Novel Multiplex Point-of-care PCR diagnostics of six common sexually transmitted infections among people receiving HIV pre-exposure prophylaxis in western Kenya

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In resource-limited settings, sexually transmitted infections (STIs) are often underreported due to limited diagnostic accessibility. This study evaluated the prevalence of six STIs among individuals receiving pre-exposure prophylaxis (PrEP) in western Kenya, employing the novel point-of-care (POC) FlashDx semi-solid PCR chip-based testing device. Between March 24 and April 30, 2025, 400 HIV□negative participants aged ≥15 years enrolled from public health facilities and pharmacies, including men who have sex with men (MSM, n= 100), heterosexual men (n=100), and women (n= 200). Participants provided self-collected urine samples tested for Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), Trichomonas vaginalis (TV), Mycoplasma genitalium (MG), Mycoplasma hominis (MH), and Ureaplasma species (US). FlashDx results were validated against Mikrogen PCR; CT/NG detection and subsequent treatment decisions followed Cepheid PCR results. The limit of detection (LOD) for FlashDx was also assessed. Overall STI prevalence was high at 69.3%, with multiple infections identified in 27.9% of participants. Individual prevalence rates were 14.3% for CT, 2.5% for NG, 4.8% for TV, 4.0% for MG, 20.9% for MH, and 59.0% for US. Women had significantly higher prevalence rates for TV, MH, and US ($p<0.02$, $p<0.001$, $p<0.001$, respectively). MSM had higher MG prevalence compared to other groups ($p=0.07$), while CT prevalence showed no significant differences across groups ($p=0.70$). FlashDx demonstrated high concordance with Cepheid and detected 10 targets per PCR in LOD analyses. These findings indicate that FlashDx effectively identifies STIs, and diagnostic strategies should be broadened across population groups. This study shows the potential for POC diagnostics pending further field assessments of cost-effectiveness.

Aarman Sohaili is a Clinical Epidemologist and PhD researcher at Maastricht University, where he specialises in promoting accessible and affordable diagnostic solutions.

His research is focused on driving innovative healthcare strategies that impact underserved communities. Born in Kenya, he brings a unique, first-hand understanding of the healthcare challenges faced across the region, particularly in resource-limited settings.

His recent projects include a pilot study in partnership with the Kenya Medical Research Institute (KEMRI) in Kisumu, evaluating a multiplex point-of-care PCR assay for diagnosing sexually transmitted infections. This includes providing an epidemiological profile on the burden of these STIs in the region.

Aarman has authored several peer-reviewed publications addressing critical health topics in Kenya, with research designed explicitly to inform evidence-based policy and strengthen public health strategies.

With a strong commitment to tackling health disparities, Aarman's work centers on developing and implementing affordable, scalable diagnostic solutions. His focus is particularly on Kenya, where he seeks to integrate sustainable innovations that can bridge gaps in access and ensure that essential diagnostic tools reach the communities that need them most.