HPV Testing in self collected samples in Uganda

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Cervical cancer is the most common cancer among women in Uganda, a country with one of the highest rates in the world (age standardized incidence rate 44.4 per 100,000)1. More than 80% of women are diagnosed with late-stage cancer, and women living with HIV (WHIV) are at greater risk of developing cervical cancer. Despite being entirely preventable, cervical cancer education, prevention and care remain underfunded, which is compounded by a shortage of trained healthcare personnel in the country[2]. At present, the standard for screening in Uganda is visual inspection using acetic acid (VIA). However, training providers to offer screening, the invasiveness of a pelvic examination, and user variability (56%-90%) are barriers led to an examination of use of HPV-DNA, either as a clinician or self collected option to improve access to screening. Self collection reduces the burden on skilled professionals, decreases the need for travel to clinics, obviates the embarrassment of the pelvic exam and has shown exceptional promise for LMIC. Two important research programs in Uganda indicating the feasibility of self collection are highlighted in this paper.

DR CAROL NAKISIGE

Group education of women waiting for screening in Uganda.

Screening Technologies to Advance Rapid Testing (START-UP): Project`1

CareHPVTM test, a low-cost HR-HPV screening tool that yields results rapidly and with minimal equipment needs was used in a study by Makerere University in 2009[3]. Clinician-collected (cervical) and self-collected (vaginal) CareHPVTM specimens, VIA, and cytology tests were evaluated among 4710 Ugandan women (Table 1). A sub-group analysis demonstrated high sensitivity of CareHPVTM in both HIV positive and negative women in Uganda. In the study of 2,337 Ugandan women with known HIV status, positivity rate was higher among WHIV (44.9%) compared to HIV negative women (19.0%). CareHPVTM sensitivity for both cervical or vaginal samples was better than VIA or Pap.

Table 1 shows sensitivity and specificity of the 4 screening tests for detection of CIN2+ and CIN3+ among Ugandan participants

In Uganda, 99.5% of women enrolled accepted to self collect vaginal samples. Interestingly, women preferred clinic based screening as opposed to home based self sampling. Self sampling acceptance was higher when provider prepared women through health education, allowed women to feel the brush and were present during the self collection process. During field implementation, additional use of culturally appropriate educational aid would promote self sampling.

Community based HPV self collection

The Advances in Screening and Prevention in Reproductive Cancers (ASPIRE) project integrates cervical cancer screening with STI & HIV testing and

reproductive health education and offers screening at the community level. Outreach workers, who are known and trusted community members trained in self-collection based screening, recruit women at their homes or places of work. They provided self collected specimens: one for HR-HPV testing, and a second for STI screening (gonorrhea and Chlamydia). Women provide the specimen at the place of recruitment, and do not need to attend a clinic. Women who test HR-HPV positive are referred to the local health unit for follow up VIA screening with a nurse. Using a see-and-treat approach, women who screen positive are treated using cryotherapy in the same visit.

Integrated cervical cancer screening with reproductive health services

ASPIRE conducted a randomized controlled trial of 500 women comparing community-based HR-HPV self collection to VIA in Kisenyi, Uganda4. In this study, self collection-based high risk HPV testing had a significantly higher uptake (99.2%) compared to VIA alone (48.4%). This trial demonstrated that self-collection based screening is both feasible and acceptable among women in this setting, and suggests this method improve access compared to VIA. Similar to the study at Makerere, rates of HR-HPV were high in the study population (29.4%), and were significantly higher among WHIV compared to HIV negative women, including rates of HR-HPV types 16 and 18.

Integration of cervical cancer prevention with reproductive health services is recommended by the WHO to maximize resources and improve access in low resource settings[5]. It has been demonstrated that integrating interventions for HIV, reproductive health, and maternal health has successfully improved uptake of services, and improved the quality of care received by women.

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Future Directions

Screening for cervical pre-cancer using low cost HPV DNA testing like CareHPV on self-collected vaginal specimen could be the game changer for cervical cancer prevention in Uganda and other LMIC. Use of self-collected specimens could result in a rapid increase in screening coverage, does not require an expansive clinical infrastructure, and does not need highly trained personnel. Self-collection has the potential for rapid scaling at the community level and trained, female village health workers or volunteers could be mobilized for mass sample collection.

References

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TABLE 1

Sensitivity and specificity of the 4 screening tests for detection of CIN2+ and CIN3+ among Ugandan participants.

	SELF-COLLECTED *CARE*HPV™	CLINICIAN COLLECTED *CARE*HPV™	VIA	CYTOLOGY
Number of women who completed all screenings N = 3146				
Number with CIN2+ N=87				
Sensitivity, % (95% CI)	77.0 (66.8, 85.4)	88.5 (79.9, 94.3)	73.6 (63.0, 82.4)	69.0 (58.1, 78.5)
Specificity, % (95% CI)	82.0 (80.5, 83.3)	81.8 (80.3, 83.1)	66.6 (64.9, 68.3)	48.6 (46.8, 50.4)
Number with CIN3+ N=25				
Sensitivity, % (95% CI)	72.0 (52.0, 87.9)	84.0 (63.9, 95.5)	80.0 (59.3, 93.2)	72.0 (50.6, 87.9)
Specificity, % (95% CI)	80.7 (79.3, 82.1)	80.3 (78.9, 81.7)	65.9 (64.2, 67.5)	48.3 (46.5, 50.1)