



Short Communication

Lessons learned from a rural, community-based cervical cancer screen-and-treat pilot study in Malawi



Laura Limarzi Klyn^{a,*}, John Chapola^a, Clement Mapanje^a, Agatha Bula^a, Jennifer H. Tang^{a,b,c}, Satish Gopal^{a,d}, Nelecy Chome^a, Billy Phiri^a, Lameck Chinula^{a,b,c}

^a University of North Carolina Project-Malawi, Lilongwe, Malawi

^b Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC, USA

^c Department of Obstetrics and Gynecology, University of Malawi, College of Medicine, Malawi

^d Department of Medicine, University of North Carolina, Chapel Hill, NC, USA

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ABSTRACT

Objectives: Invasive cervical cancer (ICC) is the leading cause of cancer-related death among women in Malawi. Barriers to screening for ICC in Malawi, such as long distances to health facilities and lack of public education about ICC, have hindered participation of women in ICC prevention programs. Given the burden of disease and barriers to screening, we implemented a community-based ICC screen-and-treat pilot study and present its successes and challenges.

Study design: This study was a screen-and-treat pilot study using Visual Inspection with Acetic acid (VIA) for screening and same-day thermal ablation for treatment of pre-cancerous lesions. The pilot was implemented in four rural community settings in Lilongwe District, Malawi.

Methods: With consultation from local leaders, as well as the UNC Project-Malawi Community Department and the Community Advisory Board, a team of researchers designed a rural, community-based ICC screen-and-treat pilot study. Over a 5-week period, we travelled to four rural communities to provide information about and screening for ICC and HIV through our study. The four selected rural locations were about an hour drive from Lilongwe City, Malawi. Detailed field notes were taken by study staff and then later analyzed and categorized as either strengths or challenges.

Results: Successes included support from local leaders, high uptake of screening (408 women underwent VIA, representing 88% of eligible women), positive experiences during screening, and good communication between study staff and participants. This communication enabled us to quickly address misperceptions about the study intent and procedures and to better understand some of the barriers to care. Challenges included insufficient medication for diagnosed sexually transmitted infections, finding ways to engage interested women who were ineligible due to young age, and not screening interested women because they needed male partner approval.

Conclusion: Community-based screen-and-treat programs with thermal ablation for ICC can be an effective way to engage hard-to-reach women in ICC preventive care. Our findings support existing literature which suggests that involvement of local leadership, women from the community, and their male partners, as well as ongoing peer education, may facilitate greater participation in ICC screening and treatment. In addition, we found ongoing communication between study staff and participants to be mutually beneficial. Finally, we suggest that future interventions consider bundling sexually transmitted infection treatment into ICC preventive care when engaging hard-to-reach populations.

Invasive Cervical Cancer (ICC) remains a problem of international concern, despite the ability to screen for and treat precancerous cervical lesions. ICC is of particular concern in sub-Saharan Africa (SSA), where

mortality rates and incidence of the disease are among the highest in the world [1]. The high incidence and mortality rates of ICC in SSA are often linked to barriers women face in accessing preventive services, such as

* Corresponding author. UNC Project-Malawi, Private Bag A-104, Lilongwe, Malawi.

E-mail addresses: llimarzi@unclilongwe.org (L.L. Klyn), jchapola@unclilongwe.org (J. Chapola), cmapanje@unclilongwe.org (C. Mapanje), abula@unclilongwe.org (A. Bula), jennifer_tang@med.unc.edu (J.H. Tang), satish_gopal@med.unc.edu (S. Gopal), nchome@unclilongwe.org (N. Chome), bphiri@unclilongwe.org (B. Phiri), lameck_chinula@med.unc.edu (L. Chinula).

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Abbreviations

CAB	Community Advisory Board
KCH	Kamuzu Central Hospital
ICC	Invasive cervical cancer
MOH	Ministry of Health
SSA	Sub-Saharan Africa
STIs	Sexually Transmitted Infections
TA	Traditional Authority
UNC Project-Malawi	University of North Carolina at Chapel Hill Project Malawi
VIA	Visual inspection with acetic acid

limited public education about ICC and living long distances from health facilities [2].

Malawi, a landlocked country in SSA, has the highest age-standardized incidence and mortality rate of ICC in the world [1]. Approximately 83% of Malawi's population lives in rural areas [3], where access to preventive services and public education about ICC are often unavailable. During this study, Malawi's National Cervical Cancer Control Strategy promoted use of Visual Inspection with Acetic acid (VIA) for screening and cryotherapy for treatment of precancerous cervical lesions [4]. Despite some success, between 2011 and 2015, only 43% of women with positive VIA were treated with cryotherapy in this program [5]. This was due in part to the high costs and logistical challenges associated with procurement and use of large gas cylinders required for cryotherapy [5].

Studies have found treatment of precancerous cervical lesions with thermal ablation to be a safe, effective, and more practical alternative to cryotherapy in low resource settings [6], including Malawi [7]. Unlike the gas cylinders required for cryotherapy, thermal ablation can be performed using a hand-held, battery-powered device. Although thermal ablation has been successfully piloted in some rural health facilities in Malawi [7], there is little data about its feasibility in non-clinical settings, and there remains a need for innovative service delivery approaches, particularly for women with poor access to health facilities. In an effort to engage women with such barriers in preventive ICC care, we piloted a community-based screen-and-treat program with VIA and thermal ablation in four rural communities in Malawi, each about an hour's drive on dirt roads from Lilongwe City [8].

Integral to study design was ongoing input from community educators and nurses of the University of North Carolina Project-Malawi (UNC Project-Malawi), a collaboration between the University of North Carolina at Chapel Hill, the Malawi Ministry of Health (MOH) and Kamuzu Central Hospital (KCH). The community educators at UNC Project-Malawi sought feedback from its Community Advisory Board (CAB), which is comprised of local chiefs, teachers, sex workers, police officers, healthcare workers, previous study participants, religious leaders, and the Lilongwe District Health Office. The CAB gave advice on site location and how to engage with their community members. Criteria for study site selection included being far from a local health facility, but close enough to Lilongwe City that our study team could travel daily from UNC Project-Malawi to the communities for implementation and ensure sufficient supplies and sterilization of supplies used for each visit.

Before study implementation, we held a formal meeting with the Traditional Authority (TA) of the region (one of the most senior leadership positions in the traditional governance structure) in which we conducted our study, to seek approval and guidance. After granting initial approval, the TA called for a meeting with the Chiefs of the villages in the area so that we could share the purpose and aims of our study. Engaging traditional Chiefs in rural screen-and-treat programs has been noted as an effective way to facilitate utilization of these services among women in rural communities in other parts of SSA [9]. The village Chiefs

also granted support for our study, provided advice, and shared information about our study with women in their villages at community gatherings, including in churches and at funerals. In addition to engaging local Chiefs, we also conducted educational sessions within the community that addressed ICC risk, prevention, presentation, and treatment, as well as our study procedures, to try to increase enrolment into our study.

Women who presented to our study sites were provided with information regarding ICC and our study procedures. Those who enrolled received HIV testing and counselling, VIA, and if VIA positive with eligible lesions, treatment with thermal ablation. Screening and treatment were conducted in private, partitioned rooms of traditional court buildings, churches and schools. Over the course of five weeks (between July to August 2017), 655 women were screened for enrollment into our study. Of the 655 women, 463 women were eligible for VIA, and 408 (88%) underwent the procedure [8]. Of those 408 women, 378 (93%) had a negative VIA [8]. Of the 30 VIA positive women, 28 (93%) underwent thermal ablation same day [8]. Two women were referred to KCH for specialized treatment as they were ineligible for thermal ablation [8].

A key facilitator for uptake of our services were women who became champions for our study. After women who underwent VIA in our study shared their experiences within the community, increased numbers of women presented for screening. This is consistent with literature from Malawi that suggests that peer education and community advocacy may be a facilitator of women's enrolment into ICC programs [2]. Another facilitator was ongoing communication between the study staff and women in the community, which enabled us to quickly identify and address misperceptions and provided insight into factors inhibiting women from presenting for screening. For example, the TA had offered us the courtyard of his residence as one study site. As we began implementation, turn-up of participants to this site was low compared to other sites. We later learned that women were hesitant to undergo VIA in the TA's courtyard because, out of respect, community members do not ordinarily visit his courtyard. Upon hearing this, we relocated this study site, and the turnout of participants increased.

We also learned that some participants were afraid to enroll because of community rumors that the study staff were a satanic cult collecting blood for rituals and vaginal discharge with semen to send to the United States for profit. Women also reported that previous studies conducted by other research groups had collected specimens from the community and never returned to disseminate the results, leading some in the community to become wary of research activities. Another rumor was that VIA involved complete removal of the cervix. This aligns with previous research in Malawi which has indicated that misperceptions of ICC preventative services may inhibit participation in screening programs [2]. Misperceptions about our staff and the procedure were addressed by our study staff through ongoing, formal and informal communication with study participants and women gathered in social settings throughout the community. In addition, all 28 women who were treated with VIA had a cervical biopsy taken and were asked to follow-up at UNC Project-Malawi to discuss and ensure women understood their results and confirm they had received adequate treatment [8]. Participants received transport reimbursement if they attended this appointment.

One challenge we faced was male partner approval. The most common reason that eligible women did not undergo VIA after learning about our program was that they wanted to first consult their husbands, and many did not return for screening. The need to improve opportunities for male partner support in ICC screening has been documented in other parts of SSA [10]. Many participants suggested involving men in awareness campaigns and educational talks to encourage participation in the future.

Another challenge was the diagnosis of sexually transmitted infections (STIs) among some women who underwent VIA. Since our study was targeted towards ICC preventative care, we did not have antibiotics available to provide STI treatment for participants. Therefore, we had to

refer women with STI signs and symptoms to their local health facilities for this care. Given the barriers this population faces with accessing health facilities, this was a missed opportunity to provide essential care. Other gynecologic treatment studies may want to incorporate treatment for STIs with easily diagnosable symptoms into study activities.

A final challenge was the number of women less than age 25 years who presented to our study sites for VIA. Malawi ICC screening guidelines recommend screening to start at age 25, so we could not screen these women. Further research may consider ways to engage women under the age of 25 who are interested in ICC preventive care but are not yet eligible for screening. For example, educating young women about the importance of HPV vaccination (which was not widely available in Malawi at the time of our study) for primary prevention would be beneficial in settings where it is available.

The large number of women who presented for VIA screening in our study suggests an unmet need for rural ICC preventive services in Malawi. The Malawi Ministry of Health has now introduced thermal ablation as an alternative treatment modality for cervical precancerous lesions, and it is being rolled out across the country. Our findings suggest that with careful planning, ongoing community involvement, innovative strategies for inclusion of male partners and involvement of women too young to be screened, rural, community-based screen-and-treat programs using VIA and thermal ablation may be an effective strategy to engage hard-to-reach women in ICC preventive care in Malawi.

Statements of ethical approval

This study received ethical approval from the University of North Carolina at Chapel Hill Institutional Review Board, as well as the National Health Sciences Research Committee in Malawi (NHSRC).

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

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