Published in final edited form as:

AIDS Care. 2012 ; 24(9): 1078–1086. doi:10.1080/09540121.2012.663883.

HIV DIAGNOSIS AND SEXUAL RISK BEHAVIOR INTENTIONS AMONG COUPLE VCT CLIENTS IN ETHIOPIA

Yung-Ting Bonnenfant*, Michelle J. Hindin*, and Duff Gillespie*

*Department of Population, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

Abstract

This research examines whether members of HIV affected couples are more likely to change their abstinence and condom intentions than members of HIV– couples during couple voluntary counseling and testing (VCT). 1,260 couple VCT clients in Ethiopia were asked about their sexual risk behavior intentions for the next two months after pre-test and post-test counseling.

Multinomial logistic regression was used to determine whether the couple's HIV status was associated with changed intentions to abstain or use condoms between pre-test and post-test. Individuals belonging to male HIV+ serodiscordant couples (aRRR= 7.98, $p<0.001$), female HIV+ serodiscordant couples (aRRR=5.85, $p<0.001$), and HIV+ concordant couples (aRRR=3.12, $p=0.05$) were more likely to have increased their intentions to abstain or use condoms in the next two months than individuals in HIV– concordant relationships. The couple's HIV status was not associated with decreased intentions to abstain or use condoms in the next two months.

Counseling for all HIV affected couples should include practical information on obtaining and using condoms. This includes HIV affected couples who intend to abstain from sex, whether for a short or long period of time, so that they are prepared to have protected sex if their intentions change.

Keywords

HIV; voluntary counseling and testing; couple; Ethiopia; condom; abstinence

INTRODUCTION

In 2007, there were 33 million individuals living with HIV and 2.7 million new HIV infections (UNAIDS, 2008). Without a cure for HIV, prevention remains paramount. Voluntary counseling and testing (VCT) for HIV is advocated as a way to reduce risk behaviors (World Health Organization, 2002). VCT is especially important among serodiscordant couples, in which there is a substantial risk of HIV transmission. Among urban Zambian and Rwandan adults, about 60.3% to 94.2% of incident heterosexually transmitted HIV infections happen within cohabitation or marriage (Dunkle et al., 2008). These stable relationships are the ones in which condoms are least likely to be used (Chimbiri, 2007; Desgrees-Du-Lou & Coleman, 2005; Moore & Oppong, 2007), and

therefore reducing sexual risk behavior among serodiscordant couples has the potential to avert many new infections.

Studies on the effectiveness of VCT to reduce sexual risk behavior show mixed results (Denison, O'Reilly, Schmid, Kennedy, & Sweat, 2008; Matovu et al., 2005; Sherr et al., 2007; The Voluntary HIV-1 Counseling and Testing Efficacy Study Group, 2000). The evidence is more consistent when looking at those who test HIV+. For example, the adjusted odds of unprotected intercourse were significantly lower after versus before seroconversion (aOR=0.69, $p=0.001$) in a study of female sex workers in Kenya (McClelland et al., 2006). Other studies have likewise shown higher levels of condom use or decreased levels of unprotected sex comparing HIV+ women after versus before HIV diagnosis (Magalhaes, Amaral, Giraldo, & Simoes, 2002; Sherr et al., 2007) or comparing HIV+ to HIV- individuals (The Voluntary HIV-1 Counseling and Testing Efficacy Study Group, 2000; van der Straten, King, Grinstead, Serufilira, & Allen, 1995; Weinhardt, Carey, Johnson, & Bickham, 1999). However, not all studies agree. There was no significant difference in condom use between HIV+ and HIV- women after prenatal or postpartum HIV testing in studies from Kenya, South Africa, and Cote d'Ivoire (Brou et al., 2008; Desgrees-Du-Lou et al., 2009; Peltzer, Chao, & Dana, 2008; Temmerman et al., 1990). Yet it should be noted that HIV+ women were not as likely to resume sexual activity as HIV- women after testing in some of these studies (Brou et al., 2008; Desgrees-Du-Lou et al., 2009).

Studies among couples, especially serodiscordant couples, provide the strongest evidence supporting a relationship between an HIV+ diagnosis and reducing sexual risk behavior. This might result from higher levels of serostatus disclosure among couple VCT participants or a mutual commitment to prevent HIV transmission within a stable union (van der Straten et al., 1995). HIV+ individuals who disclose their serostatus are more likely to use condoms and engage in other risk reduction strategies than those who do not disclose (Desgrees-Du-Lou et al., 2002; Desgrees-Du-Lou & Coleman, 2005; King et al., 2008; Olley, Seedat, & Stein, 2004; Simbayi et al., 2007), and while disclosure is voluntary in individual counseling, it is a routine part of couple VCT. A review of HIV prevention studies in developing countries found that VCT among serodiscordant couples fostered condom use and low rates of seroconversion between partners (Merson, Dayton, & O'Reilly, 2000). In a Rwandan study of discordant couples, condom use rose from 4% before HIV testing to 57% one year later (Allen et al., 1992). Similar results are found in other studies of HIV discordant couples (Allen et al., 2003; Hernando et al., 2009).

It is not clear whether the sex of the HIV+ member of the couple influences abstinence and condom use within the relationship. Several studies indicate that condom use is higher in serodiscordant couples when the woman is the HIV+ partner, although not all differences were significant or even tested for significance (Allen et al., 1992; Kamenga et al., 1991; van der Straten et al., 1995). HIV- women with HIV+ partners may lack the power to negotiate condom use. Yet, not all studies show consistent results (Allen et al., 2003; Bouhnik et al., 2007). A Zambian study among serodiscordant couples showed more frequent sex and less consistent condom use when the male partner was HIV- versus HIV+, perhaps resulting from lower sexual desire in HIV+ men and a willingness to use condoms (Allen et al., 2003).

There are numerous other factors which influence unprotected sex. Higher educational status (Buchacz et al., 2001; Desgrees-Du-Lou et al., 2009; Genberg et al., 2008) and employment or economic stability (Buchacz et al., 2001; Moore & Oppong, 2007) are associated with consistent condom use. However, those who want more children may have unprotected sex, regardless of the HIV status of the individual or sexual partner (Feldman & Maposhere, 2003; Moore & Oppong, 2007; Sarna et al., 2009). HIV disease stage may also be related to unprotected sex (Buchacz et al., 2001; McClelland et al., 2006), perhaps because sexual frequency decreases as an HIV+ individual's health deteriorates (Sarna et al., 2009; McClelland et al., 2006). Likewise, antiretroviral therapy may increase unprotected sex (Diabate, Alary, & Koffi, 2008), however, many studies in Africa show no drop in condom use after initiation of antiretroviral therapy, despite improvements in health (Kennedy, O'Reilly, Medley, & Sweat, 2007; McClelland et al., 2010; Sarna et al., 2009).

Understanding which factors influence abstinence or safe sex among stable unions is critical, since a large proportion of HIV transmission is thought to occur within them. The aim of this research is to investigate how learning about the HIV status of the couple is associated with changed intentions to use condoms or abstinence among couple VCT participants and whether the relationship differs between men and women.

METHODS

Study Setting

Data come from the Ethiopia Voluntary Counseling and Testing Integrated with Contraceptive Services (VICS) study, which assessed the impact of offering family planning services during VCT (Gillespie, Bradley, Woldegiorgis, Kidanu, & Karklins, 2009). Data were collected from individual and couple-based VCT clients at eight public sector health facilities in Oromia region, Ethiopia, in two cross-sectional waves. In 2006, baseline data were collected from 4,019 clients. In 2008, 4,027 endline client interviews were conducted. The VICS study integrated family planning into VCT between these time points. Counseling discussed HIV transmission, using condoms, obtaining antiretroviral drugs, and other topics.

Participants answered two different gender-specific standardized questionnaires on their testing day. The first interview occurred after pre-test counseling, when clients were unaware of their HIV status. The second interview occurred after clients received their HIV results and post-test counseling. Interviewers were researchers from Miz-Hasab Research Center, a local organization with experience conducting studies on sensitive topics. Interviewers were gender-matched to participants and masked to participants' HIV status. Although couple VCT clients received counseling and their HIV results with their partner, they participated in both VICS interviews individually. The Johns Hopkins institutional review board and the Science and Technology Commission of Ethiopia gave the VICS study ethical approval.

Study Population

To be eligible for the VICS study, an individual had to be at least 15 years old and agree to release his or her HIV test result to the study. This analysis is limited to all couple VCT

clients, regardless of their marital status or sexual experience. Within this sample (n=1,262 or 631 couples), all women were 49 years and men were 59 years of age. One woman missing data on her abstinence and condom intentions at both pre-test and post-test was dropped as well as her partner, resulting in a final sample size of 1,260 individuals or 630 couples. Imputation was used to account for data missing on lifetime number of sexual partners and intentions to abstain or use condoms at post-test, before multivariate analyses. Bivariate analyses were restricted to the unimputed data set (n=1,233), which only included those without missing data.

Variables

The variables in these analyses are based on self-report, with the exception of HIV serostatus. The dependent variable is an individual's change in sexual risk behavior intentions (abstinence and/or condom intentions) between pre-test and post-test. Only individual, not couple-level, intentions were assessed. Individuals were defined as having intentions to abstain or use condoms if they planned to do any of the following to protect themselves or others against HIV/STIs in the following two months: (1) "abstain from sex," (2) "use condoms every time I have sex," (3) "use condoms more often," and/or (4) "start using condoms for the first time." The outcome variable constructed from this question at pre-test and post-test has three categories: (1) consistent intentions to abstain or use condoms, which includes individuals mentioning an intention to use condoms and/or abstinence at both pre-test and post-test and individuals not mentioning an intention to use condoms or abstinence at both pre-test and posttest; (2) increased intentions to abstain or use condoms, defined as not mentioning intentions to abstain or use condoms at pre-test but mentioning intentions to abstain or use condoms at posttest; and (3) decreased intentions to abstain or use condoms, defined as mentioning intentions to abstain or use condoms at pre-test but not at post-test.

The HIV status of the couple is the main independent variable and has four categories: (1) both partners are concordant HIV-, (2) serodiscordant in which the man is HIV+, (3) serodiscordant in which the woman is HIV+, and (4) both partners are HIV+. Individual, partner, and couple characteristics were also used as independent variables. Filmer and Pritchett's methodology was used to create the asset index (Filmer & Pritchett, 2001).

Statistical Analyses

Fisher's exact tests and t-tests were used in bivariate analyses. For crude and multivariate multinomial logistic regression analyses, five imputed data sets were made with multiple imputation by chained equations (ICE version 1.9.0 PR/IW 13jul2010). Variables significant at $p < 0.1$ level in bivariate analyses and variables considered theoretically important, such as gender, were included in multivariate analyses. Standard errors were corrected for the clustering of observations by couple in multinomial logistic regression models, and $p < 0.05$ was used to determine statistical significance in multivariate analyses. STATA (version 11.0; College Station, Texas, USA) was used for analyses.

RESULTS

Most individuals (78.7%) did not change their sexual risk behavior intentions between pre-test and post-test (the average time between pre- and post-test counseling was about 2.5 hours, and between the two interviews it was 3 hours). Among these individuals, 55.1% reported intending to abstain or use condoms in the next two months at both pre-test and post-test. Among those reporting to abstain or use condoms, more than 80% mentioned intending to abstain from sex in the next two months, and nearly a quarter (24.2%) at pre-test and 27.6% of individuals at post-test mentioned intending to use condoms. In all outcome categories, some individuals mentioned intending to use condoms and abstain at the same time. Of the 14.3% who no longer intended to use condoms or abstain in the next two months after the post-test (decreased intentions), 85.1% had intended to abstain and 18.9% had mentioned condoms at pretest. Of the 7% who intended to use condoms or abstain in the next two months at the post-test but not the pre-test (increased intentions), 61.6% intended to abstain and 52.3% mentioned condom intentions at post-test.

Bivariate Results: Increased versus Consistent Intentions to Abstain or Use Condoms

The HIV status of the couple was significantly associated with increased intentions to abstain or use condoms in the next two months (Table 1). About 92.9% of those who did not change their intentions belonged to a seroconcordant HIV- couple compared to 68.6% of those who increased their intentions ($p<0.001$). Additionally, individuals who believed they were at risk for HIV/AIDS at pre-test, those who had ever had sex, those with a sexually experienced partner, and those who were married or cohabiting were more likely to have increased than consistent intentions. While those with consistent intentions were more likely to be premarital testers ($p=0.03$), they were less likely to have discussed HIV/AIDS ($p=0.001$) or family planning ($p=0.05$) within the couple.

Bivariate Results: Decreased versus Consistent Intentions to Abstain or Use Condoms

In bivariate analyses, there was no significant relationship between the HIV status of the couple and decreased versus consistent intentions to abstain or use condoms (Table 1). Very few variables were associated with these outcome categories. Those with consistent intentions were more likely to have 1–2 children than those with decreased intentions ($p=0.01$). Individuals with decreased intentions were less likely to have a partner who had ever had sex ($p=0.05$) or to be married or cohabiting ($p=0.02$) as those with consistent intentions, although they were more likely to be premarital testers ($p=0.06$).

Multivariate Results: Increased versus Consistent Intentions to Abstain or Use Condoms

The HIV status of the couple was associated with increased versus consistent intentions to abstain or use condoms in the next two months in the multivariate multinomial regression model on the imputed data set (Table 2). Individuals belonging to a serodiscordant couple in which the male partner was HIV+ had a 7.98 times higher relative risk of increased versus consistent intentions compared to members of seroconcordant HIV- couples ($p<0.001$). Similarly, the adjusted relative risk of increased versus consistent intentions was 5.85 times higher for couple VCT participants belonging to female HIV+ serodiscordant couples compared to seroconcordant HIV- couples ($p<0.001$). The relative risk of increased versus

consistent intentions was 3.12 times higher for individuals belonging to seroconcordant HIV + versus HIV– partnerships in the multivariate model ($p=0.05$).

Premarital testers and those with sexually experienced partners were more likely to have increased versus consistent intentions, although both associations were marginally significant.

Multivariate Results: Decreased versus Consistent Intentions to Abstain or Use Condoms

The HIV status of the couple was not significantly associated with decreased versus consistent intentions to abstain or use condoms in the multivariate multinomial model on the imputed data set (Table 3), however all relative risk ratios comparing individuals in HIV affected couples to those in HIV– couples were less than one. No other variables in Table 3 were associated with decreased versus consistent intentions in multivariate analyses.

Interaction Terms and Sex Stratification

In separate analyses, an interaction term for sex and the HIV status of the couple was included in the multivariate model; however it was not significant for the increased versus consistent intentions outcome categories. The multivariate model was also run on the imputed male and female sample separately. Results for the HIV variable were similar to the combined analyses, however the relative risk ratio of increased versus consistent intentions for individuals belonging to HIV+ versus HIV– concordant relationships became less significant both for men ($p=0.07$) and women ($p=0.58$). It was not possible to do these analyses for the decreased versus consistent intentions categories as a result of zero cells in certain HIV categories when the sample was sex stratified.

Unimputed Data Set

The multivariate model was run on the unimputed data set to determine whether the results differed from the imputed analyses. No substantial differences were found.

DISCUSSION

In Ethiopia, 85% of HIV affected couples who live together are serodiscordant (Federal HIV/AIDS Prevention and Control Office Federal Democratic Republic of Ethiopia, 2008). Prevention of HIV transmission within serodiscordant relationships can either be accomplished through abstinence or the consistent use of condoms, although condoms are probably a more realistic choice than abstinence for those in partnerships. However condom use within stable couples in sub-Saharan Africa is often infrequent (Chimbiri, 2007). Despite cultural norms discouraging condom use within stable unions, this analysis indicates that couple VCT clients in HIV affected partnerships are more likely to increase their intentions to abstain or use condoms in the next two months versus have consistent intentions compared to those in HIV– concordant couples.

This relationship was particularly strong among those in HIV serodiscordant relationships. Although the relative risk ratio was higher when the man was the HIV+ member ($aRRR=7.98$, $p<0.001$) rather than the woman ($aRRR=5.85$, $p<0.001$), the 95% confidence

intervals overlap extensively. Additionally, the lack of significance of the interaction terms between HIV status and sex, as well as the similar relative risk ratios comparing individuals belonging to HIV+ male and HIV+ female serodiscordant couples in the sex-stratified analyses, provide further evidence that the relationship between increased abstinence and condom intentions and HIV discordance does not depend on the sex of the HIV infected partner or respondent, in contrast to findings from other studies (Allen et al., 1992; Kamenga et al., 1991).

Individuals in HIV+ concordant relationships were also marginally more likely than those in HIV- concordant relationships to have increased versus consistent intentions to abstain or use condoms (aRRR=3.12, $p=0.05$) in the next two months. This is promising since it might be expected that members of HIV+ couples would be less motivated to use condoms or abstinence if their partner is already infected. Protected sex in HIV+ concordant couples is important because of the risk of sexually transmitted infections, unwanted pregnancy, and superinfection.

There was not a significant relationship between the HIV status of the couple and decreased versus consistent intentions to abstain or use condoms. This is likely the result of insufficient power given the small number of individuals belonging to HIV affected couples in the decreased category. Although having decreased abstinence and condom intentions after VCT is not ideal, 92% of these people intended to be monogamous at post-test, presumably with their tested partner. Furthermore, most individuals with decreased intentions were premarital testers. While monogamy is a good HIV prevention strategy if both partners are uninfected, couple counseling should state that it is only effective if both partners are faithful.

There were few other significant variables in the multivariate model. Premarital testers were marginally more likely to have increased versus consistent intentions, perhaps because they had less HIV knowledge and were therefore more influenced by counseling. Additionally, individuals with sexually experienced partners were marginally more likely to have increased versus consistent intentions perhaps because VCT made them more concerned about the risk behavior of their partners.

It is not clear why some respondents mentioned both abstinence and condom intentions during the same interview. Since responses were unprompted, some individuals might have meant abstaining from sex with casual partners or decreasing the frequency of sexual contacts. This might also be evidence of social desirability bias, with respondents providing as many “good” answers as possible, regardless of whether they make sense. Additionally, it is unusual that so many couple VCT clients intended to abstain from sex in the next two months. Since intentions were asked for a short period and abstinence may be difficult to sustain over time, all clients in HIV affected couples should be provided with information on condoms during couple VCT in case their intentions change.

One limitation to this analysis is the sample size, making it impossible to rule out insufficient power as the reason for the insignificance of the HIV relative risk ratios for decreased versus consistent intentions. Additionally, the outcome variable was based on

self-report, which could be subject to social desirability bias. Participants also might have had insufficient time to ponder the implications of their serostatus on their intentions, since data were collected soon after post-test counseling. Furthermore, only intentions for the next two months were collected. Intentions are likely to change over time, and future research should investigate the relationship between HIV diagnosis and long-term changes in both intentions and behavior. Additionally, given the substantial proportion of premarital testers and sexually inexperienced individuals in this sample, these results may not be generalizable to other couple VCT samples. Finally, if recent evidence showing that initiating antiretroviral treatment for the asymptomatic HIV+ individuals soon after testing virtually eliminates HIV transmission become a core component of VCT (2011), reducing sexual risk behaviors becomes much less important.

CONCLUSIONS

These results support the promotion of couple VCT to prevent HIV transmission within couple relationships. Counseling for all HIV affected couples should include a discussion of buying, negotiating, and using condoms to help translate nascent risk reduction intentions into actual behavior change.

Acknowledgments

The Ethiopia VICS study received funding from The David and Lucile Packard Foundation, The William and Flora Hewlett Foundation, and The Bill and Melinda Gates Institute for Population and Reproductive Health.

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Table 1

Change in intentions to abstain or use condoms between pre-test and post-test

Variable	Change in intentions to abstain or use condoms between pre-test and post-test (N=1,223)				
	Consistent (C) (N=962)	Increase (I) (N=86)	Decrease (D) (N=175)	p-value (I v. C)	p-value (D v. C)
<i>HIV Status of Couple</i>					
Male HIV−/Female HIV−	92.9	68.6	97.7	<0.001	0.14
Male HIV+/Female HIV−	2.8	12.8	0.6		
Male HIV−/Female HIV+	2.7	12.8	1.1		
Male HIV+/Female HIV+	1.6	5.8	0.6		
<i>Individual Characteristics</i>					
Sex (Female)	51.0	53.5	44.0	0.74	0.10
Age (years)	24.5	25.4	24.9	0.23	0.51
Christian religion	86.6	84.9	90.9	0.62	0.14
Oromo ethnicity	73.3	74.4	74.9	0.90	0.71
Ever attended school	70.2	75.6	68.6	0.32	0.72
Occupation					
Agriculture/construction/unskilled	33.6	36.1	28.0	0.47	0.51
Professional/skilled/business	25.2	19.8	28.6		
Student	15.8	12.8	16.6		
Unemployed or other	25.5	31.4	26.9		
Asset Index					
Poorest quintile	20.9	18.6	19.4	0.84	0.28
2 nd quintile	19.1	15.1	19.4		
3 rd quintile	19.2	22.1	26.3		
4 th quintile	20.8	22.1	16.6		
Richest quintile	20.0	22.1	18.3		
Urban	60.2	68.6	57.1	0.14	0.45
Parity					
None	67.1	55.8	70.3	0.10	0.01

Variable	Change in intentions to abstain or use condoms between pre-test and post-test (N=1,223)				
	Consistent (C) (N=962)	Increase (I) (N=86)	Decrease (D) (N=175)	p-value (I v. C)	p-value (D v. C)
1-2	21.4	29.1	13.1		
3+	11.5	15.1	16.6		
Repeat tester	34.3	27.9	36.0	0.28	0.67
Believes at risk for HIV/AIDS	33.9	46.5	33.1	0.02	0.93
Ever had sex	67.4	79.1	71.4	0.03	0.33
Lifetime number of sexual partners	2.02	2.31	2.10	0.63	0.80
Fertility intentions at pre-test					
Don't want more children	9.3	16.3	12.1	0.11	0.47
Want more children	90.5	83.7	87.9		
Don't know	0.2	0.0	0.0		
Partner Characteristics					
Partner ever had sex	68.7	86.1	61.1	0.001	0.05
Partner has pre-test risk reduction intention	57.9	55.8	58.9	0.73	0.87
Couple Characteristics					
Married or cohabiting	22.5	40.7	14.3	<0.001	0.02
Prenatal tester	65.1	52.3	72.6	0.03	0.06
Male 5+ years older than female	49.1	51.2	48.6	0.74	0.94
Male more educated than female	58.0	60.5	55.4	0.73	0.56
Couple discussed HIV/AIDS	59.2	76.7	60.6	0.001	0.74
Couple discussed family planning	19.4	29.1	14.9	0.05	0.17
Endline group	54.8	50.0	55.4	0.43	0.93

Multinomial logistic regression of increased versus consistent intentions to abstain or use condoms (N=1,260 for three categories of outcome)[†]

Table 2

Variable	Increased versus Consistent Intentions to Abstain or Use Condoms					
	Crude RRR	p-value	95% CI	Adjusted RRR [‡]	p-value	95% CI
<i>HIV Status of Couple (v. Male HIV−/Female HIV−)</i>						
Male HIV+/Female HIV−	6.68	<0.001	3.13–14.25	7.98	<0.001	3.38–18.85
Male HIV−/Female HIV+	5.92	<0.001	2.86–12.26	5.85	<0.001	2.68–12.76
Male HIV+/Female HIV+	4.26	0.005	1.58–11.53	3.12	0.05	0.99–9.89
<i>Individual Characteristics</i>						
Female (v. Male)	1.14	0.57	0.73–1.77	0.99	0.96	0.56–1.74
Age (years)	1.02	0.18	0.99–1.05	0.99	0.84	0.95–1.04
Parity (v. None)						
1–2 children	1.66	0.05	0.99–2.80	1.21	0.57	0.63–2.31
3+ children	1.58	0.16	0.83–3.02	0.98	0.96	0.38–2.48
Repeat tester	0.75	0.25	0.46–1.23	0.83	0.51	0.48–1.43
Believes at risk for HIV/AIDS	1.70	0.02	1.08–2.69	1.33	0.26	0.81–2.16
Ever had sex	1.86	0.03	1.08–3.20	0.93	0.86	0.43–2.04
<i>Partner Characteristics</i>						
Partner ever had sex	2.97	0.001	1.59–5.58	2.00	0.07	0.94–4.25
<i>Couple Characteristics</i>						
Marital Status (Other v. Married/cohabiting)	0.43	<0.001	0.27–0.67	0.62	0.18	0.31–1.24
Premarital tester	0.59	0.02	0.38–0.93	1.74	0.06	0.98–3.08
Couple discussed HIV/AIDS	2.17	0.005	1.27–3.70	1.67	0.13	0.86–3.26
Couple discussed family planning/contraception	1.61	0.05	1.00–2.59	1.11	0.70	0.64–1.92
Endline group	0.83	0.41	0.53–1.29	0.94	0.82	0.57–1.56

[†]Crude and multivariate models on the imputed data set account for clustering of observations by couple

[‡]Multivariate model also adjusts for health center couple attended

Table 3

Multinomial logistic regression of decreased versus consistent intentions to abstain or use condoms (N=1,260 for three categories of outcome)[†]

Variable	Decreased versus Consistent Intentions to Abstain or Use Condoms					
	Crude RRR	p-value	95% CI	Adjusted RRR [‡]	p-value	95% CI
<i>HIV Status of Couple (v. Male HIV−/Female HIV−)</i>						
Male HIV+/Female HIV−	0.18	0.09	0.03–1.30	0.24	0.17	0.03–1.80
Male HIV−/Female HIV+	0.38	0.19	0.09–1.62	0.50	0.37	0.11–2.28
Male HIV+/Female HIV+	0.25	0.18	0.03–1.93	0.41	0.40	0.05–3.22
<i>Individual Characteristics</i>						
Female (v. Male)	0.75	0.07	0.55–1.03	0.99	0.96	0.66–1.48
Age (years)	1.01	0.34	0.99–1.04	1.02	0.38	0.98–1.05
Parity (v. None)						
1–2 children	0.66	0.07	0.42–1.03	0.72	0.25	0.42–1.25
3+ children	1.37	0.18	0.86–2.17	1.46	0.29	0.73–2.92
Repeat tester	1.06	0.74	0.76–1.48	0.98	0.93	0.68–1.43
Believes at risk for HIV/AIDS	0.98	0.91	0.69–1.39	0.87	0.49	0.60–1.28
Ever had sex	1.23	0.25	0.86–1.75	1.44	0.12	0.91–2.28
<i>Partner Characteristics</i>						
Partner ever had sex	0.74	0.07	0.53–1.02	0.72	0.13	0.48–1.10
<i>Couple Characteristics</i>						
Marital Status (Other v. Married/cohabiting)	1.83	0.007	1.18–2.83	1.58	0.16	0.84–2.97
Premarital tester	1.41	0.06	0.98–2.02	1.22	0.43	0.74–2.00
Couple discussed HIV/AIDS	1.06	0.75	0.76–1.48	1.39	0.12	0.92–2.10
Couple discussed family planning/contraception	0.70	0.12	0.45–1.09	0.79	0.36	0.47–1.31
Endline group	1.01	0.96	0.73–1.40	0.87	0.44	0.61–1.24

[†]Crude and multivariate models on the imputed data set account for clustering of observations by couple

[‡]Multivariate model also adjusts for health center couple attended