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Results From a New York City Emergency Department Rapid HIV Testing Program

Katerina A. Christopoulos, MD, MPH, Bruce R. Schackman, PhD, Gunjeong Lee, PhD, Robert A. Green, MD, and Ellen A. Morriosn, MD, MPH
San Francisco General Hospital, San Francisco, CA

Abstract

Background—The US Centers for Disease Control and Prevention recommends expanded HIV screening in emergency departments (EDs). The additional value of ED screening programs remains controversial.

Methods—Patients were rapid-tested for HIV via fingerstick Oraquick in a counselor-based testing program at 2 university-hospital affiliated EDs in New York City in 2006–2007. Data were from a testing program database, supplemented by electronic medical record (EMR) review.

Results—Of 2,569 ED patients who underwent rapid HIV testing, 31 were preliminary positive; all diagnoses were confirmed by Western blot (1.2%, 95% CI 0.8%, 1.7%). Seven patients had previous HIV diagnoses and 24 (0.7%, 95% CI 0.6%, 1.4%) were considered new diagnoses. Of the new diagnoses, ten had hospital visits in the year before diagnosis, 7 of whom had visited only the ED. Linkage to care, defined as a visit with an HIV provider, was documented for 17.

Conclusions—ED rapid HIV testing programs can contribute substantially to HIV screening efforts and may identify persons with previously undiagnosed HIV infection who are not tested in other hospital settings. Linkage to care may be difficult, despite extensive testing program outreach.

Key phrases

HIV screening; rapid HIV testing; emergency department; linkage to care

New York State has the highest number of HIV/AIDS cases in the country.¹ In 2006, 1,591 AIDS diagnoses in New York occurred within one year of HIV diagnosis, accounting for 35% of all new HIV diagnoses.² In response to this high number of late diagnoses, the advent of rapid and accurate screening tests, and a recommendation from the CDC to routinely offer HIV testing to adults in all health care settings,³ HIV testing in New York City has expanded to the emergency department (ED). Despite recent efforts to simplify New York State legal mandates for HIV pre-test counseling and signed consent,⁴ the existence of these mandates has prompted some programs to continue to rely on dedicated HIV counselors for testing in the ED. The additional value of these ED testing programs remains controversial. Our evaluation of a counselor-based ED testing program supports the premise that the ED is an important site for HIV testing because we found that patients who did not access care in other medical center settings were tested and successfully referred for follow up.

The Counseling and Testing Service (CTS) is located at Columbia University Medical Center (CUMC), an academic teaching hospital in northern Manhattan. It was created in 2002 to assist providers with HIV counseling and testing, ensure that all patients who test positive receive their results, and report all newly diagnosed cases of HIV to the New York City Department of Health and Mental Hygiene (NYC DOHMH). Given that the CUMC ED

and the ED of an affiliated community hospital 3 miles to the north serve a diverse community of socio-economic, ethnic, and HIV risk factor groups where late diagnosis of HIV is common, CTS obtained funding from the NYC DOHMH in January 2006 for free rapid HIV testing in these two EDs.

The grant funds a counselor for each ED during business hours Monday – Friday. ED staff are encouraged to refer patients for HIV testing, but counselors approach the majority of patients without regard to HIV risk factors, thus patient selection occurs via both non-targeted screening and diagnostic testing.⁵ Counselors conduct point-of-care testing using the OraQuick ADVANCE® (OraSure Technologies, Bethlehem, PA) on fingerstick blood. In the event of a preliminary positive OraQuick result, they draw blood for a confirmatory Western blot. In most cases, patients return to the same CTS counselor for confirmatory results and active referrals⁵ to care. CTS tracks patients for up to 3 months to ensure they have kept an appointment with an HIV provider.

For patients counseled and tested from January 1, 2006 through December 31, 2007, data extracted from the CTS program database included demographics, test result, new vs. known HIV diagnosis, transmission risk factors in new HIV diagnoses, and linkage to care, defined as either an electronic medical record (EMR) indication of a visit with an HIV provider at CUMC or patient self-report of a visit outside of the institution within 90 days of the confirmatory test. For patients with more than one testing encounter in the specified time period, the result of the first test was recorded and subsequent tests were excluded from the analysis, thus the patient was primary unit of analysis (Table 1). An EMR review was performed for patients with a preliminary positive Oraquick result in order to confirm their HIV status, obtain CD4 cell count and HIV RNA level within 3 months of diagnosis, and record encounters at CUMC in the year prior to diagnosis. In order to compare patients newly diagnosed in the ED with patients diagnosed elsewhere in the institution, the EMR was also used to obtain the age, gender, race, and CD4 count, if available, on all new diagnoses of HIV at CUMC in 2006-2007. Data were analyzed using Stata/SE 10. This study was approved by the CUMC Institutional Review Board.

Of 69,398 ED visits during the hours of testing program operation, 2,569 patients underwent rapid HIV testing (3.7%). Preliminary positive results were obtained on 31 patients (1.2%, 95% CI 0.8%, 1.7%); all diagnoses were confirmed by Western blot, in contrast to recent reports of false positive test results in the ED with oral fluid Oraquick.⁶ Seven of these patients were found by EMR review to have been previously diagnosed as HIV-infected, and 24 (0.9%, 95% CI 0.6%, 1.4%) were considered new diagnoses. Although data on refusal of offers of HIV testing were not kept for the entire period, a quality assurance project conducted in December 2007 found that of 368 patients offered rapid HIV testing by the counselors, 104 (28.3%) accepted. The most common reasons for refusing testing were that patients did not view themselves at risk or reported a prior test, consistent with data from other ED testing programs.⁷

Of the 24 newly diagnosed patients, 16 (67%) were black or Hispanic heterosexuals without a history of intravenous drug use. Ten patients (42%) had a CUMC visit in the year prior to diagnosis; 9 of these patients had at least one previous ED visit, and 7 had previously visited only the ED (mean number of visits = 1.7). Ten patients (42%) were admitted to an inpatient medicine service from the ED at the time of HIV diagnosis; all of these patients except one, who preferred to follow up out of state, were documented as having been linked to care after discharge. Another 8 patients who were not admitted were linked to care, for a total of 17 patients (71%). Within 3 months of diagnosis, CD4 cell count data were available for 17 of 24 patients (median=200 cells/ μ L, range 4 to 516) and HIV RNA data for 16 patients, 4 of whom had an HIV RNA level greater than 100,000.

CTS staff performed extensive outreach to locate the 7 patients whose follow-up outcomes are unknown. One patient made several CUMC HIV clinic appointments but did not keep them, one reported planned follow-up with a private physician, one kept a social work appointment only, one told CTS he was not ready to be in care, one hung up the phone on the CTS counselor, and one moved to another state at the time of discharge from the hospital. There was one patient for whom no further information was available.

In our analysis of 2,569 ED patients there were 41 repeat testers (1.6% 95% CI 1.1%, 2.2%), one of whom tested positive on a repeat ED visit, for a total of 25 new ED HIV diagnoses. Thus, ED HIV diagnoses accounted for 16.5% of the 152 new HIV cases diagnosed by conventional EIA or rapid test at the medical center in 2006-2007, while ED HIV tests accounted for 5.5% of total medical center tests (conventional EIA and rapid tests). Acknowledging that some proportion of tests from other medical center sites are ordered to confirm infection or also represent repeat testers, the yield of testing patients for HIV in the ED appears to be substantial compared to the institution as a whole.

In order to see if there were differences between newly diagnosed patients by institutional testing site, we compared the age, gender, race, and CD4 cell count of patients newly diagnosed with HIV in the ED (n=25) to those diagnosed in outpatient (n=66) and inpatient (n=61) settings. The mean age of inpatients was slightly older (43.2 vs. 37.2 years, $p<0.001$), more women were diagnosed as outpatients than in the ED (45.5% vs. 20%, $p=0.03$), and there were no significant differences by race. CD4 cell count data within 3 months of diagnosis was available for 90.2% patients diagnosed as inpatients and 72.7% of patients diagnosed as outpatients. Mean CD4 cell count of patients diagnosed in the ED (216 cells/ μ L) was similar to that of inpatients (177 cells/ μ L) but lower than that of those diagnosed as outpatients (428 cells/ μ L, $p<0.001$).

Our analysis suggests that a counselor-based ED rapid HIV testing program can contribute substantially to HIV screening efforts, consistent with other literature.⁸ The ED may identify persons with previously undiagnosed HIV infection who do not access care in other medical center settings and who may have been missed by a traditional risk-factor based approach to testing. In addition, CD4 counts at the time of diagnosis may be lower than those of outpatients. This work also adds to the ED testing literature by providing detailed linkage to care outcomes and demonstrating that 100% linkage to HIV care may be difficult, despite extensive testing program outreach to newly positive patients. Additional research is needed on interventions that can link and retain newly positive patients in care.

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Table 1

Characteristics of Patients Undergoing Rapid HIV Testing in the ED in 2006-2007

	Total Tested n (%)	HIV+ Rapid Test n (% of total with positive test result)	P (χ^2 test)
Total	2,562	24 (0.9)	
Age categories			
13-29 years	964 (37.6)	4 (0.4)	
30-44 years	850 (33.2)	15 (1.8)	0.008
>45 years	748 (29.2)	5 (0.7)	
Gender			
Female	1,326 (51.8)	5 (0.4)	
Male	1,236 (48.2)	19 (1.5)	0.002
Race/Ethnicity			
Hispanic	1,994 (77.8)	14 (0.7)	
Black	353 (13.8)	8 (2.3)	
White	132 (5.2)	1 (0.8)	
Asian	37 (1.4)	0 (0.0)	0.07
Other	44 (1.7)	1 (2.3)	
Unknown	2 (0.08)	0 (0.0)	