HIV test acceptance. These results support the need for and acceptability of rapid HIV testing in the ED particularly for individuals who may lack access to this preventive healthcare screening elsewhere.

**Keywords** HIV testing · Access to preventive healthcare · Emergency department

## Introduction

1–1.2 million people in the United States (U.S.) are estimated to be infected with the Human Immunodeficiency Virus (HIV) with 20 % of these individuals estimated to be unaware of their HIV status [1]. Delayed HIV diagnosis is

associated with increased HIV transmission to others and increased AIDS related mortality [1, 2]. In order to promote earlier HIV diagnosis and to increase the number of HIV positive persons who are aware of their status, the Centers for Disease Control and Prevention (CDC) recommends routine HIV screening for all patients ages 13–64 years in health facilities including Emergency Departments (EDs) where the prevalence of undiagnosed HIV infection is >0.1 % [3].

Emergency Departments provide primary healthcare to many underserved persons who may not have access to preventive health services elsewhere [4]. The ED thus represents an important setting in which to conduct rapid HIV testing, particularly through possible targeting of this underserved population. In a study of hospitalized individuals without access to rapid HIV testing in the ED, patients with public health insurance, no health insurance, and no regular source of medical care had received HIV testing significantly less often prior to admission compared to individuals with private health insurance and a regular source of medical care [5]. In a national sample of pregnant women in the U.S., women without health insurance or without a personal doctor were less likely to ever have been HIV tested [6]. Therefore, we aimed to elucidate factors associated with a willingness to accept rapid HIV testing in the ED and to assess if access to preventive healthcare elsewhere is associated with an increased willingness to accept HIV testing in this setting.

## Methods

We conducted a cross-sectional study to test the hypothesis that patients are more likely to express a willingness to accept HIV testing in the ED if they lack access to

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preventive healthcare elsewhere. Acceptance of rapid HIV testing was defined as acceptance of the test by the research participants when asked by a research assistant, “If offered an oral HIV test now with the results available in 20 min would you choose to have the test”? When available, an HIV testing specialist was contacted by the research assistants to approach the study subjects who accepted HIV testing to offer them the OraQuick ADVANCE<sup>®</sup> Rapid HIV-1/2 Antibody Test (OraSure Technologies, Inc. Bethlehem, PA).

Patients who presented for care in the ED at the Hospital of the University of Pennsylvania (HUP) in Philadelphia were randomly selected for participation in the study between 7 AM and 12 AM daily between March and October 2008. Subjects were included in the study if they were  $\geq 18$  years of age and were not known to be HIV positive. Baseline demographic data (age per 10 years, gender, race, and ethnicity) and access to preventive healthcare (health insurance status, having of a usual place of healthcare, and the number of visits to an ED in the past 12 months including the current visit) were collected through patient interview and medical chart review. Health insurance status was categorized as private health insurance, Medicaid, Medicare, no health insurance, or VA health insurance. Having a usual place of health was defined as having a regular healthcare provider outside of the ED. The Copasa Health Protection Questionnaire was used to assess perceived HIV risk, the HIV Knowledge Questionnaire (HIV KQ-18) was used to assess HIV knowledge, and the HIV Stigma Scale was used to assess HIV stigma [7–9].

Research participants were also questioned about actual HIV risk according the CDC’s definition of higher HIV risk behaviors [3]. One affirmative response to any of the high risk activities constituted actual HIV risk. The collection of the demographic and healthcare access data and administration of the HIV-related questionnaires preceded the questioning regarding willingness to accept rapid HIV testing by the research assistants. The study was approved by the Institutional Review Board of the University of Pennsylvania and all participants provided written informed consent for both study participation and HIV testing when applicable.

### Statistical Analysis

The Chi square test and the Mann–Whitney *U* test were used in bivariate comparisons to evaluate for statistically significant differences between the proportion of individuals who did and did not accept rapid HIV testing by demographic variables, by the presence or absence of access to preventive healthcare, and by HIV perceptions. Multiple logistic regression was used to control for

potential confounders. Covariates were included in the logistic regression model if they reached a threshold *p* value of  $< 0.1$ . All analyses were conducted using STATA 9.0 (STATA Corp, College Station, TX).

### Results

We enrolled 1225 patients into the study. 52.9 % of the participants agreed to be HIV tested. The median age of the study participants was 37.6 years. 65.1 % of the cohort was female. 66.7 % was African American, 96.9 % was non-Hispanic, 40.2 % had public or no health insurance, and 17.9 % had no usual place of healthcare. In the bivariate analyses individuals who accepted HIV testing were younger, were more likely to have Medicaid, and were less likely to have a usual place of healthcare compared to those who refused HIV testing. In the multivariate analysis younger age (aOR 0.81, 95 % CI 0.74–0.89), Medicaid (aOR 1.62, 95 % CI 1.18–2.22), perceived HIV risk (aOR 1.22, 95 % CI 1.04–1.44), and actual HIV risk (aOR 1.77, 95 % CI 1.3–2.43) were significantly associated with increased HIV test acceptance. None of the other factors, including gender, race, ethnicity, having a usual place of healthcare, having  $> 2$  visits to an ED in the past 12 months, HIV knowledge, and HIV stigma were significantly associated with test acceptance (Table 1). None of the individuals who accepted HIV testing when questioned by the research assistants as part of the study declined testing when also approached by the HIV testing specialists.

### Discussion

Our study demonstrated that younger individuals, individuals without a usual place of healthcare, and individuals with Medicaid were more likely to accept HIV testing in the ED. One similar recent study which assessed the relationship between HIV test refusal in the ED and access to a regular alternative source of care did not demonstrate an association between HIV test refusal and health insurance status or having a primary care provider [10]. This previous study dichotomized insurance status by insured and uninsured instead of categorizing insurance status by private insurance, public insurance, VA insurance, and no insurance as in our study. This more specific insurance status information may provide greater detail to better assess an association between insurance status and different degrees of access to preventive healthcare. Similarly, the lack of association between having a regular source of care and refusal of HIV testing in the previous ED study may result from the previous study asking study subjects about having a primary care provider or not instead of about having a

**Table 1** Factors associated with a willingness to accept rapid HIV testing in an urban Emergency Department

Variable	OR (95 % CI)	Adjusted OR (95 % CI)
Age (per 10 years)	<b>0.78 (0.72–0.84)</b>	<b>0.81 (0.74–0.89)</b>
Gender	1.13 (0.89–1.43)	1.01(0.78–1.32)
Race		
African American	1 (ref)	1 (ref)
Caucasian	0.85 (0.67–1.09)	1 (0.75–1.31)
Asian	1.32 (0.57–3.09)	1.42 (0.59–3.40)
American Indian or Alaska Native	1.28 (0.36–4.55)	1.21 (0.32–4.62)
Non Hispanic ethnicity	1.50 (0.78–2.88)	1.50 (0.75–3.02)
Health insurance		
Private insurance	1 (ref)	1 (ref)
Medicaid	<b>1.74 (1.31–2.32)</b>	<b>1.62 (1.18–2.22)</b>
Medicare	0.96 (0.60–1.54)	1.24 (0.74–2.07)
No insurance	1.09 (0.76–1.56)	0.80 (0.54–1.20)
VA insurance	2.03 (0.18–22.46)	1.77 (0.14–21.92)
Usual place of healthcare	<b>0.68 (0.50–0.92)</b>	0.72 (0.51–1.02)
>2 visits to Emergency Department in past 12 months	1.21 (0.95–1.53)	1.20 (0.92–1.55)
Actual HIV risk	<b>2.03 (1.52–2.71)</b>	<b>1.77 (1.3–2.43)</b>
Perceived HIV risk	<b>1.37 (1.18–1.60)</b>	<b>1.22 (1.04–1.44)</b>
HIV knowledge	1.06 (1.02–1.10)	1.03 (0.99–1.07)
HIV stigma	1.00 (0.99–1.02)	1.00 (0.98–1.01)

Bold values indicate variables that achieved statistical significance

usual place of healthcare or not as in our study. Asking about a usual place of healthcare may provide a clearer assessment of access to preventive healthcare as many individuals particularly those with public insurance or no insurance may see several providers at a medical clinic and may not be assigned to and therefore identify with one primary care provider.

The increased acceptance of testing by younger individuals and those with Medicaid or without a usual place of healthcare suggests that the ED can provide a unique opportunity to provide this service to those without access to HIV testing elsewhere. The potential need for HIV testing in EDs is further exhibited by a study that revealed that prior to HIV diagnosis, patients had a median of 5 recent encounters with the healthcare system. Forty percent of these encounters were visits to either an ED or an urgent care clinic [11].

Numerous previous studies have shown that low perceived HIV risk, low HIV knowledge, and high HIV stigma have all been associated with refusal of HIV testing and delays in HIV testing [10–12]. Similar to these previous studies, our study demonstrated increased HIV acceptance among those with high perceived HIV risk and also among those with actual HIV risk. Contrary to these previous studies, we found no association between HIV stigma and HIV knowledge and acceptance of HIV testing. Perhaps in

the ED patients possess more anonymity than in a physician's office or private clinic, and thus HIV testing is perceived to be less stigmatizing.

This study had several limitations. First, we were not logistically able to offer rapid HIV testing to all of the research participants due to the limited availability of the HIV testing specialists. Although we used the surrogate of verbal test acceptance rather than actual test acceptance for subjects enrolled when HIV testing specialists were not available, it is reassuring that all of the individuals who accepted testing when the HIV testing specialists were available actually received the test. Secondly, since a good deal of the data collected in this study is related to sensitive topics and was collected by direct patient interview it may be subject to social desirability bias.

In conclusion, our study supports efforts to expand HIV testing in the ED through a targeted approach aimed at younger individuals, those without private health insurance, and those without a usual place of healthcare to increase the efficiency of HIV testing in this setting. Those without access to HIV testing elsewhere may be more likely to accept testing in the ED, thus concentrating ED resources on those who are most in need of testing in this setting. Our results suggest that testing in the ED is acceptable and lowers the barriers for testing in those at increased HIV risk without access to testing elsewhere.

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