Social Network Testing Project (SNTP): An Effective Method to Diagnose HIV Infection among Young MSM

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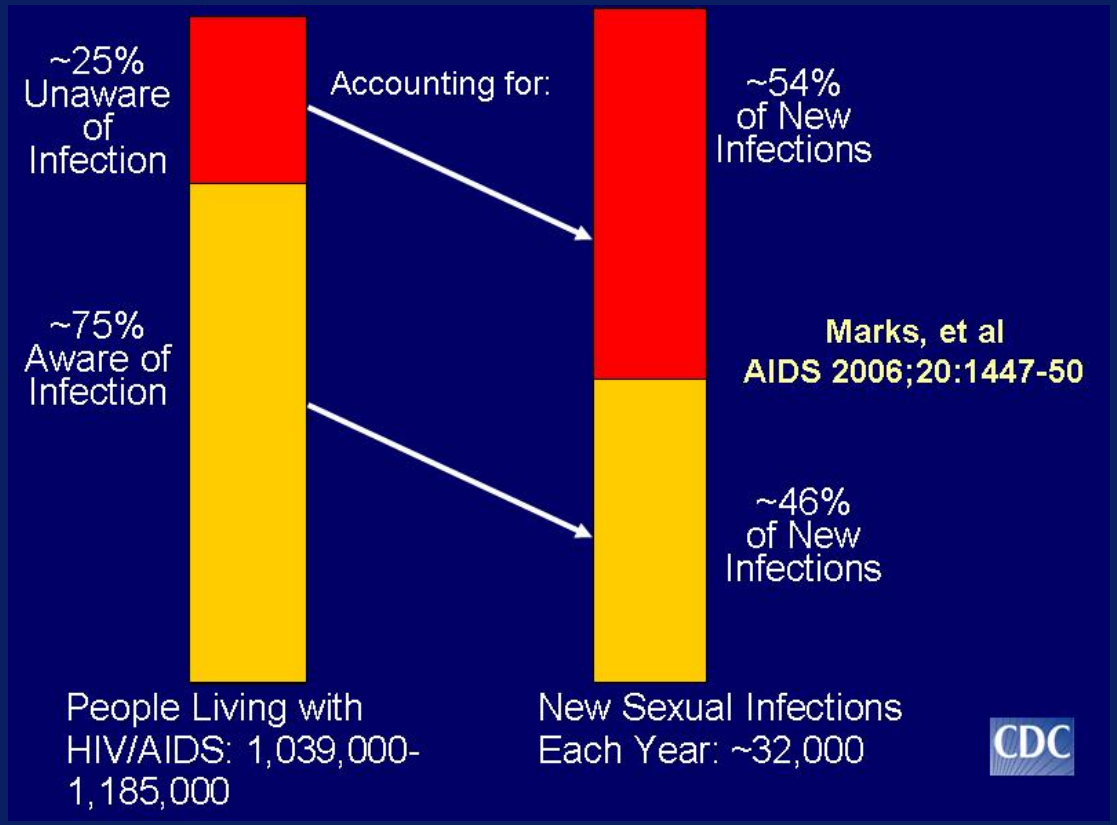
HIV Epidemic among Young MSM



- Among young HIV+ MSM (13-24 yrs.) in 2006, **~48%**[2] were not aware of their status.
- In LAC, **~56% of 18-24 yrs.** and **~64% of 25-29 yrs.**[3] old MSM had unrecognized infection in 2008.
- As of 2007, MSM exposure accounts for **76%**[4] of all living HIV/AIDS cases in LAC, **46%**[5] in U.S.

[1] 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).
[2] Campsmith M, Rhodes P, Hall I. Estimated prevalence of undiagnosed HIV infection in the United States at the end of 2006. [Abstract]. In: 16th Conference on Retroviruses and Opportunistic Infections; February 16--20, 2009; Montreal, QC, Canada. Available at http://www.retroconference.org/2009/Abstracts/33682.htm.
[3] LA Men's Survey, 2008. NHBS-MSM2. *Los Angeles County Department of Public Health, HIV Epidemiology Program*
[4] HIV Epidemiology Program, Los Angeles County Department of Public Health. 2010 Annual HIV Surveillance Report, January 2011; 1:32.
[5] Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Report, 2007. Vol. 19. Atlanta: U.S.* Department of Health and Human Services, Centers for Disease Control and Prevention; 2009

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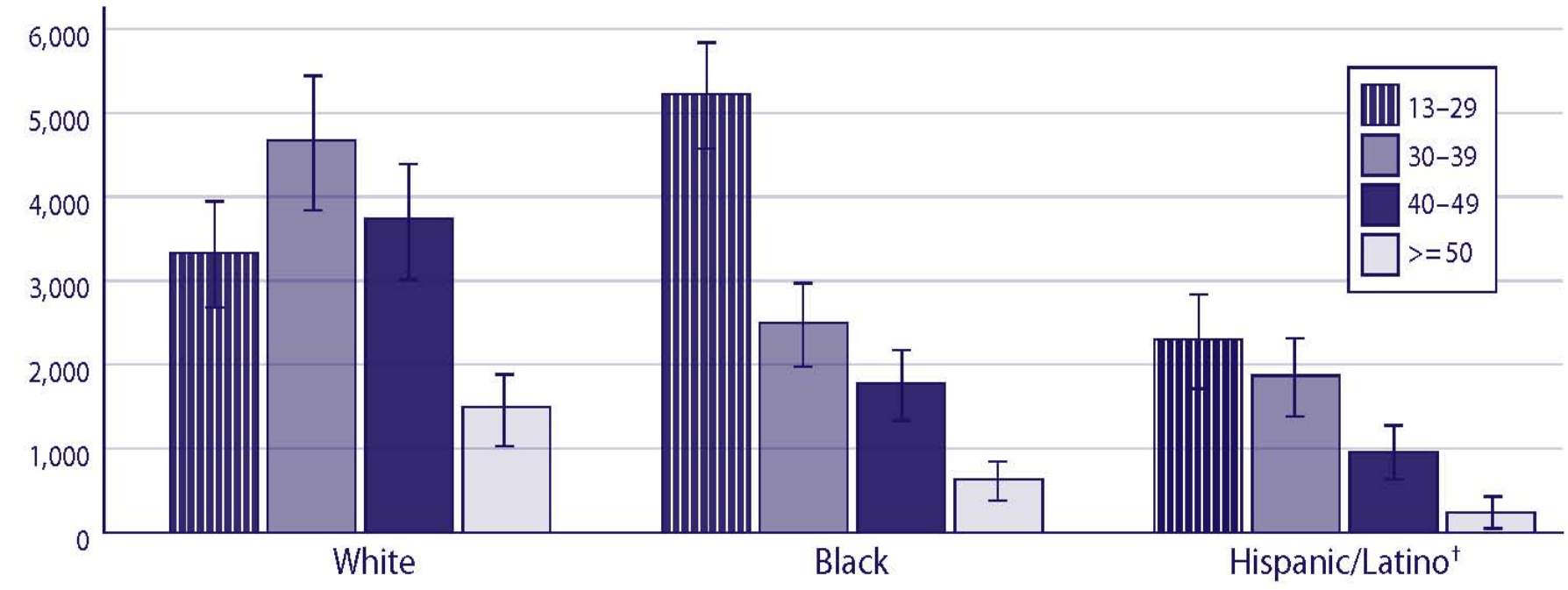
HIV Epidemic among African-Americans

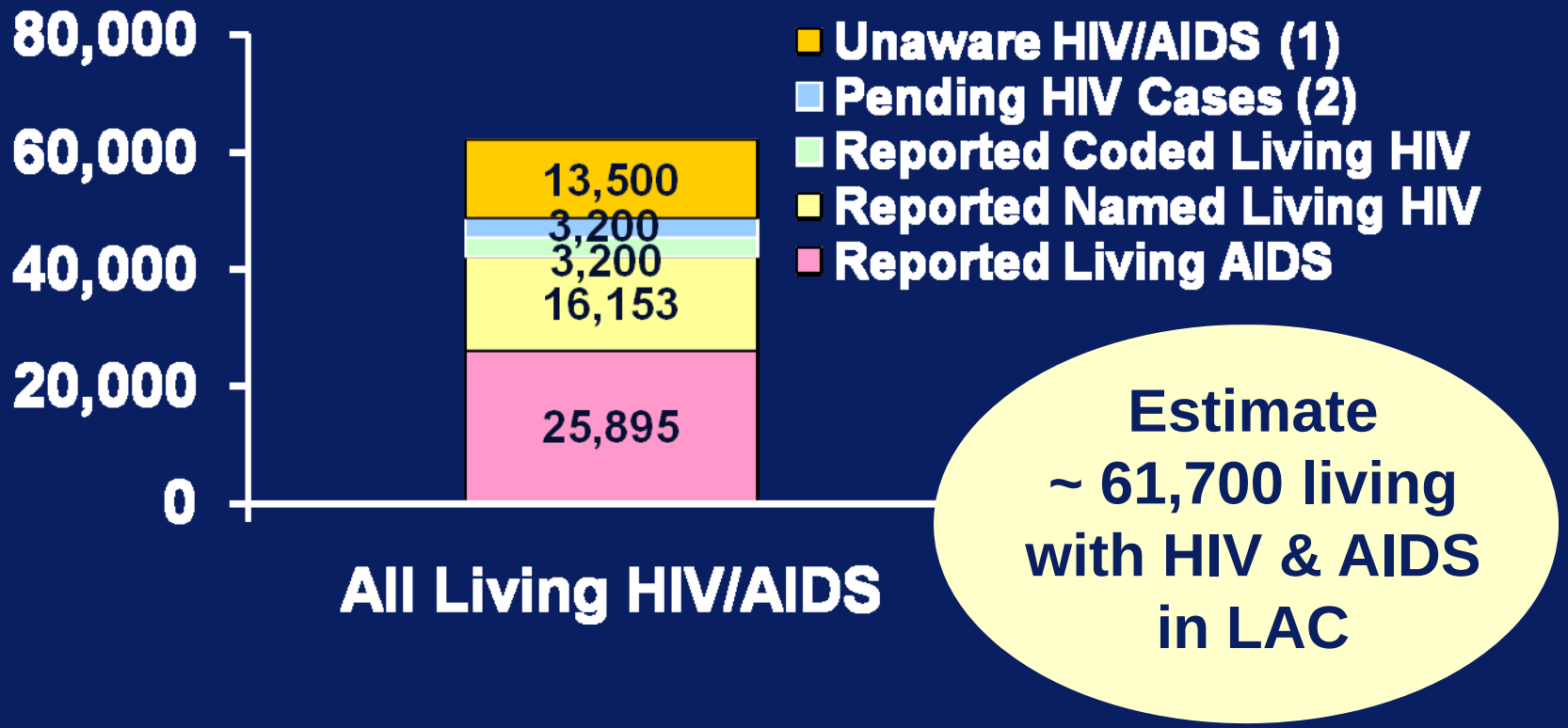
Estimated Number* of New HIV Infections in Men Who Have Sex with Men, by Race/Ethnicity and Age Group, United States, 2006



* Incidence estimates are adjusted for reporting delays and reclassification of cases reported without a known risk factor for human immunodeficiency virus (HIV) but not for underreporting.
† Non-Hispanic whites and non-Hispanic blacks are referred to as white and black, respectively. Persons of Hispanic/Latino ethnicity might be of any race.
Note: The "I" bars denote the data range for each confidence interval.

[1] CDC HIV/AIDS Facts, September 2008. *MMWR Analysis Provides New Details on HIV Incidence in U.S. Populations.*
[2] HIV Epidemiology Program, Los Angeles County Department of Public Health. 2010 Annual HIV Surveillance Report. January 2011: 1-32.

2011 Estimated Number of Persons Living with HIV and AIDS in LAC



Source: LAC HIV Epidemiology Program, reported as of 12/31/2010.

(1) Estimate that 21.5% of HIV+ in LA County are unaware of their infection; modified from CDC estimate.
(2) Of 5,100 notifications pending investigation, estimate 2,200 who have detectable VL to be cases, as well as about 1,000 of the remaining cases.

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Social Network Testing (SNT)

- What is an effective strategy to effectively and efficiently reduce rates of undiagnosed HIV among young MSM?

Strategy: Social network testing has been shown as an effective method to identify undiagnosed infection.

AIDS Behav
DOI 10.1007/s10461-011-9918-x

ORIGINAL PAPER

Using Social Networks to Reach Black MSM for HIV Testing and Linkage to Care

Vincent Fuqua · Yea-Hung Chen · Tracey Packer · Teri Dowling · Theresa O. Ick · Binh Nguyen · Grant N. Colfax · H. Fisher Raymond

- Seven-city demonstration project achieved a **5.6%** positivity rate.
- Social network testing in SF achieved a **5.5%** positivity rate vs. 1% rate achieved at CDC-funded sites.

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Social Network Testing Flowchart

What is it?

Peer-recruitment strategy that identifies high-risk individuals and provides them with HIV Counseling and Testing services.

Phase 1: Recruiter Enlistment

- Individuals are screened and interviewed in order to determine eligibility

Phase 2: Recruitment Engagement

- Recruiters are provided w/ an orientation to the program and trained on how to identify, approach, and recruit high-risk network associates.

Phase 3: Recruitment of Network Associates

- Recruiters identify high-risk (social/sexual) network associates and refer them to project testing sites.

Phase 4: Counseling, Testing, Referral (CTR)

- Network associates receive CTR services.

Project Questions & Objectives

Questions:

1. Is social network testing an effective method to identify undiagnosed HIV among young MSM?
2. Why are African-American young MSM so disproportionately impacted by HIV?

Objectives:

Methodology

- Social Network Testing Project (SNTP) was implemented at three DHSP-funded agencies (five sites) that provide HIV counseling and testing services
- Timeframe: May – December 2009
- Sampling: Snowball sampling
- Recruiters:
  - Recruiter survey administered via PDA (used to determine eligibility and collect risk information)
  - Incentives received for completing survey and recruiting targeted network associates[1].
- Testers:
  - Underwent same testing protocol as non-project testers.
  - Incentives received if tester eligibility is met.

[1] Recruiters received incentives if the network associate was a male, 18-40 yrs. who either self-identified as gay or bisexual or reported sex with another male in the past year.

Recruiter/Tester Eligibility

Recruiter Eligibility:

- Male or transgender MTF[1]
- 18-40 yrs. Old
- Identify as gay/bisexual OR report sex with male in past 6 mo.
- Report at least one high-risk behavior[2] in past 6 mo.

Tester Eligibility:

- Recruited by a SNTP recruiter
- Agreed to test confidentially (names-based)
- At least 12 yrs. old (California Health Code 121020)

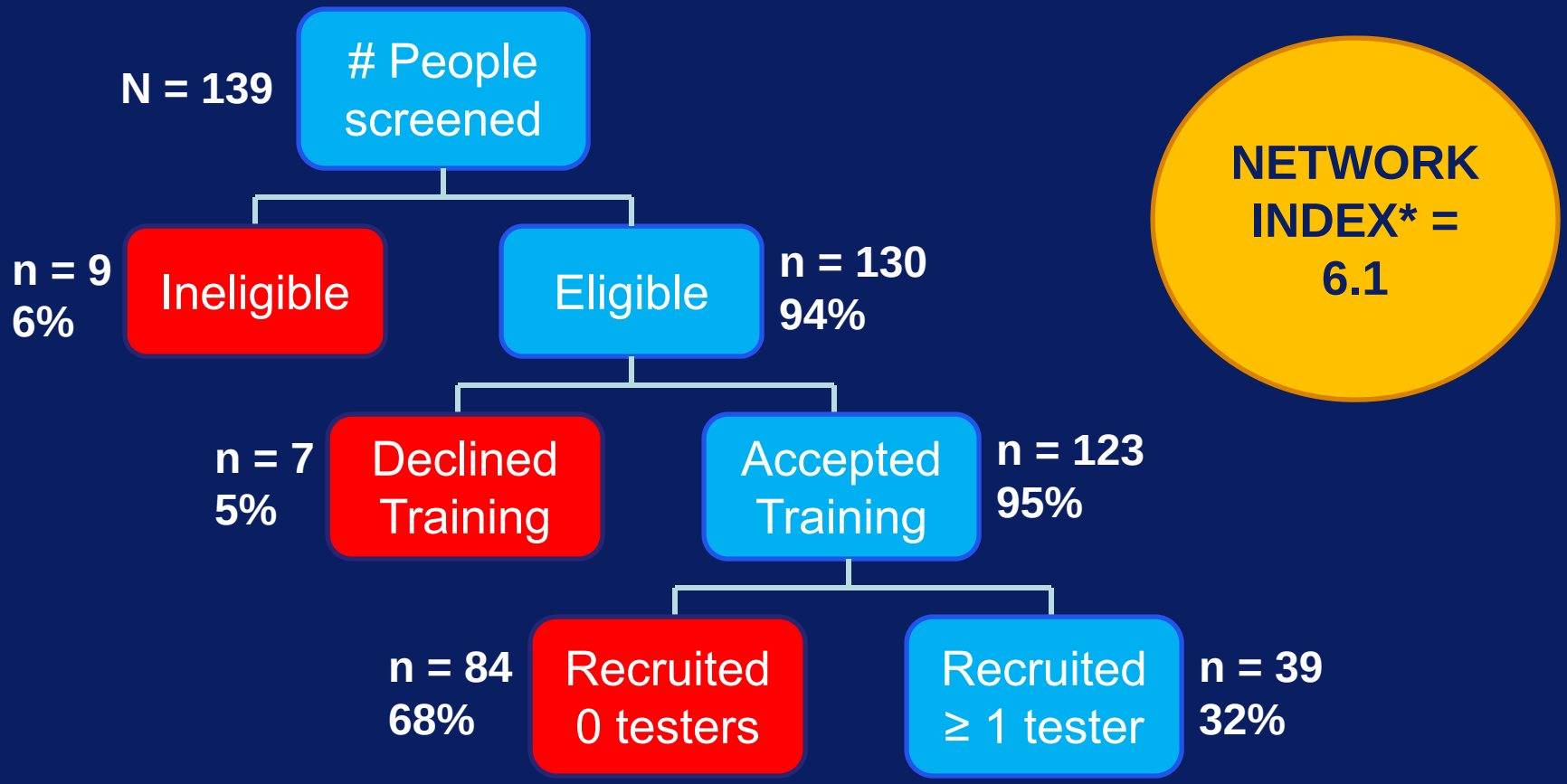
[1] In order to be eligible as a recruiter for TG MTFs, individual must report having had sex with a male in past 6 mo.

[2] Risk behaviors include: sex without condom use, sharing needles, sex with HIV serodiscordant /unknown status partner, sex while high/drunk, engaged in sex exchange, diagnosed with a STD, found sex partners online/anonymously, had multiple sex partners.

Sample Size

Recruiters: N = 39

Testers: N = 238



NETWORK INDEX* = 6.1

* Network index = Average # of testers brought each per recruiter.

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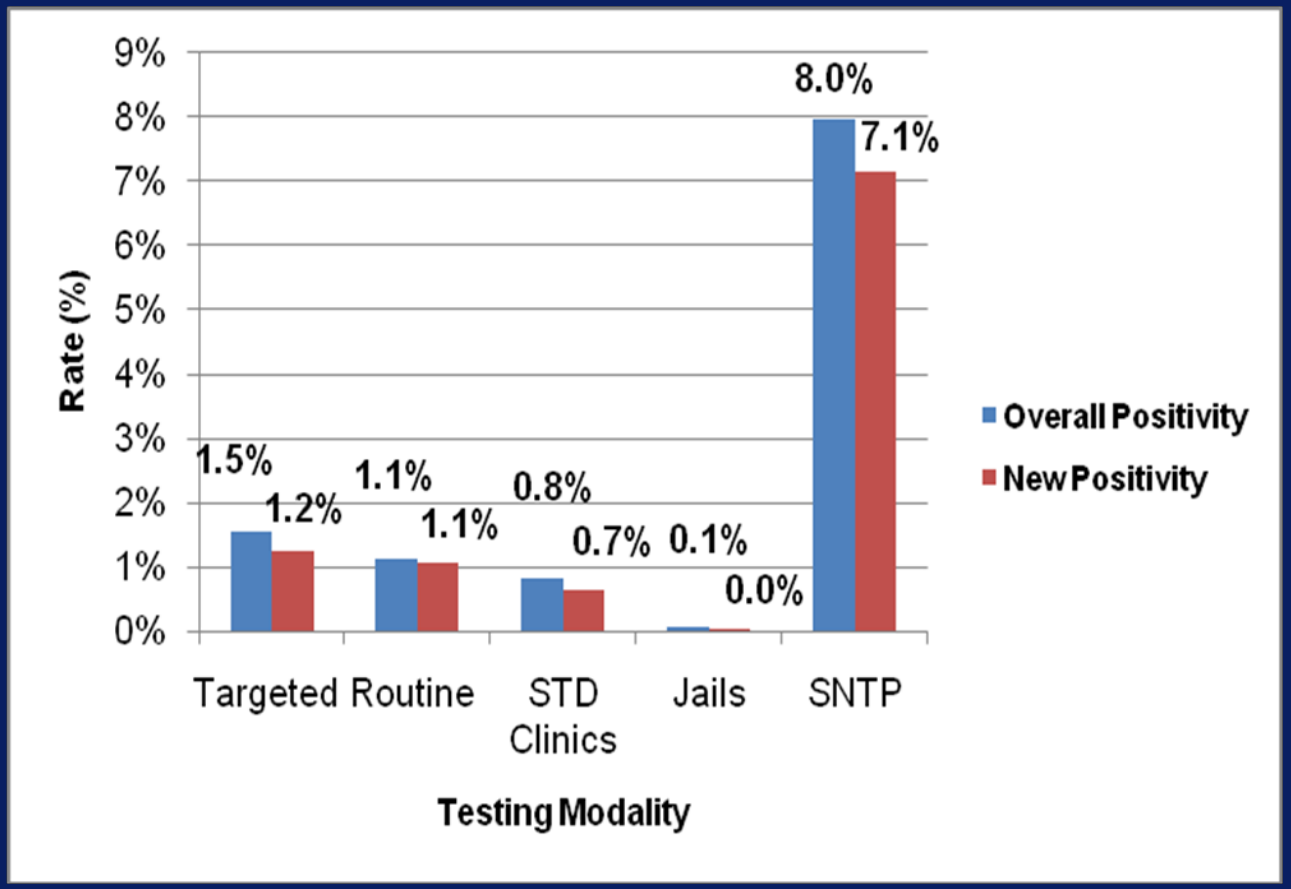
Data Analysis Plan

- Compare differences (using chi-square tests) in demographic profile/risk behaviors between:
  - SNTP testers vs. DHSP-funded testers (at same testing locations)
  - Positive testers and negative testers (among SNTP testers)
- Determine recruiter characteristics associated with the ability to:
  - Bring in a large # of network associates (high network index)
  - Identify those with undiagnosed infection (high HIV prevalence)
- Model HIV-positivity using various demographic/risk covariates (logistic regression)
- Analyze social network factors of recruiters:
  - Age difference of sexual partners
  - Racial/ethnic mixing of sexual networks.
  - Sexual partner concurrency

HIV-Positivity Rates

SNTP vs. DHSP-funded HCT Sites, by Modality, '07-'09*



- SNTP achieved new HIV positivity rates **5-10** times greater than the rates at DHSP-funded sites by year and modality.

* 2009 data does not include SNTP participants

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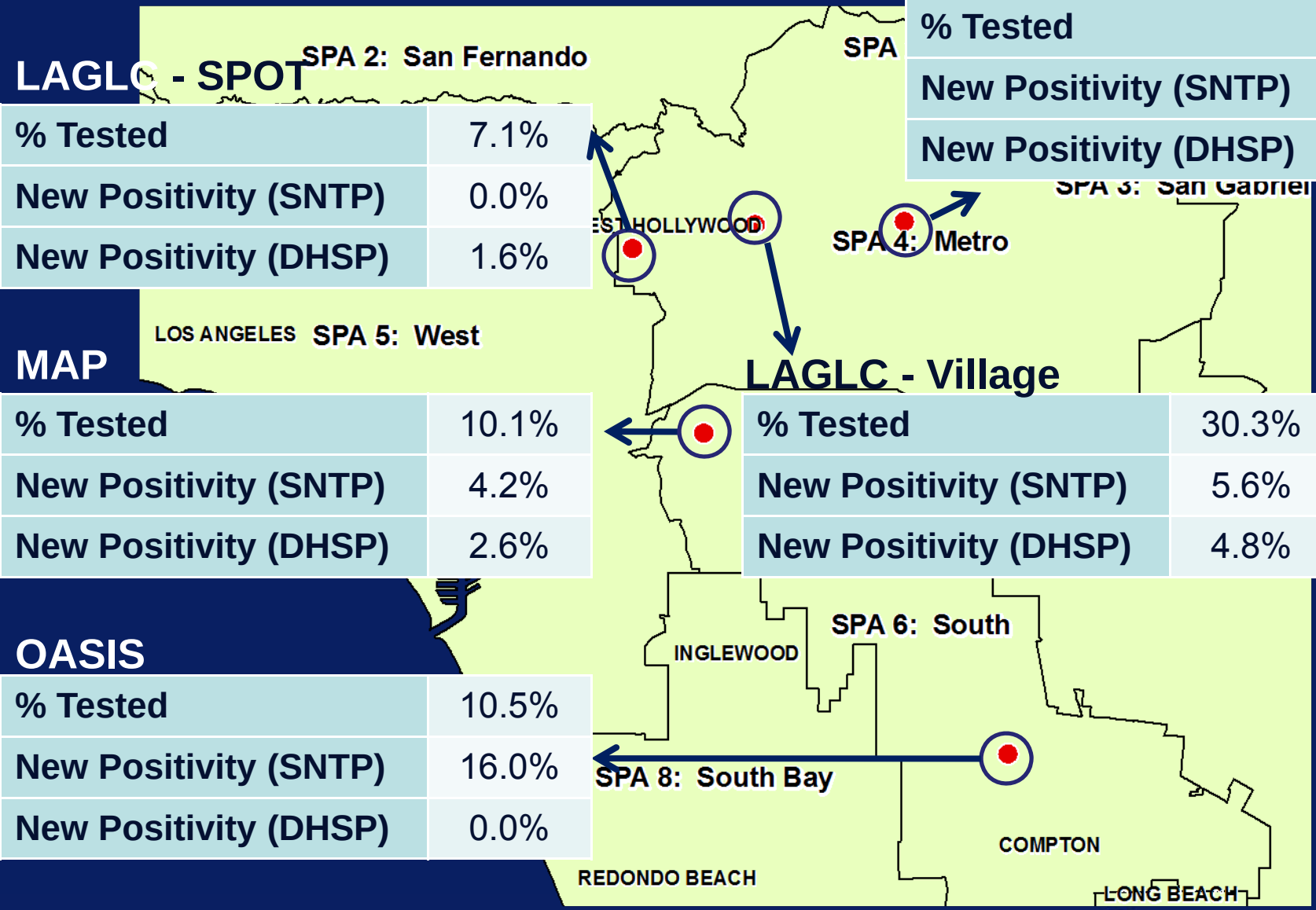
SNTP Sites



LAGLC - JG

% Tested	42.0%
New Positivity (SNTP)	8.0%
New Positivity (DHSP)	1.4%

LAGLC - SPOT

% Tested	7.1%
New Positivity (SNTP)	0.0%
New Positivity (DHSP)	1.6%

MAP

% Tested	10.1%
New Positivity (SNTP)	4.2%
New Positivity (DHSP)	2.6%

LAGLC - Village

% Tested	30.3%
New Positivity (SNTP)	5.6%
New Positivity (DHSP)	4.8%

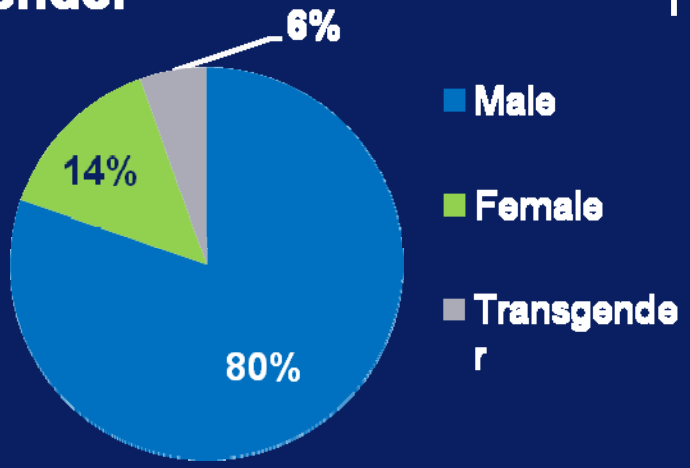
OASIS

% Tested	10.5%
New Positivity (SNTP)	16.0%
New Positivity (DHSP)	0.0%

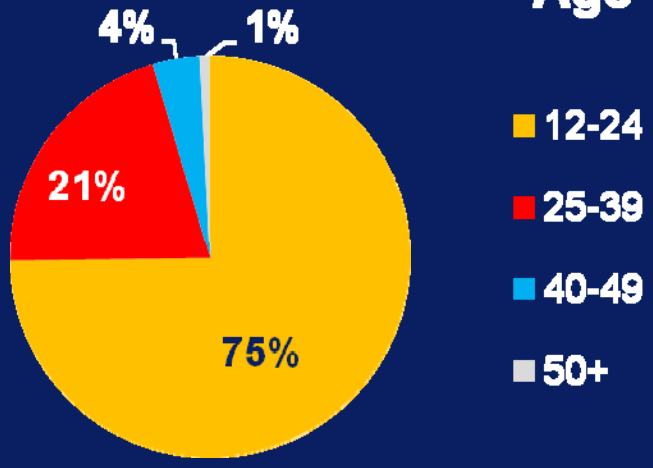
SNTP Tester Demographics

N = 238

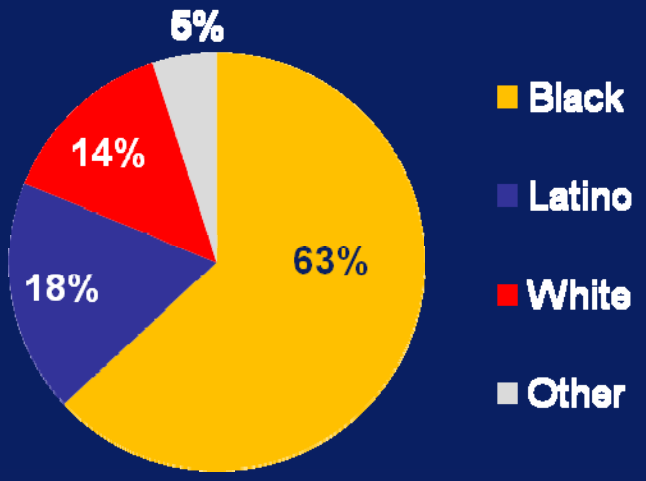
Gender



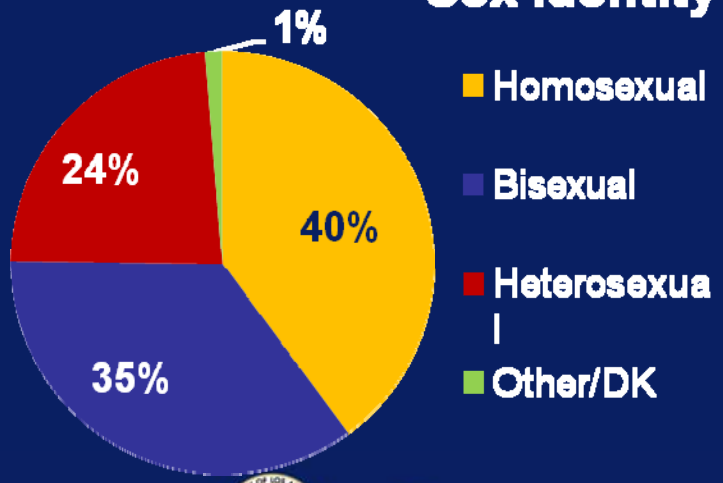
Age



Race



Sex Identity



Demographic Comparison: Tester

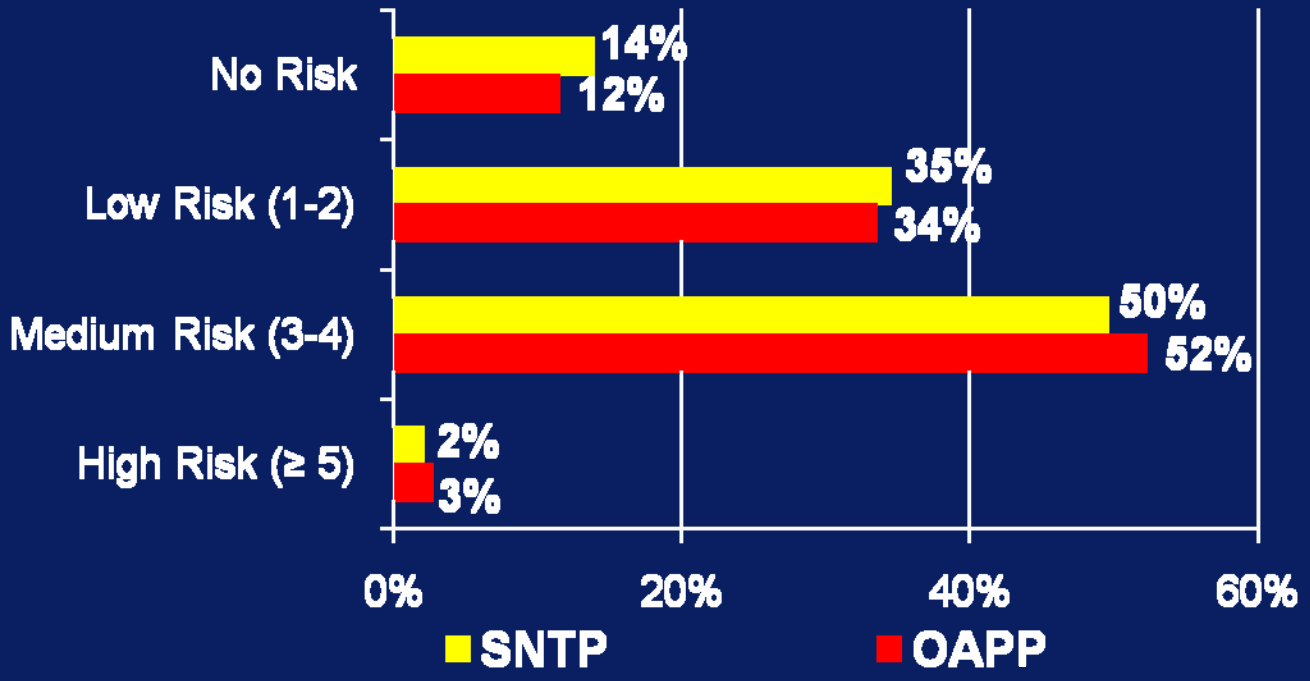
- Compared to DHSP testers*, SNTP testers were more likely to…
  - First time testers (26% vs. 9%)**
  - Higher proportion with newly diagnosed infection, among positive testers (90% vs. 76%)**
  - African-American (63% vs. 17%)**
  - Young – ages 12-24 (75% vs. 21%)**
  - Bisexual (35% vs. 9%)**
  - Homeless (50% vs. 4%)**
- Among SNTP testers, HIV+ were more likely to… (compared to HIV-)
  - Male (84% vs. 80%)**
  - Gay/Homosexual/Lesbian (79% vs. 37%)**
  - Homeless (84% vs. 47%)

* Represent all non-SNTP individuals who tested at any one of the five SNTP testing sites in 2009.
** p-value < 0.05

Risk Behaviors: SNTP vs. DHSP

- Compared to DHSP testers, SNTP testers were…
  - More likely to exchange sex for goods (14% vs. 3%)**
  - More likely to share needles/injection equipment (3% vs. 1%)**
  - Less likely to have sex w/ HIV+ partner (6% vs. 12%)**

Aggregate Risk Levels*



* Based on 8 individual risk factors: multiple sex partners, inconsistent condom use, sex while high/intoxicated, sex with HIV+ partner, STD diagnosis, sex exchange, shared needles/injection paraphernalia.

** p-value < 0.05

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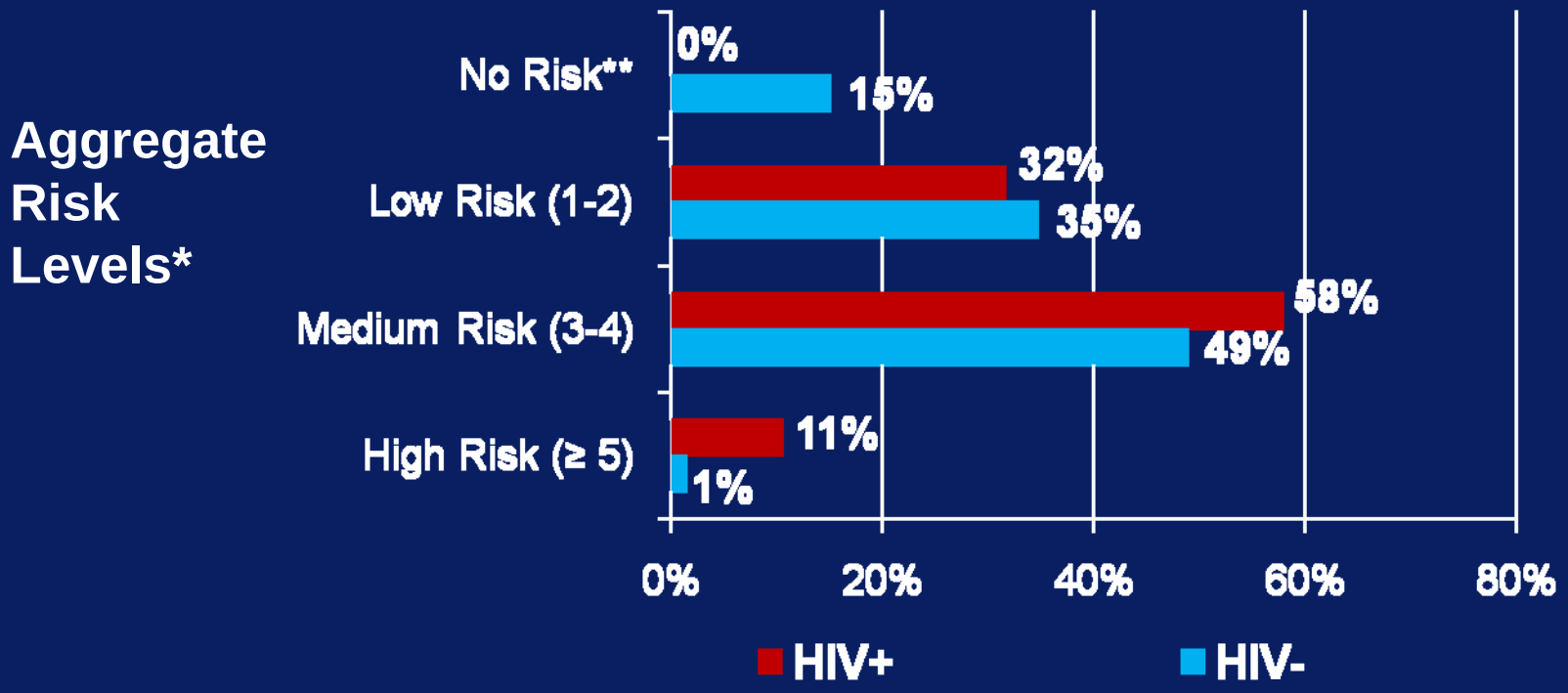
Risk Behaviors: HIV+ vs. HIV-

- Among SNTP testers, positive testers were…
  - More likely to have sex with HIV+ partner (32% vs. 4%)**
  - Less likely to know status of HIV+ partner prior to sexual contact (17% vs. 78%)**



* Based on 8 individual risk factors: multiple sex partners, inconsistent condom use, sex while high/intoxicated, sex with HIV+ partner, STD diagnosis, sex exchange, shared needles/injection paraphernalia.

** p-value < 0.05

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Risk Behaviors: Racial Breakdown

Risk Behaviors	Black (n = 150)	Latino (n = 43)	White (n = 33)
Tested Positive	**11%**	**5%**	**3%**
Mean # Sex Partners (std dev)	**13 (39) [B]**	10 (13)	**5 (7) [A]**
Inconsistent Condom Use	73%	74%	67%
Sex while High/Intoxicated	47%	51%	39%
Sex w/ HIV+ Partner	6%	5%	9%
Knew Status of Partner	44%	0%	100%
Inconsistent Condom Use	44%	100%	67%
STD Diagnosis	11%	7%	3%
Exchanged Sex for Goods	14%	9%	15%
Shared Needles	3%	0%	6%

– No significant differences in aggregate risk levels by race.

[A] Significantly different (p-value < 0.05) compared to African-Americans
[B] Significantly different (p-value < 0.05) compared to Whites.

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Network Index and HIV Prevalence by Recruiter Characteristics (N = 38)*

Characteristic	%	Network Index	HIV Prevalence
HIV Status			
Positive	29%	3.2	**14.3**
Negative/Unknown	71%	**7.5**	6.9
Race			
Black	76%	**6.6**	**8.9**
Latino	16%	5.8	5.7
Other	8%	3.3	0.0
Sexual Identity			
Gay/Homosexual	66%	6.1	6.6
Bisexual	29%	**7.4**	**11.1**
Other	5%	2.0	0.0

* Data from 1 recruiter was lost , which reduced testing total from 238 to 237.

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Network Index and HIV Prevalence by Recruiter Characteristics (N = 38)*

Characteristic	%	Network Index	HIV Prevalence
Age			
Youth (18-24)	68%	**7.3**	7.9
Non-Youth (25-40)	32%	3.9	**8.5**
Education			
Finished High School	76%	**6.6**	**8.9**
Didn't Finish High School	24%	5.2	4.3
Employment			
Employed	37%	5.9	**9.8**
Unemployed/On Disability	63%	**6.5**	7.1
Living Situation			
Stable	71%	5.6	7.2
Unstable (Homeless/Transitional)	29%	**7.7**	**9.4**

* Data from 1 recruiter was lost , which reduced testing total from 238 to 237.

Network Index and HIV Prevalence by Recruiter Characteristics (N = 38)*

Characteristic	%	Network Index	HIV Prevalence
Insurance			
Private/Public Health Insurance	42%	4.5	6.9
No Health Insurance	58%	**7.5**	**8.5**
Risk Levels			
Low (1-2 risk factors)	24%	6.1	**10.9**
Medium (3-4 risk factors)	45%	**8.2**	8.6
High (≥ 5 risk factors)	32%	3.5	2.4

* Data from 1 recruiter was lost , which reduced testing total from 238 to 237.

Discussion

- SNTP was effective at identifying undiagnosed HIV among young MSM
  - SNTP achieved higher positivity rates
  - Identified larger proportion of first-time testers
- SNTP testers had similar levels of risk, yet much higher prevalence rates compared to DHSP-funded testers
  - Suggests that SNTP population is inherently at higher risk of becoming infected with HIV
- HIV disparities continue to persist despite individual-level risk behaviors are similar across the different races
  - Indicates individual-level risk behaviors are not the predominant factor affecting transmission

Limitations

- High proportion of trained recruiters did not bring any network associates (NA)
  - Recruiters who brought in at least one NA were more likely to be African-American and younger (no other significant differences)

- Small sample sizes inhibited ability to…
  - Model HIV-status with a number of covariates
  - Investigate further potential hypotheses to explain HIV disparities among young African-American MSM

- Majority of data is self-report
  - Social-desirability or reporter bias?

Literature

- Numerous studies have shown that individual-level risk behaviors are **not** the primary reason for the disproportionate rates of HIV among Black MSM.
- Other potential hypotheses that may explain the racial disparities include:
  - Higher STD Prevalence
  - Partner Selection (race/age)
  - Higher rates of undiagnosed infection (lower testing levels)
  - Lower ART Usage
  - Sexual Identity Disclosure
  - High HIV Background Prevalence

Older partner selection, sexual risk behaviour and unrecognised HIV infection among black and Latino men who have sex with men

Heather A Joseph,[1] Gary Marks,[1] Lisa Belcher,[1] Gregorio A Millett,[1] Ann Stueve,[2] Trista A Bingham,[3] Jennifer Lauby[4]

- Young Black and Latino MSM were more likely to have partners who were at increased risk of having compared to White MSM.
- Black MSM were more likely to have partners who were at increased risk of having unrecognized HIV.

Next Steps

- Further analysis/investigation into hypotheses that can explain the disproportionate racial impact.

- Further expansion of social network testing among DHSP-funded agencies.
  - Currently, one agency is funded to conduct SNT -

- Additional Questions:
  1. Is social network testing cost-effective compared to other testing modalities?
  2. Is social network testing generalizable and effective among other (general, low risk, high risk) populations?

Comprehensive HIV Prevention Strategy

- Increasing the proportion aware of their serostatus alone does not constitute a comprehensive HIV prevention plan.
- In accordance with the National HIV/AIDS Strategy - Testing, Linkage to Care, Plus Treatment (TLC+) provides the framework for a holistic approach towards HIV prevention.

Testing

- Decrease number of individuals with undiagnosed HIV (expand testing)

Linkage to **C**are

- Immediate linkage to HIV care and social services

+ Treatment

- Improve retention in care, access to ART, and treatment adherence

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