

Prevalence of rectal human papillomavirus infection among men who have sex with men in Vancouver

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Background / Objectives

Men who have sex with men (MSM) are at increased risk for infection with human papillomavirus (HPV). In particular, HIV-positive MSM have a high prevalence of HPV-related disease.

The ManCount Survey is the Vancouver site of the Canadian M-Track second generation HIV surveillance system.¹ We incorporated self-collected rectal swabs into the study protocol to link HPV data with questionnaire variables and dried blood spot HIV test results. The purpose of this study was to describe the cross-sectional prevalence of HPV infection, distribution of HPV types, and factors associated with HPV-positivity in this community sample of MSM.

Methods

Participants were recruited at community venues catering to gay and bisexual men in Vancouver from 9 September 2008 to 28 February 2009. The methodology related to this self-collected rectal swab component has been described previously.²

We assessed HPV prevalence among participants whose specimens were adequate for HPV testing, as indicated by a betaglobin-positive result. HPV was detected using the Linear Array HPV Genotyping Test (Roche Diagnostics). Strains were identified as low risk (LR) or high risk (HR) types according to the classification proposed by Munoz *et al.*³ We examined HPV prevalence by HIV status and carried out bivariate analyses of survey variables to determine factors significantly associated with HPV infection (chi-square p value <0.05).

Results

The ManCount Survey was completed by 766 men during the study period. Among these, 268 (35.0%) consented to participate in this sub-study, 252 provided a rectal swab, 239 specimens were of sufficient quality for analysis, and 159 were adequate for HPV testing. Participants more likely to consent to self-collect a rectal swab were HIV-positive, current smokers, and reported lower education or lower income (data not shown).

Overall, 62.3% (95% CI: 55 - 70%) were HPV positive; this was significantly higher among HIV-positive (78.6%) compared to HIV-negative (56.9%) MSM. The number of types per HPV-positive participant varied from one to 13 (median 2, IQR 1-5). Sixty-one (38.4%) had at least one HPV vaccine-specific type (6, 11, 16 or 18); 37 (23.3%) had at least one of HPV 16 or 18.

Table 1: Prevalence of HPV types among MSM in Vancouver

	Total (n=159)	HIV positive (n=42)	HIV negative (n=116)	OR (95% CI)*
HPV positive	99 (62.3%)	33 (78.6%)	66 (56.9%)	2.8 (1.2 – 6.3)
HR-HPV	75 (47.2%)	30 (71.4%)	45 (38.8%)	3.9 (1.8 – 8.5)
HPV-16	30 (18.9%)	15 (35.7%)	15 (12.9%)	3.7 (1.6 – 8.6)
HPV-18	12 (7.5%)	6 (14.3%)	6 (5.2%)	3.1 (0.9 – 10.1)
LR-HPV	59 (37.1%)	26 (61.9%)	33 (28.4%)	4.1 (1.9 – 8.6)
HPV-6	18 (11.3%)	9 (21.4%)	9 (7.8%)	3.2 (1.2 – 8.8)
HPV-11	19 (11.9%)	8 (19.0%)	11 (9.5%)	2.2 (0.8 – 6.0)

*HIV positive vs HIV negative; OR: odds ratio; CI: confidence interval

Prevalence of HR HPV types: 16 (18.9%), 18 (7.5%), 26 (1.3%), 31 (9.4%), 33 (3.8%), 35 (0.6%), 39 (6.3%), 45 (5.0%), 51 (4.4%), 52 (8.8%), 53 (10.7%), 56 (2.5%), 58 (6.3%), 59 (7.5%), 66 (4.4%), 68 (5.0%), 73 (3.1%), 82 (3.8%)

Prevalence of LR HPV types: 6 (11.3%), 11 (11.9%), 40 (2.5%), 42 (6.9%), 43 (0.0%), 44 (0.0%), 54 (3.1%), 61 (5.0%), 70 (5.7%), 72 (2.5%), 81 (1.9%)

Prevalence of other HPV types: 62 (7.5%), 67 (3.8%), 69 (3.1%), 83 (3.1%), 84 (9.4%), 87 (0.6%), 89 (10.7%),

Table 2: Factors significantly associated with HPV infection

Variable		Number (%)	OR (95% CI)
Recreational drug use before or during sex (past 6 months)*	Yes	35/42 (83.3%)	3.8 (1.5 – 9.2)
	No	60/105 (57.1%)	1.0
Douching before sex	Yes	39/48 (81.3%)	3.1 (1.3 – 7.2)
	No	50/86 (58.1%)	1.0
Concurrent sexual partner	Yes	49/66 (74.2%)	2.6 (1.2 – 5.9)
	No	22/42 (52.4%)	1.0
Unprotected anal sex with casual partner (past 6 months)	Yes	46/59 (78.0%)	2.6 (1.1 – 5.9)
	No	30/52 (57.7%)	1.0
Age (years)	≥25	86/130 (66.2%)	2.4 (1.1 – 5.5)
	< 25	13/29 (44.8%)	1.0

*Includes ecstasy, ketamine, crystal meth, GHB, psychedelics or amphetamines

Other variables analyzed but not statistically significant were history of STI in past 12 months, lifetime diagnosis of genital warts, current smoking, income, education, ethnicity, circumcision, venues for seeking sex, group sex, receiving money/goods in exchange for sex.

HPV prevalence was greater among men who had more lifetime insertive anal sex partners: none (33.3%), 1-9 (48.8%), 10-49 (74.5%), ≥50 (82.1%); p<0.001. Of HPV-positive participants, 55 (55.6%) had heard of HPV.

Discussion

We found HIV-positive MSM significantly more likely to be HPV-positive and have a higher prevalence of HR and LR HPV; however, we may have overestimated overall HPV prevalence due to higher participation of HIV-positive men in this sub-study. Consent also varied by other study variables but these were not associated with HPV infection. A substantial proportion of specimens (33.5%) were inadequate for HPV testing. The reduced sample size may have lowered statistical power to detect significant differences by other variables. Adequacy of self-collected samples was lower in our study compared to other studies of HPV infection among MSM but our prevalence findings are comparable.^{4,5} Of the risk factors we identified, douching before sex may warrant further investigation. A substantial proportion of MSM may be at risk for HPV and other STI in association with this practice as it was relatively common among ManCount participants overall (31% of all participants, data not shown).

Conclusion

Self-collection of rectal swabs at community venues showed that the prevalence of HPV infection among MSM in Vancouver is high (62%) and associated with HIV infection and sexual risk factors. Given the recent licensure of HPV vaccine for men and the prevalence of vaccine-specific types in our sample, HPV vaccine may benefit MSM. The high proportion of HPV-positive MSM who had not heard of HPV suggests that education efforts for MSM may be useful.

References

¹ Public Health Agency of Canada. HIV/AIDS: M-Track Survey. <http://www.phac-aspc.gc.ca/aids-sida/about/mtrack-eng.php>

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