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Factors associated with recruiting an HIV seropositive risk network member among injection drug users

Carl A Latkin, Cui Yang, Karin Tobin, and Alicia Hulbert

Abstract

Using a social network approach to recruitment, we analyzed the factors that predicted recruitment of an HIV seropositive network member by active injection drug users (IDUs). IDUs were asked to bring in drug and sex network members, whom they delineated on a social network inventory. The 297 index participants recruited 425 networks, of whom 17.3% were seropositive. The majority of seropositive members were recruited by IDUs who reported no seropositive risk network members. The strongest predictor of recruiting seropositives was ethnicity, with African American indexes more than 3 times more likely than others to recruit seropositives. Those African American indexes who reported that they had no seropositive network members were over 10 times more likely to recruit a seropositive. These results suggest the feasibility to target active drug users to recruit seropositives and emphasize the public health importance of focusing network approaches on the networks of African American IDUs.

Keywords

HIV; Social Network; HIV testing; injection drug use; recruitment; seropositives

It is critical to identify HIV seropositives in order to provide them with prevention interventions and medical care. If individuals are unaware of their positive serostatus, they may focus on avoiding infection rather than transmission and continue engaging in behaviors that place their partners at risk of infection.¹ For examples, reducing the number of sexual partners to only one main partner is a viable risk reduction strategy if neither partner is infected. However, if one partner is infected, the other is a high risk. Among seropositive injection drug users (IDUs) who share syringes, injecting last is a viable prevention strategy for seropositives but not for seronegatives.

Not all injectors are at equal risk for HIV transmission. Individual and social factors that predict HIV serostatus among IDUs include use of shooting galleries, injecting cocaine, frequency and years of injecting, homelessness, incarceration, and methadone treatment.^{2–4} Personal and social network factors have also been linked to HIV serostatus and risk behaviors.^{5–8} A community-based program provided a brief training to peer recruiters (N=97) in combination with an oral HIV test found an increase of HIV testing in a minority community.⁹ One pilot social network project targeting the identification of syphilis cases reported the additional advantage of identifying HIV seropositives who were unaware of their serostatus.¹⁰ A recent CDC study utilized a social network approach to find seropositives.¹¹ In seven cities, 422 high-risk individual recruited 3,172 network members, of whom 177 were determined to be HIV positive.¹¹ The HIV prevalence of these recruited network members was 5.6%. The authors also examined the relationship between a limited set of demographic and risk factors and HIV

prevalence of network members. They found that HIV positives recruited more positives (6.8% vs. 4.4%). The goal of the present analyses were to identify a range of index factors, including sociodemographic background, risk behaviors, and health service utilization that predict the recruitment of a seropositive risk network member among IDUs who recruited risk network members to become eligible for an HIV prevention intervention.

Methods

The data for this study were collected at baseline from a social network oriented HIV prevention intervention for IDUs and their risk network members in Baltimore, Maryland. Participants were recruited in neighborhoods with high concentrations of drug use and sales. Two types of participants were enrolled: indexes and networks. Index eligibility included: 18 years and older; resided in Baltimore; not participated in HIV or network studies in the past year; injected drugs in the past 3 months; and willing to talk to others about HIV prevention. Index participants who met the initial eligibility requirements were informed that to enroll in the intervention, which involved skills building training in small group sessions, they were required to recruit at least one drug or sexual network member whom they had previously listed on their social network inventory. The interviewer provided the participants with up to five cards that had the initials of those network members who were eligible for the study. When the network members arrived at the clinic, their identification was verified with the information provided by the index about the network member. Network members were eligible for the study if they were 18 years of age or older. The network members were recruited to assess the intervention diffusion. They were administered the assessments instruments but did not receive the behavioral intervention.

All participants (index and network) completed baseline interviews. The social network data were collected using the Drug and Support Inventory which has been shown to have predictive validity and internal consistency.⁸ The first section of this inventory was designed to generate names of people in their social support network. This name generating section entailed respondents listing the names (first and last initials) of individuals who provided emotional, material, and informational support. The next set network questions delineated drug network with the question “*Who are the people that you do drugs with?*” Probes to the drug network included questions such as: “*When you use drugs with [NAME], who else is usually there; Who do you consider your running buddy; Who did you do drugs with last month; Think about the place where you copped last week and the people who you were with; and Who are the people that you regularly buy or use drugs with?*” After the drug network participants were asked to list their sexual network during the prior six months. At the end of the name-generating section, participants were asked to list the type and frequency of drugs used among their network members. Participants also reported on the network members’ age, gender, and HIV status.

Sociodemographic characteristics included age, gender, race/ethnicity, unemployment, monthly income, education, relationship status, homelessness and sexually transmitted infection (STI) history. HIV status was determined by OraSure HIV oral specimen antibody tests and self-reports. Depressive symptoms were assessed by the CES-D.¹² Health services included questions on use of methadone and needle exchange programs. Respondents were asked about their drug use and use of unhygienic syringes in the past six months. The primary outcome of interest was recruiting at least one seropositive network member. Variables that were statistically significant in the bivariate analyses were included in multivariate logistic regressions used by Stata 10.0. To detect the consistency and magnitude of different predictors, three multivariate logistic regression models were conducted among 1) all indexes, 2) the subset of indexes who reported no seropositive network members on the Drug and Support Inventory, and 3) the subset of indexes who recruited at least one network members. Participants were

compensated with \$35. Index participants were paid \$10.00 for recruiting each network member with a maximum payment of \$50. All protocols were approved by the JHUSPH IRB.

Results

Of 600 indexes, 85.0% reported that they did not have any seropositive network members. There were 297 (49.5%) indexes who recruited at least one network member for a total of 425 networks, with 63 indexes recruiting one seropositive and 5 indexes recruiting two seropositives, and 17.2% of network members were seropositive. The sample demographic characteristics are presented in table 1. Most (n=49; 72.1%) of seropositive network members were recruited by indexes who did not report any seropositive risk network members. The multivariate analyses in table 1 present three groups: (1) all indexes (N=600); (2) indexes who reported no seropositive network members (N=510), and (3) indexes who recruited one or more network members (N=297). African Americans had high odds of recruiting seropositives (Adjusted Odds Ratio (AOR) ranges 3.6–10.1). History of more than one STIs (AOR ranges 2.1–3.3), and attendance at methadone and needle exchange program (AOR ranges 1.8–2.6), were strongly associated with recruiting seropositives. Indexes' HIV serostatus was also significant among two of the three subgroups (AOR=2.2 among all indexes; AOR=4.1 among indexes who brought in networks). Surprisingly, self-reported needle sharing (AOR=0.5 among all indexes; AOR=0.5 among indexes who brought in networks) and daily heroin injecting (AOR=0.6 among all indexes; AOR=0.4 among indexes who reported no seropositive network members) were negative associated with recruiting seropositives for two of the three groups.

Conclusions

In the present study, most of the index participants who recruited seropositive network members did not report any seropositive risk network members. These results support the findings by Kimbrough, et al.¹¹ who found that seropositive were more likely than seronegative to recruit seropositive network members. However, the strength of association between ethnicity and recruiting seropositives was much stronger in this study. Enrollment in methadone drug treatment or needle exchange and STI history were also strong predictors of recruiting seropositives.

The findings are limited by the sampling methods, self-report data, and that it was designed with minimal incentives to recruit more than one network member. Moreover, we did not detect recent seroconverters or have information about duration of infection. The findings suggest that to reach seropositive IDUs, it may be fruitful to engage methadone clinic and needle exchange clients in recruiting risk network members. These results also indicate that intervention for positives should emphasize the African American community. Additionally, the study findings suggest that programs are able to find HIV seropositives by involving active drug users and other community members in the recruitment process. However, as many IDUs did not know that their network members were seropositive, it may not be fruitful to request them to recruit seropositives.

Acknowledgments

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TABLE 1

Sociodemographic, health status, service use and drug use behaviors, bivariate and multivariate associations with recruiting at least one HIV seropositive network member among STEP study indexes, Baltimore, Maryland

	All indexes N(%)	All indexes Unadjusted OR (95%CI) (n=600)	All indexes Adjusted OR (95%CI) (n=600)	Indexes who reported no seropositive network members Adjusted OR (95% CI) (n=510)	Indexes who brought in networks Adjusted OR (95%CI) (n=297)
<i>Sociodemographic background</i>					
Age					
>=42	326(54.3)	1.32(0.79,2.20)			
<42	274(45.7)				
Gender					
Female	233(38.8)	1.20(0.72,1.99)			
Male	367(61.2)				
Race/ethnicity					
African American	482(80.3)	5.98(1.84,19.36)**	3.58(1.07,12.04)*	10.09(1.33,76.16)*	3.91 (1.07,14.26)*
White, Hispanic, Asian and others	118(19.7)				
Employment					
Unemployed	505(84.2)	1.10(0.54,2.24)			
Employed	95(15.8)				
Monthly income					
>=\$500	284(47.7)	0.79(0.48,1.32)			
<\$500	311(52.3)				
Highest education					
At least 12th/high school diploma	263(43.8)	1.08(0.65,1.80)			
Grade (1-11)	337(56.2)				
Relationship status					
Married or in a committed relationship	175(29.2)	2.11(1.26,3.53)**	1.85(1.06,3.24)*	1.91(0.99, 3.68) +	1.67(0.86,3.22)
Single, divorced, separated or widowed	425(70.8)				
Homeless [#]					
Yes	241(40.2)	0.50(0.28,0.88)*	0.74(0.40,1.37)	0.70(0.34,1.43)	0.70(0.35,1.41)
No	359(59.8)				
<i>Health status</i>					

	All indexes N(%)	All indexes Unadjusted OR (95%CI) (n=600)	All indexes Adjusted OR (95%CI) (n=600)	Indexes who reported no seropositive network members Adjusted OR (95% CI) (n=510)	Indexes who brought in networks Adjusted OR (95%CI) (n=297)
Number of STIs					
None	308(51.3)				
1 STI	157(26.2)	1.20 (0.61,2.34)	1.25(0.62,2.54)	1.14(0.52, 2.49)	1.50(0.68,3.33)
>1 STIs	135(22.5)	2.96(1.65,5.30) ***	2.92(1.56,5.49) **	2.14(1.00, 4.57) *	3.33(1.60,6.91) **
Self report HIV serostatus					
HIV seropositive	86(14.3)	2.69(1.49,4.85) **			
HIV seronegative	514(85.7)				
Orasure result					
Seropositive	71(13.4)	2.52(1.32,4.82) **			
Seronegative or undermined	458(86/6)				
HIV serostatus					
HIV seropositive (self report or orasure)	106(17.7)	2.55(1.46,4.46) **	2.20(1.20,4.03) *	1.52(0.67,3.48)	4.10(1.91,8.80) ***
Others	494(82.3)				
CES-D					
>16	393(65.5)	0.52(0.31, 0.86) *	0.57(0.33,1.00) *	0.52(0.28,0.98) *	0.40(0.21,0.78) **
<=16	207(34.5)				
Service use					
Ever attended methadone and NE program					
Yes	125(20.8)	1.84(1.05, 3.21) *	1.83 (1.00,3.35) *	2.19(1.12, 4.31) *	2.62(1.25,5.46) *
No	475(79.2)				
Injection behaviors					
Injected heroin daily [#]					
Yes	292(48.7)	0.54(0.32,0.91) *	0.56(0.31,0.98) *	0.44 (0.23,0.86) *	0.61(0.32,1.17)
No	308(51.3)				
Sniff heroin daily [#]					
Yes	373(62.2)	0.85(0.51,1.43)			
No	227(37.8)				
Smoke crack daily [#]					

	All indexes N(%)	All indexes Unadjusted OR (95%CI) (n=600)	All indexes Adjusted OR (95%CI) (n=600)	Indexes who reported no seropositive network members Adjusted OR (95% CI) (n=510)	Indexes who brought in networks Adjusted OR (95%CI) (n=297)
Yes	365(60.8)	1.51(0.88,2.59)			
No	235(39.2)				
Inject speedball daily [#]					
Yes	233(38.8)	1.10(0.65,1.86)			
No	367(61.2)				
Used dirty needles [#]					
Yes	218(36.3)	0.38(0.20, 0.70) **	0.48(0.24,0.94) *	0.52(0.24,1.16)	0.45 (0.21,0.96) *
No	382(63.7)				

[#] In the past 6 months

+ p<.10,

* p<.05,

** p>.01,

*** p<.001