

Prevalent HPV infection increases the risk of HIV acquisition in African women: advancing the argument for HPV immunization

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Abstract

Objective: Vaccine-preventable human papillomavirus (HPV) infection is common, especially in sub-Saharan Africa where HIV risk is also high. However, unlike other sexually transmitted infections (STIs), HPV's role in HIV acquisition is unclear. We evaluated this relationship using data from MTN-003, a clinical trial of HIV chemoprophylaxis among cisgender women in sub-Saharan Africa.

Design: Case-control study.

Methods: We matched 138 women who acquired HIV (cases) to 412 HIV-negative controls. Cervicovaginal swabs collected within 6 months before HIV seroconversion were tested for HPV DNA. We estimated the associations between carcinogenic (high-risk) and low-risk HPV types and types targeted by HPV vaccines and HIV acquisition, using conditional logistic regression models adjusted for time-varying sexual behaviors and other STIs.

Results: Mean age was 23 (+/- 4) years. Any, high-risk, and low-risk HPV was detected in 84%, 74%, and 66% of cases, and 65%, 55%, and 48% of controls. Infection with ≥ 2 HPV types was common in cases (67%) and controls (49%), as was infection with nonavalent vaccine-targeted types (60% and 42%). HIV acquisition increased with any (aOR 2.5, 95% CI 1.3-4.7), high-risk (aOR 2.6, 95% CI 1.5-4.6), and low-risk (aOR 1.8, 95% CI 1.1-2.9) HPV. Each additional type detected increased HIV risk by 20% (aOR 1.2, 95% CI 1.1-1.4). HIV acquisition was associated with HPV types targeted by the nonavalent (aOR 2.1, 95% CI 1.3-3.6) and quadrivalent vaccines (aOR 1.9, 95% CI 1.1-3.2).

Conclusions: HPV infection is associated with HIV acquisition in sub-Saharan African women. In addition to preventing HPV-associated cancers, increasing HPV vaccination coverage could potentially reduce HIV incidence.

