Effects of Brief Messaging About Undiagnosed Infections Detected through HIV Testing Among Black and Latino Men Who Have Sex With Men in the United States

Gordon Mansergh, PhD, Paige Miller, BA,*† Jeffrey H. Herbst, PhD,* Matthew J. Mimiaga, ScD, MPH,‡§ and Jeremy Holman, PhD‡*

Abstract: We examined intent to get tested for HIV infection and use condoms among n = 604 uninfected black and Latino men who have sex with men after receiving brief information messaging that 1 in 10 minority men who have sex with men had HIV infection and did not know it. Information awareness, newness, believability, HIV testing cost willingness, and associated demographic variables were also assessed.

African American/black and Latino men who have sex with men (MSM) continue to be at disproportionate risk for HIV infection in the United States.[1] From 2008 to 2011, awareness of HIV infection among MSM increased overall and among all age, race/ethnicity, education, and income strata.[2] However, 14% of black MSM and 6% of Latino MSM (and 2% of white MSM) were unaware they were HIV positive.[2]

Routine HIV testing is critical to curbing the HIV epidemic because it can link HIV-infected people to highly effective HIV treatment and HIV-uninfected people to effective prevention programs.[3,4] Studies also show that once individuals know that they are HIV infected, risk behavior dramatically decreases, thereby reducing risk of further HIV transmission.[5,6]

Effective prevention information messages are needed to promote routine HIV testing among MSM at risk for HIV infection. The purpose of this study is to determine how a brief message on HIV testing to detect undiagnosed infections and increase awareness of HIV infection may enhance reported intent to get an HIV test and to use condoms in the future among black and Latino MSM.

Data for this analysis include HIV-negative black (n = 296) and Latino (n = 308) MSM in the *Messages4Men Study*, a 2014 assessment of brief HIV prevention messages. The convenience sample was recruited through online, agency, and street outreach in Chicago, Fort Lauderdale, and Kansas City. To be eligible, men reported having sex with a man in the previous year, identified as black or Latino, were at least 18 years old, worked or lived in one of the 3 city metropolitan statistical areas, and were not enrolled in another HIV-related prevention study. Eligible participants were scheduled for a 1-hour assessment at the local community agency study site: Center on Halsted (Chicago, IL), Latinos Salud (Fort Lauderdale, FL), or Kansas City CARE Clinic (Kansas City, MO). Upon arrival at the study site, participants were rescreened for eligibility and consented for study enrollment. The study protocol was approved by the institutional review board of John Snow, Inc. Computer self-assessment technology was used.

Participants read a brief, plain language message based on study findings among MSM in 20 US cities.[2] The message was presented on a computer screen: "It is important to get tested for HIV. Some people have HIV and do not know it. A recent study of black (Latino, customized based on the participant's race/ethnicity) gay and bisexual men found that about 1 out of 10 of them had HIV and did not know it." Participants were asked on the computer if, after reading the message, they were more or less likely to (*a*) get an HIV test and (*b*) use condoms during anal sex in the future. Responses were based on a 5-point Likert scale ranging from definitely more likely (1) to definitely less likely (5), with the midpoint being not more or less likely (3). The men were also asked if the information was new to them (coded yes vs. unsure/no), they believed the information (5-point Likert scale from fully believe [1] to fully don't believe [5] the message with the midpoint [3] being unsure if I believe it), they would be willing to pay out of their own pocket for an HIV test (coded $0 vs. $1+; overall range, $0–100+), and they want to get an HIV test that day (coded yes vs. unsure/no). Participants then completed a computer-based demographic and behavioral assessment, after which they received a $40 gift card and referrals to services.

Reponses to 5-point Likert scales were recoded to a binary outcome (e.g., definitely or somewhat more likely [1–2] vs. not more likely [3–5] to get an HIV test after reading the message) for analyses. Bivariate and multivariable logistic regression analyses were conducted, with models including

From the *CDC Division of HIV/AIDS Prevention, Atlanta, GA; †Gustavus Adolphus College, St Peter, MN; ‡John Snow Inc, Boston, MA; §Department of Epidemiology, Harvard School of Public Health, and Department of Psychiatry, Harvard Medical School, Boston, MA.

Acknowledgments: The authors thank the study participants and study site staff: Christian F. Castro, Troy Williams, and Jill Dispenza at the Center on Halsted, Chicago, IL; Flavio Nottola, Carlos Moega, Victor Gonzalez, Rafaele Narvaez, and Stephen Fallon at Latinos Salud, Fort Lauderdale, FL; Shawna Edgerson, Lawrence Crawford, DeMarco Vaughn, and Roberta Esmond at the Kansas City CARE Clinic, Kansas City, MO; Jeremy Holman, Devon Brown, Michele Clark, Naima Cozier, Amy Flynn, Robin Hicks, Mihaly Imre, Stewart Landers, Matthew Mimiaga, Michelle Samplin-Salgado, Karen Schneider, and Jodi Sperber at John Snow Inc, Boston, MA; and Gordon Mansergh, Jeffrey H. Herbst, Nicole Pitts, Damian Denson, and Arin Freeman at the US Centers for Disease Control and Prevention, Atlanta, GA.

Funding: This work was supported by the Secretary's Minority AIDS Initiative Fund of the US Department of Health and Human Services, and the Centers for Disease Control and Prevention under CDC research contract no. 200-2012-53307.

Conflict of interest: None declared.

Correspondence: Gordon Mansergh, PhD, Division of HIV/AIDS Prevention, CDC, 1600 Clifton Rd NE, Mailstop E-37, Atlanta GA 30329. E-mail: gcm2@cdc.gov.

Ethics approval: This study was conducted with the approval of the John Snow, Inc, IRB (Protocol Approval No. 13-001-A2).

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Received for publication May 27, 2015, and accepted August 27, 2015.

DOI: 10.1097/OLQ.0000000000000371

TABLE 1. Multivariable Analysis of Message Outcomes and Follow-up Questions Reported by HIV-Uninfected Black and Latino MSM After Receiving a Brief Informational Message on Undiagnosed Infections Detected Among Minority MSM Through HIV Testing (n = 604)

	After Hearing Message, More Likely in the Future to…					
	Take HIV Test, AOR (CI)	**Use Condoms, AOR (CI)**	**New Info, AOR (CI)**	**Believe Info, AOR (CI)**	**Willing to Pay, AOR (CI)**	**Want HIV Test Today, AOR (CI)**
Anal sex without condom, 3 mo (No, reference)		0.34 (0.21–0.60)				1.57 (1.11–2.22)
Latino (Black, reference)			2.38 (1.37–4.12)			1.88 (1.12–3.15)
Age group (40+ y, reference)						
18–29	2.44 (1.24–4.80)				0.57 (0.35–0.92)	
30–39						0.54 (0.33–0.89)
Education (≤HS diploma/GED, reference)						
Some post-HS education/training						
≥4-y college degree	0.32 (0.15–0.68)	0.38 (0.20–0.73)				
City (Chicago, reference)						
Fort Lauderdale					0.48 (0.28–0.80)	
Kansas City			2.38 (1.42–4.00)			

Only significant results are shown, and only significant ($P < 0.05$) AORs are reported.
HS indicates high school; 3 mo, past 3 months.

covariates of race/ethnicity (black, Latino), age (18–29, 30–39, 40+ years), education (high school diploma or less, some post–high school training, 4-year college degree or more education), city (Chicago, Fort Lauderdale, Kansas City), and reporting of condomless anal sex in the past 3 months (yes, no).

Of the 604 participants, 49% were African American/black and 51% were Latino. Half (50%) of the men were 18 to 29 years old, 25% were 30 to 39 years old, and 25% were 40 years or older. Thirty-one percent had a high school diploma or less education, and 36% had a 4-year college degree or more.

After receiving the message, 89% of the sample of HIV-negative MSM reported they were more likely to get an HIV test in the future, and 86% said they were more likely to use condoms in the future. The message contained new information for 29% of the men, and nearly all (98%) believed the message. Most men (70%) were willing to pay something ($1+) for an HIV test, and 35% requested an HIV test on the day of the assessment. Bivariate analysis comparing MSM who reported (vs. did not report) recent condomless anal sex found no difference in enhanced likelihood of getting an HIV test in the future (89% vs. 90%, $P > 0.05$). Men who reported recent condomless anal sex were less likely to report increased likelihood of using condoms (81% vs. 92%, $P < 0.05$). Understandably, more men who reported recent condomless sex indicated they wanted an HIV test on the day of the assessment than men who did not report recent risk behavior (41% vs. 29%, $P < 0.05$).

In multivariable analyses that included demographic characteristics and recent condomless anal sex (Table 1), MSM 18 to 29 (vs. 40+) years old were more likely to report an increased likelihood of taking an HIV test in the future, after hearing the message (adjusted odds ratio [AOR], 2.44; 95% confidence interval [CI], 1.24–4.80), but they were less willing to pay for it (AOR, 0.57; 95% CI, 0.35–0.92). Men with a 4-year college degree or more (vs. high school diploma or less education) had lower odds of reporting increased likelihood of taking an HIV test in the future and using condoms in the future after hearing the message. Latino MSM (vs. black MSM) were more likely to report that the HIV testing information was new and request an HIV test that day. Controlling for demographic characteristics, MSM who reported recent condomless anal sex were less likely to report postmessage enhancement of likelihood of using condoms in the future, although they were more likely to want a HIV test that day. Compared with Chicago, MSM in Kansas City were more likely to report the message information to be new, and men in Fort Lauderdale were less willing to pay for an HIV test, again controlling for other demographic characteristics.

We tested a brief message conveying study findings that 1 in 10 black and 1 in 10 Latino MSM were HIV infected and did not know it.[2] This information was universally believable and new to less than one-third of this sample of black and Latino MSM—although it was relatively more novel to men in Kansas City than in Chicago. Geographical and/or city size differences in HIV-related awareness may be an important factor in developing effective local prevention messages.

Most men reported that they were more likely to get an HIV test and use condoms in the future after receiving the message. Overall, this brief message shows strong potential to be effective in enhancing HIV testing among black and Latino MSM aged 18 to 29 years, a group at highest risk for HIV infection.[7] Such a message could be readily disseminated through cost-efficient prevention approaches such as text messaging, Internet banner advertisements, and community marketing campaigns.[8–10]

Men who have sex with men who reported recent sexual risk behavior were less likely to report that the brief message enhanced their intent to use condoms in the future compared with men who did not report recent sexual risk. Most of the sample still reported that the message enhanced (or increased) the likelihood of future condom use. Nine of 10 men affirmed the message as a possible enhancer of future HIV testing, regardless of whether or not they reported recent condomless sex. This single message has potential for being effective in promoting HIV testing among condom users and nonusers alike, and particularly among younger men.

Nearly 1 in 3 MSM said they wanted an HIV test on the day of the assessment, which was higher among men who reported recent anal sex without a condom. This suggests that men who exhibit behavioral risk for HIV infection may particularly benefit from a brief message about HIV testing, thus reducing windows of undiagnosed infection and risk for further HIV transmission.[3,4]

This study is limited in that it is a cross-sectional assessment that measured perceptions of intended future behavior. Additional research is needed to measure behavior over time to link message exposure with HIV testing and condom use. The

generalizability of the study findings is limited to HIV-uninfected black and Latino MSM in the 3 US cities where the assessment took place. Future studies can replicate the prevention message in additional jurisdictions or in a national sample.

This study is the first to quantitatively assess the potential effectiveness of a brief message about undiagnosed HIV infections among racial/ethnic minority MSM who have the highest HIV incidence rates in the United States. As new HIV prevention findings continue to emerge, more research is needed to develop brief messages that effectively disseminate critical information about HIV risk and prevention options, and facilitate desired behavior change to reduce the HIV epidemic.

REFERENCES

1. CDC. Diagnoses of HIV infection in the United States and dependent areas, 2011. HIV Surveill Rep 2013. Available at: http://www.cdc.gov/hiv/library/reports/surveillance/2011/surveillance_Report_vol_23.html. Accessed April 15, 2015.
2. Wejnert C, Le B, Rose CE, et al. HIV infection and awareness among men who have sex with men—20 cities, United States, 2008 and 2011. PLoS One 2013; 8:e76878.
3. Hall HI, Holtgrave DR, Maulsby C HIV transmission rates from persons living with HIV who are aware and unaware of their infection. AIDS 2012; 26:893–896.
4. Rizza SA, MacGowan RJ, Purcell DW, et al. HIV screening in the health care setting: status, barriers, and potential solutions. Mayo Clin Proc 2012; 87:915–924.
5. Centers for Disease Control and Prevention (CDC). HIV testing and risk behaviors among gay, bisexual, and other men who have sex with men—United States. MMWR Morb Mortal Wkly Rep 2013; 62:958–962.
6. Marks G, Crepaz N, Janssen RS Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. AIDS 2006; 20:1447–1450.
7. CDC. Estimated HIV incidence among adults and adolescents in the United States, 2007–2010. HIV Surveill Suppl Rep 2012;17(No. 4). Available at: www.cdc.gov/hiv/pdf/statistics_hssr_vol_17_no_4.pdf.
8. Hirshfield S, Chiasson MA, Joseph H, et al. An online randomized controlled trial evaluating HIV prevention digital media interventions for men who have sex with men. PLoS One 2012; 7:e46252.
9. Reback CJ, Grant DL, Fletcher JB, et al. Text messaging reduces HIV risk behaviors among methamphetamine-using men who have sex with men. AIDS Behav 2012; 16:1993–2002.
10. Chiasson MA, Hirshfield S, Rietmeijer C HIV prevention and care in the digital age. J Acquir Immune Defic Syndr 2010; 55:S94–S97.