

PROJECT ROADMAP: REEDUCATING OLDER ADULTS IN MAINTAINING AIDS PREVENTION: A SECONDARY INTERVENTION FOR OLDER HIV-POSITIVE ADULTS

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The number of older adults living with HIV/AIDS is larger than ever. Little is known about their sexual behaviors, although contrary to stereotypes, older adults desire and engage in sexual activity. Despite increased recognition of the need for prevention interventions targeting HIV-positive individuals, no secondary HIV prevention interventions have specifically targeted the older HIV-positive adult. Efforts to target high-risk sexual behaviors may be even more critical in the older population because of sociocultural, biological, and behavioral vulnerabilities. In response, Project ROADMAP (Reeducating Older Adult in Maintaining AIDS Prevention) intervention was developed to reduce high-risk sexual behaviors among older HIV-positive patients in primary care clinics. The purpose of this article is to report the 6-month outcomes of a behavioral intervention designed to reduce sexual risk behaviors in older HIV-positive adults.

HIV/AIDS has become a significant national problem among older adults (Maes & Louis, 2003). The rates of HIV infection in this cohort continue to increase, with 28% of persons living with HIV/AIDS in 2006 being age 45 and older, compared with 22% in 2001. In 2007, this age group accounted for 29% of new HIV/AIDS diagnoses (Centers for Disease Control [CDC], 2009). Contrary to stereotypical beliefs, older adults long for active, satisfying sex lives (Wooten-Bielski, 1999). The fact that sexual contact is the most common HIV transmission route among older adults (Chiao, Ries, & Sande, 1999) confirms the presence of both sexual activity and sexual risk behaviors among this population. Results from national surveys examining the sexual activity among persons over the age of 60 indicate that more than 92% of the respondents consider sex an important part of life and that 75%

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of those between 65 and 74 considered themselves sexually active (National Bulletin of the National Advisory Council on Aging, 2002). Although little is known about the sexual behaviors of older HIV-positive adults, emerging data suggest that sexually active older adults are engaging in risky sexual behaviors (Illa et al., 2008). This finding is consistent with other studies that report continued high rates of unprotected intercourse among people with HIV, approximating 33% (Kalichman et al., 2001).

Because of the widespread detrimental consequences of continued unsafe sexual practices among individuals living with HIV, the public health benefit of reducing high-risk practices among persons living with HIV is exponentially greater than among at-risk populations (Kalichman, Rompa, & Cage, 2005). Although risk reduction interventions tailored for the special needs of people living with HIV/AIDS have begun to demonstrate promising results, none to date have focused on HIV-positive older adults (Gordon, Forsyth, Stall, & Cheever, 2005; Kalichman et al., 2001). Research across generations have revealed differences between older adults and their younger counterparts in terms of sexual knowledge, risk behaviors, and biological factors, signifying the importance of age appropriate interventions for this unique cohort (Orel, Spence & Steele, 2005). Increased age has been associated with having incorrect information concerning prevention, including the need to protect oneself during high-risk behaviors regardless of age (Henderson et al., 2004; Zablotsky, 1998). In contrast to the younger age groups, many older adults do not consider unprotected sex a high-risk behavior because many are no longer concerned about contraception, making them less likely than their younger counterparts to use condoms (Shaw, 2001). Furthermore, data suggest that older adults' knowledge of the seriousness of HIV/AIDS may not correlate with their perceived threat of AIDS or their use of condoms (Maes & Louis, 2003).

Older adults also differ from younger individuals in terms of biological factors related to transmission and disease process (Mack & Bland, 1999), such as faster progression from HIV to AIDS and the development of AIDS opportunistic infections (Adler & Nagel, 1994). In 2005, among HIV-positive older adults, half were diagnosed with HIV and AIDS concurrently or was diagnosed with AIDS within 1 year of their HIV diagnosis (Linley, Hall, An, & Wheeler, 2007). This delay in diagnosis is often due to clinicians underestimating the risk for HIV among older adults, common nonspecific HIV symptoms such as fatigue being mistaken for signs of aging, and more important, older adults not seeking testing because they do not believe to be at risk (Linley et al., 2007). Multiple health problems and age-related physiological changes may make elderly persons particularly vulnerable to HIV infection (Gaeta, LaPolla, & Melendez, 1996). For example, postmenopausal women are at greater risk for HIV infection and reinfection during heterosexual contact because of the fragility of the vaginal mucosa related to decreased levels of estrogen (Shaw, 2001). Therefore, efforts to target high-risk sexual behaviors may be even more critical in the older population because of sociocultural, biological, and behavioral vulnerabilities.

In response, Project ROADMAP (Reeducating Older Adults in Maintaining AIDS Prevention) was developed as part of the larger, multisite Special Projects of National Significance (SPNS) initiative examining the efficacy of secondary HIV prevention interventions in clinic settings. The behavioral intervention draws on a theoretically derived intervention, Project INSPIRE, a CDC-funded multisite group intervention targeting prevention with positives. The INSPIRE intervention targeted adults of all ages and was not specific for the older HIV-positive adult. Therefore,

specific modules targeting sexual risk reduction were selected and modified to address the issues that are present in the older HIV-positive population. In this article we report 6-month outcomes for both intervention and comparison conditions.

METHODS

STUDY PARTICIPANTS

Three hundred participants were recruited between January 2004 and November 2006 from a primary care clinic in a large urban medical center. University of Miami/Jackson Memorial Medical Center (UM/JMH) is Miami-Dade County's largest health care facility for HIV/AIDS treatment, serving approximately 3,500 patients annually. The clinic population is ethnically and racially diverse with 27% Hispanic, 9% White nonHispanic and 64% Black nonHispanic. This latter group comprises African Americans as well as other Blacks of Caribbean descent. All research participants enrolled in Project ROADMAP participated in an informed consent process prior to a baseline assessment. All procedures were approved by the institutional review board (IRB) of the University of Miami Miller School of Medicine. *Randomization and Intervention*

Following receipt of signed informed consent, participants were assigned a study identification number and screened to determine study eligibility. The inclusion criteria were a positive HIV status, age 45 or older, and being sexually active within the last 12 months. Eligible participants were randomized to the intervention or a comparison group at a ratio of 2 to 1, respectively. Following randomization, both groups received an educational brochure. Participants in the comparison group only received the brochure and proceeded to receive care as usual. In addition to receiving the educational brochure, participants in the intervention group were scheduled for four psychoeducational group sessions designed specifically for HIV-positive adults over 45 years of age.

All participants were assessed by a clinical interviewer using computer-assisted personal interview software at baseline following randomization, and at approximately 6 and 12 months. The duration of each assessment session was 60 to 80 minutes. Participants were reimbursed for their time for each assessment with a \$25 gift certificate from a local supermarket. Participants did not receive reimbursement for group participation but were given travel tokens and a small gift of less than \$5 value at the end of each session.

The intervention was guided by the information-motivation-behavior skills (IMB) model of AIDS risk behavior change coupled with principles of self-efficacy theory (Bandura, 1992). The IMB model is a psychosocial model of behavior change developed specifically to address the complexity and interpersonal nature of HIV risks and other issues of behavior change (Fisher, Misovich, Kimble, & Weinstein, 1999). It meets the standards of empirical research and simplicity of practical application and is represented as a process composed of four distinct parts: information, motivation, behavioral skills, and AIDS risk reduction behaviors. Intervention sessions lasted between 1 to 2½ hours. During the first session, participants were introduced to the program and to each other, and discussed educational information on HIV/AIDS. The second session was devoted to discussions about the effects of HIV on sexual behaviors and a review of the concept and practice of harm reduction. The third session focused on building skills for assertive communication with partners, including deescalating negative partner reactions and developing creating

negotiating tactics to avoid issues of faithfulness and disease in condom negotiation. The intervention series ended with a review of lessons learned during the previous sessions and an overview of techniques involved in recovering from slips and using self-reward for maintenance of safer behavior.

MEASURES

Measures were selected from the multisite evaluation assessment tool developed by the University of California, San Francisco, Center for AIDS Prevention Studies, Enhancing Prevention with Positives Evaluation Center (EPPEC) and were administered during the baseline, 6-month and 12-month assessment.

DEMOGRAPHIC VARIABLES

Demographic variables assessed included age, gender, ethnicity, education, income, relationship status, and sexual orientation.

SEXUAL RISK

Sexual risk was measured by asking participants information regarding their sexual behaviors within the last 6 months: number of partners, partner gender, partner HIV status, type of sexual act, and condom use. Participants were asked to report how many oral, vaginal, and anal sexual acts they had with each HIV-positive, -negative or -unknown serostatus partners and of those acts how many were with condoms. Participants responded with a number for each question. For example, for the question "How many times did you have vaginal sex with your HIV-positive partner?" a participant would have responded "three" if they had vaginal sex three times with their HIV-positive partner. The question would then be followed with, "Of the three times, how many times was a condom used?" Participants again answered with a number, indicating the number of times a condom was used.

To these measures we added a local evaluation component. The following variables were selected because they have been associated with HIV transmission/risk behavior in previous research studies (Kalichman & Nachimson, 1999; Kelly et al., 1993; Maes & Louis, 2003; Preston et al., 2004).

HIV KNOWLEDGE

HIV knowledge was measured using 33 items derived from CDC's (1992) *Handbook for Evaluating HIV Education*, which we adapted to the 45 years and older population. The measure was modified to include specific age-related differences gathered from the literature and from information obtained from focus groups conducted with older HIV-positive adults. . Examples of true/false items include "Seniors are unlikely to consistently use condoms during sex because of a generational mindset and unfamiliarity with HIV/STD prevention methods"; and "Men who have sex with men form the smallest group of AIDS cases in the over-50 population." A summary score was calculated by summing item scores, with higher scores representing greater knowledge.

SEXUAL SELF-EFFICACY

Sexual self-efficacy, or respondents' beliefs about their abilities to engage in safe sex, was assessed using seven items (4-point Likert scale) with response options ranging from "strongly disagree" to "strongly agree" (Cronbach's alpha = .77) (Malow, Devieux, Jennings, Lucenko, & Kalichman, 2001). Examples of items include "Safer sex isn't that difficult" and "Using condoms doesn't take a lot of effort." A summary

TABLE 1. Baseline Comparison of Intervention and Control Groups

	Intervention Group (<i>n</i> = 149)		Control Group (<i>n</i> = 92)	
	<i>N</i>	%	<i>N</i>	%
Gender				
Male	83	55.7	51	55.4
Female	65	43.6	41	44.6
Transgender	1	0.7	0	0
Race/Ethnicity				
African American	116	78.4	73	79.3
Hispanic	21	14.2	12	13.0
White	11	7.4	6	6.5
Other	0	0.0	1	1.1
Education				
Less than high school	56	37.6	33	35.9
High school complete	56	37.6	37	40.2
Beyond high school	37	24.8	22	23.9
Marital status				
Single--not living together	81	54.4	51	55.4
Married or partnership	17	11.4	7	7.6
Divorced or separated	50	33.6	33	35.9
Other	1	0.7	1	1.1
Self-identification				
Straight/Heterosexual	124	83.2	80	87.0
Gay/Homosexual	16	10.7	5	5.4
Bisexual	9	6.0	6	6.5
Not sure	0	0.0	1	1.1
Sexual activity and condom use				
Inconsistent condom use	25	16.8	13	14.1
Consistent condom use	97	65.1	53	57.6
Abstinent	27	18.1	26	28.3

score was calculated by summing item scores, with higher scores representing greater sexual self-efficacy.

RESULTS

STATISTICAL ANALYSIS

Two hundred forty-one participants (149 in intervention group and 92 in the comparison group) completed baseline and 6-month follow-up interviews and were included in the analysis. We compared the 51 intervention group participants who did not complete the 6-month interview to those who completed the interview using chi-square for categorical variables and *t* test for continuous variables. Results indicated that the two groups were similar on all the variables tested: age ($p = .88$), gender ($p = .41$), marital status ($p = .84$), ethnicity ($p = .97$), education ($p = .48$), sex with negative rates without condom ($p = .76$), and sex with positives without a condom rates ($p = .93$). Similarly, control group 6-month interview completers (92) were similar to noncompleters (8) on all the variables mentioned previously. We used chi-square to compare the two groups who completed the follow-up interviews in terms of their sociodemographic characteristics and the McNemar test to compare each group's baseline and 6-month prevalence of reported use of condom during sexual intercourse, their HIV knowledge, and their self-efficacy scores. For each group we computed and contrasted the prevalence of inconsistent use of condom

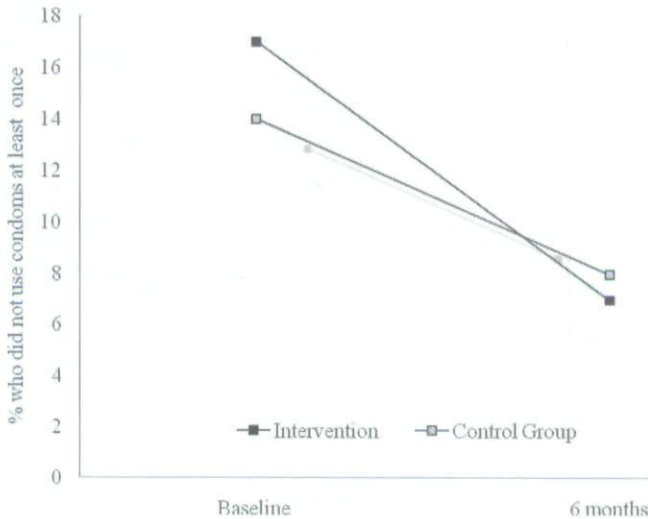


FIGURE 1. Inconsistent Condom Use with All Partners.

Note. $p < 0.01$, intervention; $p = 0.11$, control, McNemar Test

separately during sex with all partners, sex with negative partners and partners with unknown serostatus, and sex with positive partners.

Baseline Comparison of Intervention and Control Groups. At baseline, the two groups had a similar sociodemographic and behavioral profile (Table 1). In the intervention group, 55% were male and 78% were African American, with a mean age of 50.82 ($SD = 4.97$). Sixty-two percent had completed high school; 11% were married or living with a partner and 83% self-identified as straight or heterosexual. Seventeen percent had failed to use condom at least once (defined as inconsistent condom use) during sexual intercourse and 18% had not had sexual intercourse during the previous six months. In the comparison group, 55% were male and 79% were African American, with a mean age of 50.77 ($SD = 4.59$). Sixty-four percent had completed high school; 8% were married or living with a partner; and 87% self-identified as straight or heterosexual. Fourteen percent had failed to use condom at least once during sexual intercourse and 28% had not had sexual intercourse during the previous 6 months.

INCONSISTENT CONDOM USE

Sexual Acts With Partners of all Serostatus. As mentioned above, 17% of the intervention group reported inconsistent condom use during sex with all partners at baseline, but at 6-month follow-up, only 7% reported inconsistent condom use ($p = .003$). In the comparison group, 14% reported inconsistent condom use at baseline, and 8% reported not using condoms consistently at six month follow up ($p = .109$) (Figure 1).

Sexual Acts with Negative/unknown Serostatus Partners. Nine percent of the participants in the intervention group reported having used condoms inconsistently during sex with negative partners or partners of unknown serostatus whereas at 6 month

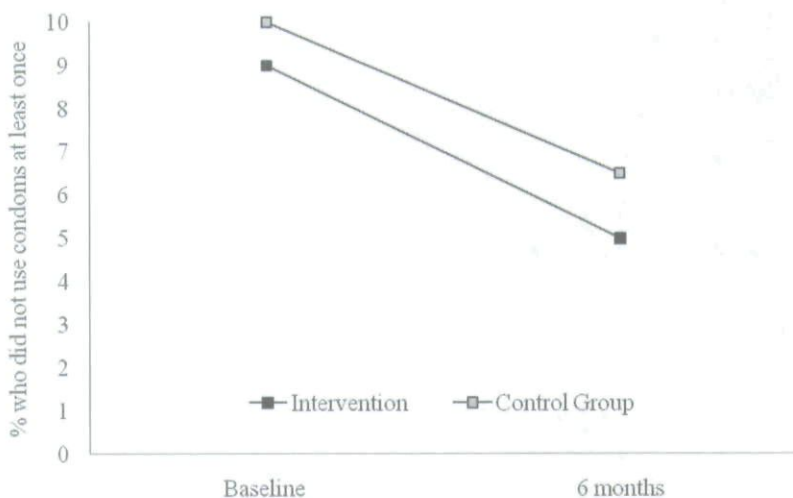


FIGURE 2. Inconsistent Condom Use with Negative/Unknowns.
 Note. $p < 0.01$, intervention; $p = 1.00$, control, MacNemar Test.

follow-up only 1.3% reported inconsistent condom use with these partners ($p = .003$). In the comparison group, 4% reported inconsistent condom use during sex with negative partners or partners with unknown serostatus at baseline and 3% of participants reported inconsistent condom use during sex with negative partners or partners with unknown serostatus at 6-month follow-up ($p > .999$) (Figure 2).

Sexual Acts With Positive Serostatus Partners. Nine percent of the participants in the intervention group reported inconsistent condom use during sex with positive partners at baseline; 5% reported such behavior at follow-up ($p = .146$). In the comparison group, 10% reported inconsistent condom use during sex with positive partners at baseline and 6.5% reported such behavior at 6-month follow-up ($p = .508$).

KNOWLEDGE OF HIV

The knowledge index score was 26.95 at baseline for the intervention group and 28.36 when measured at 6-month follow-up ($p = .000$). For the control group, the knowledge score at baseline was 26.89 and 28.02 at 6-month follow-up ($p = .011$).

SELF-EFFICACY

The mean self-efficacy score was 14.76 at baseline and 14.64 at 6-month follow-up for the intervention group ($p = .711$); for the control group, the mean score was 15.35 at baseline and 15.34 at 6-month follow-up ($p = .811$).

DISCUSSION

This study examines the effectiveness of a secondary prevention intervention targeting older HIV-positive adults. Data indicate that participants in both conditions increased their HIV knowledge at 6 months compared with baseline. Because

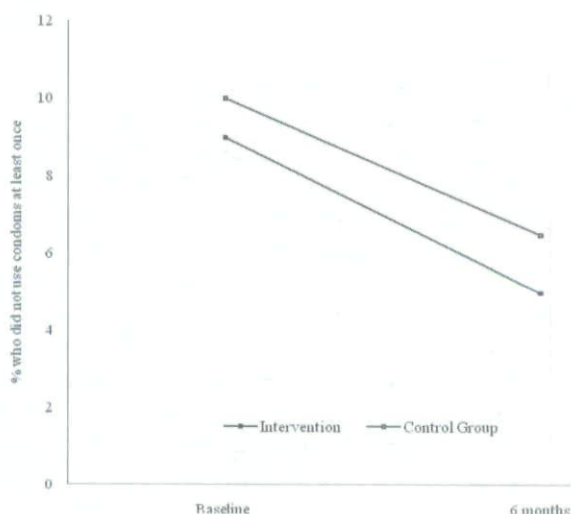


FIGURE 3. Inconsistent Condom Use with Positives.

Note. $p = 0.15$, intervention; $p = 0.51$, control, MacNemar Test

all participants received an educational brochure, which included basic HIV knowledge and prevention strategies, it is possible that information on the educational brochure contributed to the increased knowledge of participants in both the intervention and comparison groups.

However, only participants in the intervention group decreased unprotected sexual acts with partners of all serostatus and specifically with negative or unknown serostatus partners, when compared with participants in the comparison group. We attribute this difference to the effect of group sessions, where participants had the opportunity to practice condom use skills, role play condom negotiation situations and clear up any misunderstandings about relative risk for sexual behaviors. Research suggests that group interventions can result in significant reductions in risk behaviors as well as serve as a social support system for the participants (Kalichman et al., 2001). Group interventions often bring people together who may share common challenges and needs (Kalichman et al., 2005).

Self-efficacy did not improve for either group. It is possible that the self-efficacy measure used was not sensitive enough to capture change. Additionally, although the intervention addressed related concepts such as condom skills and negotiation skills, it did not specifically target self-efficacy. Future studies examining the role of self-efficacy on high-risk sexual behaviors in HIV-positive older adults are warranted.

Our sample may not be representative of the older HIV-positive population, therefore possibly limiting the generalizability of our findings. All participants were recruited from a primary care clinic serving primarily individuals of low socioeconomic status and of African American, Hispanic or White background. Our sample was predominantly heterosexual, not active drug users and sexual active within the previous year. Furthermore, because this was an HIV prevention study, it is possible that individuals who were more concerned about condom use self-selected into the study. Finally, our findings do not speak to the risk behaviors of HIV-positive older adults who are not engaged in medical care.

The results were also based on self-report data, which depend on the veracity of the responders. Although there is evidence suggesting that 3-, 6-, and 12-month recall is less biased than shorter periods and that longer time frames are more likely to be representative of an individual's behavior (Schroder, Carey, & Vanable, 2003), the reader is cautioned because the validity and reliability of retrospective recall is often a concern. However, such limitations are inherent in behavioral research, which often relies on self-report methods to assess sexual behavior because ethical and practical considerations limit the use of more direct assessment methods (Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998). Recall may have been particularly an issue for this older sample given the expected challenge to recollect and describe intimate behaviors that had happened during the preceding 6-month period.

In summary, our results indicate that participants in the intervention condition were more likely to report a reduction in high-risk sexual behavior than those in the comparison group. Although the data suggest a relationship between intervention and reduction in sexual risk behavior, a causal relationship cannot be established. Nevertheless, the study findings represent a significant contribution to the development of effective prevention interventions targeting HIV-positive older adults. Our study results suggest that Project ROADMAP is an effective secondary prevention intervention for sexually active older HIV-positive adults.

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