HIV Risk and Prevalence among Heterosexuals at Increased Risk for HIV in New York City

2013 National HIV Behavioral Surveillance Study
Background

• Heterosexual transmission* HIV case surveillance in NYC
  – 616 new heterosexual diagnoses in 2012
    20% of all new diagnoses and 25% of new diagnoses with known risk
  – 22,767 heterosexual PLWHA as of 2012
    20% of all PLWHA and 26% of PLWHA with known risk

• Heterosexual transmission case categorization is complicated by need for known partner risks
  – Heterosexual HIV epidemic is partially driven by sexual partnerships with high-risk partners (including men who have sex with men (MSM) & injection drug users (IDU))
  – Partner risks are often unknown

*Includes persons who had heterosexual sex with a person they know to be HIV-infected, an injection drug user, or a person who has received blood products; for females only, also includes history of prostitution, multiple sex partners, sexually transmitted disease, crack/cocaine use, sex with a bisexual male, probable heterosexual transmission as noted in medical chart or sex with a male and negative history of injection drug use
Racial Disparities in Heterosexual HIV Transmission in New York City

Compared to the overall NYC population, heterosexual PLWHA and new diagnoses are disproportionately black.
Gender Disparities in Heterosexual HIV Transmission in New York City

Heterosexual PLWHA and new heterosexual diagnoses are disproportionately female.
Heterosexual HIV diagnoses disproportionately occur in three areas: the Bronx, Central Brooklyn, and Northern Manhattan.
National HIV Behavioral Surveillance (NHBS)

• Ongoing, cyclical study of three HIV risk groups: MSM, IDU, and high-risk heterosexuals (HET)
  – Conducted in 20 cities through the U.S.
  – Funded by CDC, designed collaboratively
  – Cross-sectional study design
  – Anonymous, structured interview and HIV testing

• Current results are from third HET cycle (NHBS-HET3)
NHBS Study Objectives

- Determine frequency and correlates of HIV risk behaviors
- Assess HIV testing history and patterns
- Assess exposure to and use of HIV prevention services
- Estimate the prevalence of HIV infection
- Understand trends in HIV risk and prevalence
NHBS-HET3 Eligibility Criteria

- Vaginal or anal sex with an opposite sex partner in the past 12 months
- Male or female (not transgender)
- Resident of NYC metropolitan statistical area
- Speaks English or Spanish
Respondent-Driven Sampling

1. Study team recruits small number of initial participants (“seeds”) through community outreach
   - To focus recruitment in geographic areas of interest, seeds must have resided in High Risk Areas (HRAs)
   - HRAs were defined as the 25% of census tracts in New York City that have the highest proportion of residents who live below the Census Bureau’s poverty threshold (census tract poverty rate ≥24.2%)

2. Seeds participate in the study then recruit up to three peers in their social networks

3. If eligible, those three peers participate and each recruits up to three more peers
   - Recruitment chains continually monitored to ensure demographic representativeness
   - Incentives provided for participating in study and peer recruitment
New York City High Risk Areas

Total census tracts=2122
HRA census tracts=623

- Population less than 200 people

Poverty Rate by Census Tract

- <24.2%
- 24.2% - 27.0%
- 27.1% - 30.8%
- 30.9% - 35.3%
- 35.4% - 42.8%
- 42.9% - 100%

Data classed using quintiles
Data source: American Community Survey 2007-2011
Each node represents a study participant. Linking lines show recruitment chains, initiated by 5 productive seeds (represented by larger circular nodes outlined in green).

To focus recruitment in high-risk heterosexual social networks, those who injected drugs without a prescription in the past 12 months and those that do not have low socio-economic status (SES) (having income that does not exceed Health and Human Services (HHS) poverty guidelines or educational attainment not greater than high school) were not eligible to recruit other participants.
Statistical Analysis

- Weighted analysis conducted with RDS Analysis Tool 7.1.38 and SAS 9.2
- RDS weighting may reduce recruitment biases common in chain-referral methods (preferential in-group recruitment [homophily] and large networks)
- If methodological assumptions are met, RDSAT may estimate generalizable population proportions (%’s) but not population sizes (n’s)
- Self-reported HIV+ HET (n=7) removed from behavioral risk analyses; HET untested for HIV (n=5) excluded from seroprevalence analyses
NHBS-HET3 Sample Diagram

- Seeds: n=5
- Recruits: n=552
- Eligible & Complete: n=509 (92%)
  - Not Self-Reported HIV+: n=502 (99%)
  - HIV Tested: n=504 (99%)
## Demographics

*NYC NHBS-HET3, 2013, n=509*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Male</td>
<td>53%</td>
</tr>
<tr>
<td>Female</td>
<td>47%</td>
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<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Black</td>
<td>67%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>30%</td>
</tr>
<tr>
<td>White</td>
<td>3%</td>
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<tr>
<td>Other</td>
<td>&lt;1%</td>
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<table>
<thead>
<tr>
<th>Age Range</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>18-29</td>
<td>29%</td>
</tr>
<tr>
<td>30-39</td>
<td>14%</td>
</tr>
<tr>
<td>40-49</td>
<td>24%</td>
</tr>
<tr>
<td>50+</td>
<td>33%</td>
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<table>
<thead>
<tr>
<th>Birthplace</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>United States</td>
<td>87%</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>8%</td>
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<tr>
<td>Foreign</td>
<td>5%</td>
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</tbody>
</table>
Demographics
NYC NHBS-HET3, 2013, n=509

Marital Status
Never Married 65%
Currently Married or Cohabiting 7%
Previously Married 28%

Homeless*
Ever 24%
Currently 11%

Criminal Justice*
Arrested 30%
Incarcerated 18%

Household Income*
< $10k/year 60%

Education
< H.S. Grad 41%

* In the past 12 months
Type of Sexual Partnerships (Past 12 Months) by Gender

NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)

- **Main Partners**
  - Men: 71%
  - Women: 75%

- **Casual Partners**
  - Men: 73%
  - Women: 68%

- **Same-Sex Partners**
  - Men: 4%
  - Women: 36%

Heterosexual Partners
### Number of Heterosexual Partners, by Gender (Past 12 Months)

*NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)*

<table>
<thead>
<tr>
<th></th>
<th>Total (n=502)</th>
<th>Men (n=296)</th>
<th>Women (n=206)</th>
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<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Main</td>
<td>1</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>Casual*</td>
<td>2</td>
<td>7.4</td>
<td>3</td>
</tr>
<tr>
<td>All Types†</td>
<td>3</td>
<td>8.8</td>
<td>4</td>
</tr>
</tbody>
</table>

Men had more casual partners than women (p=0.01, Wilcoxon)
Men had more total heterosexual partners than women († p=0.02, Wilcoxon)
Sex without a Condom in Past 12 Months and at Last Sex, by Age

NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)

p=0.002  p=0.02
Sex without a Condom at Last Sex by Partner Type and Gender

NYC NHBS-HET3, 2013, n=500 (HIV-/Unknown Status)*

*Denominators: of those with a respective partner type at last sex
Past 12 Month Sexual Risks among Heterosexual Partnerships by Gender

NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)

- **Vaginal Sex w/o Condom**: Men 83%, Women 90%
- **Anal Sex w/o Condom**: Men 30%, Women 26%
- **Sex w/o Condom w/ Casual Partner**: Men 46%, Women 42%
- **>2 Sex Partners**: Men 58%, Women 44%

*p=0.003*
Risk Characteristics of Last Heterosexual Partnership by Gender

*NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)*

- **Concurrent Drug/Alcohol Use**: Men 54%, Women 52%
- **Partner HIV+/Unknown Status**: Men 50%, Women 49%
- **Partner Ever IDU**: Men 9%, Women 10%
- **Partner Ever Used Crack**: Men 25%, Women 36%
- **Partner Ever Incarcerated**: Men 35%, Women 66%

*p<0.0001*
Concurrent* Partnerships by Gender

NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)

- **Men**
  - Participant Had Concurrent Partners in the Past 12 Months: 61%
  - Last Sex Partner Had Concurrent Partners: 42%
  - Both Had Concurrent Partners: 33%

- **Women**
  - Participant Had Concurrent Partners in the Past 12 Months: 56%
  - Last Sex Partner Had Concurrent Partners: 53%
  - Both Had Concurrent Partners: 38%

*p=0.02
*

*sexual partnerships that overlap over time
Women with a Male Sex Partner Who Ever Had Sex with Men

*NYC NHBS-HET3, 2013, n=206 (HIV-/Unknown Status)*

- 14% of partners in the past 12 months
- 11% of last sex partner
Drug and Alcohol Use History

*NYC NHBS-HET3, 2013, n=509*

- **IDU Ever**
  - 17%

- **IDU Past 12 Months**
  - 6%

- **Non-Inject. Drug Use Past 12 Months**
  - 65%

- **Alcohol Use Past 12 Months**
  - 83%

*Past 12 Months*
Non-Injection Drug Use in Past 12 Months

NYC NHBS-HET3, 2013, n=509

- Overall:
  - <1x/week: 13%
  - ≥1x/week: 17%
  - ≥1x/day: 35%

- Marijuana:
  - <1x/week: 13%
  - ≥1x/week: 12%
  - ≥1x/day: 28%

- Cocaine:
  - <1x/week: 10%
  - ≥1x/week: 5%
  - ≥1x/day: 2%

- Crack:
  - <1x/week: 6%
  - ≥1x/week: 6%
  - ≥1x/day: 3%

- Heroin:
  - <1x/week: 7%
  - ≥1x/week: 3%
  - ≥1x/day: 5%

- Ecstasy:
  - <1x/week: 6%
  - ≥1x/week: 1%
  - ≥1x/day: 0%
Alcohol Use (Past 12 Months) by Age

_NYC NHBS-HET3, 2013, n=509_

*4 or more drinks in one sitting for females and 5 or more drinks in one sitting for males
HIV Testing History Across NHBS Cycles

NYC NHBS MSM (2011), IDU (2012), and HET (2013)

- **Ever Tested**
  - MSM: 94%
  - IDU: 92%
  - HET: 90%

- **Tested in Past Year**
  - MSM: 75%
  - IDU: 66%
  - HET: 50%
Medical Visits and HIV Testing in Past 12 Months by Gender

*NYC NHBS-HET3, 2013, n=502 (HIV-/Unknown Status)*

Of Those Who Visited Medical Provider
- Male: 80%
- Female: 86%

Of Those Offered HIV Test
- Male: 59%
- Female: 59%

Of Those Accepted HIV Test
- Male: 67%
- Female: 71%

p=0.04
Offered HIV Test by Medical Provider by Past 12 Month Risks


- Overall: 59%
- >1 Partner: 57%
- Sex w/o Condom with Casual Partner: 54%
- Self-reported STD Diagnosis*: 57%

*Chlamydia, gonorrhea, or syphilis diagnosis*
HIV Prevention Activities in Past 12 Months by Gender

NYC NHBS-HET3, 2013, n=509

- Received Free Condoms: Men 73%, Women 69%, p=0.008
- Used Free Condoms: Men 49%, Women 37%, p=0.007
- Any HIV Counseling: Men 31%, Women 21%
- Individual HIV Counseling: Men 27%, Women 20%, p=0.006
- Group HIV Counseling: Men 16%, Women 8%
## Estimated HIV Prevalence

*NYC NHBS-HET3, 2013, n=504 (Tested in Study)*

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<tr>
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<th>HIV-Positive</th>
<th>95% CI</th>
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<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>3.9%</td>
<td>2.1%-5.8%</td>
</tr>
<tr>
<td><strong>Lifetime Risks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HET only</td>
<td>2.4%</td>
<td>0.7%-4.0%</td>
</tr>
<tr>
<td>HET &amp; MSM</td>
<td>16.4%</td>
<td>0.0%-33.1%</td>
</tr>
<tr>
<td>HET &amp; IDU</td>
<td>9.0%</td>
<td>2.2%-15.9%</td>
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<td>HET &amp; MSM &amp; IDU</td>
<td>0.0%*</td>
<td>-</td>
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<td><strong>Gender</strong></td>
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<tr>
<td>Male</td>
<td>3.9%</td>
<td>1.5%-6.3%</td>
</tr>
<tr>
<td>Female</td>
<td>4.0%</td>
<td>1.1%-6.9%</td>
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*no cases of HIV identified among those who reported lifetime HET & MSM & IDU risk*
## Estimated HIV Prevalence

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<td>0.8%</td>
<td>0.0%-2.4%</td>
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<td>0.0%-4.1%</td>
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<tr>
<td>40-49</td>
<td>5.0%</td>
<td>0.7%-11.7%</td>
</tr>
<tr>
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<td>0.1%-6.7%</td>
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*p=0.03*
Summary

• NHBS study able to sample heterosexuals with multiple types of sexual risk
• Many participants experienced poverty, homelessness, and incarceration
• Most participants used drugs and alcohol
Summary

• Some participants reported high numbers of recent sexual partners, however, the overall average number of sexual partners was relatively low (median=3)

• Sex without a condom among main and casual partnerships was common

• Nearly all engaged in unprotected sex
  – Rates of unprotected sex at last encounter were highest in main partnerships, but still common with casual partners

• Sexual partnerships with high-risk partners (HIV+/unknown status, drug users, previously incarcerated) and partner concurrency were frequent

• A considerable number of women reported sexual partnerships with men who had ever had sex with men
Summary

• Compared to MSM & IDU, HET have lower levels of recent HIV testing despite high levels of risk
  – Slightly more than half of those visiting a medical provider were offered an HIV test by the provider
  – Offers of HIV testing did not vary by HIV risk factors

• Many participants received free condoms in the past 12 months, but less than half reported using free condoms during this time period
Summary

• Overall HIV prevalence (4%) was higher than the general population
  – HIV prevalence varied by lifetime risk factors, with the highest rates among those with MSM (16%) and IDU (9%) lifetime risks
  – HIV prevalence was higher among older participants
Strengths

• Large dataset with multiple HIV risk factors
• National, standardized survey and protocol
• Extensive formative research supporting data collection
• RDS can reach “hidden” populations for which no sampling frame exists
Limitations

• RDS-based estimates may not be generalizable to all high risk heterosexuals in New York City if methodological assumptions are not met

• All data except HIV serostatus were collected by self-report, and may be biased by recall error or social desirability and self-selection
Conclusions

• Continued work is needed to define and identify high-risk heterosexuals across multiple dimensions of risk
  – Individual, partner, network, community, and structural
• Innovative strategies are needed to encourage condom use and other preventive behaviors among this population, including reducing sex partner concurrency
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