Will “Combined Prevention” Eliminate Racial and Ethnic Disparities in HIV Infection among Persons who Inject Drugs?

D.C. Des Jarlais1, K. Arasteh2, C. McKnight1, J. Feeleymer1, H. Hagan2, H. Cooper3, A. Campbell4, S. Tross5, D. Perlman6

1 The Baron Edmond de Rothschild Chemical Dependency Institute, Mount Sinai Beth Israel, New York City, USA, 2 College of Nursing, New York University, New York City, USA, 3 Rollins School of Public Health at Emory University, Atlanta, USA, 4 School of Psychiatry, Columbia University, New York City, USA, 5 HIV Center, New York State Psychiatric Institute, New York City, USA

BACKGROUND

• Significant racial and ethnic disparities in HIV infection exist among people who inject drugs (PWID), especially ethnic minorities1,2.
• Racial and ethnic disparities in HIV infection exist at all levels of HIV seroprevalence3.
• Combined prevention programs may be more effective at reducing these disparities than single program interventions.
• The logic of combined prevention programming is that no providing multiple interventions on a large scale will lead to greater reductions in HIV infection than can be obtained through providing any single intervention.
• New York City established prevention programs for PWID starting in 1967 which included:
  - 1967-1994: Methadone maintenance program
  - 1995-2000: Methadone maintenance and needle/syringe exchange programs
  - 2000-2006: Methadone maintenance, syringe exchange, and antiretroviral treatment (ART) programs
  - 2007-2014: Methadone maintenance, syringe exchange, antiretroviral treatment, and New York City Condom Social Marketing programs
• Combined prevention programs have reduced HIV incidence among PWIDA
• Although overall incidence has been reduced among PWID, sexual transmission remains an important factor in HIV transmission.
• With the addition of condoms to the established prevention programs for PWID, reductions should occur in sexual and while injection related transmission remains low as well.

OBJECTIVE

Assess whether the implementation of the NYC Condom social Marketing program was associated with a change in racial and ethnic disparities in HIV infection among PWID in New York City in relationship to previously established combined prevention programs.

METHODS

• Data derived from ongoing analysis of Risk Factors Study between 2007-2014.
• Participants recruited from Beth Israel Medical Center’s drug detoxification and methadone maintenance programs.
• The programs are both large (approx. 5000 admissions per year in the detoxification program and approx. 6000 patients participating in methadone treatment at any point in time) and serve New York City as a whole.
• Analysis includes PWID who had injected in the past six months.
• PWID first drug injection had to occur in 1995 or later (after established needle/syringe exchange program).

METHODS

• Research staff asked all patients recently admitted to each drug treatment program to participate.
• Response rates were above 95% among participants recruited into study.
• Questionnaire was administered to all participants that obtained information regarding drug and sexual risk behavior and use of HIV prevention services.
• HIV and HCV pretest counseling and testing provided for each participant.
• Bivariate and multivariable logistic regression analyses were used to identify factors associated with HIV seropositivity; chi-squared tests were used to examine differences across racial/ethnic groups.
• We used the model developed by Vickerman and colleagues to estimate sexual versus injecting related acquisition of HIV among PWID.

RESULTS

• Overall HIV prevalence among PWID declined over time: 9.4% total HIV seropositivity from 2007-2009, 2.2% total HIV seropositivity from 2010-2014.
• 3% of Whites seropositive.
• 9% of African-Americans seropositive.
• 2% of Hispanics seropositive.
• Seroprevalence decreased among African-Americans and Hispanics and remained low among Whites.
• No significant racial and ethnic differences in injection of heroin.
• No significant racial and ethnic differences in injection drug behavior (i.e., “receptive” versus “distributive” needle sharing).
• Racial and ethnic disparities in positive HIV serostatus: 1% White, 1.7% African-American, and 4.5% Latino.
• Gender, race and ethnicity, and year of interview significantly associated with HIV seropositivity.
• HIV not significantly associated with HIV infection (OR=1.3, 95% CI 0.6 to 2.8).
• No significant correlation between years of injection and HIV prevalence.
• A substantial percentage of HIV infections most likely occurred prior to first injection.
• 75% or more of the participants’ infections acquired through sexual transmission.
• A comparison of these results and previously published data reveals that there has been an reduction in injection among PWID through the “combined prevention” time frame:
  - African-American PWID compared to White PWID
    - 1995-2006: 4.02 AOR (95% CI 1.67 to 9.69)
    - 2007-2014: 2.10 AOR (95% CI 0.77 to 6.73)
  - Hispanic PWID compared to White PWID
    - 1995-2006: 4.50 AOR (95% CI 1.3 to 16.3)
    - 2007-2014: 4.50 AOR (95% CI 1.3 to 16.3)

TABLE ONE

Demographic and drug use characteristics of people with drug use who started injecting in 1995 or later (New York City Beth Israel Medical Center drug treatment programs)

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Total years drug use</th>
<th>Year of interview</th>
<th>Gender</th>
<th>Race and ethnicity</th>
<th>Year of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.9 (0.9 – 1.0)</td>
<td>0.7 (0.6 – 0.8)</td>
<td>Male</td>
<td>White</td>
<td>0.7 (0.6 – 0.8)</td>
</tr>
<tr>
<td>African-American</td>
<td>0.9 (0.9 – 1.0)</td>
<td>0.7 (0.6 – 0.8)</td>
<td>Female</td>
<td>African-American</td>
<td>0.7 (0.6 – 0.8)</td>
</tr>
<tr>
<td>Latino/a</td>
<td>0.9 (0.9 – 1.0)</td>
<td>0.7 (0.6 – 0.8)</td>
<td>Male</td>
<td>Latino/a</td>
<td>0.7 (0.6 – 0.8)</td>
</tr>
<tr>
<td>Total</td>
<td>0.9 (0.9 – 1.0)</td>
<td>0.7 (0.6 – 0.8)</td>
<td>Female</td>
<td>Total</td>
<td>0.7 (0.6 – 0.8)</td>
</tr>
</tbody>
</table>

TABLE TWO

Univariate and Multivariate logistic models of HIV infection among PWID who began injecting in 1995 or later (New York City Beth Israel Medical Center drug treatment programs)

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Univariate</th>
<th>Multivariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>African-American</td>
<td>20.0</td>
<td>7.2</td>
</tr>
<tr>
<td>Latino/a</td>
<td>10.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Multivariate</td>
<td>4.4 (1.3 – 13.6)</td>
<td>4.4 (1.2 – 15.0)</td>
</tr>
</tbody>
</table>

DISCUSSION

• Due to the lack of correlations between injection drug use and HIV or HCV infection, it appears that the majority of new HIV infections are occurring through sexual transmission.
• Sexual transmission of HIV may have occurred prior to the participants’ first injection, during their period of non-injection drug use.
• Herpes simplex virus type 1 (HSV-1/2), facilitates the acquisition and transmission of HIV, and is strongly associated with injection and ethnic disparities in HIV infection among non-injection drug users (NIDU) in NYC.

Future Directions

• Addressing racial and ethnic disparities among the NDU NYC population may reduce HIV racial and ethnic disparities among PWID.
• NYC Treatment as Prevention (TasP) protocol offers antiretroviral treatment to all HIV seropositives in the city may be a promising step towards addressing racial and ethnic disparities in HIV among PWID and NIDU.

LIMITATIONS

• We do not have data on when HIV seronegatives became infected with HIV (and when HIV seropositives might have left the active injection population due to either cessation of injection or to death) or death.
• We do not have behavior data on HIV seronegatives and HIV seropositives and risk network factors at the actual times of HIV transmission (cannot directly compare acquisition and transmission risk behaviors and risk network factors among the groups).

CONCLUSION

• Racial and ethnic disparities in HIV infection have persisted among PWID in NYC despite successful implementation of combined prevention programs.
• The goal to reduce racial and ethnic disparities for PWID was not achieved.
• The achievement of an “AIDS free generation” in which there are “very few” new HIV infections among adults of all racial and ethnic groups.

REFERENCES

(4) Rollins School of Public Health at Emory University, Atlanta, USA, 5 School of Psychiatry, Columbia University, New York City, USA, 6 HIV Center, New York State Psychiatric Institute, New York City, USA

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