Published in final edited form as:

Sex Transm Dis. 2012 May ; 39(5): 379–381. doi:10.1097/OLQ.0b013e3182479108.

HIV Testing Rates and Factors Associated With Recent HIV Testing Among Male Couples

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Abstract

Little data exists on HIV testing rates among male couples. By using dyadic data from 142 male couples, we found that less than a quarter of the men had gotten tested for HIV in the previous three months. Few factors also were associated with their most recent HIV test.

Keywords

HIV testing; male couples; MSM; UAI; HIV

In 2008, the Centers for Disease Control and Prevention (CDC) examined HIV testing histories among men who have sex with men (MSM) in 21 U.S. cities. Among the MSM who tested for HIV, 19% tested HIV-positive and of these, 44% were unaware of their infection [1]. Findings from this study indicate that expanding HIV testing efforts must include MSM, and suggested reconsideration of whether sexually active MSM should test more often than once per year (i.e., every three months), regardless of their self-reported sexual behaviors [1]. The CDC currently recommends that gay, bisexual, and other MSM who have multiple or anonymous sex partners, who have sex while using drugs, or who have a partner that engages in these activities, be tested for HIV every three to six months [2]. Recent estimates also indicate that 68% of MSM acquire HIV from their main sex partners [3]. Because MSM remain disproportionately affected by HIV and a majority are contracting HIV in the context of a relationship, research has recently examined how relationship factors and sexual risk behaviors are contributing to these new infections [4, 5]. For example, previous research has explored relationship factors associated with unprotected anal intercourse (UAI), the primary sexual risk behavior for HIV acquisition, between main partners of male couples and among partnered men with a secondary male sex partner [4]. Other research has examined aspects of sexual agreements [6–9]; a sexual agreement is an explicit contract between main partners about which sexual behaviors may occur within the relationship, and with any secondary sex partners. Nevertheless, limited data exists on the HIV testing rates of MSM in couples and what factors may be associated with their most recent HIV test.

The present study has two aims: 1) to report HIV testing rates among a convenience sample of male couples; and 2) to examine which factors were associated with participants' who reported having had an HIV test within the previous three months. We used a cross-sectional

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No financial or ethical conflicts of interest exist among the authors for the present study.

study design paired with a standard reciprocal dyadic data collection method to examine testing rates and factors associated with recent HIV testing (i.e., within previous three months) among both men in the male couple. A variety of recruitment methods were used to target and obtain a convenience sample of 142 male couples from Portland, Oregon and Seattle, Washington between June and November 2009. For example, business cards and flyers were distributed at gay-identified events and venues, referrals were made from local organizations that provided social services to gay men and other MSM, and electronic invitations were sent to profiles located on social websites frequented by gay men in the Pacific Northwest. A response rate was not recorded. Both members of each couple had to meet the following eligibility criteria to participate in the study: 18 years or older; self-identified as gay, bisexual, or queer; have had anal sex in the previous 3 months; had been coupled with his main partner for at least 3 months; and had a HIV-negative or unknown serostatus.

At a pre-arranged appointment, each qualified male in every couple read an electronic consent form and completed the 15 to 25 minute self-administered anonymous, electronic survey simultaneously, yet independently. Personal identifying information was not collected to decrease measurement error and participation bias [10]. Data from 144 male couples were then screened for eligibility criteria, missing values, and adjusted accordingly based on recommendations made by Acock [11]. Data from two couples were deleted due to ineligibility and inconsistencies in responses.

The present study asked participants to complete a variety of measures in the electronic questionnaire, including: common demographic information (age, race, highest education-level achieved, etc.); relationship characteristics (i.e., type of relationship, having a sexual agreement); whether the men had UAI with their main partner and a secondary male sex partner in the previous three months; self-reports of, and perceived partner's, HIV serostatus and most recent HIV test; and validated measures for relationship factors of trust [12], relationship commitment [13], and investment in one's sexual agreement [14]. Further details about the procedures and measures used in the present study have previously been reported [4, 6].

Dyadic data from 142 male couples were analyzed using Stata version 11 (StataCorp LP, College Station, TX). Responses to several questions were appropriately categorized and descriptive statistics were calculated. Because we were most interested in factors associated with men's most recent HIV test, each participant's self-reported HIV test and his perceived main partner's last HIV test were dichotomized into two categories (i.e., < 3 months vs. > 3 months and never). Bivariate analyses compared men who got tested for HIV in the previous three months and men who did not or were never tested by using the Pearson chi-square test, Fisher's exact test, and the independent t-test as appropriate. Variables that differed significantly in bivariate analyses at $P < 0.05$ were then analyzed for multicollinearity in a pairwise deletion correlation matrix with Bonferroni correction. All predictors that were significant at $P < 0.05$ and had minimal issues of multicollinearity were included in the final multilevel random-intercept logistic regression model (i.e. xtlogit).

Recommendations from Kenny et al. [15] were used to arrange the data into an appropriate format for random-intercept logistic regression, a multilevel modeling analytical technique used to calculate individual probabilities from dyadic data [16]. In this case, data from both men in each couple were used to predict which factor(s) were associated with the likelihood (i.e. odds) that one or both of the men had been tested for HIV within the previous three months. Recruitment site, relationship duration, and type of relationship were added as control variables to the final model. Odds ratios and their associated 95% confidence intervals were then calculated.

The average age of the men was 34.1 years (SD 8.4). Most men (N = 284) self-reported as: gay (95%); HIV-negative (95%); non-Hispanic (92%); White (85%); living in a city (82%); being employed (85%); earning more than \$30,000 per year (79%); and/or having at least a bachelor's degree (68%). Most also perceived their main partner to be HIV-negative (93%); were living with their main partner (82%); and/or have been in their relationship for two years or longer (65%). Table 1 provides selected descriptive statistics of the sample's sexual risk behaviors, last HIV test, type of relationship, and couples' concordance about having a sexual agreement. Among those who reported having a sexual agreement, 77% reported that they explicitly discussed their agreement in detail with their main partner; 20% reported that they had definitively broke their agreement with their main partner. On average, the participants trusted their main partners, were invested in their relationship, and were invested in the sexual agreements that they had with their main partners.

Among the sample of male couples, several factors were significantly associated with one or both partners self-reporting that they had tested for HIV in the previous three months. The odds of testing for HIV in the previous three months were positively associated with both men in the couple (i.e., concordance) reporting that they had a sexual agreement (OR = 2.15 [CI 1.10 – 4.21], $P < 0.05$), and with one or both men in the couple self-reporting that they had engaged in UAI with a secondary male sex partner within the previous three months (OR = 3.20 [CI 1.22 – 8.43], $P < 0.05$). Further, the odds of testing for HIV in the previous three months were negatively associated with men who indicated that they were living in Portland, Oregon (OR = 0.41 [0.21 – 0.79], $P < 0.01$). Results from the multilevel random-intercept logistic regression model analysis are presented in Table 2.

Findings from this study are the first to report HIV testing rates among male couples and the factors that are associated with recent HIV testing. Recent HIV testing rates in this study's sample were relatively low, even when controlling for differences in relationship types and UAI with the main partner in the multilevel random-intercept logistic regression model. Moreover, some men were never tested for HIV. Our results suggest that concurring with one's partner about having a sexual agreement may help encourage someone to test for HIV, perhaps as a component of the couple's sexual agreement. Some men may also have recently been tested for HIV as part of their HIV prevention strategy because they had engaged in a high-risk sexual behavior (i.e., UAI) with someone who was not their main partner. Given that the majority of MSM acquire HIV from their main sex partner while they are in a couple, more research is urgently needed to determine what facilitators and barriers exist to HIV testing for male couples [17], and whether testing is an active component to their sexual agreements.

This study is not without limitations, including the use of a cross-sectional study design and a convenience sample. Other limitations include the lack of data on other sexual risk behaviors besides UAI, the timing of sexual risk behaviors with respect to HIV testing, reasons for obtaining an HIV test, whether HIV testing is a component to the sexual agreement, and the men's attitudes and perceptions of their risk for acquiring HIV. Despite these limitations, our study's main strength is the use of dyadic data with multilevel modeling analyses.

Future research with male couples should take these limitations into consideration when examining what factors may encourage or prevent male couples from HIV testing. Specifically, future studies are needed to examine how sexual agreements, HIV testing rates, and sexual behaviors are intertwined and how they affect the individual and male couples' risk for HIV. Research that investigates the extent of male couples' communication about their sexual health, including testing, is also needed. These advances in research will help inform how best to develop and tailor future HIV prevention strategies for male couples.

Acknowledgments

This manuscript was supported by the center (P30-MH52776; PI: J. Kelly) and NRSA (T32-MH19985; PI: S. Pinkerton) grants from the National Institute of Mental Health.

References

1. CDC. HIV testing among men who have sex with men --- 21 cities, United States, 2008. *MMWR*. 2011; 60(21):694–699. [PubMed: 21637183]
2. CDC. [Accessed October 10, 2011.] Gay and Bisexual Men's Health. Sep 27. 2011 Available at: <http://www.cdc.gov/msmhealth/HIV.htm>
3. Sullivan PS, Salazar L, Buchbinder S, et al. Estimating the proportion of HIV transmissions from main sex partners among men who have sex with men in five US cities. *AIDS*. 2009; 23(9):1153–1162. [PubMed: 19417579]
4. Mitchell JW, Harvey SM, Champeau D, et al. Relationship factors associated with HIV Risk among a sample of gay male couples. *AIDS Behav*. 2011; 10.1007/s10461-011-9976-0.
5. Mustanski B, Newcomb ME, Clerkin EM. Relationship characteristics and sexual-risk taking in young men who have sex with men. *Health Psychol*. 2011; 30(5):597–605. [PubMed: 21604883]
6. Mitchell JW, Harvey SM, Champeau D, et al. Relationship factors associated with gay male couples' concordance on aspects of their sexual agreements: Establishment, type, and adherence. *AIDS Behav*. 2011; 10.1007/s10461-011-0064-2
7. Hoff CC, Beougher SC. Sexual agreements among gay male couples. *Arch Sex Behav*. 2008; 39(3):774–787. [PubMed: 18686027]
8. Hoff CC, Beougher SC, Chakravarty D, et al. Relationship characteristics and motivations behind agreements among gay male couples: Differences by agreement type and couple serostatus. *AIDS Care*. 2010; 22(7):827–835. [PubMed: 20635246]
9. Hoff CC, Chakravarty D, Beougher SC, et al. Serostatus differences and agreements about sex with outside partners among gay male couples. *AIDS Educ Prev*. 2009; 21(1):25–38. [PubMed: 19243229]
10. Catania JA, Gibson DR, Chitwood DD, et al. Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychol Bull*. 1990; 108:339–362. [PubMed: 2270232]
11. Acock AC. Working With Missing Values. *J Marriage Fam*. 2005; 67:1012–1028.
12. Rempel JK, Holmes JG, Zanna MP. Trust in close relationships. *J Pers Soc Psychol*. 1985; 49(1):95–112.
13. Rusbult CE, Martz JM, Agnew CA. The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Pers Relatsh*. 1998; 5:357–391.
14. Neilands TB, Chakravarty D, Darbes LA, et al. Development and validation of the sexual agreement investment scale. *J Sex Res*. 2010; 47(1):24–37. [PubMed: 19396645]
15. Kenny, D.; Kashy, D.; Cook, W. *Dyadic data analysis*. New York: Guilford Press; 2006.
16. Rabe-Hesketh, S.; Skrondal, A. *Multilevel and longitudinal modeling using stata*. College Station: Stata Press; 2008.
17. Stephenson R, Sullivan PS, Salazar LF, et al. Attitudes towards couples-based HIV testing among MSM in three US cities. *AIDS Behav*. 2011; 15:S80–S87. [PubMed: 21336607]

Summary

Less than a quarter of men in the male couples had gotten tested for HIV in the previous three months. Few factors were associated with their most recent HIV test.

Table 1

Descriptive statistics of the sample

Characteristic	% (N = 284 men)
Had UAI with main partner within past 3 months ^a	90% (257)
Had UAI with a secondary partner within past 3 months ^a	10% (28)
Self-reported last HIV test	
< 3 months	24% (68)
> 3 months	75% (212)
Never been tested	1% (4)
Perceived timing of main partner's last HIV test ^b	
< 3 months	15% (44)
> 3 months	82% (232)
Never been tested	2% (5)
Type of relationship	
Monogamous	51% (144)
Non-monogamous	49% (140)
	% (N = 142 couples)
Concordance about having a sexual agreement	
Both men reported yes	48% (68)
Both men reported no	16% (23)
Discordant reports	36% (51)

Notes:

^a Participants responded to these items independently. Thus, the total number of affirmative responses for the two items is greater than the number of participants.

^b Minimal missing data existed for perceived timing of main partner's last test (3 cases).

Table 2

Odds Ratios and 95% Confidence Intervals from Random-effects Logistic Regression Analysis of Men in 142 Male Couples Who Tested for HIV in the Previous Three Months (vs. longer or never) by Characteristic

Characteristic	OR	95% CI
Type of relationship (Monogamous vs. non-monogamous)	0.60	0.29 – 1.26
Relationship duration (< 2 years vs. > 2 years)	1.82	0.88 – 3.75
Concordance about having a sexual agreement (Yes vs. discordance or none)	2.15*	1.10 – 4.21
UAI with main partner in past three months (Yes vs. no)	0.86	0.29 – 2.52
UAI with secondary sex partner in past three months (Yes vs. no)	3.20*	1.22 – 8.43
Recruitment city (Portland vs. Seattle)	0.41**	0.21 – 0.79

Note: Model controlled for type of relationship, relationship duration, and UAI with main partner in the past three months.

OR odds ratio, *CI* confidence interval

* $P < 0.05$,

** $P < 0.01$