**Background:** HIV prevention interventions in the U.S. have failed to reduce racial disparities. Here, we evaluate individual and network factors associated with racial disparities in HIV prevalence among people who inject drugs using HIV Prevention Trial Network (HPTN) 037 data, Philadelphia, 2002.

**Methods:** We measured racial consistency (all members share the same race), drug and sex risk behavior, and being in an HIV+ network (network with ≥ 1 member who is HIV+). A logistic regression with a two level random intercept evaluated the association between being in an HIV+ network adjusting for individual and network-level factors.

**Results:** Data from 232 egocentric networks of 232 index participants and 446 network members were included in the analysis. Racial consistency was high among blacks (79%) and whites (70%); 27% of all-black, 14% of all-white and 23% of racially mixed networks were in HIV+ networks. Sex risk was similar across networks but needle sharing was significantly lower in all-black (23%) compared to all-white (48%) and racially mixed networks (46%). All-black (AOR 3.6, 95% CI 1.4-9.5) and racially mixed networks (AOR 2.0, 95% CI 1.1-3.7) were more likely to be in HIV+ networks; other associated factors included homelessness (AOR 2.0, 95% CI 1.2-3.2), recent incarceration (AOR 0.4, 95% CI 0.2-0.7) and cocaine injection (AOR 1.7, 95% CI 1.0-2.7). Risk behaviors were not associated with being in an HIV+ network.

**Conclusion:** Despite having lower drug risk behavior, all-black networks were disproportionately in networks of HIV prevalence. HIV prevention interventions need to go beyond individual risk behaviors and consider social context and the composition of risk networks.

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**ABSTRACT**

**INTRODUCTION**

- Racial disparities in the HIV epidemic are worsening: HIV incidence is 8 times higher among blacks than whites.
- Risk network characteristics and HIV prevalence within networks play a critical role in the spread of HIV.
- Using 2002 baseline HPTN 037 data, we aimed to evaluate the association between: individual demographic, socio-economic/social determinant and network-level factors associated with being in an HIV positive network.

- We hypothesized that HIV risk is a function of the interaction between individual risk behavior and HIV prevalence within one's network and that persistence of racial disparities in HIV prevalence can be explained by racial homogeneity among networks where HIV prevalence exists.

**RESULTS**

- **Table 1:** Association Between Being in an HIV Positive Network, Individual and Network Characteristics in Unadjusted and Adjusted Logistic Regression Model with Random Intercept

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Black Networks</th>
<th>All White Networks</th>
<th>Racially Mixed Networks</th>
<th>p-value&lt;br&gt;Unadjusted</th>
<th>p-value&lt;br&gt;Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>242(5.5)</td>
<td>170(6.5)</td>
<td>15(0.8)</td>
<td>0.000</td>
<td>1.1(0.8)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>242(5.5)</td>
<td>170(6.5)</td>
<td>15(0.8)</td>
<td>0.000</td>
<td>1.1(0.8)</td>
</tr>
<tr>
<td>Homelessness (ref.未曾)</td>
<td>242(5.5)</td>
<td>170(6.5)</td>
<td>15(0.8)</td>
<td>0.000</td>
<td>1.1(0.8)</td>
</tr>
<tr>
<td>Needle sharing (ref.未曾)</td>
<td>242(5.5)</td>
<td>170(6.5)</td>
<td>15(0.8)</td>
<td>0.000</td>
<td>1.1(0.8)</td>
</tr>
<tr>
<td>Number of individuals</td>
<td>53(22.8)</td>
<td>55(24.0)</td>
<td>13(17.4)</td>
<td>0.009</td>
<td>1.0(0.9)</td>
</tr>
</tbody>
</table>

**CONCLUSION**

- In this large cohort of drug and sex networks, we found significant racial differences in HIV prevalence: the prevalence of HIV among blacks was more than double that of whites and in the multivariable logistic regression, being in an all-black network was strongly associated with being in an HIV+ network.
- The disproportionately high prevalence of HIV among black networks and the racial homogeneity for drugs and sex partnerships among these networks create an environment where the risk of HIV transmission is much higher even if black network members engage in minimal risk behaviors.
- Our results suggest that interventions targeting individual drug and sex risk behaviors would yield minimal impact in reducing racial disparities compared to interventions at the level network including treatment of HIV+ individuals and pre-exposure prophylaxis (PrEP) for those at risk for HIV.

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