AFRICAN AMERICANS AND HIV (Overview)

- Epidemiology: Distribution of AIDS among U.S. racial/ethnic minorities
- Heterosexual HIV infection: what factors contribute to the racial disparity in the U.S?
- Role of sexual networks in STI transmission
AFRICAN AMERICANS AND HIV (Overview 2)

• Distribution of concurrent partnerships among women in the U.S.
• Concurrent partnerships among African Americans in the Southeast
• Potential effects of contextual features of the environment on heterosexual HIV transmission among African Americans
• The adverse social and economic environment in which many African Americans live fosters HIV transmission by interfering with stable partnering and by increasing sexual network patterns which enhance population STI transmission.
Estimated* AIDS Incidence in Racial/Ethnic Minorities**
January 1986 - December 2001, United States

*Adjusted for reporting delays
**Includes Black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native persons with AIDS
Proportion of AIDS Cases, by Race/Ethnicity and Year of Report, 1985 – 2001, United States

- White, not Hispanic
- Black, not Hispanic
- Hispanic
- Asian/Pacific Islander
- American Indian/Alaska Native

% of Cases

Year of Report

1985 1987 1989 1991 1993 1995 1997 1999 2001
AIDS in Blacks and Hispanics

Of the 816,149 AIDS cases reported to CDC through 2001, blacks and Hispanics accounted for

57% of total
78% of women
79% of heterosexuals*
82% of children

Of AIDS cases reported in 2001, 68% were among black and Hispanic adults and adolescents.

*Heterosexual injection drug users and persons with heterosexually acquired HIV
<table>
<thead>
<tr>
<th>Exposure category</th>
<th>White not Hispanic</th>
<th>Black not Hispanic</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men who have sex with men (MSM)</td>
<td>243,806 70%</td>
<td>97,325 30%</td>
<td>57,007 37%</td>
</tr>
<tr>
<td>Injection drug use (IDU)</td>
<td>45,837 13%</td>
<td>124,688 39%</td>
<td>58,607 38%</td>
</tr>
<tr>
<td>MSM and IDU</td>
<td>27,281 8%</td>
<td>18,794 6%</td>
<td>8,883 6%</td>
</tr>
<tr>
<td>Heterosexual contact</td>
<td>22,823 7%</td>
<td>72,432 23%</td>
<td>26,159 17%</td>
</tr>
<tr>
<td>Other/not identified**</td>
<td>10,323 3%</td>
<td>7,432 2%</td>
<td>2,439 2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>350,070</td>
<td>320,671</td>
<td>153,095</td>
</tr>
</tbody>
</table>

*Data adjusted for reporting delays and redistribution of cases initially reported without risk information, as of December 2002

**Includes patients with hemophilia or transfusion-related exposures and those whose medical record review is pending; patients who died, were lost to follow-up, or declined interview; and those with other or undetermined modes of exposure
### Estimated* AIDS Cases in Adults and Adolescents by Exposure Category and Race/Ethnicity, Diagnosed through December 2001, United States

<table>
<thead>
<tr>
<th>Exposure category</th>
<th>Asian/Pacific Islander</th>
<th>American Indian/Alaska Native</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Men who have sex with men (MSM)</td>
<td>4,178</td>
<td>66</td>
</tr>
<tr>
<td>Injection drug use (IDU)</td>
<td>682</td>
<td>11</td>
</tr>
<tr>
<td>MSM and IDU</td>
<td>242</td>
<td>4</td>
</tr>
<tr>
<td>Heterosexual contact</td>
<td>908</td>
<td>14</td>
</tr>
<tr>
<td>Other/not identified**</td>
<td>365</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>6,374</td>
<td></td>
</tr>
</tbody>
</table>

*Data adjusted for reporting delays and redistribution of cases initially reported without risk information, as of June 2002.

**Includes patients with hemophilia or transfusion-related exposures and those whose medical record review is pending; patients who died, were lost to follow-up, or declined interview; and those with other or undetermined modes of exposure.
AIDS Cases Reported in 2001 and Estimated 2001 Population, by Race/Ethnicity, United States

AIDS Cases
N=43,158*

- White, not Hispanic: 49%
- Black, not Hispanic: 19%
- Hispanic: 31%
- Other: <1%

Population
N=289,282,000

- White, not Hispanic: 69%
- Black, not Hispanic: 12%
- Hispanic: 14%
- Asian/Pacific Islander: 1%
- American Indian/Alaska Native: 1%
- Other: 4%

*Includes 57 persons with unknown race/ethnicity
Estimated* Percent Distribution of AIDS Cases in Male Adults and Adolescents, by Exposure Category and Race/Ethnicity, Diagnosed through December 2001, United States

*Data adjusted for reporting delays and estimated proportional redistribution of cases reported without a risk

**Includes patients with hemophilia or transfusion-related exposures and those whose medical record review is pending; patients who died, were lost to follow-up, or declined interview; and those with other or undetermined mode of exposure
Estimated* Percent Distribution of AIDS Cases in Female Adults and Adolescents, by Exposure Category and Race/Ethnicity, Diagnosed through December 2001, United States

*Data adjusted for reporting delays and estimated proportional redistribution of cases reported with a risk
**Includes patients with hemophilia or transfusion-related exposures and those whose medical record review is pending; patients who died, were lost to follow-up, or declined interview; and those with other or undetermined modes of exposure
AIDS Cases in Adults and Adolescents, by Sex and Race/Ethnicity, Reported in 2001, United States

- **White, not Hispanic**
  - Male: 13,895 thousand
  - Female: 7,023 thousand

- **Black, not Hispanic**
  - Male: 11,164 thousand
  - Female: 1,894 thousand

- **Hispanic**
  - Male: 6,289 thousand
  - Female: 2,040 thousand

- **Asian/Pacific Islander**
  - Male: 358 thousand
  - Female: 69 thousand

- **American Indian/Alaska Native**
  - Male: 152 thousand
  - Female: 42 thousand

*Includes cases with unknown race/ethnicity"
Estimated Number of Persons Living with AIDS, 1993-1998, by Region, United States
Proportion of AIDS Cases, by Race/Ethnicity and Year of Report, 1985 - 2000, United States
Reasons for Racial Disparity in HIV?

- Prevalence of HIV
- Prevalence of risk behaviors
- Access to and use of treatment that delays progression of HIV infection to AIDS
HETEROSEXUAL HIV: Black-White Disparity

• Differences in prevalence of individual high-risk sexual behaviors not clearly established
• SES - likely contributes, but racial disparities in STIs persist after controlling for SES
SEXUAL NETWORKS

• Set of people linked directly or indirectly by sexual contact
• Pattern of linkages is of critical importance in STI transmission
• More mixing between high and low (sexual) activity classes among blacks (Laumann) - a pattern that facilitates STI spread
• Prevalence of concurrent partnerships?
CONCURRENT SEXUAL PARTNERSHIPS

• Sexual partnerships that overlap in time
  – Permit more rapid spread of an STI throughout a population
  – Individual infected by 1 partner already has others to infect
  – Earlier partners are put at risk by individual’s subsequent partners

Marital Status by Ethnicity

SEXUAL NETWORK COMPONENTS AMONG AFRICAN AMERICANS IN THE RURAL SOUTH

• Hypothesis
  – Concurrency is reported more frequently by Blacks in rural North Carolina than by the general population.
SELECTION OF SUBJECTS

• Randomly selected from NC Driver’s License file
  • African American men and women, aged 18-59
  • Resided in 13 rural Eastern NC counties
  • Counties chosen for high proportions of African Americans
  • and high STI/HIV rates among African Americans
STUDY PROCEDURES

- Potential subjects contacted by letter, telephone
- Study nurse went to subjects’ homes
- Informed consent
- Administered standardized interview questionnaire (~1 hr)
- Collected blood specimen
- Provided financial incentive
STUDY INSTRUMENT

• Standardized interview
  – Demographic data
  – Sexual risk behaviors
  – Timing of sexual partnerships, including date of first and last intercourse for last 3 sexual partnerships
  – Respondent’s estimate of likelihood that partner had had other sexual partners during relationship with the respondent
  – Drug use of respondent and partners
SUBJECT RECRUITMENT

- 1,063 sampled from Driver’s License file
- 697 could not be located (>50% due to out of date or incorrect addresses)
- 101 refused to participate
- 22 unavailable (illness or incarceration)
- 17 ineligible (age, not black, gay, IDU, HIV+)
- 226 interviewed and eligible
STUDY POPULATION

MALES  78

FEMALES  148

AGE RANGE  19-61

MEDIAN AGE  37
Demographic Characteristics

- Married
- Employed full-time
- Annual HH Income <$16K
- < HS Education

Controls
## Sexual History

<table>
<thead>
<tr>
<th></th>
<th>MALES</th>
<th>FEMALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median lifetime #partners</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>% with &gt;1 partner in past yr</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td>Age sexual debut</td>
<td>15</td>
<td>16</td>
</tr>
</tbody>
</table>
### Risk Behaviors

<table>
<thead>
<tr>
<th>Behavior</th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traded sex</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Smoked crack</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Crack/snorted cocaine/heroin</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>&gt;5 drinks/day</td>
<td>51</td>
<td>26</td>
</tr>
<tr>
<td>Unprotected sex &gt;10x</td>
<td>92</td>
<td>82</td>
</tr>
</tbody>
</table>
## Partner Risks

<table>
<thead>
<tr>
<th>Activity</th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU - very likely</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Partner traded sex</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Crack - very likely</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

Controls
Incarceration (> 24 hours in past 10 years)

<table>
<thead>
<tr>
<th></th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>incarcerated</td>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td><strong>Partner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>incarcerated</td>
<td>14</td>
<td>54</td>
</tr>
</tbody>
</table>
Concurrency Prevalence (%)
## Concurrency Odds Ratios

<table>
<thead>
<tr>
<th></th>
<th>MALES</th>
<th>FEMALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital status</td>
<td>4.2 (1.6, 11.0)*</td>
<td>1.9 (0.9, 4.1)</td>
</tr>
<tr>
<td>Income &lt; $16K</td>
<td>2.6 (0.8, 8.6)</td>
<td>1.8 (0.8, 4.2)</td>
</tr>
<tr>
<td>&lt; High School</td>
<td>1.1 (0.3, 3.5)</td>
<td>1.3 (0.5, 3.2)</td>
</tr>
<tr>
<td>Past incarceration</td>
<td>5.3 (1.6, 17.8)*</td>
<td>1.7 (0.4, 7.9)</td>
</tr>
<tr>
<td>Partner incarceration</td>
<td>2.7 (0.7, 11.3)</td>
<td>3.0 (1.4, 6.4)*</td>
</tr>
</tbody>
</table>

Controls
## Concurrency Odds Ratios

<table>
<thead>
<tr>
<th></th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10 Partners (life)</td>
<td>1.8 (0.7, 4.5)</td>
<td>2.9 (1.3, 6.4)*</td>
</tr>
<tr>
<td>Crack or snorted cocaine/heroin</td>
<td>2.4 (0.4, 13.4)</td>
<td>7.5 (1.4, 38.7)*</td>
</tr>
<tr>
<td></td>
<td>MEN</td>
<td>WOMEN</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Partner had other partners</td>
<td>4.5 (1.7, 11.9)*</td>
<td>11.3 (3.3, 38.7)*</td>
</tr>
<tr>
<td>Partner had STD</td>
<td>4.4 (0.9, 22.1)</td>
<td>3.6 (1.6, 8.2)*</td>
</tr>
<tr>
<td>Respondent traded sex</td>
<td>7.4 (0.9, 63.4)</td>
<td>2.3 (0.5, 9.7)</td>
</tr>
</tbody>
</table>
Concurrency Odds Ratios: Men & Women, Multiple Regression
### Sexual Partners

<table>
<thead>
<tr>
<th></th>
<th>Median Lifetime Partners</th>
<th>% with ≥2 Partners in Past Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Cases</td>
<td>20</td>
<td>56</td>
</tr>
<tr>
<td>Male Controls</td>
<td>15</td>
<td>42</td>
</tr>
<tr>
<td>Female Cases</td>
<td>8</td>
<td>53</td>
</tr>
<tr>
<td>Female Controls</td>
<td>5</td>
<td>26</td>
</tr>
</tbody>
</table>

Controls
Concurrent Prevalence (%)
Summary

• Prevalence of reported concurrent sexual partnerships among Blacks in rural NC’s general population is high.

• A higher proportion of black women in NC reported concurrency than did black women in the US.

• Rates are higher among men than women.

• Potential contributing factors may include:
  – Being unmarried
  – Lower age of sexual debut
Summary (continued)

- Prevalence of concurrency is higher among those with newly acquired heterosexually transmitted HIV than among Blacks in the general population.

- This level of concurrency may markedly facilitate HIV transmission in this population.
SOCIAL CONTEXT OF SEXUAL RELATIONSHIPS AMONG RURAL AFRICAN AMERICANS

- Focus group interviews re: community life and contextual factors affecting sexual behavior
  - Pervasive economic and racial oppression, boredom, resultant substance abuse
  - Shortage of black men (increased mortality and incarceration rates)
  - Respondents believed male shortage responsible for widespread concurrency among unmarried persons

CONTEXT AFFECTS SEXUAL NETWORKS

• Low sex ratios among blacks
• Economic adversity
• Drugs - especially crack
• Incarceration
CONCLUSIONS

• Contextual factors (sex ratio, poverty, discrimination) are likely of considerable importance in influencing sexual behaviors that facilitate population HIV transmission
• “The Lord looked and was displeased that there was no justice.”

» Isaiah 59:14
CONCURRENT PARTNERSHIPS AMONG AFRICAN AMERICANS IN THE RURAL SOUTH

- Adaora A. Adimora, MD, MPH
- Victor J. Schoenbach, PhD
- Francis Martinson, MD, PhD
- Sevgi Aral, PhD
- Ward Cates, MD, MPH
- JoAnne Earp, PhD
- Robert Fullilove, EdD
- Amy Lansky, PhD
- Greg Samsa, PhD
- Stephanie Betran, RN
- Kathryn Donaldson, MPH
- Tonya Stancil, MPH
- Merritha Williams, RN
- NC HIV/STD Control Section