Factors Associated with Linkage to HIV Care among Recently Diagnosed Persons in Los Angeles County

Los Angeles County Department of Public Health Division of HIV and STD Programs (DHSP)
2012 Estimated Number of Persons Living with HIV and AIDS in LAC

Source: LAC Division of HIV and STD Programs, reported as of 12/31/2011.

(1) Estimate that 21.5% of HIV+ in LA County are unaware of their infection; modified from CDC estimate.
(2) Of 4,853 notifications pending investigation, estimate half of 2,400 who have detectable VL or confirmatory test to be unduplicated cases.
(3) Out of the 3,200 cases reported as code, half are thought to represent unduplicated cases.
State of the HIV Epidemic

- 21%\(^1\) of HIV-positive are individuals unaware of their status.
  - 54%\(^2\) of new infections are attributable to those unaware.
- 33%\(^3\) of those aware of their infection are not engaged in care.
  - 40%\(^4\) of those diagnosed with AIDS had their first positive test result within 1-yr. of their AIDS diagnosis.
  - For those who are linked to care, treatment improves health outcomes

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2 Marks G et al., Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. AIDS 2006: 20(10).
Mortality and HAART Use Over Time
HIV Outpatient Study, CDC, 1994-2003
Testing and Linkage to Care Plus (TLC+)

- TLC+ is a holistic approach to HIV prevention, medical care, and supportive services that aims to:

  **Testing**
  - Increase proportion of HIV+ individuals aware of their status

  **Linkage to Care**
  - Immediate linkage to HIV care and social services/re-engagement of those fallen out of care

  **+ Treatment**
  - Improve retention in care, access to antiretroviral therapy, and treatment adherence

**Source:** The Report of a U.S. Think Tank on HIV Treatment as Prevention - February, 2010

http://www.projectinform.org/testandtreat/index.shtml
Los Angeles County Spectrum of Engagement in HIV Care

High Risk Individuals → HIV Positive → Linked to Care → Engaged/Re-Engaged in Care → Retained in HIV Care → Adherent to ART Medication → Suppressed VL and Reduced Transmission

HIV Negative
Objectives

Goal: Increase access to care and improve health outcomes for people living with HIV.

Objectives:
- Who are the approximately 34% of clients who are aware of their status but are unwilling/unable to enter Care?

Hypothesis: Clients who experience institutional and/or socio-economic challenges to accessing care are more likely to not be in care.

Identify factors of being unlinked to care
Inform targeted interventions
Methodology

• Newly identified HIV Positive Clients (n = 717) identified through DHSP-funded testing facilities from 2006-2008.

• Data Source: HIV Information Resources System (HIRS) with care information collected through HIV/AIDS Reporting System (HARS)

• **Unlinked to care** defined as a client who did not receive a CD4 or Viral Load Test within one year of testing positive for HIV
Methodology cont.

- Conduct Bivariate and Multivariate Logistic Regression Analysis to identify factors associated with being unlinked to care
- Dependent variable: Unlinked to Care
- Independent variables:
  - Demographic information
  - Testing background
  - Risk behaviors
Demographics, Study Sample

Overall, n = 717

- African American: 21.2%
- NA/AI: 5.6%
- Asian/PI: 23.0%
- Latino(a): 1.3%
- White: 48.7%
- Other: <1%

Unlinked, n = 247

- African American: 15.4%
- NA/AI: <1%
- Asian/PI: 6.5%
- Latino(a): <1%
- White: 49.8%
- Other: 27.5%

1HIV Information Resources System (HIRS) & HIV/AIDS Reporting System (HARS), 2006-08.
*Represents lab data collected through December 31, 2009
Demographics, Study Sample

Overall, n = 717

- Male: 88.1%
- Female: 13.5%
- Transgender: 3.1%
- 12-24: 19.7%
- 25-44: 66.8%
- 45+: 68.0%

Unlinked, n = 247

- Male: 87.9%
- Female: 14.6%
- Transgender: 4.9%
- 12-24: 17.4%
- 25-44: 68.0%
- 45+: 66.8%

1HIV Information Resources System (HIRS) & HIV/AIDS Reporting System (HARS), 2006-08.
*Represents lab data collected through December 31, 2009.
### Linkage to Care by Test Year, 2006-08 (n = 717)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linked to Care</td>
<td>470</td>
<td>66.0</td>
</tr>
<tr>
<td><strong>2006 (n = 252)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 3 months</td>
<td>116</td>
<td>46.0</td>
</tr>
<tr>
<td>Within 4-6 months</td>
<td>16</td>
<td>6.3</td>
</tr>
<tr>
<td>Within 7-12 months</td>
<td>18</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>2007 (n = 218)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 3 months</td>
<td>132</td>
<td>60.6</td>
</tr>
<tr>
<td>Within 4-6 months</td>
<td>16</td>
<td>7.4</td>
</tr>
<tr>
<td>Within 7-12 months</td>
<td>8</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>2008 (n = 247)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 3 months</td>
<td>145</td>
<td>59.0</td>
</tr>
<tr>
<td>Within 4-6 months</td>
<td>9</td>
<td>3.6</td>
</tr>
<tr>
<td>Within 7-12 months</td>
<td>10</td>
<td>4.0</td>
</tr>
</tbody>
</table>

1HIV Information Resources System (HIRS) & HIV/AIDS Reporting System (HARS), 2006-08.

*Represents lab data collected through December 31, 2009.
Unlinked to Care

At Risk Groups and Risk Behaviors

- Gay ID Men: 85, 30.0%
- Non-gay ID MSM: 28, 43.1%
- Homeless: 40, 61.5%
- Alcohol with Sex: 21, 27.3%
- Meth with Sex: 11, 27.5%
- Injection Drug Use: 35, 47.3%
- Shared Needles: 6, 50.0%
- Sex in Exchange for Money/Drugs: 40, 52.6%
- Sex with Sex Worker: 25, 51.0%

Unlinked to Care: Multivariate Model

- Multivariate logistic regression (n = 717)
- Dependent variable: Unlinked to Care
- Independent variables:
  - race
  - age
  - gender
  - living situation
  - sexual orientation
  - HIV test type
  - co-location of treatment facility with testing site
  - injection drug use
  - non-injection drug use
  - sex worker
  - sex with sex worker
Demographic Factors Associated with Being Unlinked to Care\(^1\): Multivariate Analysis, (n = 717)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race (White = reference)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>2.49*</td>
<td>1.48 – 4.21</td>
</tr>
<tr>
<td>Asian/Pacific-Islander</td>
<td>2.55*</td>
<td>1.18 – 5.51</td>
</tr>
<tr>
<td>Latino</td>
<td>1.96*</td>
<td>1.24 – 3.10</td>
</tr>
<tr>
<td>Other</td>
<td>0.81</td>
<td>0.16 – 4.09</td>
</tr>
<tr>
<td><strong>Age (45+ yrs. = reference)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-24 yrs</td>
<td>0.65</td>
<td>0.35 – 1.20</td>
</tr>
<tr>
<td>25-44 yrs.</td>
<td>0.95</td>
<td>0.57 – 1.58</td>
</tr>
<tr>
<td><strong>Gender (Male = reference)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.65</td>
<td>0.31 – 1.36</td>
</tr>
<tr>
<td>Transgender</td>
<td>1.70</td>
<td>0.61 – 4.78</td>
</tr>
</tbody>
</table>

\(^1\)Time frame from within last 2 years or since last test.
* p-value < 0.05

**Data Source:** HIV Information Resources System (HIRS) and HIV/AIDS Reporting System (HARS), 2006-2008. Represents lab data collected through December 31, 2009.
Demographic Factors Associated with Being Unlinked to Care: Multivariate Analysis, (n = 717)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Identity (Straight = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gay</td>
<td>1.20</td>
<td>0.73 – 1.99</td>
</tr>
<tr>
<td>Bisexual</td>
<td>1.18</td>
<td>0.62 – 2.25</td>
</tr>
<tr>
<td>Living Situation (Stable = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeless</td>
<td>2.68*</td>
<td>1.44 – 4.99</td>
</tr>
</tbody>
</table>

* Time frame from within last 2 years or since last test.

### Behavioral Factors Associated with Being Unlinked to Care¹: Multivariate Analysis, (n = 717)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Illicit Drug Use²</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Didn’t Use Illicit Drugs = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-injected Drug Use</td>
<td>0.87</td>
<td>0.54 – 1.41</td>
</tr>
<tr>
<td>Injected Drug Use</td>
<td>1.16</td>
<td>0.58 – 2.30</td>
</tr>
<tr>
<td><strong>Sex Work</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Not a Sex Worker = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex Worker</td>
<td>1.31</td>
<td>0.70 – 2.46</td>
</tr>
<tr>
<td><strong>Sex with Sex Worker</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(No Sex with Sex Worker = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Sex w/ a Sex Worker</td>
<td>1.34</td>
<td>0.68 – 2.65</td>
</tr>
</tbody>
</table>

¹Time frame from within last 2 years or since last test.
²Includes crack, cocaine, methamphetamines, heroin
* p-value < 0.05

**Data Source:** HIV Information Resources System (HIRS) and HIV/AIDS Reporting System (HARS), 2006-2008. Represents lab data collected through December 31, 2009
Testing Factors Associated with Being Unlinked to Care\(^1\): Multivariate Analysis, (n = 717)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Adjusted OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Facility at Testing Site (Care Facility = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Care Facility at Testing Site</td>
<td>3.16*</td>
<td>2.07 – 4.83</td>
</tr>
<tr>
<td>HIV Test Type (Rapid Test = reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>1.24</td>
<td>0.84 – 1.84</td>
</tr>
</tbody>
</table>

\(^1\)Time frame from within last 2 years or since last test.

* p-value < 0.05

**Data Source:** HIV Information Resources System (HIRS) and HIV/AIDS Reporting System (HARS), 2006-2008. Represents lab data collected through December 31, 2009
Summary of Findings

• Overall, 34.5% of those in HIRS/HARS sample were not linked to care
  – Most were male, Latino or African American, and younger: ages (12 – 34)

• Through adjusted analysis, the following were identified as factors of being unlinked to care:

  - African American
  - Latino
  - Asian/PI
  - Homeless
  - Testing Site with no Care Facility
Next Steps

• Increase sample size of analysis in order to increase generalizability
  – Match and analyze full set of most recent data available, 2009-2011.

• Interventions designed to improve timely linkage to care should focus on ethnic minorities, who have unstable housing, who tested at nonmedical testing facilities.
  – Active confirmation of linkage to care by HCT provider, and increased re-imbursement for meeting linkage goals
  – Linkage workers, ARTAS Partner Services
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