

## OUTCOMES FROM A COMMUNITY-BASED, PARTICIPATORY LAY HEALTH ADVISER HIV/ STD PREVENTION INTERVENTION FOR RECENTLY ARRIVED IMMIGRANT LATINO MEN IN RURAL NORTH CAROLINA

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Latinos in the United States are at increased risk for HIV and sexually transmitted disease (STD) infection. We evaluated the efficacy of a pilot lay health adviser (LHA) intervention designed to increase condom use and HIV testing among Latino men. Fifteen LHAs (mean age = 35.6; range 23–60 years) from 15 Latino soccer teams were trained and worked with their teammates for 18 months. Another 15 teams served as the control group. Data were collected at baseline and at 18 months post-LHA training from a random sample of teammates from intervention and control teams. Data were collected from 222 men (mean age = 29 years) who participated in one of the 30 teams. Relative to the control condition, participants in the intervention reported more consistent condom use in the 30 days preceding follow-up (unadjusted analysis, intervention, 65.6% vs. control, 41.3%;  $p < .001$ ). Participants in the intervention were more likely to report condom use (adjusted odds ratio [AOR] = 2.3; confidence interval [CI] = 1.2–4.3) and HIV testing (AOR = 2.5; CI = 1.5–4.3). LHA interventions for Latino men that are developed in partnership with community members, rely on male-centered intrapersonal networks, and are culturally congruent can enhance preventive behaviors and may reduce HIV infection.

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This study was supported under a cooperative agreement from the CDC through the Association for Prevention Teaching and Research (APTR, formerly the Association of Teachers of Preventive Medicine) to Dr. Rhodes. The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the CDC or APTR.

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North Carolina has one of the fastest-growing Latino populations in the United States (North Carolina Institute of Medicine, 2003; U.S. Census Bureau, 2005). Concurrently, North Carolina joins other southern states in consistently leading the nation in reported cases of AIDS and other sexually transmitted diseases (STDs) such as gonorrhea, chlamydia, and syphilis (Centers for Disease Control and Prevention, 2007, 2008).

To address the HIV and STD epidemics in North Carolina, our community-based participatory research (CBPR) partnership developed, implemented, and evaluated the efficacy of an HIV/STD prevention intervention known as *HoMBReS: Hombres Manteniendo Bienestar y Relaciones Saludables* (Men: Men Maintaining Wellbeing and Healthy Relationships). *HoMBReS* was designed to increase condom use and HIV testing and enhance the determinants of prevention behaviors among sexually active heterosexual Latino men.

## METHODS

The development of this intervention and baseline findings have been reported elsewhere (Knipper et al., 2007; Rhodes, Eng et al., 2007; Rhodes et al., 2006). Although immigrant Latino men engage in a variety of community-based activities, including athletic and church activities, our formative work indicated that men most at risk in this community would be found among those who participated in the local soccer teams. Subgroups of Latino men are not mutually exclusive; however, men involved with church activities, for example, were identified as those likely to be at decreased risk as compared to those who played soccer (Rhodes, Eng et al., 2007). Thus, our CBPR partners wanted an intervention approach that worked within the existing structure of a rural Latino soccer league, harnessed community assets, was male centered, and used a lay health adviser (LHA) approach.

This study was conducted from October 2003 to March 2007. The Wake Forest University Health Sciences Institutional Review Board approved the study protocol. From 89 soccer teams with a total of 1,600 to 1,800 adult Latino men in a local soccer league in central North Carolina, 30 teams were selected and recruited to serve as intervention teams ( $n = 15$ ) and control teams ( $n = 15$ ). The intervention teams included teams from the southern region of the league for two primary reasons. First, formative data already existed on local resources, referral procedures, and health care service delivery in this region, and second, intervention and control teams needed to be geographically and socially distinct to minimize contamination. Because the CBPR partnership did not want to withhold the intervention from those in the control teams indefinitely, members of the control teams were offered the intervention as the study was completed. No further data were collected on subsequent effects on the control teams, however. Teammates nominated and elected one LHA per intervention team. This LHA was known as a *Navegante*, or Navigator.

During a four-session, 16-hour *Navegante* training, which was held over two consecutive weekends, the 15 *Navegantes* who represented intervention teams were trained to serve as health advisers who make referrals to increase knowledge about HIV and STDs and testing and increase condom use skills, opinion leaders who bolster positive and reframe negative sociocultural expectations about what it means to be a man; and community advocates who work toward environmental change. The training was based in social cognitive theory (Bandura, 1986) and empowerment

education (Freire, 1973). Training was held at a local restaurant owned by Hondurans. The 15 *Navegantes* worked with their teammates for 18 months.

Data were collected at baseline and 18-month post-*Navegante* training from a random sample of teammates from the intervention and control teams. The assessment contained 192 items with predefined response categories. The assessment, which was read aloud by a male native Spanish-speaking staff member who was originally from Mexico to assist with challenges associated with low literacy rates and was completed by the participant, took 45-120 minutes to complete, depending on the skip pattern of the participant. The CBPR partnership chose to have the assessment administered by a study staff member, who was involved in the training of the *Navegantes* and was not involved with the activities that study participants engaged in with their *Navegantes*.

We assessed demographics, utilization of testing services, knowledge of HIV transmission and prevention, sexual risk behavior, and psychological and sociocultural factors. Demographic characteristics assessed included age in years, ethnicity, race, length of time living in the United States and North Carolina, level of education, employment status, and income. Relationship status was assessed. Participants who reported being married and living with spouse or living with a partner but not married were considered “accompanied”; participants who reported living alone but having wives or partners in their country of origin, being single, or divorced were considered to be “unaccompanied.”

Knowledge of HIV transmission and prevention was assessed through the summation of correct responses to 18 true-false items (Knipper et al., 2007). Behaviors related to risk also were measured, including gender of sexual partners, type of sexual activity (vaginal, oral, and anal), and condom use during intercourse.

We assessed acculturation (G. Marin, F. Sabogal, B.V. Marin, R. Otero-Sabogal, & E.J. Perez-Stable, 1987;  $\alpha = .93$ ); condom use self-efficacy (B. V. Marin, Tschann, Gomez, & Gregorich, 1998;  $\alpha = .95$ ); adherence to traditional masculine norms (Knipper et al., 2007;  $\alpha = .78$ ); and mastery (Pearlin & Schooler, 1978;  $\alpha = .68$ ). Items were reverse-coded as necessary so that higher scores indicated higher knowledge, adherence to masculine norms, acculturation, and mastery.

### STATISTICAL ANALYSIS

At baseline, descriptive statistics were summarized sociodemographic variables, psychosocial determinants of risk, and sexual and testing behaviors. Potential differences between conditions were assessed using t-tests and chi-square analyses. Multivariable logistic regression model using a generalized linear mixed modeling was used to test the efficacy of the intervention to increase condom use and HIV testing while adjusting for baseline scores, relationship status, and within team clustering. The team that the participant belonged to was considered a random effect with participants nested within the team. We adjusted for team differences in participant characteristics and behaviors because participants from the same team may be more alike than participants from different teams. From this modeling, adjusted odds ratios (AORs) were calculated and confidence intervals estimated. All analyses were performed in SAS, Version 8.2 (SAS Institute, Cary, NC) and the SAS GLIMMIX macro. This macro uses iteratively reweighted likelihoods to fit a logistic regression model in which the participants are clustered on teams, a process known as the random effect.

TABLE 1. Effects of the HoMBReS Intervention on Self-Reported Condom Use, HIV Testing, and Intervention-Focused Determinants of Risk Behaviors

Variable	Baseline Scores <sup>a</sup>	Unadjusted Post-Navegante Training		Adjusted <sup>b</sup>	
		Intervention	Control	Odds Ratio (95% CI)	<i>p</i>
Consistent condom use, past 30 days	43.2%	65.6%	41.3%	2.3 (1.2-4.3)	.01
HIV testing	9.0%	64.4%	41.8%	2.5 (1.5-4.3)	.001
High knowledge of HIV transmission and prevention	36.0%	74.1%	43.5%	1.7 (1.4-2.1)	.001
High self-efficacy to use condoms	35.3%	55.6%	38.2%	1.6 (1.1-2.6)	.01
High adherence to traditional masculine norms	47.3%	45.9%	41.6%	1.2 (0.6-2.0)	.6
High sense of mastery over circumstances	66.7%	67.4%	61.1%	1.3 (0.8-1.9)	.7

<sup>a</sup>There were no significant statistical differences between conditions on baseline scores. <sup>b</sup>Adjusting for baseline scores, relationship status, and within team clustering.

## RESULTS

Of the 222 participants, mean age was 29.8 ( $\pm 8.3$ ; range 18-71) years; 60.8% ( $n = 135$ ) reported being originally from Mexico; 14.0% ( $n = 31$ ) from El Salvador; 6.8% ( $n = 15$ ), from Guatemala; 5.9% ( $n = 13$ ), from Honduras; 1.8% ( $n = 4$ ), and Colombia; and 6.4% ( $n = 14$ ) from other areas. Over half ( $n = 117$ ) reported educational attainment of 8 years or fewer; and over half reported being accompanied ( $n = 118$ ). Mean length of time in the United States was 8.8 ( $\pm 7.6$ ) years; 70.4% ( $n = 150$ ) reported year-round employment; and 69.1% ( $n = 143$ ) reported estimated annual salaries \$21,999 or below. All self-identified as heterosexual; six reported having had sex with men within past year. There were no significant statistical differences between conditions on sociodemographic characteristics ( $p > .05$  for each).

## INTERVENTION EFFECTS

Effects of the intervention from baseline to 18 months post-*Navegante* training are presented in Table 1. Participation in the intervention was associated with increased condom use during the past 30 days, increased HIV testing; increased knowledge of HIV transmission and prevention, and increased self-efficacy to use condoms. Participation was not associated with adherence to traditional masculine norms or increased mastery.

## DISCUSSION

Working within the naturally existing social network of a rural soccer league, *Navegantes* were able to increase consistent condom use, HIV testing, knowledge of HIV transmission and prevention, and self-efficacy to use condoms among their teammates. Given the important roles that networks serve for immigrants, LHA approaches that are well crafted and carefully implemented may prove invaluable to reduce the disproportionate HIV burden borne by Latinos. LHAs may be able to reach large numbers of community members with scientifically sound and theoretically informed messages and skills-building activities. Furthermore, LHA interventions may have residual effects that continue to positively affect a broad community long

after a study or an intervention is complete. For instance, the *Navegantes* who participated in this study were known to be natural leaders who--with their increased knowledge and skills that resulted for their being trained as LHAs--may continue their roles as LHAs despite the completion of this study. Such outcomes have been suggested in international LHA studies (Rhodes, Foley, Zometa, & Bloom, 2007). However, the evidence base of using LHAs as an intervention strategy among men in general and Latino men in particular must be strengthened.

Future research must further explore interventions that apply other ecological approaches. For example, federal immigration policies that allow entire families to come to the United States together may impact risk behaviors. However, the *HoMBReS* intervention was designed by members of a CBPR partnership who were committed to developing an intervention based on two criteria; the intervention needed to focus on factors that were (a) linked to risk as suggested by the formative research, such as norms and expectations around masculinity, and (b) changeable. Changing immigration policies would not have been considered an intervention objective given the scope of this study. Furthermore, the *Navegantes* were trained to serve as community advocates as previously described to advocate for needs and change their environment (e.g., long health department hours, offsite HIV testing; Rhodes et al., 2006) but did not fully fulfill this role given the high demand for information, referrals, condoms, condom use skill development, and reframing norms and expectations around masculinity.

This study provided preliminary evidence that an LHA approach is feasible and appropriate for use with Latino men and can be effective. Our study was designed as a pilot to assess the feasibility of partnering with a Latino soccer league to engage in research through the development, implementation, and evaluation of an intervention to reduce risk among Latino men. Our partnership saw this research as a first step to build trust and develop local capacity to engage in research.

Because more rigorous studies are needed to further demonstrate the efficacy of this type of intervention, we currently are implementing and evaluating the efficacy a revised intervention, known as *HoMBReS-2*, with random assignment and a comparison group that is receiving a cancer prevention intervention. We have included a DVD component that is being integrated into the intervention training modules. This DVD component includes role modeling to reframe negative and bolster positive aspects of what it means to be a man. It also follows a Latino man as he goes through the testing process at a local health department and as he meets and surmounts challenges in a system that is neither bilingual nor bicultural. It also includes a local heterosexual immigrant Latino man, whose identity is obscured, sharing his story about becoming infected and living with HIV in the same community in which the participants live. The *HoMBReS-2* intervention is the result of the soccer league trusting researchers and understanding more about building evidence through science.

Although several limitations of this study exist (including nonrandom assignment, the use of self-reported data and the lack of biomarker data, and the potential lack of generalizability of findings, among others), we would not have been able to set up a more rigorous trial for *HoMBReS-2* without the foundation laid by the *HoMBReS* intervention. To reduce health disparities among some of the most vulnerable communities, we must act creatively, developing new partnerships, building trust through incremental research steps, and utilizing mixed frameworks to improve community health.

## REFERENCES

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs: Prentice-Hall.
- Centers for Disease Control and Prevention. (2007). Sexually Transmitted Disease Surveillance, 2006. Atlanta, GA: U.S. Department of Health and Human Services.
- Centers for Disease Control and Prevention. (2008). HIV/AIDS Surveillance Report. Atlanta.
- Freire, P. (1973). *Education for critical consciousness*. New York: Seabury Press.
- Knipper, E., Rhodes, S. D., Lindstrom, K., Bloom, F. R., Leichter, J. S., & Montano, J. (2007). Condom use among heterosexual immigrant Latino men in the southeastern United States. *AIDS Education and Prevention, 19*(5), 436-447.
- Marin, B. V., Tschann, J. M., Gomez, C. A., & Gregorich, S. (1998). Self-efficacy to use condoms in unmarried Latino adults. *American Journal of Community Psychology, 26*(1), 53-71.
- Marin, G., Sabogal, F., Marin, B.V., Otero-Sabogal, R., & Perez-Stable, E.J. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences, 9*(2), 183-205.
- North Carolina Institute of Medicine. (2003). NC Latino health 2003. Durham, NC: Author.
- Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior, 19*(1), 2-21.
- Rhodes, S. D., Eng, E., Hergenrather, K. C., Remnitz, I. M., Arceo, R., Montano, J. et al. (2007). Exploring Latino men's HIV risk using community-based participatory research. *American Journal of Health Behavior, 31*(2), 146-158.
- Rhodes, S. D., Foley, K. L., Zometa, C. S., & Bloom, F. R. (2007). Lay health advisor interventions among Hispanics/Latinos a qualitative systematic review. *American Journal of Preventive Medicine, 33*(5), 418-427.
- Rhodes, S. D., Hergenrather, K. C., Montano, J., Remnitz, I. M., Arceo, R., Bloom, F. R. et al. (2006). Using community-based participatory research to develop an intervention to reduce HIV and STD infections among Latino men. *AIDS Education and Prevention, 18*(5), 375-389.
- U.S. Census Bureau (2005). 2005 American Community Survey data profile highlights: North Carolina fact sheet (Vol. 2005). Washington, DC: U.S. Department of Commerce.