Published in final edited form as:
Sex Transm Infect. 2012 April ; 88(3): 171–176. doi:10.1136/sextrans-2011-050091.

HPV-related information sharing and factors associated with US men's disclosure of an HPV test result to their female sexual partners

Stephanie L Marhefka[1], **Ellen M Daley**[1], **Erica Hesch Anstey**[1], **Cheryl A Vamos**[1], **Eric R Buhi**[1], **Stephanie Kolar**[2], and **Anna R Giuliano**[3]

[1]Department of Community and Family Health, College of Public Health, University of South Florida, Tampa, Florida, USA

[2]Department of Epidemiology and Biostatistics, College of Public Health, University of South Florida, Tampa, Florida, USA

[3]Risk Assessment, Detection & Intervention (RADI) Program, H. Lee Moffitt Cancer Center and Research Institute, Tampa, Florida, USA

Abstract

Objectives—Prevalence of human papillomavirus (HPV) is high in both men and women, yet men have seldom been involved in HPV education/prevention programmes, and their disclosure of known HPV infection has rarely been studied. This analysis sought to determine factors associated with men's HPV test result disclosure and HPV-related information sharing with partners.

Methods—From 2007 to 2010, men enrolled in a psychosocial study of responses to HP testing who reported having a female main sexual partner (N=251) completed surveys including questions about HPV test results, disclosure of HPV test results to partner(s), relationship characteristics and stigma (for those who reported HPV-positive results) approximately 3 weeks after receiving an HPV test result. Logistic regression was conducted to determine factors associated with disclosure of HPV test results in cross-sectional analysis.

Results—Most men disclosed their test results to a main partner (82%). Self-reported HPV-negative test result, a high school education and a higher commitment to a sexual partner were significantly associated with increased disclosure in multivariable analysis. Men who disclosed (vs those who did not) were significantly more likely to provide their partners with HPV-related

Correspondence to Dr Ellen M Daley, Department of Community and Family Health, College of Public Health, University of South Florida, 13201 Bruce B. Downs Blvd. MDC 56, Tampa, FL 33612, USA; edaley@health.usf.edu.

Competing interests None.

Ethics approval Ethics approval was provided by University of South Florida Institutional Review Board.

Contributors SLM is an investigator on the Cognitive and Emotional Responses to HPV in Men (CER) Study; she led the writing effort, coordinated all sections of the paper, co-wrote the discussion section and participated in the results and analysis. EMD is the principal investigator of the CER Study; she reviewed all sections of the paper, contributed to the methods and discussion sections and was responsible for the final production of the manuscript. EHA is a graduate assistant on the CER Study who contributed with the background section, editing efforts and coordination of manuscript preparation. CV was a graduate assistant on the CER Study; she wrote the methods section and contributed to the discussion section. ERB is an investigator on the CER Study; he directed the analysis of results and contributed to the discussion section. SK is the data manager on the CER Study and was responsible for producing the tables and results in the paper. ARG is the principal investigator of the parent study (the HPV In Men Study); she contributed to the overall structure of the manuscript, reviewed and revised findings. All authors on this paper had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Provenance and peer review Not commissioned; externally peer reviewed.

information. Among men who disclosed to their main partner, nearly half reported that partner asked them questions about HPV.

Conclusions—Results from this study highlight the critical role that men who are symptomatic for, who are tested for or who are vaccinated against HPV can play in educating their sexual partners, independent of whether they actually disclose their test results.

INTRODUCTION

In the USA, there are approximately 20 million individuals infected with human papillomavirus (HPV), and each year, 6 million people become newly infected.[1] Of the over 40 types of sexually transmitted HPV, low-risk (non-oncogenic) types of HPV are associated with genital warts and high-risk (oncogenic) types can cause anogenital cancers, such as cervical, vulvar, vaginal, anal and penile cancers.[23] Largely asymptomatic, HPV places many people at risk for transmitting HPV unknowingly. Over 50% of all sexually active adults will contract HPV during their lifetime,[1] which can present a serious risk to men and their sexual partners.[45] Currently, some providers are testing men for HPV `off label',[6] yet HPV testing for men is not widely available and is not part of routine clinical care.

There is limited research on men's disclosure of HPV infection and related information sharing with sexual partners. For prevention purposes and given the causal link between HPV infection and cervical, anogenital and head and neck cancers, it is important to understand men's disclosure of HPV infection to sexual partners when they know they are infected. Men's awareness of an HPV infection may lead to intentions to reduce their sexual risk-taking behaviours and to encourage their partners to be screened regularly.[7] Self-disclosure also may increase the ability of their sexual partners to make informed choices to protect their health and decrease the spread of HPV and other sexually transmitted infections (STIs). Additionally, disclosure to sexual partners might present an opportunity for men to answer questions posed by their partners and educate partners about primary and secondary prevention.

Some psychosocial factors such as stigma and relationship commitment may affect whether disclosure occurs. Stigma continues to be strongly associated with HPV infection such that psychosocial stress is sometimes experienced in response to an HPV diagnosis.[8–17] Feelings of stigma and shame are frequently cited as reasons for disclosure or non-disclosure of HPV and other STIs to partners.[8–111819] Additionally, studies of HIV and other STIs indicate that relationship characteristics may be important determinants of disclosure among men as well as women.[9] Studies have found that disclosure of HIV/STI status to sexual partners is more likely within committed (vs more casual) relationships[91020–25] and longer term (vs newer) relationships.[1923]

Given the limited literature regarding disclosure of HPV test results among men, it is important to determine disclosure and information-sharing behaviour among men with main sex partners (henceforth main partners) and what factors affect that behaviour. The purpose of this report is to identify (1) factors associated with men's disclosure of HPV test results to female main partners, (2) HPV-related information discussed with female main partners after men receive HPV test results and (3) types of questions from female main partners who are informed of the participant's HPV test result.

METHODS

Participants

From March 2007 through March 2010, men aged 18–70 years were recruited from a large natural history study of HPV in Florida—the HPV In Men (HIM) Study.[4] Eligible participants for the HIM Study met the following criteria: (1) no prior diagnosis of penile or anal cancer, genital warts or HIV/AIDS; (2) no current STI symptoms and (3) no prior participation in an HPV vaccination study. Upon enrolment, participants were informed that the test for HPV was not Food and Drug Administration approved for men and that it was being done for research purposes only. Participants were told their HPV test results from the previous visit at each 6-month appointment and received oral and written HPV informational materials from the nurse practitioner at enrolment and at each appointment. Men whose HPV test results were positive were encouraged by the nurse practitioner to suggest that their female sexual partners get a Pap test and the HPV vaccine. After receiving test results for the first time, HIM participants were recruited for the Cognitive and Emotional Responses to HPV in Men (CER) Study, which was approved by the University of South Florida Institutional Review Board. The CER Study was designed to assess psychosocial responses to HPV testing among these men through the completion of four surveys (every 6 months) over a 2-year period.[26] Men were scheduled to complete the CER questionnaire 2–4 weeks after receiving each HPV test result, though a small number rescheduled beyond 4 weeks. Participants completed written informed consent prior to the study initiation and received $130 in compensation over the course of four visits.

Of the 722 HIM Study participants eligible for the CER Study, 661 agreed to participate, although 96 failed to return to complete the first CER Study visit. Men choosing not to participate reported travelling substantial distances and not wanting to attend additional study visits as reasons. Of the 565 men who completed the survey, 29 were excluded because they were missing test results due to laboratory error, 28 did not complete the survey within 90 days and 226 did not report having a main sexual partner. Twenty-two participants with a main partner were excluded from these analyses because they were unsure of (n=18) or declined to report (n=2) their HPV test result or declined to report whether they disclosed their HPV test result to their main partner (n=2). Due to a limited number, men who reported a male main partner (n=9) were excluded. Thus, 251 were included in the present analyses.

Procedure

At each CER Study visit, participants completed a 168-item computer-assisted self-interview questionnaire at a private workstation at the HIM/CER Study location (mean completion time=30 min). Instrument items assessed cognitive and emotional responses, sexual behaviour, sexual partnership status, information-seeking behaviour and HPV vaccine intentions. The validation and psychometric properties of this theory-driven instrument have been published previously.[27]

Measures

For the present analysis, dependent variables included disclosure of HPV test results to main sexual partner, provision of advice and information shared with main partners and topics of HPV-related questions asked by partners of men who disclosed their results. *Disclosure of HPV test result* was assessed with a single question: “Did you tell your main partner your most recent HPV test result?” (answer options = `yes' and `no'). Provision of HPV-related advice and information to partner was assessed with seven items concerning HPV-related information/advice shared with main partners. *Topics of HPV-related questions asked by partner* were assessed with a checklist of 13 topics. Independent variables included self-

reported HPV test result, participant characteristics, stigma and partnership status. *Self-reported HPV test result* was assessed with a single question: "What was your most recent HPV test result?" phrased this way because in this longitudinal study, men are tested repeatedly. Self-reported result was thought to be more relevant than actual result because men's disclosure and information sharing was likely based on self-perceptions—accurate or not—of their test results. Participant characteristics included ethnicity, race, age, marital status, education, health insurance status and whether participants were currently experiencing HPV symptoms. For HPV-positive participants only *stigma* was assessed with six statements rated on a 6-point Likert type scale ranging from `strongly agree' to `strongly disagree'. Statements referred to feelings of guilt, shame, uncleanliness, paying for the past behaviours, concern about being judged by others and risk associated with disclosure of HPV. Points were summed across items, with higher scores indicating greater stigma. Factor analysis indicated that all six variables loaded on one factor; the scale had high internal consistency (variance explaine=100%, Cronbach's α=0.89). Partnership status was assessed with multiple measures related to participants' relationship with their main sexual partner, including level of *commitment* (rated on a scale of 1–5, with 5 indicating `total commitment'), *time in relationship* (weeks, months or years) and *self-reported monogamy* since the relationship began.

Analysis

Only data from the first CER Study visit, collected from March 2007 to March 2010, were analysed. Bivariate logistic regression analyses were conducted to assess factors associated with men's disclosure of HPV test results to their main partner. Variables significantly associated with disclosure ($p<0.05$) were entered into a multivariable logistic regression. Because only self-reported HPV-positive men responded to items assessing stigma, an additional logistic regression analysis was conducted with men who self-reported testing HPV positive to examine the association between stigma and disclosure of HPV test results. Multivariable logistic regression analyses were employed to test for differences in advice and information shared with partners by disclosure of test result, adjusting for factors significantly associated with each outcome variable in bivariate analyses. All analyses were conducted using SAS V.9.2.

RESULTS

Of the 251 participants included in these analyses (table 1), the mean age was 31.9 years (SD=13.4, range 18–69). Most respondents were Caucasian (72%), non-Hispanic (83%), had at least some college education (86%) and had health insurance (75%). Few reported experiencing symptoms of HPV currently (5%) or ever (13%). Most (82%) reported that they disclosed their HPV test result to their main partner. More than half of the men reported that they were totally committed to their partner (55%) and they had not had sex with anyone else during their relationship (66%). Relationship duration varied from a few weeks to 43 years (mean=5.5 years, SD=8.4).

In multivariable men who self-reported an HPV-negative test result were more likely to disclose the test result compared with those who self-reported an HPV-positive test result (table 1). Men who were totally committed to their partner (vs less committed) were also more likely to disclose. Men with a graduate degree (vs a high school diploma or less) were *less* likely to disclose.

Among men with a self-reported HPV-positive test result (n=106), 25% scored 19 or greater on the 30-point stigma scale, consistent with `agreeing' or `strongly agreeing' that they experienced manifestations of HPV stigma (data not shown). Men who reported greater amounts of HPV-related stigma were less likely to disclose results to their partner (p for

trend=0.03), but this effect was not maintained in multivariable analyses controlling for demographic and relationship characteristics. Among men scoring within the lowest quartile for stigma, 89% disclosed their HPV test result to their main partner compared with 65% scoring in the highest quartile.

As displayed in table 2, men who disclosed their HPV test result to their main partner were more likely to share information about HPV with that partner. The majority of men who disclosed their HPV test result to their main partner also told the partner that HPV is sexually transmitted (62%) and that HPV could be transmitted to her (72%); roughly half of the men who disclosed their result to their main partner informed her that HPV can cause genital warts (49%) and cervical cancer (46%). Fewer men reported telling their partner to get a Pap test (32%), get the HPV vaccine (29%) or get tested for other STIs (25%).

Half (50%) of the non-disclosers did share at least some information about HPV with their partner, although they did not share their HPV test results. More than one-quarter of the non-disclosers informed their partner that HPV is sexually transmitted (29%), could be passed to her (27%) and can cause cervical cancer (25%). In comparison to men who disclosed, men who did not disclose their HPV test result to their main partner were significantly less likely to share information about HPV with that partner, except for the recommendation to get tested for other STIs, which did not significantly differ based on test result disclosure (25% among disclosers and 16% among non-disclosers; table 2).

Men who disclosed their HPV test results to their main partner answered questions about HPV-related topics asked by their partners. Of the 206 men who disclosed their test results, 99 (48%) had a partner who asked them questions about HPV. As shown in table 3, the most commonly reported topics of questions included: modes of HPV transmission (69%), HPV prevention (65%), HPV treatment (64%), HPV prevalence (63%), HPV types (strains; 55%) and cervical cancer (52%).

DISCUSSION

This analysis explored men's disclosure of HPV test results to female main partners. It is important to note that men are not routinely tested for HPV; this study presents a unique opportunity to assess men's behaviours related to responses to HPV test results, including disclosure of test results to sexual partners. Disclosure was higher among men with self-reported HPV-negative (89%) versus HPV-positive (73%) results, and findings demonstrate high disclosure rates overall (82%). Rates of disclosure among men with self-reported HPV-positive test results in this study were similar to rates of disclosure among men living with HIV (67–88%)[25] and among men and women with HPV (74%) in other studies.[23] Compared with men who did not disclose their test results, men who disclosed were more likely to provide their partners with HPV-related information that could influence their sexual risk-taking behaviour. However, half of the non-disclosing men also provided their partners with at least some HPV-related information. When men did disclose, nearly half of their partners asked them questions related to HPV, and our previous findings suggest that these men possess a high level of accurate HPV-related knowledge.[28] These findings highlight the role that men can play in educating their partners when they know or suspect that they are infected (through off-label testing, disclosure of positive HPV DNA test results by their female partner or visible evidence of genital warts) and possess accurate information about HPV. Although neither disclosure of an STI nor sharing prevention messages necessarily translates into safer sexual practices,[2226] these communication strategies hold promise for expanding prevention efforts by improving screening and vaccination awareness for individuals in sexual relationships. HPV information directed at

men will be part of efforts to increase vaccination; thus, vaccinated men may be well poised to share HPV-related information with their partners.

Consistent with previous literature,[19,23,24] results showed that stronger relationship commitment and longer relationship duration were associated with greater likelihood of disclosure to main partners, although only relationship commitment was independently associated with disclosure. Qualitative research has shown that concerns with rejection,[10,23] accusations of infidelity[8,18,24] and trust[8,24] may explain some of the lack of disclosure of STIs to partners. Such concerns may transcend relationship duration, especially among men self-perceived to have tested HPV positive.

Previous research suggests that perceived stigma may be an important predictor of STI disclosure to partners.[8–11,18,19] In this study, higher perceived stigma was associated with a decreased likelihood of disclosure in bivariate analysis only, although lack of statistical significance in multivariable analysis may be due to the limited number of HPV-positive participants. In studies with women, stigma has been commonly mentioned as a reason for non-disclosure of HPV to partners.[8,11,18] In one study, 65% of women disclosed their HPV-positive test results to a current sex partner. However, in-depth interviews revealed that these women focused on the cancer risk when disclosing their HPV test results to their partners, rather than the sexually transmitted nature of the infection, due to feelings of shame and stigma around having an STI.[11] A parallel could be drawn to Chlamydia, an STI that is often asymptomatic in men and which has more known negative implications for women. Although men do express stigma-related anxieties regarding disclosure of Chlamydia to female partners,[29] rates of men's disclosure of Chlamydia infection to sexual partners are comparable to those found among men who reported testing HPV positive in this sample.[30]

The present study has several strengths, including the relatively large sample size and the fact that all men were tested for HPV and had an opportunity to learn about their HPV test results. Nevertheless, results should be considered in light of several limitations. First, as noted above, men were tested as part of a research study, using a test that is not currently Food and Drug Administration approved for men. Second, the sample may have been affected by selection bias. Some men may have been unwilling to enrol in a study related to STIs. In addition, there is a possibility that those who are willing to participate may be more inclined to disclose to their partners than the general population of men. Research by Keller and colleagues[23] found that participants were more likely to disclose an HPV infection at the point of diagnosis but not 6 months later to new partners. Assuming the method of diagnosis for men in that study was based on clinical observation of genital warts, participants may have been less likely to disclose to partners if they became asymptomatic, as opposed to the present study, where clinical test results were shared with participants. In a related finding, more than half of the participants in the CER Study were concerned about symptomatic genital warts (data not shown). Third, as part of the study, the nurse provided information about HPV and suggested that participants speak with their partners about getting a Pap test and the HPV vaccine—a level of information and counselling that most men do not receive. Fourth, data were self-reported and thus are subject to recall and social desirability bias. Fifth, although the sample size was large, given the nature of the study, only 106 men reported receiving an HPV-positive test result, and some questions were only asked of men who disclosed their test result (n 206, 82%); thus, sample size for some analyses was limited. Lastly, only nine men reported a male main partner; although a similar percentage reported that they disclosed to their partner (78%) as men with female partners (82%), conclusions cannot be drawn about men with male partners from this study. Despite limitations, this study expands the extant literature regarding disclosure of STI test results in general, and disclosure of HPV test results, specifically.

Results from this study highlight the critical role that men who are tested for HPV and other STIs (and potentially vaccinated against them) can play in educating their sexual partners, independent of whether they actually disclose their test results. To our knowledge, this role has been under-valued, especially for men who have negative STI test results. Health education campaigns that encourage men (and potentially women) who test for STIs to educate their partners—regardless of test result—may help to expand primary and secondary prevention efforts. If accurate information is shared, this low-cost education strategy could provide an excellent means of STI prevention. Research is warranted to understand what elements might be critical to making such campaigns effective.

Acknowledgments

Funding This study is supported through a grant from the National Cancer Institute (R01 CA123346) and the HPV In Men Study R01 CA098803.

REFERENCES

1. Centers for Disease Control and Prevention. [(accessed 28 Mar 2011)] Genital HPV Infection—Fact Sheet. 2009. http://www.cdc.gov/std/HPV/STDFact-HPV.htm
2. Lacey CJ, Lowndes CM, Shah KV. Chapter 4: burden and management of non-cancerous HPV-related conditions: HPV-6/11 disease. Vaccine. 2006; 24(Suppl 3):S3/35–41. [PubMed: 16950016]
3. Munoz N, Castellsague X, de Gonzalez AB, et al. Chapter 1: HPV in the etiology of human cancer. Vaccine. 2006; 24(Suppl 3):S3/1–10.
4. Giuliano AR, Lee JH, Fulp W, et al. Incidence and clearance of genital human papillomavirus infection in men (HIM): a cohort study. Lancet. 2011; 377:932–40. [PubMed: 21367446]
5. International Agency for Research on Cancer (IARC). IARC Monographs of the Evaluation of Carcinogenic risks to humans. Lyon, France: 2007.
6. Jain N, Irwin K, Carlin L, et al. Use of DNA tests for human Papillomavirus infection by US clinicians, 2004. J Infect Dis. 2007; 196:76–81. [PubMed: 17538886]
7. McPartland TS, Weaver BA, Lee SK, et al. Men's perceptions and knowledge of human papillomavirus (HPV) infection and cervical cancer. J Am Coll Health. 2005; 53:225–30. [PubMed: 15813233]
8. McCaffery K, Waller J, Nazroo J, et al. Social and psychological impact of HPV testing in cervical screening: a qualitative study. Sex Transm Infect. 2006; 82:169–74. [PubMed: 16581749]
9. Montgomery KA, Gonzalez EW, Montgomery OC. Self-disclosure of sexually transmitted diseases: an integrative review. Holist Nurs Pract. 2008; 22:268–79. [PubMed: 18758276]
10. Newton DC, McCabe MP. Sexually transmitted infections: impact on individuals and their relationships. J Health Psychol. 2008; 13:864–9. [PubMed: 18809636]
11. Perrin KK, Daley EM, Naoom SF, et al. Women's reactions to HPV diagnosis: insights from in-depth interviews. Women Health. 2006; 43:93–110. [PubMed: 17000613]
12. Mortensen GL, Larsen HK. Quality of life of homosexual males with genital warts: a qualitative study. BMC Res Notes. 2010; 3:280. [PubMed: 21050431]
13. Mortensen GL, Larsen HK. The quality of life of patients with genital warts: a qualitative study. BMC Public Health. 2010; 10:113. [PubMed: 20205944]
14. Colon-Lopez V, Ortiz AP, Palefsky J. Burden of human papillomavirus infection and related comorbidities in men: implications for research, disease prevention and health promotion among Hispanic men. P R Health Sci J. 2010; 29:232–40. [PubMed: 20799510]
15. Waller J, Marlow LA, Wardle J. The association between knowledge of HPV and feelings of stigma, shame and anxiety. Sex Transm Infect. 2007; 83:155–9. [PubMed: 17098767]
16. Daley EM, Perrin KM, McDermott RJ, et al. The psychosocial burden of HPV: a mixed-method study of knowledge, attitudes and behaviors among HPV+ women. J Health Psychol. 2010; 15:279–90. [PubMed: 20207671]

17. Jeynes C, Chung MC, Challenor R. `Shame on you'—the psychosocial impact of genital warts. Int J STD AIDS. 2009; 20:557–60. [PubMed: 19625588]
18. Kahn JA, Slap GB, Bernstein DI, et al. Psychological, behavioral, and interpersonal impact of human papillomavirus and Pap test results. J Womens Health (Larchmt). 2005; 14:650–9. [PubMed: 16181021]
19. Scrivener L, Green J, Hetherton J, et al. Disclosure of anogenital warts to sexual partners. Sex Transm Infect. 2008; 84:179–82. [PubMed: 18375646]
20. Gorbach PM, Galea JT, Amani B, et al. Don't ask, don't tell: patterns of HIV disclosure among HIV positive men who have sex with men with recent STI practising high risk behaviour in Los Angeles and Seattle. Sex Transm Infect. 2004; 80:512–17. [PubMed: 15572626]
21. Niccolai LM, Dorst D, Myers L, et al. Disclosure of HIV status to sexual partners: predictors and temporal patterns. Sex Transm Dis. 1999; 26:281–5. [PubMed: 10333282]
22. Payn B, Tanfer K, Billy JO, et al. Men's behavior change following infection with a sexually transmitted disease. Fam Plann Perspect. 1997; 29:152–7. [PubMed: 9258645]
23. Keller ML, von Sadovszky V, Pankratz B, et al. Self-disclosure of HPV infection to sexual partners. West J Nurs Res. 2000; 22:285–96. discussion 296–302. [PubMed: 10804893]
24. Green J, Ferrier S, Kocsis A, et al. Determinants of disclosure of genital herpes to partners. Sex Transm Infect. 2003; 79:42–4. [PubMed: 12576613]
25. Sullivan KM. Male self-disclosure of HIV-positive serostatus to sex partners: a review of the literature. J Assoc Nurses AIDS Care. 2005; 16:33–47. [PubMed: 16536263]
26. D'Angelo LJ, Abdalian SE, Sarr M, et al. Disclosure of serostatus by HIV infected youth: the experience of the REACH study. Reaching for Excellence in Adolescent Care and Health. J Adolesc Health. 2001; 29(3 Suppl):72–9. [PubMed: 11530306]
27. Daley EM, Buhi ER, Baldwin J, et al. Men's responses to HPV test results: development of a theory-based survey. Am J Health Behav. 2009; 33:728–44. [PubMed: 19320621]
28. Daley EM, Marhefka S, Buhi E, et al. Ethnic and racial differences in HPV knowledge and vaccine intentions among men receiving HPV test results. Vaccine. 2011; 29:4013–18. [PubMed: 21459176]
29. Mills N, Daker-White G, Graham A, et al. Population screening for Chlamydia trachomatis infection in the UK: a qualitative study of the experiences of those screened. Fam Pract. 2006; 23:550–7. [PubMed: 16790452]
30. Hogben M, Kissinger P. A review of partner notification for sex partners of men infected with Chlamydia. Sex Transm Dis. 2008; 35(11 Suppl):S34–9. [PubMed: 18354341]

Key messages

- Although male HPV infection presents risks to men and their partners, there is limited research on men's disclosure of HPV infection and information sharing.
- Disclosure rates among men tested for HPV were high overall (82%) and among men with self-reported HPV-positive results (72%).
- Men who disclosed their HPV test results (vs those who did not) were significantly more likely to provide their partners with HPV-related information.
- Health education campaigns that promote disclosure and partner education may be effective in reducing STI risk and should be empirically tested.

Table 1

Factors associated with disclosing HPV test results to a main partner (n=251)

Factor	n (% total) per category	n (%) who told partner, within row*	Univariate analysis		Multivariate analysis	
			OR (95% CI)	p Value†	OR (95% CI)	p Value†
Self-reported HPV status						
Positive	106 (42)	76 (72)	1.0		1.0	
Negative	145 (58)	130 (90)	3.4 (1.7 to 6.8)		3.0 (1.5 to 6.2)	
Characteristics						
Ethnicity						
Non-Hispanic	207 (83)	168 (81)	1.0			
Hispanic	43 (17)	37 (86)	1.4 (0.6 to 3.6)			
Race						
Non-Caucasian	70 (28)	55 (79)	1.0			
Caucasian	181 (72)	151 (83)	1.4 (0.7 to 2.7)			
Age (years)				0.74		
18–20	57 (23)	50 (88)	1.0			
21–26	69 (27)	52 (75)	0.4 (0.2 to 1.1)			
27–40	63 (25)	52 (83)	0.7 (0.2 to 1.8)			
≥40	62 (25)	52 (84)	0.7 (0.3 to 2.1)			
Marital status						
Single	123 (49)	97 (79)	1.0		1.0	
Unmarried living with partner	37 (15)	35 (95)	4.7 (1.1 to 20.8)		3.9 (0.8 to 19.8)	
Married	67 (27)	55 (82)	1.2 (0.6 to 2.6)		0.7 (0.2 to 2.4)	
Separated/divorced/widowed	24 (10)	19 (79)	1.0 (0.3 to 3.0)		0.5 (0.1 to 2.0)	
Education						
High school diploma/GED or less	35 (14)	33 (94)	1.0		1.0	
Some college credit, but no degree	101 (40)	84 (83)	0.3 (0.1 to 1.4)		0.2 (0.03 to 0.99)	
Two-year or undergraduate degree	93 (37)	74 (80)	0.2 (0.1 to 1.1)		0.1 (0.02 to 0.8)	
Masters or doctoral degree	22 (9)	15 (68)	0.1 (0.02 to 0.7)		0.1 (0.01 to 0.4)	
Health insurance status						
No	62 (25)	51 (82)	1.0			

Factor	n (% total) per category	n (%) who told partner, within row*	Univariate analysis		Multivariate analysis	
			OR (95% CI)	p Value†	OR (95% CI)	p Value†
Yes	189 (75)	155 (82)	1.0 (0.5 to 2.1)			
Current symptoms of HPV						
No	219 (95)	185 (84)	1.0			
Yes	11 (5)	8 (73)	0.5 (0.1 to 1.9)			
Partnership status						
Commitment						
1–4	113 (45)	85 (75)	1.0		1.0	
5 (I am totally committed)	137 (55)	120 (88)	2.3 (1.2 to 4.5)		2.6 (1.2 to 5.9)	
Time in relationship with main partner				0.43		0.48
<6 months	52 (21)	37 (71)	1.0		1.0	
6 months to <1 year	38 (15)	33 (87)	2.7 (0.9 to 8.2)		2.3 (0.6 to 7.9)	
1 year to <2 years	45 (18)	38 (84)	2.2 (0.8 to 6.0)		1.5 (0.5 to 4.6)	
≥2 years	116 (46)	98 (84)	2.2 (1.01 to 4.8)		1.8 (0.6 to 6.0)	
Self-reported sexual monogamy						
I have not had sex with anyone else	164 (66)	135 (82)	1.0			
I have had sex with one other person	39 (16)	32 (82)	1.0 (0.4 to 2.6)			
I have had sex with other people since we've been involved	44 (18)	37 (84)	1.2 (0.5 to 2.9)			

GED, General Educational Development; HPV, human papillomavirus.

*Total number of participants and per cent who disclosed their HPV test results to their main partner in each category.

†p Value for trend. Odds were tested modelling each ordinal variable as a continuous independent variable. Values were calculated using the finest data categories available, with use of categories smaller than those displayed in the table.

Table 2

Information shared with main sexual partners by disclosure of HPV result (n=251)

	Disclosed HPV test result to partner n (%)	Did not disclose HPV test result to partner n (%)	Disclosing men compared with non-disclosing men	
			OR (95% CI)	AOR (95% CI)*
Told main sex partner that HPV is sexually transmitted	128 (62)	13 (29)	4.1 (2.0 to 8.3)	4.8 (2.2 to 10.3)†
Told main sex partner that HPV could be passed to him/her	125 (72)	11 (27)	7.1 (3.3 to 15.3)	7.8 (3.5 to 17.3)‡
Told main sex partner that HPV can cause genital warts	99 (49)	8 (18)	4.4 (2.0 to 9.9)	5.1 (2.1 to 12.5)§
Told main sex partner that HPV can cause cervical cancer	93 (46)	11 (25)	2.5 (1.2 to 5.3)	2.4 (1.1 to 5.1)¶
Told main sex partner to get a Pap test	65 (32)	5 (11)	3.6 (1.4 to 9.6)	4.1 (1.4 to 11.8)**
Told main sex partner to get the HPV vaccine	49 (29)	4 (10)	5.8 (1.9 to 18.2)	6.7 (2.0 to 22.4)††
Told main sex partner to get tested for any other sexually transmitted diseases	52 (25)	7 (16)	1.8 (0.8 to 4.3)	1.7 (0.0 to 4.6)‡‡

Percentages and logistic regression calculated not including participants who selected 'decline to answer' or 'not applicable'.

AOR, adjusted OR; HPV, human papillomavirus.

*Adjusted for variables significantly associated with dependent variables in bivariate analyses.

†Adjusted for time with partner, age, education and race.

‡Adjusted for self-reported sexual monogamy.

§Adjusted for time with partner, age, education, marital status and race.

¶Adjusted for time with partner, age, commitment and marital status.

**Adjusted for time with partner, age, education and race.

††Adjusted for time with partner, age, education, self-reported HPV status and ethnicity.

‡‡Adjusted for time with partner, age, education, race and ethnicity.

Table 3

Topics of questions asked by main sex partners following men's HPV test result disclosure (n=99)

	n (%)
Modes of HPV transmission	68 (69)
Prevention	64 (65)
Treatment	63 (64)
HPV prevalence	62 (63)
HPV types (strains)	54 (55)
Cervical cancer	51 (52)
Pap test	49 (49)
Other sexually transmitted infections	39 (39)
Genital warts	37 (37)
Disclosing an HPV test result	23 (23)
HPV and pregnancy	22 (22)
Anal cancer	15 (15)

Of the 206 men who disclosed to their main sex partner, 99 reported that this partner asked them questions regarding HPV. HPV, human papillomavirus.