

Do Men who have Sex with Men (MSM) in the United States Understand that HIV Serodiscordance is Possible?

Bradley H. Wagenaar¹, Kristina L. Grabbe², Rob Stephenson³, Christine M. Khosropour¹ and Patrick S. Sullivan^{*,1}

¹Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, Georgia, USA

²Capacity Building Branch, Centers for Disease Control and Prevention, Atlanta, Georgia, USA

³Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, Georgia, USA

Abstract: *Background:* Little is currently known about the extent to which US MSM understand the possibility that a long-term sex partner can have an HIV status different than one's own status. This information is important in the adaptation of Couples Voluntary HIV Counseling and Testing (CVCT) for US MSM.

Methods: 428 US MSM completed an online survey using MySpace.com from March-April, 2009.

Results: Of 426 MSM with complete data, 21.1% (90) were not definitively aware that serodiscordance is possible. Factors associated with a lack of understanding that serodiscordance is possible were: never having tested for HIV (OR: 2.0; CI: 1.1, 3.8), compared to testing 0-6 months previously and having a high school education or less (OR: 2.2; CI: 1.1, 4.5), compared to men who had completed at least some college.

Conclusions: A large proportion of young, internet-using MSM in the United States may not understand that HIV serodiscordance is possible within sexual partnerships. Based on these results, we recommend that CVCT provided to male couples in the United States should include education on HIV serodiscordance.

Keywords: CVCT, HIV knowledge, HIV serodiscordance, HIV/AIDS, epidemiology.

INTRODUCTION

Men who have sex with men (MSM) continue to represent the majority of all new HIV diagnoses in the United States (US); developing and testing interventions to serve MSM is a high priority for HIV prevention [1,2]. Couples Voluntary Counseling and Testing (CVCT) is an African testing service that has been recently adapted for use with US male couples who have also expressed high levels of hypothetical willingness to participate in CVCT [3,4]. The African CVCT intervention includes an educational component to help couples understand that HIV serodiscordance is possible – that is, that one partner may be HIV-positive while the other is HIV-negative. It is not clear whether MSM in the US would also benefit from education about the possibility of HIV serodiscordance in the adapted CVCT intervention for MSM. Limited available data suggest that MSM tend to assume HIV partner concordance [5,6]; MSM are more likely to engage in unprotected anal intercourse (UAI) with partners who are perceived to share the same HIV serostatus, compared to those who are HIV discordant or whose status they do not know [7,8].

METHODS

Data were from the 3-month follow-up time point of an online HIV prevention research study for US MSM. Methods

have been previously reported [9]. Briefly, MSM were recruited online from MySpace.com from March-April, 2009 in the US. Men who were white, black, or Hispanic and who consented to prospective follow-up were invited to participate in a 3-month follow-up survey July-August, 2009.

In addition to demographic and behavioral information, the survey collected data on men's understanding of the possibility of HIV serodiscordance, measured using responses to the statement: "in a couple that has been having sex for several years, if one partner is HIV-negative the other partner is also HIV-negative." Men who responded "false" were considered to understand that serodiscordance is possible; others were considered not to understand. Using logistic regression in SAS 9.3 (Cary, NC), we calculated crude odds ratios and 95% confidence intervals (CI) for the associations of understanding that serodiscordance is possible with selected demographic characteristics and sexual risk behaviors. Two-tailed Wald tests and an alpha level of 0.05 were used for significance testing.

RESULTS

From 428 total survey respondents, we excluded one man with missing data and one man responding "prefer not to answer" to the serodiscordance question. Most respondents were between 18-24 years of age, and over 75% had a main male sex partner in the last 12 months (Table 1). Over 70% of respondents reported UAI in the last 12 months. nearly half had received and HIV test in the last 12 months and about a quarter had never been tested for HIV. Over 30% did not know their most recent male sex partner's HIV status.

*Address correspondence to this author at the 1518 Clifton Road, N. E., Room 438, Atlanta, GA 30322, USA; Tel: 404-727-2038; E-mail: pssulli@emory.edu

Table 1. Characteristics Associated with Not Understanding that HIV Serodiscordance is Possible Among 426^a US MSM, 2009

Characteristics	Sample Totals n (%) Unless Noted ^b	False n (%)	True/Don't Know n (%) ^c	Unadjusted OR (95% CI)
Total	426 (100)	336 (78.9)	90 (21.1)	
Race/Ethnicity				
Non-Hispanic White	203 (47.7)	162 (79.8)	41 (20.2)	1 (reference)
Non-Hispanic Black	61 (14.3)	45 (73.8)	16 (26.2)	1.4 (0.72, 2.7)
Hispanic	162 (38.0)	129 (79.6)	33 (20.4)	1.0 (0.61, 1.7)
Age	22 (median), 6 (IQR)			
18-24	284 (66.7)	224 (78.9)	60 (21.1)	1 (reference)
25-29	87 (20.4)	71 (81.6)	16 (18.4)	0.84 (0.46, 1.6)
Over 30	55 (12.9)	41 (74.6)	14 (25.5)	1.3 (0.65, 2.5)
Education				
College, post graduate, or professional school	88 (20.7)	76 (86.4)	12 (13.6)	1 (reference)
Some college, associate's or technical degree	206 (48.4)	162 (78.6)	44 (21.4)	1.7 (0.86, 3.4)
High school or less	129 (30.3)	98 (74.2)	34 (25.8)	2.2 (1.1, 4.5)*
Missing	3 (0.70)	2 (66.7)	1 (33.3)	
Region				
Midwest	67 (15.7)	54 (80.6)	13 (19.4)	1 (reference)
North	66 (15.5)	50 (75.8)	16 (24.2)	1.3 (0.58, 3.0)
South	133 (31.2)	107 (80.5)	26 (19.5)	1.0 (0.48, 2.1)
West	141 (33.1)	112 (79.4)	29 (20.6)	1.1 (0.52, 2.2)
Missing	19 (4.5)	13 (68.4)	6 (31.6)	
Had a main male sex partner in last 12 months				
No	103 (24.2)	78 (75.7)	25 (24.3)	1 (reference)
Yes	323 (75.8)	258 (79.9)	65 (20.1)	0.79 (0.46, 1.3)
Most recent male sex partner's HIV status				
Negative	266 (62.4)	212 (79.7)	54 (20.3)	1 (reference)
Positive	17 (4.0)	13 (76.5)	4 (23.5)	1.2 (0.38, 3.9)
Unknown	143 (33.6)	111 (77.6)	32 (22.4)	1.1 (0.69, 1.9)
Had unprotected anal intercourse in last 12 months				
No	121 (28.4)	98 (81.0)	23 (19.0)	1 (reference)
Yes	305 (71.6)	238 (78.0)	67 (22.0)	1.2 (0.71, 2.0)
Number of male sex partners in last 12 months	4 (median), 5 (IQR)			
1	83 (19.5)	66 (79.5)	17 (20.5)	1 (reference)
2 – 3	115 (27.0)	85 (73.9)	30 (26.1)	1.4 (0.70, 2.7)
4 – 7	123 (28.9)	101 (82.1)	22 (17.9)	0.85 (0.42, 1.7)
>7	105 (24.6)	84 (80.0)	21 (20.0)	0.97 (0.47, 2.0)
Time since last HIV test				
0-6 months	112 (26.3)	90 (80.4)	22 (19.6)	1 (reference)
7-12 months	84 (19.7)	71 (84.5)	13 (15.5)	0.75 (0.35, 1.6)
>12 months	91 (21.4)	74 (81.3)	17 (18.7)	0.94 (0.47, 1.9)
Never tested	100 (23.5)	67 (67.0)	33 (33.0)	2.0 (1.1, 3.8)*
Un known	39 (9.2)	34 (87.2)	5 (12.8)	0.60 (0.21, 1.7)

*P < .05 (Wald X²)^aFrom 428 total respondents, excludes one man with missing data and one man responding "prefer not to answer" regarding the statement: "In a couple that has been having sex for several years, if one partner is HIV-negative the other partner is HIV-negative."^bPercentages in this column reflect column percentages. For example, 47.7% of our sample was of Non-Hispanic White race/ethnicity. All other columns are row percentages pertaining to percent responding "correctly" or "incorrectly" to the serodiscordance question.^cIncludes 49 men responding "true" and 41 responding "don't know" regarding the statement: "In a couple that has been having sex for several years, if one partner is HIV-negative the other partner is HIV-negative."

Abbreviations: OR, Odds Ratio; HIV, Human immunodeficiency virus; IQR, Interquartile range.

Of 426 men included in the analysis, 21.1% (90) of MSM were not aware that serodiscordance is possible: 11.5 percent (49) responded “true” and 9.6% (41) responded “I don’t know” to the question about serodiscordance. The odds of not understanding that serodiscordance is possible were 2.0 (CI: 1.1, 3.8) times as high for men who had never tested for HIV, compared to the odds for men who had tested for HIV 0-6 months previously. Additionally, the odds of not understanding that serodiscordance is possible were 2.2 (CI: 1.1-4.5) times as high among men with a high school education or less, compared to the odds for men who had completed at least some college.

DISCUSSION

A substantial proportion of young, internet-using MSM in the United States may not understand that HIV serodiscordance is possible within sexual partnerships. Lack of understanding may occur especially among men not previously tested for HIV and those with less educational attainment. These same factors have been recently reported to be associated with lower levels of general HIV knowledge [10].

We recognize several important limitations to our work. First, we were limited to a single item for this assessment, and the measure is imperfect. We considered respondents who answered “I don’t know” to not be aware of the possibility of serodiscordance. However, even if we only considered those who endorsed the item as true as not being aware of the possibility of serodiscordance, our primary conclusion - that an important proportion of young MSM are not definitively certain that serodiscordance is possible - is still valid. We also acknowledge that our sample is not representative of all US MSM, or all internet-using MSM.

Based on these results, we recommend that CVCT provided to male couples in the United States should include education on HIV serodiscordance. Since approximately one in six MSM who had been previously tested for HIV also did not recognize the possibility of serodiscordance, this concept might also be important to include in general HIV/AIDS educational interventions and standard prevention counseling with individuals receiving HIV counseling and testing.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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DISCLAIMER

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

REFERENCES

- [1] Prejean J, Song R, Hernandez A, *et al.* Estimated HIV incidence in the United States, 2006-2009. *PLoS ONE* 2011; 6(8):e17502.
- [2] Sullivan PS, Carballo-Diequez A, Coates T, *et al.* Successes and challenges of HIV prevention in men who have sex with men. [Research Support, N.I.H., Extramural Research Support, Non-U.S. Gov't]. *Lancet* 2012; 380(9839): 388-99.
- [3] Stephenson R, Sullivan PS, Salazar LF, Gratz B, Allen S, Seelbach E. Attitudes towards couples-based HIV testing among MSM in three US cities. *AIDS Behav* 2011;15 Suppl 1:S80-7.
- [4] Wagenaar BH, Christiansen-Lindquist L, Khosropour C, *et al.* Willingness of US men who have sex with men (MSM) to participate in couples HIV voluntary counseling and testing (CVCT). *PLoS ONE* 2012; 7(8): e42953.
- [5] Parsons JT, Severino J, Nanin J, *et al.* Positive, negative, unknown: assumptions of HIV status among HIV-positive men who have sex with men. *AIDS Educ Prev* 2006;18(2):139-49.
- [6] Niccolai LM, Farley TA, Ayoub MA, Magnus M, Kissinger PJ. HIV-infected persons' knowledge of their sexual partners' HIV status. *AIDS Educ Prev* 2002;14(3):183-9.
- [7] Golden MR, Brewer DD, Kurth A, Holmes KK, Handsfield HH. Importance of sex partner HIV status in HIV risk assessment among men who have sex with men. *J Acquir Immune Defic Syndr* 2004; 36(2): 734-42.
- [8] Hoff CC, Stall R, Paul J, *et al.* Differences in sexual behavior among HIV discordant and concordant gay men in primary relationships. *J Acquir Immune Defic Syndr* 1997;14(1): 72-8.
- [9] Sullivan PS, Khosropour CM, Luisi N, *et al.* Bias in online recruitment and retention of racial and ethnic minority men who have sex with men. *J Med Internet Res* 2011;13(2): e38.
- [10] Wagenaar BH, Sullivan PS, Stephenson R. HIV knowledge and associated factors among internet-using men who have sex with men (MSM) in South Africa and the United States. *PLoS ONE* 2012;7(3): e32915.