

BRIDGING EPIDEMIOLOGY AND INTERVENTION: URETHRAL HPV BURDEN AMONG MSM IN SOUTH AFRICA

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BACKGROUND AND OBJECTIVES: Human papillomavirus (HPV) remains a major cause of multiple anogenital and oropharyngeal cancers. While anal HPV in men who have sex with men (MSM) is well-studied, the urethral reservoir a potential site for transmission and oncogenesis remains poorly characterized, especially in high human immunodeficiency virus (HIV) prevalence settings like sub-Saharan Africa. Bridging this epidemiological gap is critical for informing targeted interventions. Thus, this study investigated the prevalence of urethral HPV infection among MSM and associated risk with HIV infection.

METHODS: A cross-sectional study was conducted among 199 MSM recruited from Gauteng and the North-West provinces, South Africa. HIV status was determined using HIV-1/2 Alere Determine™ Ag/Ab Combo test, confirmed using Uni-Gold™ Recombigen® HIV-1/2 rapid immunoassay. Urethral swabs were collected from 199 participants, however 195 samples were retrieved and extracted for DNA using the Abbott mSample Preparation System DNA Kit on the Abbott m2000sp platform, and HPV genotyping was performed on 191 samples using the Anyplex™ II HPV28 assay. Statistical analyses were conducted using R.

RESULTS: HIV prevalence was 66.3%, and urethral HPV was detected in 20.9% of participants with 16.2% having HIV/HPV co-infection. High-risk HPV types constituted 52.5% of infections, with HPV 16, 18, and 68 each present in 12.5% of cases. Types covered by Gardasil®9 accounted for 60.0% of infections. A clear relationship was observed between HIV-associated immunosuppression and urethral HPV infection: the predicted probability of HPV infection increased with declining CD4+ T-cell counts, with prevalence progressively decreasing across higher CD4 strata.

CONCLUSION: This study reveals a significant burden of urethral high-risk HPV among South African MSM, closely linked to HIV-related immunosuppression. The urethra emerges as a potential niche for oncogenic HPV, highlighting two translational priorities: integrating urethral

HPV screening into routine MSM sexual health services and expanding HPV vaccination programs for high-risk groups in high HIV-burden settings.