

Characteristics used by Physicians to Identify Patients for HIV Testing in the Emergency Department as a Part of a Diagnostic Testing Model

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DENVER EMERGENCY DEPARTMENT HIV TESTING STUDY GROUP

Denver Health • Denver Public Health • Children's Hospital of Denver • Colorado Department of Public Health and Environment • University of Colorado at Denver and Health Sciences Center

Epidemiology

- Diagnosis of patients infected with HIV continues to evade healthcare workers in the U.S.
- The prevalence of undiagnosed HIV infection in the U.S. is approximately 250,000
- The incidence of new HIV infection is approximately 40,000 per year
- The increasing prevalence of HIV infection, especially among non-traditional risk groups, continues to serve as a significant factor in its forward transmission

HIV and the Emergency Department

- Unselected HIV seroprevalence ranges from approximately 1% to 4%
- Approximately 30% of these are undiagnosed
- HIV infection is increasing in non-traditional risk groups, the same groups that commonly use the ED for primary care
- The ED serves as an important focal point for HIV identification and linkage-to-care

HIV and the Emergency Department

- The CDC currently recommends performing non-targeted, opt-out rapid HIV testing in healthcare venues (including EDs) where the prevalence is $\geq 0.1\%$
- Currently, relatively few EDs perform routine screening
- The clinical effectiveness of this strategy remains untested, and other (possibly more effective or efficient) strategies include targeted screening and/or diagnostic testing

Objectives

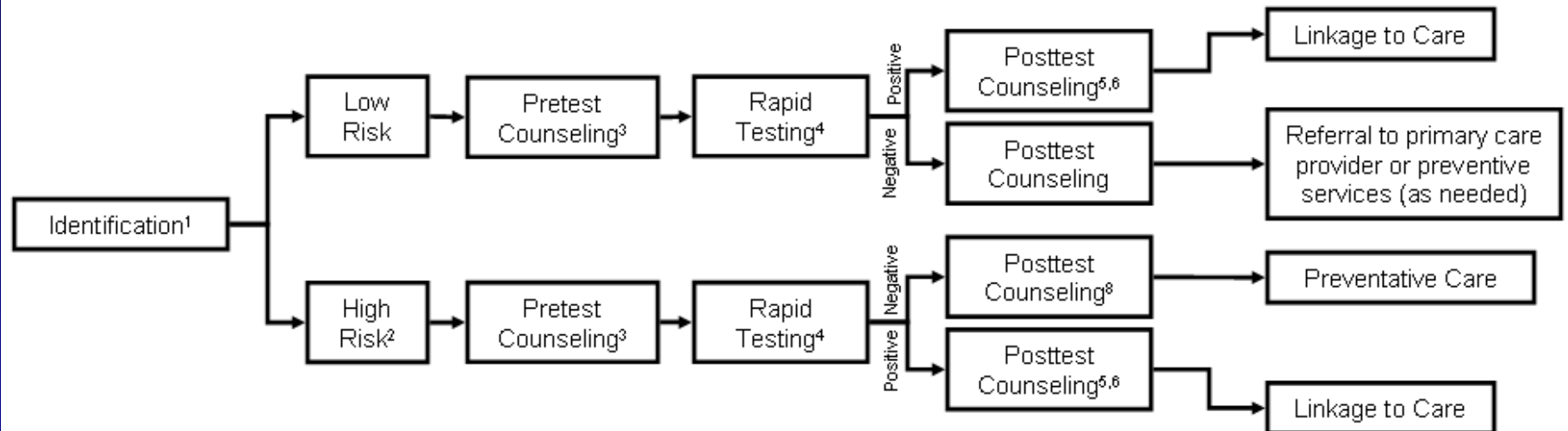
- To determine what characteristics emergency physicians use to identify patients for diagnostic testing
- To assess how accurate they were in predicting HIV seropositivity

Methods: Diagnostic Testing Model

- Prospective cohort study performed to evaluate a physician-based diagnostic testing model implemented in the ED at Denver Health Medical Center in Denver, Colorado
- Denver Health is a high-volume, urban, safety-net hospital and level 1 trauma center
- Annual ED census of approximately 55,000 adult patients and an approximate unselected and undiagnosed HIV seroprevalence of 0.7%

Denver Emergency Department HIV Testing Study Group

Emergency Department: DIAGNOSTIC



¹Identification in the emergency department based on current Centers for Disease Control and Prevention Guidelines and implemented screening instruments.

²Men who have sex with men (MSM), injection drug use, high-risk sexual behavior.

³Designated counselors will provide pretest and posttest counseling to those patients identified for rapid HIV testing in the emergency department. Staffing options include: (1) full-time on-site; (2) full-time off-site; (3) part-time on-site; (4) part-time off-site; or (5) a combination of (1) through (4). Current: Part-time on-site.

⁴OraQuick® ADVANCE™ Rapid HIV-1/2 Antibody Test performed by the hospital laboratory.

⁵To include follow-up for confirmation of positive rapid test.

⁶To include risk-reduction counseling.

Methods

- Emergency physicians had the opportunity to target patients with suspected undiagnosed HIV infection and offer them free, confidential, rapid HIV testing
- Pretest and posttest counseling, and linkage-to-care were provided by ED-based clinical social workers
- Laboratory-based rapid HIV testing (OraQuick ADVANCE[®] Rapid HIV-1/2 Antibody Test, OraSure Technologies, Bethlehem, PA) was performed using whole-blood

Methods: Data Collection

- Physician data were collected prior to obtaining patients' test results
- Physician's reason(s) for testing
 - History of an HIV-related risk factor
 - History suggesting immunodeficiency
 - Examination finding consistent with immunodeficiency
 - Diagnosis consistent with immunodeficiency
 - Patient requested
- Physician's pretest probability (defined as low (<5%), moderate (5% - 25%), or high (>25%)) of being infected with HIV

Results

- Between October 15, 2004 and March 30, 2007, a total of 119,824 patients were evaluated in the ED
- Of these, 681 (0.6%) were identified as being at increased risk for undiagnosed HIV infection and completed rapid HIV testing
- Of these, 15 (2.2%) tested positive for HIV infection
- Physician data were available for 442 patients (65%; 95% CI: 61% - 68%)

Table. Patient characteristics, documented reasons for referral for rapid HIV counseling, testing, and referral, and emergency physicians' index of suspicion for HIV infection.

	Rapid HIV Test Result				Total*	<i>p</i> †
	Positive		Negative			
Median Age (years)	39 (IQR: 31-44)		36 (IQR: 27-45)		-	0.5
Male Gender	14/15	(93%)	448/650	(69%)	462/665 (69%)	0.04
Race/Ethnicity						
Caucasian	5/15	(33%)	308/638	(48%)	313/653 (48%)	0.5
Hispanic	5/15	(33%)	179/638	(28%)	481/653 (28%)	
African-American	4/15	(27%)	113/638	(18%)	117/653 (18%)	
Asian	0/15	(0%)	10/638	(2%)	10/653 (2%)	
Other	1/15	(7%)	28/638	(4%)	29/653 (5%)	
Reasons for Referral						
HIV Risk Factor	10/12	(83%)	303/419	(72%)	313/431 (73%)	0.5
Immunodeficiency	2/12	(17%)	72/419	(17%)	74/431 (17%)	1.0
Examination Finding	2/12	(17%)	74/419	(18%)	76/431 (18%)	1.0
Suggestive Diagnosis	0/12	(0%)	25/419	(6%)	25/431 (6%)	1.0
Requested By Patient	2/12	(17%)	76/419	(18%)	78/431 (18%)	1.0
Pretest Probability						
Low (<5%)	3/12	(25%)	176/405	(43%)	179/417 (43%)	<0.0001
Moderate (5-25%)	4/12	(33%)	209/405	(52%)	213/417 (51%)	
High (>25%)	5/12	(42%)	20/405	(5%)	25/417 (6%)	
Admitted to the hospital	10/15	(67%)	208/649	(32%)	218/664 (33%)	0.009

Abbreviation: IQR = interquartile range.

*Denominators differ as a result of missing or unavailable data.

†Wilcoxon rank sum test or Fisher's exact test were used to compute *p*-values for continuous or categorical data, respectively.

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Pretest Probability

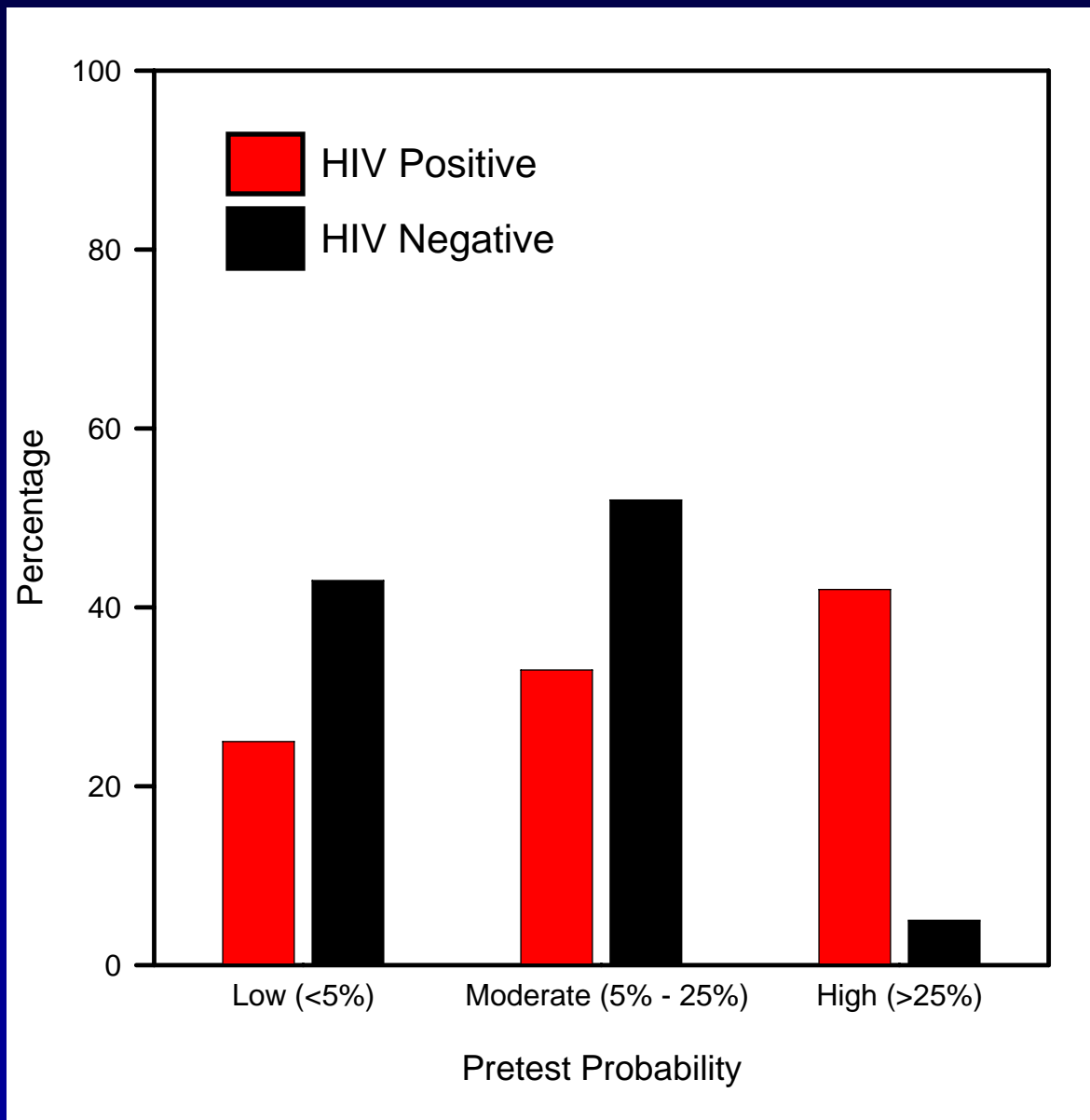
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Conclusions and Implications

- Patients were most often targeted for HIV testing based on history of a risk factor rather than on aspects of the patient's medical history, physical examination, or ED diagnosis
- In this high-volume, urban ED setting, emergency physicians were reasonably accurate in predicting overall HIV seropositivity
- Their abilities to identify HIV seropositivity among patients identified as “high risk” appears to be best

Supported by:

Programmatic Grant
Colorado Department of Public Health and Environment
Denver, Colorado

Unrestricted Development Grant
Abbott Laboratories
Abbott Park, Illinois

Cooperative Agreement
Division of HIV/AIDS Prevention
National Center for HIV, STD, and TB Prevention
Centers for Disease Control and Prevention
Atlanta, Georgia

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