Models for Implementing Routine HIV Testing: The Emergency Department Perspective

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Strategies for Uncovering HIV

Operational Considerations for All Testing Models

- Opt-in versus Opt-out Consent
- Education versus Counseling
- Rapid versus Conventional Assay
- Point-of-Care Testing versus Laboratory-based Testing
- Result Notification, Reporting, and Linkage of Positives
- Native versus External Resources
# Conventional HIV Testing: The ED Experience

<table>
<thead>
<tr>
<th>Year Published</th>
<th>Authors</th>
<th>Number Tested</th>
<th>Seroprevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Kelen et al.</td>
<td>168</td>
<td>16%</td>
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<tr>
<td>2000</td>
<td>Coggin et al.</td>
<td>155</td>
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<tr>
<td>2004</td>
<td>Glick et al.</td>
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<td>2004</td>
<td>Coil et al.</td>
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<tr>
<td>2005</td>
<td>Haukoos et al.</td>
<td>372</td>
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<td>2005</td>
<td>Lyons et al.</td>
<td>5,232</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>6,915</strong></td>
<td><strong>1.4%</strong></td>
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# Rapid HIV Testing: The ED Experience

<table>
<thead>
<tr>
<th>Year Published</th>
<th>Authors</th>
<th>Number Tested</th>
<th>Seroprevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Kelen et al.</td>
<td>492</td>
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<tr>
<td>1995</td>
<td>Ernst et al.</td>
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<td>2007</td>
<td>Mehta et al.</td>
<td>1,428</td>
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<td>Lyss et al.</td>
<td>2,824</td>
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<td>MMWR</td>
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<td>Haukoos et al.</td>
<td>681</td>
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<tr>
<td>2007</td>
<td>Brown et al.</td>
<td>2,476</td>
<td>1.0%</td>
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<td><strong>Total</strong></td>
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<td><strong>21,613</strong></td>
<td><strong>1.6%</strong></td>
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**Funding Agency**
Division of HIV/AIDS Prevention
National Center for HIV, STD, and TB Prevention
Centers for Disease Control and Prevention
Atlanta, Georgia

U18 PS000314
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Improving Identification of Patients Infected with HIV Using Rapid Testing in the Emergency Department: A Systems-Based Approach

Emergency Department: OPT-OUT

Rapid testing offered to all patients who present to the Emergency Department¹

Pretest Information²

Rapid Testing³

Positive

Posttest Counseling⁵⁻⁷

Linkage to Care (see Page 3)

Negative

High Risk⁴

Posttest Counseling⁵⁻⁷

Preventative Care (see Pages 5 and 6)

Low Risk

No Posttest Counseling

¹Consent performed using opt-out language incorporated into general medical consent. Those: (1) <18 years; (2) unable to consent; (3) prisoners or detainees; (4) victims of sexual assault; or (5) already known to be infected with HIV are excluded.

²Pretest informational sheet provided to ALL patients.

³Multiple Rapid Testing Algorithm* using: (1) Uni-Gold™ Rapid HIV Test (Trinity Biotech); (2) OraQuick® ADVANCE™ Rapid HIV-1/2 Antibody Test (OraSure Technologies); and (3) Multispot HIV-1/HIV-2 Rapid Test (Bio-Rad) performed by the hospital laboratory (*Still in evaluation and requires confirmatory testing).

⁴For those patients considered at highest risk for acquiring HIV infection.

⁵Designated counselors will provide posttest counseling to those patients who test preliminarily positive or those considered high-risk but test negative for HIV infection. 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.

⁶To include follow-up for confirmation of positive rapid test(s).

⁷To include risk-reduction counseling.
Improving Identification of Patients Infected with HIV Using Rapid Testing in the Emergency Department: A Systems-Based Approach

Emergency Department: TARGETED

Identification

Low Risk → Pretest Counseling → Rapid Testing → Posttest Counseling → Linkage to Care (see Page 3)

High Risk → Pretest Counseling → Rapid Testing → Positive → Posttest Counseling → Referral to primary care provider or preventive services (as needed)

Positive → Preventative Care (see Pages 5 and 6)

Positive → Posttest Counseling → Linkage to Care (see Page 3)

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.
## Preliminary Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>(%)</th>
<th>Intervention</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time period (months)</td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
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<tr>
<td>Total ED patients</td>
<td>16,973</td>
<td></td>
<td>16,911</td>
<td></td>
</tr>
<tr>
<td>Total age eligible patients</td>
<td>14,475</td>
<td></td>
<td>15,487</td>
<td></td>
</tr>
<tr>
<td>Total who did not opt-out</td>
<td>-</td>
<td></td>
<td>3,388</td>
<td></td>
</tr>
<tr>
<td>Total tested for HIV infection</td>
<td>76</td>
<td>(0.5)</td>
<td>2,632</td>
<td>(17)</td>
</tr>
<tr>
<td>Positive</td>
<td>3</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Confirmed</td>
<td>3</td>
<td>(5)</td>
<td>7</td>
<td>(0.3)</td>
</tr>
<tr>
<td>New diagnosis</td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Repeat diagnosis</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Linked into short-term care</td>
<td>3</td>
<td>(100)</td>
<td>7</td>
<td>(100)</td>
</tr>
</tbody>
</table>
Is Rapid Testing in the ED Feasible?

• Pros
  – High-risk populations use the ED as their sole source for medical care
  – Seroprevalence is relatively high and this affords an outstanding opportunity to determine risk and to test for HIV
  – Rapid tests are quick and accurate
  – Growing experience and body of literature demonstrating clinical feasibility and cost effectiveness
Is Rapid Testing in the ED Feasible?

• Cons
  – Perceptions regarding ED-based prevention efforts vary
  – Program implementation will vary depending on resources and site
  – Limited effectiveness data
  – Funding
What’s the Best Model?

- Limited data do not support a “best” model
  - Requires comparative data
- Depends on how “success” is defined
  - Positivity?
  - Linkage to care?
  - Requires integration of relative cost effectiveness and impact on clinical efficiency
- Consideration must include all processes of care, which are highly variable and influential
What’s the Best Model?

Operational Considerations for All Testing Models

- Opt-in versus Opt-out Consent
- Education versus Counseling
- Rapid versus Conventional Assay
- Point-of-Care Testing versus Laboratory-based Testing
- Result Notification, Reporting, and Linkage of Positives
- Native versus External Resources
Questions for the Group

- Is it naïve to believe routine opt-out rapid HIV screening is the best approach in the ED?
- Does “routine opt-out rapid HIV screening” mean the same thing to different people?
- Should diagnostic testing be held as a minimum standard for all EDs?
- If both extremes are not optimal, how do we effectively target ED patients?
- How do we generalize routine HIV screening in the ED?
Denver ED HIV Testing Study Group

- Bob Bongiovanni
  - STD/HIV Section, Colorado Department of Public Health and Environment
- Richard Byyny, MD, MSc
  - Emergency Medicine, Denver Health Medical Center
- Eric Christensen, RN, BSN
  - EM Nursing, Denver Health Medical Center
- Beth Dillon, MSW, MPH
  - STD/HIV Section, Colorado Department of Public Health and Environment
- Sheri Eisert, PhD
  - Health Services, Denver Health Medical Center
- Jessica Forsyth, MSW
  - The Children’s Hospital Immunodeficiency Program
- Jason Haukoos, MD, MSc
  - Emergency Medicine, Denver Health Medical Center
- Emily Hopkins, MSPH
  - Emergency Medicine, Denver Health Medical Center
- Steven Johnson, MD
  - University of Colorado HIV/AIDS Clinical Program
- Jennifer Saltzsieder, RN
  - EM Nursing, Denver Health Medical Center
- Morgan Silverman, LCSW
  - Clinical Social Work, Denver Health Medical Center
- Mark Thrun, MD
  - Denver Public Health, Denver Health Medical Center
- Shawn Ullrich, RN
  - EM Nursing, Denver Health Medical Center
- Melinda Whalen, RN, BSN, CEN
  - EM Nursing, Denver Health Medical Center
- Michael Wilson, MD
  - Laboratory, Denver Health Medical Center
Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings
Summary of the Recommendations

- Routine screening in all healthcare settings with undiagnosed prevalence $\geq 0.1\%$ for patients aged 13 to 64 years
- Repeat testing should be performed at least annually for those determined to be high-risk
- Screening should be voluntary using opt-out consent
- Consent should be integrated into general consent
- Pretest information replaces counseling
- No posttest counseling for those who test negative
Denver ED Rapid HIV Testing Network

- UCHSC Infectious Diseases
- DHMC Infectious Diseases
- DHMC Public Health
- DHMC Emergency Department
- The Children’s Immunodeficiency Program
- Colorado Department of Public Health and Environment
- DHMC Clinical Social Work
- DHMC Core Laboratory
Improving Identification of Patients Infected with HIV Using Rapid Testing in the Emergency Department: A Systems-Based Approach

Linkage to Care

Referral from the Emergency Department

Admitted to the Hospital

Linkage to Care Staff contacts patient during hospitalization

First intake visit at Denver Public Health

Medical Care (see Page 4)

Preventative Care (see Pages 5 and 6)

Planned discharge from the Emergency Department

Linkage to Care Staff contacts patient while in the emergency department

Medical Care (see Page 4)

Preventative Care (see Pages 5 and 6)

Disease Intervention Specialist contacts patient while in the emergency department

Preventative Care (see Page 6)

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1 Referrals made during posttest counseling for those who test positive for HIV in the emergency department.
2 Linkage to Care Staff includes dedicated HIV counselors from Denver Public Health.
3 During business hours, patients are discharged directly to Denver Public Health. During non-business hours, referral is made for the following business day.
4 Disease Intervention Specialists include dedicated HIV counselors from the Colorado Department of Public Health and Environment.
5 This visit includes the following components: (1)…
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Medical Care

Referral from Denver Public Health or during hospitalization¹

- Denver Health HIV Primary Care Clinic²
- Denver Health Infectious Diseases Clinic³
- University of Colorado HIV/AIDS Program⁴
- Children's Hospital Immunodeficiency Program⁵
- Other healthcare provider⁶

¹Referrals for those who are confirmed to be infected with HIV.
²Patients are referred here if they are eligible to receive care at Denver Health and if their CD4 count >200 cells/mm³.
³Patients are referred here if they are eligible to receive care at Denver Health and if their CD4 count ≤200 cells/mm³ or if they have been diagnosed with AIDS.
⁴Patients are referred here if they are not eligible to receive care at Denver Health.
⁵Patients are referred here if they are ≤24 years or pregnant.
⁶Patients are referred here if they live in another geographical region or have an established primary care provider.
Improving Identification of Patients Infected with HIV Using Rapid Testing in the Emergency Department: A Systems-Based Approach

Preventative Care

Referral from Denver Public Health or during hospitalization¹

- Denver Health HIV Primary Care Clinic²
- Denver Health Infectious Diseases Clinic³
- University of Colorado HIV/AIDS Program⁴
- Children's Hospital Immunodeficiency Program⁵
- Other healthcare provider⁶

Individual Level Health Education (ILHE)⁷
Prevention Case Management (PCM)⁸⁻⁹

¹Referrals for those who are confirmed to be infected with HIV.
²Patients are referred here if they are eligible to receive care at Denver Health and if their CD4 count >200 cells/mm³.
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⁴Patients are referred here if they are not eligible to receive care at Denver Health.
⁵Patients are referred here if they are ≤24 years or pregnant.
⁶Patients are referred here if they live in another geographical region or have an established primary care provider.
⁷Multiple components aimed primarily at behavioral risk reduction and health education.
⁸Multiple components aimed primarily at promoting and reinforcing safer behavior.
⁹Multiple components aimed primarily at increasing the proportion of people infected.
Improving Identification of Patients Infected with HIV Using Rapid Testing in the Emergency Department: A Systems-Based Approach

Preventative Care

Referral from the Emergency Department → Colorado Department of Public Health and Environment\(^1\,\,2\)

- Individual Level Health Education (ILHE)
- Prevention Case Management (PCM)
- Substance Abuse Services
- Mental Health Support
- Partner Counseling and Referral Services (PCRS)

\(^1\)This occurs in parallel with the preventative care provided on Page 5.

\(^2\)Multiple components aimed primarily at behavioral risk reduction and health education.

\(^3\)Multiple components aimed primarily at promoting and reinforcing safer behavior.

\(^4\)Multiple components aimed primarily at increasing the proportion of people infected with HIV and their partners who are linked to appropriate prevention care and treatment services.
### Preliminary Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (%)</th>
<th>Intervention (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total tested for HIV infection</td>
<td>76</td>
<td>2,632</td>
</tr>
<tr>
<td>Median age (range)</td>
<td>36 (19-61)</td>
<td>39 (16-96)</td>
</tr>
<tr>
<td>Male gender</td>
<td>51 (67)</td>
<td>1,372 (52)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0)</td>
<td>16 (0.7)</td>
</tr>
<tr>
<td>African-American</td>
<td>13 (18)</td>
<td>383 (17)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19 (26)</td>
<td>948 (41)</td>
</tr>
<tr>
<td>White</td>
<td>37 (53)</td>
<td>841 (37)</td>
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<tr>
<td>Other</td>
<td>6 (8)</td>
<td>47 (2)</td>
</tr>
<tr>
<td>Unknown/Missing</td>
<td>0 (0)</td>
<td>397 (15)</td>
</tr>
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</table>

| Confirmed Positive              |             |                  |
| Median age (range)              | 3 (100)     | 7 (100)          |
| Male gender                     | 46 (40-50)  | 38 (21-65)       |
| Race/ethnicity                  |             |                  |
| Asian                           | 0 (0)       | 0 (0)            |
| African-American                | 0 (0)       | 1 (14)           |
| Hispanic                        | 2 (67)      | 5 (71)           |
| White                           | 1 (33)      | 1 (14)           |
| Other                           | 0 (0)       | 0 (0)            |
| Unknown/Missing                 | 0 (0)       | 0 (0)            |
## Preliminary Results

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<thead>
<tr>
<th>Variable</th>
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<th>Intervention (%)</th>
</tr>
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<tbody>
<tr>
<td>Confirmed Positive</td>
<td>3</td>
<td>7</td>
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<tr>
<td>Median sex partners in last year (range)</td>
<td>2 (0-2)</td>
<td>0 (0-3)</td>
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<tr>
<td>Previously tested</td>
<td>0 (0)</td>
<td>2 (29)</td>
</tr>
<tr>
<td>Transgender</td>
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<td>1 (14)</td>
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<tr>
<td>Homeless</td>
<td>0 (0)</td>
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<tr>
<td>Injection drug use</td>
<td>2 (66)</td>
<td>1 (14)</td>
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<tr>
<td>MSM</td>
<td>1 (33)</td>
<td>3 (43)</td>
</tr>
<tr>
<td>Sex with partner with known HIV</td>
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<td>3 (43)</td>
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<tr>
<td>Exchange money/drugs for sex</td>
<td>1 (33)</td>
<td>0 (0)</td>
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<tr>
<td>STD history</td>
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<td>0 (0)</td>
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<tr>
<td>Recent incarceration</td>
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Variables are not mutually exclusive and therefore may total greater than the number of confirmed positives.