HIV Risk and Prevalence among Heterosexually Active Adults at Increased Risk for HIV in New York City

2019 National HIV Behavioral Surveillance Study
Background

• Heterosexual transmission* HIV case surveillance in New York City (NYC)
  – 358 new diagnoses of heterosexual transmission in 2018
    • 19% of all new diagnoses and 24% of new diagnoses with known risk
  – 24,495 PLWHA with heterosexual transmission as of 2018
    • 20% of all PLWHA and 24% of PLWHA with known risk

• Heterosexual transmission case categorization is complicated by need for known partner risks
  – Heterosexual transmission is partially driven by sexual partnerships with partners at increased risk (including men who have sex with men [MSM] and people who inject drugs [PWID]).
  – Sexual partnerships are often unknown.

*“Heterosexual contact” includes people who had heterosexual sex with a person they know to be living with HIV, a person who has injected drugs or a person who has received blood products. For women only, also includes history of sex work, multiple sex partners, sexually transmitted disease, crack/cocaine use, sex with a bisexual man, probable heterosexual transmission as noted in a medical chart or sex with a man and negative history of injection drug use.
Compared to the overall NYC population, PLWHA with heterosexual transmission and new diagnoses are disproportionately Black.

PLWHA=People living with HIV/AIDS.
Gender Disparities in Heterosexual HIV Transmission in NYC

PLWHA with heterosexual transmission and new diagnoses are disproportionately female.

PLWHA=People living with HIV/AIDS.
National HIV Behavioral Surveillance (NHBS)

- Ongoing, cyclical study of three groups at risk for HIV: MSM, PWID, and heterosexually-active adult at increased risk for HIV (HET).
  - Conducted in 22 cities through the US
  - Funded by CDC, designed collaboratively
  - Cross-sectional study design
  - Anonymous, structured interview and optional HIV testing

- Data were collected for the fifth cycle among HET (“HET5”) during June-October 2019.
NHBS-HET5 Objectives

- Determine the 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-HET5 Eligibility Criteria

• Survey eligibility criteria:
  – Self-identify as female and had vaginal or anal sex with a male sex partner in the past 12 months or self-identify as male and had vaginal or anal sex with a female sex partner in the past 12 months
  – Is between 18 and 60 years of age
  – Be a resident of NYC metropolitan statistical area
  – Speaks English or Spanish

• Final sample eligibility criteria ("HET definition"):
  – Household income does not exceed 150% of the HHS poverty guidelines adjusted for NYC’s cost of living
  – Has not injected drugs in the past 12 months
  – If male, has not had male sex partners in the past 12 months
1. Study team recruits small number of initial participants (“seeds”) through community outreach.
   • In order to focus on heterosexually active adults at increased risk, seeds must have never injected drugs, and, if male, must have never had male sex partners.

2. Seeds participate in the study and then recruit up to 5 peers in their social networks.

3. If eligible, those recruited peers participate; those who meet the ‘HET definition’ can recruit up to 3 peers until sample size is met.

4. Incentives were provided for completing the survey, HIV testing, and peer recruitment.
Each node represents a study participant. Linking lines show recruitment chains, initiated by 8 productive seeds (represented by squares). To focus recruitment in social networks of heterosexuals at increased risk, only those who met the HET definition were eligible to recruit and are shown in the diagram.
Study Sample

Seeds
n=8

Total Recruits
n=734

Eligible & Completed Surveys
n=622 (85%)

Met HET Definition
n=506 (81%)

Tested for HIV
n=500 (99%)

Self-reported HIV-negative or unknown status
n=501 (99%)
Statistical Analyses

- Weighted analyses were conducted with RDS Analyst (RDS-A); data were weighted to take into account network size using RDS II estimators.
  - Those with large network sizes have a higher probability of selection.

- An advantage of RDS is that, if methodological assumptions are met, RDS-A may estimate proportions that are generalizable to the larger population.
Statistical Analyses

• Basic descriptive frequencies of risk behaviors and use of HIV testing and prevention services were calculated.

• Chi-square tests (categorical variables) and Wilcoxon (continuous variables; unweighted) were used to compare differences in HIV risk and the use of HIV testing and prevention services. Any statistically significant associations ($p<0.05$) are denoted.

• Analyses exclude seeds (n=8) because they were not recruited randomly.

• Behavioral risk analyses exclude participants who self-report an HIV-positive status, since awareness of a positive status influences behavior.

• Overall prevalence of HIV infection was determined by the HIV test result among those agreeing to take an HIV test and have a confirmed result (n=497).
### Demographics

**NYC NHBS-HET5, 2019, n=506**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Age</th>
<th>18-29</th>
<th>43%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic/Latino</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>65%</td>
<td>30-39</td>
<td>25%</td>
</tr>
<tr>
<td>White</td>
<td>1%</td>
<td>40-49</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>50-60</td>
<td>20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-Identified Gender</th>
<th>Birthplace</th>
<th>US</th>
<th>88%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>Outside US</td>
<td>12%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-Identified Gender</th>
<th>Birthplace</th>
<th>Outside US</th>
<th>12%</th>
</tr>
</thead>
</table>
### Demographics

**NYC NHBS-HET5, 2019, n=506**

<table>
<thead>
<tr>
<th>Poverty Status</th>
<th>Education Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or below poverty level</td>
<td>&lt;High School: 31%</td>
</tr>
<tr>
<td>Above poverty level</td>
<td>&gt;High School: 69%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Borough of Residence</th>
<th>Homelessness²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronx</td>
<td>Homeless: 13%</td>
</tr>
<tr>
<td>Brooklyn</td>
<td>Not homeless: 87%</td>
</tr>
<tr>
<td>Manhattan</td>
<td></td>
</tr>
<tr>
<td>Queens</td>
<td></td>
</tr>
<tr>
<td>Staten Island</td>
<td></td>
</tr>
</tbody>
</table>

---

1 Federal poverty level as per 2019 Department of Health and Human Services Guidelines

2 Past 12 months
Sexual Behaviors by Participant Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)
Number of Sex Partners, by Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

<table>
<thead>
<tr>
<th></th>
<th>Total (n=501)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>1</td>
<td>1.1</td>
<td>1</td>
<td>1.2</td>
<td>1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Casual*</td>
<td>1</td>
<td>2.5</td>
<td>1</td>
<td>3.3</td>
<td>1</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Any Type*</td>
<td>2</td>
<td>3.6</td>
<td>2</td>
<td>4.4</td>
<td>2</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Men (n=269)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>1</td>
<td>1.1</td>
<td>1</td>
<td>1.2</td>
<td>1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Casual*</td>
<td>1</td>
<td>2.5</td>
<td>1</td>
<td>3.3</td>
<td>1</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Any Type*</td>
<td>2</td>
<td>3.6</td>
<td>2</td>
<td>4.4</td>
<td>2</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women (n=232)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Main</td>
<td>1</td>
<td>1.1</td>
<td>1</td>
<td>1.1</td>
<td>1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Casual*</td>
<td>1</td>
<td>1.5</td>
<td>1</td>
<td>1.5</td>
<td>1</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Any Type*</td>
<td>2</td>
<td>2.7</td>
<td>2</td>
<td>2.7</td>
<td>2</td>
<td>2.7</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.001; Wilcoxon Test: Men had more casual and total sex partners compared to women.
Sexual Behaviors by Partner Type and Participant Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

- Vaginal/Anal Sex with a Main Partner:
  - Overall: 85%
  - Male: 80%
  - Female: 88%
- Condomless Vaginal/Anal Sex with a Main Partner:
  - Overall: 77%
  - Male: 67%
  - Female: 86%
- Vaginal/Anal Sex with a Casual Partner:
  - Overall: 50%
  - Male: 54%
  - Female: 47%
- Condomless Vaginal/Anal Sex with a Casual Partner:
  - Overall: 30%
  - Male: 33%
  - Female: 27%

*p = 0.02 for Condomless Vaginal/Anal Sex with a Main Partner
*p = 0.003 for Vaginal/Anal Sex with a Main Partner
*p = 0.003 for Condomless Vaginal/Anal Sex with a Casual Partner
Sexual Behaviors by Gender, At Last Sex
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

Overall  Male  Female

Condomless Vaginal Sex: 69% 61% 77%
p = 0.003

Condomless Anal Sex: 4% 5% 3%

Condomless Vaginal/Anal Sex: 69% 61% 77%
p = 0.003
Characteristics of Last Sex Partner, by Participant Gender
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

*Participant was asked whether last partner definitely did, probably did, probably did not, or definitely did not have the characteristic.
Concurrent Partnerships by Participant Gender, At Last Sex
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

<table>
<thead>
<tr>
<th>Last Sex Partner Had Concurrent Partners</th>
<th>Overall</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>42%</td>
<td>44%</td>
<td>39%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Had Concurrent Partners</th>
<th>Overall</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>41%</td>
<td>47%</td>
<td>36%</td>
<td></td>
</tr>
</tbody>
</table>

$p = 0.006$
Frequency of Non-Injection Drugs Used, Past 12 Months
NYC NHBS-HET5, 2019, n=506

- Any: 43% Daily, 9% More than weekly, 6% Once a week or less
- Marijuana: 41% Daily, 8% More than weekly, 7% Once a week or less
- Crack Cocaine: 2% Daily, 1% More than weekly, 3% Once a week or less
- Painkillers: 1% Daily, 4% More than weekly, 1% Once a week or less
- Downers: 1% Daily, 4% More than weekly, 1% Once a week or less
- Powder Cocaine: 1% Daily, 3% More than weekly, 3% Once a week or less
- Ecstasy: 1% Daily, 3% More than weekly, 3% Once a week or less
- Heroin: 1% Daily, 2% More than weekly, 3% Once a week or less
Alcohol Use by Gender, Past 30 Days
NYC NHBS-HET5, 2019, n=506

Any Alcohol Use
- Overall: 70%
- Male: 69%
- Female: 71%

Any Binge Drinking*
- Overall: 31%
- Male: 34%
- Female: 29%

*Defined as >4 drinks in one sitting for females and >5 drinks in one sitting for males.
HIV Testing History among HET Compared to Other NHBS Populations
NYC NHBS-MSM (2017), PWID (2018), and HET (2019) (HIV-/Unknown Status)

- Ever HIV Tested:
  - MSM: 97%
  - PWID: 98%
  - HET: 86%

- Tested in Past 12 Months:
  - MSM: 81%
  - PWID: 71%
  - HET: 53%
Medical Visits and HIV Testing by Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

- Visited Healthcare Provider: Overall 85%, Male 84%, Female 86%
- Offered HIV Test by Healthcare Provider: Overall 63%, Male 57%, Female 69%

(among those who visited a healthcare provider)
HIV Prevention Activities by Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

- Received Free Condoms: 47% Overall, 41% Male, 52% Female
- Individual Counseling*: 18% Overall, 20% Male, 17% Female
- Group Counseling**: 9% Overall, 12% Male, 7% Female

*Defined as a one-on-one conversation with an outreach worker, counselor, or prevention program worker about ways to prevent HIV. Does not include counseling as part of an HIV test.
**Defined as any organized session with a small group of people to discuss ways to prevent HIV. Does not include discussions with a group of friends.
PEP/PrEP Awareness and Use by Gender, Past 12 Months
NYC NHBS-HET5, 2019, n=501 (HIV-/Unknown Status)

- **PEP Use**
  - Overall: 3%
  - Male: 3%
  - Female: 2%

- **Aware of PrEP**
  - Overall: 37%
  - Male: 32%
  - Female: 41%

- **Discussed PrEP with a Provider**
  - Overall: 4%
  - Male: 4%
  - Female: 4%

- **Used PrEP**
  - Overall: 2%
  - Male: 2%
  - Female: 1%
Sexually Transmitted Infection (STI) Diagnoses, by Gender

NYC NHBS-HET5, 2019, n=506

Past 12 Months

- Any Bacterial STI: 5% (Overall), 4% (Male), 7% (Female)
- Gonorrhea: 3% (Overall), 4% (Male), 3% (Female)
- Chlamydia: 5% (Overall), 4% (Male), 7% (Female)

Ever

- Herpes: 4% (Overall), 1% (Male), 7% (Female)
- Genital Warts: 1% (Overall), 0.1% (Male), 1% (Female)

Statistical significance: \( p = 0.03 \)
Supplemental Activity: STI Prevalence among Women aged 18-30
NYC NHBS-HET5, 2019, n=92 (Agreed to STI Testing)

*Women aged 18-30 were offered STI testing for oropharyngeal and vaginal gonorrhea and chlamydia.
## Estimated HIV Prevalence

NYC NHBS-HET5, 2019, n=497 (Tested for HIV, Confirmed Result)

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>HIV-Positive Test Result</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>497</td>
<td>1.1%</td>
</tr>
<tr>
<td><strong>Lifetime Risks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HET only</td>
<td>497</td>
<td>1.0%</td>
</tr>
<tr>
<td>HET &amp; MSM(^1)</td>
<td>9</td>
<td>9.0%</td>
</tr>
<tr>
<td>HET &amp; PWID(^2)</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>266</td>
<td>1.6%</td>
</tr>
<tr>
<td>Female</td>
<td>231</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

\(^1\)MSM in lifetime, but not in the past 12 months.

\(^2\)PWID in lifetime, but not in the past 12 months.
## Estimated HIV Prevalence

NYC NHBS-HET5, 2019, n=497 (Tested for HIV, Confirmed Result)

<table>
<thead>
<tr>
<th></th>
<th>Unweighted Sample Size</th>
<th>HIV-Positive Test Result</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>497</td>
<td>1.1%</td>
<td>0.0% - 2.3%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>153</td>
<td>0.4%</td>
<td>0.0% - 1.1%</td>
</tr>
<tr>
<td>Black</td>
<td>331</td>
<td>1.5%</td>
<td>0.0% - 3.3%</td>
</tr>
<tr>
<td>White</td>
<td>6</td>
<td>0%</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>0%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>200</td>
<td>0.4%</td>
<td>0.0% - 1.2%</td>
</tr>
<tr>
<td>30-39</td>
<td>102</td>
<td>2.2%</td>
<td>0.0% - 6.5%</td>
</tr>
<tr>
<td>40-49</td>
<td>79</td>
<td>1.4%</td>
<td>0.0% - 4.1%</td>
</tr>
<tr>
<td>50-60</td>
<td>116</td>
<td>1.1%</td>
<td>0.0% - 2.5%</td>
</tr>
</tbody>
</table>
Summary

- The sample of heterosexually active adults at increased risk for HIV (HET) were almost all Black or Latino and a high proportion were living at or below the Federal Poverty Level.

- 87% of the sample reported condomless vaginal or anal sex in the past 12 months.
  - Although men reported more sex partners than women, women were more likely to report having had sex with someone who had been incarcerated.

- Non-injection drug use (with the exception of marijuana) was low.
Summary

• Uptake of HIV prevention methods was low
  – Compared to MSM and PWID NHBS samples, the HET sample reported lower levels of lifetime and recent HIV testing
  – Only 37% were aware of PrEP, with only 2% reporting recent use.

• Overall, HIV prevalence (1.1%) was lower than in the general NYC population (1.5%)
  • There were no statistically significant differences in HIV prevalence by gender, race/ethnicity, or age.
  • The higher HIV prevalence among men compared to women may be due to the higher HIV prevalence among men who reported a history of having sex with other men.
  • By race/ethnicity, Black people had the highest prevalence of HIV.
  • Prevalence did not increase with age; people aged 30-39 years had the highest prevalence.
NYC National HIV Behavioral Surveillance Team – HET5

NYC Department of Health

Principal Investigator
Sarah Braunstein, PhD
Project Director
Alexis Rivera, MPH
Project Coordinator
Sidney Carrillo, MPH
Study Operations Supervisor
Pablo Martinez

Data Collection Team
Allie Bullock
Hasani Escobar
Carolyn Hernandez
Janell Johnson-Dash
Leandro Santos
Evelyn Silva

CDC
Dita Broz, PhD
Cyprian Wejnert, PhD
Contact

Alexis Rivera, MPH
NHBS Project Director
HIV Epidemiology Program
Bureau of HIV
NYC Department of Health and Mental Hygiene
Email: arivera6@health.nyc.gov