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## Abstract

### Infection with Human Papillomavirus (HPV) 6 and 11, and associations with genital warts, HIV and other risk factors in high-risk women in Burkina Faso

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**Background** Human papillomavirus (HPV) types 6 and 11 are known causative agents of genital warts (GW) but little is known about their epidemiology in Africa. We describe the prevalence of cervical HPV 6/11 DNA among high-risk women in Burkina Faso, and their association with GW, HIV, and other risk factors.

**Methods** 306 women were enrolled. HIV status and CD4 counts were determined. Among other genital samples, a cervical sample was collected for liquid-based cytology using a Cervex swab and the ThinPrep 2000 processor and HPV genotyping using INNO-LiPA genotyping v2. Statistical analysis was conducted using logistic regression.

**Results** HIV-1 prevalence was 40% (123/306). HPV DNA was detected in 55% (100/183) of HIV-uninfected women, 84% (78/93) of HIV-1 infected women with CD4 counts >200 cells/ $\mu$ l and 97% (29/30) of women with CD4 counts  $\leq$ 200 cells/ $\mu$ l ( $p < 0.001$ ).

18 (6%) women were infected by HPV 6, and 13 (4%) were infected by HPV 11. Prevalence of HPV 6/11 was 7% (13/183) in HIV-uninfected women, 10% (9/93) in HIV-1 infected women with CD4 counts >200 cells/ $\mu$ l, and 20% (6/30) in women with CD4 counts  $\leq$ 200 cells/ $\mu$ l ( $p_{\text{trend}} = 0.04$ ). 18 women (6%) had GW; there was a strong association between HPV 6 and GW (adjusted OR=6.16, 95% CI 1.25–30.88,  $p = 0.03$ ) but none between HPV 11 and GW.

In multivariable analysis, cervical HPV 6/11 was detected more frequently in women who had genital ulcers (aOR=5.22, 95% CI 1.21–22.57,  $p = 0.03$ ), or whose last menses was more than 15 days prior to examination (aOR=2.71, 95% CI 1.07–6.98,  $p = 0.03$ ). Regular vaginal douching was protective (aOR=0.25, 95% CI 0.07–0.88,  $p = 0.03$ ). There were no associations with HIV-1 plasma viral load, other STI or bacterial vaginosis.

**Conclusions** Prevalence of HPV 6 and 11 was high in this population and occurred more frequently in HIV-1 infected immunosuppressed women. Vaginal douching and follicular phase of menstrual cycle were protective, which might be secondary to mechanical or hormonal factors, decreasing DNA detection.