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Outreach in Natural Settings: The Use of Peer Leaders for HIV Prevention among Injecting Drug Users' Networks

SYNOPSIS

Objective. Guided by a social influence and empowerment framework, peer leaders in the injecting drug user (IDU) community were trained to promote human immunodeficiency virus (HIV) prevention among their contacts within and beyond their sex and drug networks.

Methods. From 1994 to 1995 in Baltimore, Maryland, 36 peer leaders who participated in the 10-session training program were administered pretest and posttest surveys. Evaluation included leaders' self-reported HIV-related behaviors and outreach activities. Survey data also were collected from 78 of the leaders' risk network members .

Results. Peer leaders reported a significant increase in condom use and in cleaning used needles with bleach. The leaders' risk network members, compared with controls, were significantly more likely to report greater needle hygiene. In an assessment of diffusion of information, the majority of risk network members who were current injectors reported receiving needle-cleaning materials from the leaders, and the majority of risk network members were able to correctly identify the HIV prevention slogans that had been taught to the leaders. The leaders documented 2165 HIV prevention interactions, of which 84% were with active drug users.

Conclusions. The results from this study suggest that, in the IDU community, training peer leaders as HIV educators may promote HIV prevention among the leaders' risk network members and others at risk of acquiring and transmitting HIV. This training also may provide the leaders with effective prosocial roles.

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The Institute of Medicine publication *AIDS and Behavior: An Integrated Approach* reports that social-contextual factors have been neglected in the current theoretical models of behaviors related to human immunodeficiency virus (HIV) transmission.[1] There is ample evidence that HIV risk behaviors among injecting drug users (IDUs) are influenced by social factors. Friedman and colleagues found that friends' HIV-related behaviors were the strongest predictors of behavioral change; friends' risk behavior was a stronger determinant of risk reduction than was knowledge about acquired immunodeficiency syndrome (AIDS), education level, or knowing someone with HIV or AIDS.[2] Magura and colleagues also reported that friends' attitudes are a strong determinant of needle sharing.[3] Des Jarlais and associates examined factors associated with behavior change among IDUs in cities in Brazil, Thailand, Scotland, and the United States.[4] In all four locations, talking about AIDS with drug-using friends was associated with self-reported behavioral risk reduction.

Social network methodology is one approach to assessing social influence and social environments. Individuals' needle sharing has been found to be associated with characteristics of their personal and social networks,[5,6] and HIV serostatus has been found to be associated with network structure.[7,8] The findings that peers' behaviors and network characteristics are associated with individual risk behaviors suggest that social factors merit closer examination.

HIV prevention interventions have typically focused on the individual, often ignoring social determinants of HIV risk behaviors.[9] Capitalizing on natural social influence processes may be an effective approach to HIV behavioral change among drug users, given past successes in related programs.[10,11] In a comprehensive review on drug use prevention programs for adolescents, Hansen concluded that the programs based on social influence models had predominantly positive effects.[12] Several school-based interventions also have shown promising results in reducing HIV-related behaviors.[13–15] The observed community-wide risk reduction among gay men in San Francisco also suggests that social influence can be an important method in behavioral risk reduction.[16]

One strategy of affecting social influence is through the use of opinion leaders. Kelly and colleagues reported success in reducing HIV risk behaviors among gay men by training their opinion leaders, identified in bars, to deliver HIV and AIDS prevention messages.[17] In contrast, inner-city IDUs, who are our target population, are predominantly poor and unemployed, with markedly different social structures from the gay groups studied by Kelly. However, both gays and IDUs report that social factors influence their health behaviors.[9]

One approach employed in HIV prevention among IDUs is street outreach. Watters and colleagues found in San Francisco that outreach workers were the most frequent source of information on bleach for disinfecting needles.[18] Friends were the second most common source of information. Although several studies suggest that street outreach is effective in reducing risk behaviors,[19–22] some researchers have found that outreach is more effective for individuals who are at lower risk for HIV.[23] In a review of community-oriented HIV outreach among IDUs, Stimson and colleagues argue that despite the development of innovative outreach strategies, the full potential of outreach programs has not been realized.[24] In a review of HIV prevention projects, Freudenberg and Zimmerman reported that no street outreach projects have employed a randomized experimental design.[25] Without random assignment, it has been difficult to assess the effect of street outreach. Stimson and colleagues suggest that, to induce community-level change, IDU networks should be the targets of future outreach.[24] Broadhead and Heckathorn have successfully used current injectors to recruit other IDUs for clinic-based HIV prevention interventions,[26] and we have conducted interventions with drug-sharing networks in a clinic setting.[5]

In the present study, IDUs were recruited and trained to educate and influence their drug and sex network members about HIV-related behaviors. This program differed from Kelly's approach in that the focus of the intervention was on networks rather than settings. As a result of the processes of making public commitments to risk reduction, behavioral modeling, skills rehearsal, and behavioral cues in natural settings, peer leaders were expected to report reductions in their HIV-related behaviors. Risk reduction also was anticipated in the leaders' drug and sex network members. A secondary goal of the study was to provide a positive identity or role, for the peer leader, as health educator to individuals who were of low socioeconomic status and often unemployed and who often had strained family relationships.

METHODS

Recruitment. Peer leaders were chosen by a nomination process. Nominators were IDUs who volunteered for the study and completed the baseline interview. After the baseline interview, the interviewers discussed the meaning of leadership with the nominators. The interviewers stated

that there was a variety of leader types, and that the leaders they were interested in recruiting were individuals to whom drug users might listen about HIV prevention. For example, peer leaders could be individuals in the community who were knowledgeable about health, people who were effective communicators, or those who led by example. Nominators were then asked to list individuals they considered leaders in the IDU community. The nominators were asked to give these individuals a written description of the study and to recruit them into the study. The nominators were paid $10 for bringing the leaders into the clinic. The nominators also were allowed to self-nominate. Once the leaders came to the clinic and agreed to participate in the study, they were administered a baseline interview and a three-month postintervention interview. The leaders were remunerated $10 for each intervention session they attended and $15 for each interview they completed.

Measurement. The network inventory, based on the work of Barrera,[27] asked participants to list, by giving names or pseudonyms, members of their personal support network whom they had known for at least one month. After naming the members of their support network, participants were asked to list individuals they had known for at least one month and with whom they shared injection drugs or had had sex with in the past six months. The Cronbach's *alpha* for the network inventory was .85. The leaders also were asked whether any of their support network members used injection drugs. Sex partners and network members who used injection drugs were defined as the leaders' "risk network" members.

Risk network members. At the last intervention session, the leaders were requested to bring into the clinic at least one risk network member whom they had listed on their baseline network inventory. Risk network members were administered the same risk behavior survey and network inventory as the leaders. In addition, they were administered a set of questions about sources of recent information and materials about HIV prevention.

Leaders' training. The training consisted of 10 90-minute sessions. Leaders were provided four sessions of cognitive-behavioral skill-building training before they began outreach education. Participants were taught concepts of social norms and social influence and leadership skills of goal setting, effective communication, modeling, and conflict resolution. Role playing of real-life problem situations also was employed. Prior to outreach, all peer leaders were tested on their knowledge about HIV to ensure they would disseminate accurate and consistent information. The main content of the information disseminated by the leaders was that people in their community are vulnerable to HIV infection and that sharing needles, improperly disinfecting injection equipment, and not using condoms lead to HIV infection. The outreach phase of the study, which began after the fourth session, focused on practicing leadership skills and provided a forum for the leaders to discuss their outreach experiences and observations. At the beginning of each session, participants discussed impediments to engaging network members and others in conversations about HIV prevention and methods of overcoming these impediments. A former IDU served as facilitator to train, provide feedback on outreach experiences, and serve as an informational resource for the leaders. The facilitator encouraged the peer leaders to set obtainable goals. The first goal was to discuss HIV prevention with at least one network member. They then were encouraged to set higher goals and discuss HIV prevention with family members, friends, males and females, and young and old individuals. The facilitator also imparted techniques for engaging others in a discussion of the topic of HIV prevention. During outreach, leaders were encouraged to model safer behaviors to their network members and others and to engage them in discussions about HIV prevention.

Assessing outreach encounters. After each outreach encounter, the leaders were asked to fill out a brief informational survey on basic demographic characteristics, topics discussed, location of the contact, and materials distributed. Participants were given the option of putting their initials on these contact surveys. Participants were encouraged to return the surveys, but there was no incentive for the number of surveys returned, nor were the surveys counted in view of the leaders. The goal was to collect information about the leaders' interaction without pressure that could lead to fabrication of interactions.

To test for diffusion of information, the leaders were taught "APBs," the acronym for "AIDS preventive behaviors." The facilitator continually referred to this acronym in the educational sessions but did not explicitly state that the leaders should teach the acronym to outreach contacts. Leaders were provided with buttons that stated "Practice AIDS Preventive Behaviors." Included in the posttest survey was a question on the meaning of the acronym "APBs."

Table 1. Demographic characteristics of peer leaders, risk network members, and controls (*N* = 279)

	Peer leaders (n = 36) (Percent)	*Risk network members (n = 78) (Percent)*	*Controls (n = 165) (Percent)*
Injection drug use[a]	100	80	100
Male	69	62	69
African American	100	98	98
Less than 12th grade education	54	41	46
Married	8	5	8
Public assistance[a]	71	67	75
Unemployed[a]	97	89	95
Homeless[a]	29	28	39

[a]In the prior six months

ANALYSIS

Out of 107 nominated leaders who were recruited and interviewed, 41 (38%) agreed to participate in the intervention. Thirty (73% of the 41) completed the intervention, three completed four to eight sessions, five completed one to three sessions, and three did not complete any sessions. At the three-month follow-up, 36 leaders and 78 of the leaders' network members were interviewed. The study was evaluated by comparing changes in leaders' HIV-related behaviors at baseline with their behaviors at three-month follow-up. The leaders' self-reported behaviors also were compared with the self-reported behaviors of IDUs who were randomly assigned to the no-treatment control condition in the Stop AIDS for Everyone (SAFE) study—a network-oriented, experimental HIV prevention intervention. (For a description of the study design and outcome, see Latkin et al.[5]) The network members' behaviors also were compared with those of SAFE study controls. The SAFE study interviews were conducted between May 1993 and October 1994, and the leaders were interviewed between July 1994 and June 1995.

In the first set of analyses, the peer leaders' changes in HIV-related behaviors from baseline to follow-up were compared to changes in the SAFE study control group. The next set of analyses examined the difference in HIV-related behaviors between the peer leaders' network members and the SAFE study controls. Only the network members who were IDUs (80%) were included in this analysis. As only one survey was administered to the network members, these comparisons were cross-sectional. The final analysis assessed the leaders' self-reports of discussions of HIV prevention in the community.

RESULTS

Quantitative results. Study participants were predominately unemployed inner-city African Americans who used injection drugs. As seen in Table 1, the baseline demographic characteristics among the three groups (leaders, network members, and controls) were highly similar. The network members who were IDUs, compared with noninjectors, were more likely to be male than female (68% *vs.* 33%, $X^2 = 6.24$, $P < 0.05$) and unemployed (94% *vs.* 67%, $X^2 = 8.64$, $P < 0.01$). The median year of birth for the leaders and the controls was 1956; it was 1959 for the network members. In the first set of analyses, the leaders' changes from baseline to follow-up were analyzed and compared with changes in the SAFE study control group.

Peer leaders. Between baseline and follow-up, the leaders reported a significant increase in condom use (df = 24, t = 3.38, $P < 0.01$), whereas the SAFE study controls did not significantly change their condom use (df = 108, t = 1.23, $P = 0.22$). At baseline there was no difference between the leaders and controls in self-reports of always cleaning used needles with bleach before injecting in the prior six months (16% *vs.* 17%). At follow-up, however, there was a highly significant difference, with 59% of the leaders and only 23% of the controls reporting that they always cleaned used needles with bleach before injecting ($X^2 = 14.25$, $P < 0.001$). At follow-up, the leaders were marginally more likely than the controls to report never sharing needles without first cleaning their needles with bleach in the prior six months (76% *vs.* 56%, $X^2 = 3.64$, $P < 0.06$).

Table 2. Characteristics of the peer leaders' self-reported HIV prevention interactions in the community (N=2165)

Demographic characteristics	*Percent*	n	*Topics discussed*	*Percent*	n
Male	58	1235	Needle risk	71	1536
Age			Sex risk	75	1611
<25	16	339	Basic knowledge	69	1487
25–40	63	1301	AIDS treatment	32	700
>40	21	431	Bleach use	48	1036
Relationship			Drug treatment	25	531
Friend	33	649	Health care	18	382
Relative	6	124	Shelters	7	161
Sex partner	2	42			
Associate	57	1130			
Other	1	28			
Drug user	84	1674			
Location	*Percent*	n	*Materials distributed*	*Percent*	n
Street	54	1111	Brochures	53	1154
Treatment	2	46	Bleach	67	1439
Home	17	359	Condoms	76	1650
Gallery	7	137	Buttons	3	62
Park	4	72	Information on services	19	409
Friends' place	11	217			
Other	6	130			

Risk network members. The leaders' risk network members who were IDUs were significantly less likely than the SAFE study controls at baseline to report needle sharing without first cleaning their needles with bleach: 80% of the risk network members reported never sharing a needle without prior cleaning in the past six months, compared with 49% of the controls ($X^2 = 15.39$, $P < 0.001$). Risk network members also were more likely than the SAFE study controls to report always cleaning used needles with bleach before injecting (41% *vs.* 17%, $X^2 = 13.24$, $P < 0.001$).

Eighty-six percent of the risk network members reported receiving written materials about HIV and AIDS in the prior two months, of whom 70% reported receiving the materials from the leaders. Of the 74% of the risk network members who reported receiving condoms in the prior two months, 58% reported receiving the condoms from the leaders. Of the 65 risk network members who were current injectors, 92% reported receiving materials in the prior two months for cleaning their injection equipment, and 91% of these injectors reported receiving cleaning materials from leaders.

Included in the risk network members' interview was a question on the meaning of the acronym "APBs." Thirty (39%) of the risk network members correctly stated that it stood for "AIDS preventive behaviors." Another 34 (44%) said that APBs were about AIDS and prevention. When asked, in an open-ended question, where they had learned about APBs, 50% of the risk network members reported learning it from the leaders.

Contact surveys. The leaders returned 2165 forms that documented their HIV prevention activities (Table 2). The majority of the leaders' HIV prevention interactions were with friends (33%) and associates or acquaintances (57%), and most were with drug users (84%). Although only 2% of the reported discussions were with sex partners and 6% were with relatives, this represented 42 and 124 individuals, respectively. Sixteen percent of the interactions ($n = 339$) were with individuals youger than 25 years old. Those contacts who were younger than age 25 tended to be relatives (28%) or sex partners (24%), as compared with friends (15%) or acquaintances (14%; $X^2 = 38.18$, $P < 0.001$). Twenty-eight percent of all the interactions occurred in the participants' or friends' residences. There was a significant statistical association between setting and gender of the contact: discussions with women, as compared with men, were more likely to

occur in homes (21% *vs.* 14%, $X^2 = 22.6$, $P < 0.001$). In most of the interactions, the leaders discussed the risks of acquiring HIV through needle sharing (71%) and through unprotected sex (75%). There appeared to be a differential in discussion topic by relationship type. For example, needle risk was discussed with 94% of drug users and only 60% of nonusers ($X^2 = 337.85$, $P < 0.001$), and drug treatment was discussed with 38% of sex partners but with only 23% of associates ($X^2 = 15.0$, $P < 0.01$). The 62 "APBs" buttons that the leaders reported distributing corresponded with the number of buttons given to the leaders (Table 2).

Qualitative results. Thematic content analysis of observational notes from the outreach feedback sessions revealed several salient themes.

Obstacles to outreach. One frequently mentioned obstacle encountered by the leaders was individuals' feigned indifference about acquiring HIV. The leaders reported one effective response was to state that they were providing this information and materials because they cared about their community. An initial difficulty for some of the peer leaders was answering challenging questions aimed at testing the leaders' knowledge about HIV and AIDS. To maintain their credibility, leaders were told that HIV and AIDS is a vast field and that no one can master all the information. If leaders were uncertain about the answer to a question, they found it effective to tell the individual that they would find out the answer and get back to them.

Motivations for conducting outreach. Although participants were not paid for conducting outreach, they remained enthusiastic about it. Participants reported several motives for conducting outreach. Both males and females reported that they were concerned about their community and children and other family members becoming infected with HIV. Most participants reported having a close friend or family member infected with HIV. Another important motivational factor was the leaders' interest in maintaining their new status as an expert in HIV and other health-related issues. Many of the leaders reported that others began to depend on them for the kits, which contained bleach, water, condoms, and HIV prevention information. It is theorized that their new role and identity of health expert was reinforced in the community, which motivated them to acquire more knowledge about HIV and to act as models within the community.

Outreach as assumption of prosocial role and identity. Several participants stated that their outreach work altered their neighbors' and friends' perceptions of them and increased their respect among both drug users and nonusers. Another salient theme discussed by participants was that the outreach provided them with nondrug-related activities. Several leaders indicated that their outreach activities in their neighborhood were recognized by the police, and several reported positive encounters with police. One participant reported embarrassment (and indicated pride) when a police officer nodded approvingly to him on the street.

Outreach as destigmatizing the topic of AIDS. During the course of the intervention, seven of the leaders disclosed to the facilitator that they were HIV seropositive. The seropositive participants appeared to be more knowledgeable about HIV and AIDS than were the seronegatives.

Gender differences in topic of conversation and audience. Whereas women were more likely than men to discuss HIV risk through sexual contact, men were more likely than women to discuss risk through needle sharing. Women, compared with men, reported more educational activities with other women and in private settings, such as houses and apartments. Men were more likely than women to report outreach with men in public and semi-public areas, such as on the streets, in shooting galleries, in parks, and inside abandoned buildings.

DISCUSSION

The results of this study suggest that individuals identified as leaders among IDUs may be effective in promoting HIV prevention among their networks, drug users, and other community members. There are several advantages of this approach. First, it may be more cost-effective than traditional outreach. Many municipalities in the United States and elsewhere cannot or will not pay for a sufficient number of professionals to conduct outreach. Results of this study suggest that volunteers in the IDU community are able to disseminate HIV prevention information to their network members and to others. Second, peer leaders may have a greater influence than professionals on the HIV-related behaviors of friends, relatives, and sex partners. Third, the leaders are able to enter a diversity of settings, some not readily accessible to nonindigenous professional outreach workers, across a wide geographic area.

Several components of the intervention were specifically designed for the target population. These included rehearsal of HIV prevention skills through outreach, providing prosocial activities, configuring a role or identity that

is reinforced by the community, structuring the training sessions to be both emotionally supportive and task oriented, emphasizing empowerment and intrinsic motivation, and training a sufficient number and variety of participants.

The leaders' outreach experiences provided numerous opportunities for them to develop HIV prevention skills. Green and Kreuter noted that health education programs often do not provide ample opportunities for skill development and practice of new behaviors.[28] The leaders' public endorsement of behaviors and modeling of new behaviors are well-documented methods for promoting behavior change. Leaders were encouraged to educate their network members because it was anticipated that they would have more influence on them than would strangers. Morever, conducting outreach among acquaintances in public settings helped to reinforce their new identities as HIV health educators.

Many behavior change programs provide participants with information on what not to do and how not to act. Often these programs have been less successful in providing attractive and feasible alternatives. For example, the traditional approach to drug treatment has been to advise clients to avoid people and places that may encourage or trigger drug relapse. For many inner-city residents this admonition is difficult, if not impossible. Not only do many drug users have family members who also use drugs,[29] but there are limited prosocial activities available in the inner city to replace drug use. In the current study, participants were provided with an alternative activity to HIV risk behaviors. Rather than emphasizing that participants' behaviors were faulty, the goal of the intervention was to provide them with meaningful activities that would promote HIV prevention.

Numerous models of HIV-related behavior change have been developed. Most focus on the individual and are psychological in orientation, such as increasing individuals' perceived risk, improving decision-making abilities, and building skills for effective condom use and proper needle disinfection. Alternative models focus on social change and affecting social structures, such as community mobilization and job creation. The model presented in this study both em-phasized individual change and provided an empowerment schema that could be utilized for social change. It has been argued that empowerment is essential for any successful community program to be effective in reducing HIV risk behaviors.[30] Empowerment has been described as a process whereby people create or are given opportunities to control their own destiny and influence decisions that affect their lives.[31] Results of this study suggest that training IDUs as HIV prevention educators is a means of empowering members of the IDU community. Participants reported that the intervention provided them with the opportunity to engage in activities that met with social approval and that these activities were both personally rewarding and beneficial to the community.

The group training sessions engaged participants in both socioemotional and task-oriented activities. The socioemotional aspects of the sessions were psychotherapeutic and may have aided in group maintenance; the task orientation was the training and emphasis on HIV prevention activities. The group sessions may have had both a direct and an indirect effect on the outreach activities: improved communication skills may have directly increased the effectiveness of outreach activities, and a reduction in individual psychological distress may have increased the effectiveness of the leaders. The group atmosphere also may have helped reduce attrition. Participants enjoyed the supportive group sessions and appeared eager to return.

In the initial sessions, participants seemed to view the outreach as theoretically important, but did not consider it a highly esteemed activity. Once they started the outreach and began to receive positive feedback from the community, they developed a higher regard for the outreach. This experience suggests that, although the outreach did not begin as an activity that participants highly valued, through the process of outreach it became valuable.

Studies suggest that overpayment of participants reduces intrinsic motivation.[32] We did not want monetary payment to participants to result in a decrease in their intrinsic motivation to conduct HIV prevention education. Yet, the time participants spent in the training sessions could have been used by them to acquire funds. To balance these contradictory motives, we paid them only for the training but not for the outreach activities.

Participants spent a wide range of time on outreach activities. It would be naive, however, to expect all participants to make HIV prevention their priority. Time spent obtaining money to purchase drugs often impeded their ability to engage in HIV prevention activities. From a public health perspective, the variability in the time the leaders spent conducting outreach should not be considered an impediment. If a sufficient number of leaders are trained, then hopefully a portion of them will become effective educators and will influence a sufficient number of drug users and others at risk of acquiring HIV.

The finding of gender differences in outreach settings and topics of conversation by relationship type may have important implications for outreach intervention. We speculate that this observation may be due to the relative

salience of mode of infection to themselves and to gender differences in where they spend most of their time. These findings suggest the importance of including both male and female outreach leaders in the interventions and not limiting outreach to public settings. We also speculate that discussing HIV under the rubric of an intervention helps to destigmatize the disease, especially for those who are HIV seropositive, and allows individuals to discuss HIV without focusing on their own serostatus.

There were several unanticipated outcomes from the study. The peer leaders quickly discovered that once they provided information about HIV, they were identified as sources of information about other services. Contacts were most interested in the availability, access, and quality of social and medical services such as drug treatment, HIV and AIDS services, homeless shelters, soup kitchens, and health care. The leaders felt that being able to provide this information would increase their rapport with people they contacted. Another unanticipated consequence of the intervention was that participants were disappointed when the program ended. Many leaders expressed interest in continuing the sessions without financial remuneration.

Because sustainability is an important goal for public health interventions, it is important to consider whether and how to structure empowerment activities for individuals who have the stresses and disruptions experienced by inner-city drug users. One approach is to link the leaders with existing organizations with similar goals, such as community-based HIV service organizations. A drawback to this linkage would be a potential cultural conflict with a services-client model of service delivery. A second potential obstacle would be that participants might not identify with the goals and mission of the organizations. Another approach is to link participants with church-based organizations. The church is an important, stable, and respected institution. Attitudes toward drug use, however, could be a major obstacle for integrating active drug users into many church-based organizations. A third approach would be to form a new organization. In the replication study that is now in progress, we will examine these and other methods of sustaining the program after Federal funding of the project has ended.

There are several limitations that temper the conclusions that can be drawn from the present study. Two significant design limitations were the study's quasi-experimental design and lack of pretest data on the risk network members. We are currently replicating the study using a traditional experimental design with random assignment and pretest and posttest surveys. Another limitation is generalizability; it is not known whether this peer leader intervention would be effective in cities where drug users have greater geographic and network mobility or different patterns of drug use and drug purchasing.

There are other study design issues that limit the conclusions that can be drawn from the data. It is possible that the peer leaders brought to the clinic only network members to whom they had recently provided information on HIV prevention. To minimize this selection bias for recruitment of network members, we informed the leaders that we wanted to talk to their network members about ways of improving the intervention; that is, we did not intend to test their educational efforts. Another study limitation was that the leaders' outreach activities were not closely monitored; hence, it is difficult to assess the accuracy of the self-report information provided on the outreach contact surveys that documented the leaders' HIV prevention discussions. Fortunately, there is evidence to support the internal validity of the self-report data. For example, the statistically significant differences in topic of conversation by relationship type (for instance, friends and relatives) correspond to expected differences, and the number of HIV prevention buttons reported distributed corresponded with the number of buttons provided to the leaders. In the future, however, it would be useful to include ethnographic evaluation with participant observations to better assess the leaders' outreach activities.

Several issues not addressed in the study warrant attention in future studies. These include the characteristics of influential peer leaders; the dynamics of effective interactions among the leaders, network members, and community members; and whether the HIV prevention messages change from the clinic training sessions to natural settings. There also are important structural questions about how prevention messages and behavior change flow through networks, settings, and communities. In our replication study, we hope to begin to address some of these research questions. It also is important to understand HIV prevention interventions for IDUs in their social context. Many of the problems of HIV transmission within this group are linked to the social conditions of poverty and violence; limited drug treatment, access to sterile syringes, employment, and other prosocial opportunities; and high levels of demoralization. Without addressing these issues, it is doubtful that the full potential of HIV prevention interventions for IDUs will be fully realized.

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