implement a research project to determine the feasibility of establishing a network of community-based health care teams with the capability of performing smartphone-based digital cervicography in Tanzania.
Methods: The project was carried out with an expert team in Kilimanjaro and Arumeru district hospital (Arumeru district) between October 2013 and March 2015. In total we have recruited 500 clients from Arumeru district hospital (a semi-rural site). After the subject underwent VIA and smartphone-based digital cervicography, and the non-expert health team had recorded their diagnosis and treatment plan, the digital image was sent by SMS to the expert site for review. The image was then sent to the expert reviewer for diagnosis and the result was then recorded and transmitted via SMS back to the peripheral site only after the team had recorded and stored their initial diagnosis result. The expert diagnosis was to inform and dictate what the final diagnosis will be and this was communicated to the client and acted on as per protocol with respect to cryotherapy or referral for LEEP excision/other intervention or simply for planned surveillance.
Findings: Interim analysis of the first 250 patients indicated that there was full agreement between nurse and expert diagnosis on 94.6% of images. A significantly higher number of women with abnormal cervical lesions were HIV positive. The nurse-run digital cervicography team had overwhelmingly positive feedback about the use of the mHealth based system for capacity building and quality assurance.
Interpretation: iphone-based digital cervicography and SMS image transfer provide a reliable and sustainable strategy for maintaining and upgrading skills of non-expert cervical cancer screening teams and strengthen the ability of non-expert (nurses) to accurately diagnose abnormal cervical lesions.
Funding: Grand Challenges Canada.
Abstract #: *01ITIS031*

A real world feasibility study for using HPV test as primary screening technology for cervical cancer screening in rural China

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Background: The national cervical cancer screening program for rural women has been expanded to 10 million Chinese women every year since 2012, which was based on VIA/VILI and Pap smears. In low resource settings, the efficiency of VIA/VILI and Pap smears in real world were unsatisfactory and it is difficult to set up effective screening systems. HPV test is now recommended as primary screening. A low cost, rapid and simple test came into market recently (careHPV™ test; QIAGEN Gaithersburg Inc). Success of setting up a high quality screening system by HPV test requires good performance when operated by personnel with limited laboratory experience. This study aims at evaluating the feasibility of implementing the rapid HPV test as primary screening tool for cervical cancer screening by local health workers in rural China.
Methods: Women living in rural areas of Xinmi, Henan Province were invited. Women fulfilled the inform consent were randomized into 3 arms and screened by careHPV test, Pap smears or VIA/VILI separately. Any positive and 10% negative women were referred to colposcopy. Directed biopsy and/or ECC were performed if necessary. A laboratory-inexperienced local worker was trained by technician from NCC/CHCAMS. All the screening procedures were performed by local health workers. The final diagnoses were based on a histopathology expert from NCC/CHCAMS. Some of the screened women and rural health workers were invited to finish a questionnaire. The Institutional Review Board for human research subjects at NCC/CHCAMS approved the study. SPSS 13.0 software and chi-square test were used for data analysis. Test level was adjusted by Bonferroni test.
Findings: 900 women had careHPV test, 560 underwent VIA/VILI and 579 had Pap smears. The overall detection rate for CIN2+ was 0.64%. The positive rates for HPV test, VIA/VILI and Pap smears were 10.6%, 17.9% and 5.7% respectively ($p < 0.001$). The detection rates for CIN2+ showed no statistically difference ($p=0.937$). The false negative for CIN1 was 50% in Pap smears group. The compliance of careHPV group was significantly higher ($p < 0.001$). 266 women and 25 health workers finished the questionnaire. 9.1% women with VIA/VILI complained about the pain (careHPV 4.5%, Pap smears 2.3%). The vast majority women (97%) and all the health workers preferred HPV test irrespective of the cost.
Interpretation: After a simple training, experience-limited personnel could operate careHPV test appropriately. The referral rate of HPV test is proper for population screening in real world. Our study proved HPV test is possible to implement in rural areas technically and acceptable to the women and rural health workers. It also implied that free and good quality screening methods may improve the coverage for government initiated programs.
Funding: Doctoral Innovation Fund supported by Peking Union Medical College.
Abstract #: *01ITIS032*

Acceptability of cervical cancer screening using a self-collected tampon for HPV testing among HIV-infected women in Pretoria, South Africa

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Background: Cytology-based screening programs face multiple barriers to successful implementation and broad uptake. Self-collection of cervical specimens for HPV testing has been suggested as one method for increasing cervical cancer screening coverage. We sought to describe the acceptability of self-collected HPV specimens using a tampon compared to Pap smears among HIV-infected women attending an HIV treatment clinic in Pretoria, South Africa.
Methods: We conducted a prospective study at one government HIV treatment clinic in Pretoria, South Africa. The study population consisted of 325 HIV-infected women, 25 years or older, seeking care at the clinic and without chart documentation of a cervical cytology result within the past three years. A study clinician performed a pelvic exam and obtained a cervical brush specimen. All study participants received instructions, and then performed a tampon self-collection. The specimens would be used for cytology and to evaluate the performance of a molecular test. After the collection, each participant completed a questionnaire to assess her experiences with both collection methods. The acceptability survey utilized a Likert scale, from 1 (most favorable) to 5 (least favorable), to assess user experiences related to privacy, embarrassment, pain, discomfort, and care for both collection methods. A direct comparison of preferred method was also assessed. Results are reported as proportions and are analyzed using Z-test and Chi-square test statistics.
Findings: When compared directly, 179 (55.4%) of women preferred the clinician-collected method and 144 (44.5%) preferred the tampon method ($p = < 0.01$), excluding two missing values.