Early experiences in integrating cervical cancer screening and treatment into HIV services in Zomba Central Hospital, Malawi


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Abstract

Background
Malawi has the highest rate of cervical cancer globally and cervical cancer is six to eight times more common in women with HIV. HIV programmes provide an ideal setting to integrate cervical cancer screening.

Methods
Tisungane HIV clinic at Zomba Central Hospital has around 3,700 adult women receiving treatment. In October 2015, a model of integrated cervical cancer screening using visual inspection with acetic acid (VIA) was adopted. All women aged 20 and above in the HIV clinic were asked if they had cervical cancer screening in the past three years and, if not, were referred for screening. Screening was done daily by nurses in a room adjacent to the HIV clinic. Cold coagulation was used to treat pre-cancerous lesions. From October 2016, a modification to the HIV programme's electronic medical record was developed that assisted in matching numbers of women sent for screening with daily screening capacity and alerted providers to women with pre-cancerous lesions who missed referrals or treatment.

Results
Between May 2016 and March 2017, cervical cancer screening was performed in 957 women from the HIV clinic. Of the 686 (71%) women who underwent first ever screening, 23 (3.4%) were found to have VIA positive lesions suggestive of pre-cancer, of whom 8 (35%) had a same-day cold coagulation procedure, seven (30%) deferred cold coagulation to a later date (of whom 4 came for treatment), and 8 (35%) were referred to surgery due to size of lesion; 5/686 (0.7%) women had lesions suspicious of cancer.

Conclusion
Incorporating cervical cancer screening into services at HIV clinics is feasible. A structured approach to screening in the HIV clinic was important.

Key words: HIV, cervical cancer, screening

Introduction
Malawi has the highest prevalence of cervical cancer in the world with an age standardized rate of 75.9 per 100,000.1 This accounts for 45% of all female cancers in Malawi and results in at least 1,600 deaths per year.2 Women with HIV have 6 to 8 times increased risk of cervical cancer.4,5,6 Cervical cancer is preventable with both Human Papilloma Virus (HPV) vaccination and regular screening and treatment of pre-cancerous lesions. HPV vaccination programmes have been implemented in several African countries and a pilot project has recently been concluded in Malawi with plans for national scale up by 2019.7 However, even when the vaccine is made available, millions of women will be beyond the priority age of vaccination and screening this population for cervical cancer will remain crucial.8 Several studies have shown that screening programmes using visual inspection of the cervix with acetic acid (VIA) are feasible and acceptable in resource limited settings.9,10,11,12 A study of VIA screening over 3 years in a general population of women in India demonstrated a 24% reduction in incidence of cervical cancer and a 35% reduction in cervical cancer mortality.13 VIA screening has been successfully integrated into HIV services in several countries. In Zambia, HIV infrastructure was used to offer cervical cancer screening on a national scale.14 In Cote d’Ivoire, cervical cancer screening was offered to all women attending HIV services at four clinics, by means of a mobile team of midwives.15 All women attending an urban HIV clinic in Botswana were offered VIA as part of the clinic’s services16 and in a large HIV clinic in Lilongwe, Malawi, hypertension and cervical cancer are also screened for and managed as part of routine anti-retroviral (ART) services.17 For women who screen positive for lesions suggestive of cervical cancer, several treatment options are available.

Cryotherapy has been widely used in many African countries and is the main method used in Malawi.17 More recently cold coagulation has been introduced, which offers several potential advantages over cryotherapy.18 For locally invasive lesions confined to the cervix but considered too large for cryotherapy or cold coagulation, other options include loop electrical excision procedure (LEEP), cold-knife conization and hysterectomy.18 Cervical cancer screening programmes also detect patients with already advanced carcinoma, but treatment options for malignancies in many African countries remain limited due to lack of gynaecological oncology expertise and radiotherapy services.19

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The Malawi Ministry of Health has adopted VIA as the method of screening for cervical cancer.20 When pre-cancer lesions are detected, they are treated with cryotherapy. VIA is available at most district hospitals, but cryotherapy is often unavailable due to broken machines or lack of gas.20 Although national HIV guidelines recommend that all HIV-positive women receive VIA annually,21 this has not been widely implemented. Cervical cancer screening had been available for many years at Zomba Central Hospital, but the service had often been poorly staffed and under-equipped, with no structured system for referring HIV-positive women for cervical cancer screening.

In October 2015, Dignitas International, a medical and research organization, together with the Malawi Ministry of Health, established cervical cancer screening at the HIV clinic at Zomba Central Hospital. This was part of a broader initiative to fully integrate HIV and non-communicable disease (NCD) care where all adults accessing care in the HIV clinic are screened for cervical cancer.22 We describe the process and outcomes of the integration of HIV care with cervical cancer screening, including innovations used and challenges encountered.

**Methods**

**Setting**

Zomba District is one of the most densely populated districts in Malawi with 679,500 inhabitants at the time of this study. The HIV clinic at Zomba General Hospital has over 6,500 patients in care, of whom around 3,700 are adult women 20 years and older. It has been supported by Dignitas International since 2004 in the provision of supplementary clinical, laboratory and counseling staff and technical assistance.

**Implementation of integrated cervical cancer screening at the HIV clinic**

As part of the NCD integration initiative, new equipment was purchased and new staff was trained. The broken existing cryotherapy machine was replaced with a cold coagulator. Experience elsewhere in Malawi had shown the difficulties in maintaining cryotherapy equipment23 and the relative robustness of cold coagulation equipment.24 Cryotherapy uses carbon dioxide gas to freeze a metal probe which is then applied to the cervix. A systematic literature review of 32 articles has found cure rates of 98.5% for all grades of CIN at 12 month follow up using cryotherapy.25 Cold coagulation involves using a metallic probe heated to 100-120 °C (relatively low temperatures compared to other devices causing coagulation) and leads to thermal destruction of cervical tissue. Advantages of cold coagulation equipment include its small size and thus portability, minimal use of electricity and shorter time of treatment compared to cryotherapy.

Cervical cancer screening was conducted 7 days a week adjacent to the HIV clinic. Screening was offered to all eligible women in HIV care by expert clients (ECs) who are patients ART, are open about their HIV status and have shown exemplary care by expert clients (ECs) who are patients on ART, are open about their HIV status and have shown exemplary adherence. The VIA service operates daily and is coordinated with support from Ministry of Health nurses. HIV-positive lesions are also screened in the VIA clinic and appropriate treatment is administered.

**Data collection**

Data were collected using the existing VIA registry that was modified to enable capturing of those who attended the HIV clinic. After six months of implementation, several challenges became apparent: many women referred for VIA did not attend the screening clinic or undergo screening. In addition, some women with pre-cancerous lesions elected to defer treatment with cold coagulation but did not return for care. As a response to the above two challenges, a modification to the existing HIV programme, Electronic Medical Record (EMR), was developed to incorporate VIA. This modification reminds clinicians about when VIA is due, limits daily numbers of referrals to match capacity, asks clinicians to check if women went to VIA when referred and alerts clinicians to women who had a positive VIA but did not receive same-day treatment (see figure 1). This modification was implemented in October 2016.

**Figure 1: Screenshot of VIA modification to Electronic Medical Record**

Ethics approval was not sought for this study as it utilises data that is routinely collected and anonymised. The data is used in routine reporting for monitoring of service delivery of a medical program. All data can be requested from the Ministry of Health through the corresponding author.

**Results**

We evaluated cervical cancer screening visits in 957 women who were referred from the HIV clinic between May 2016 and March 2017. Of the 665 (71%) women who underwent screening, 35% (237) had pre-cancerous lesions suggestive of pre-cancer. Of the 23 VIA positive women, 19 (82.6%) were within age group 31.5 – 45 years and only 1 (4.4%) were <30 years. VIA positive women (N=23) were slightly older than all HIV-positive women in the clinic, aged 37.7 ± 9.9 years. Comparing data from five months prior to the implementation of the modification of the EMR to six months after the intervention, the monthly average of women receiving VIA screening from the HIV clinic for the first time showed little change (from 412 ± 97 patients to 438 ± 97 patients per month). However, the percentage of women who received cryotherapy the same day increased from 33% (n=3) to 83% (n=5).

**Discussion**

Before the implementation of the EMR modification, many women who were referred from the HIV clinic for cervical cancer screening were not followed-up. Women were turned away from VIA services, they likely chose not to attend VIA screening due to long waiting lines. The cervical cancer screening programme therefore needs to modify referrals to match capacity daily.

**Conclusions**

Malawi has a large unmet need for cervical screening for all women of reproductive age. Women who are HIV-positive are at significantly higher risk, and those women who regularly attend an HIV clinic are far more accessible to health care workers than women in the community. Incorporation of medical interventions such as VIA or cryotherapy is therefore of high importance. Experience at one site in Malawi with the cold coagulator shows that women often do not return for follow up. For example, in Zambia, 22% of women that chose to defer cryotherapy did not return for treatment.26 In this regard, cryotherapy is a relative potent treatment for cervical intraepithelial neoplasia. Cold coagulation requires a large tank of carbon dioxide or nitrous-oxide and the freezing units can malfunction.27 Cold coagulation is an alternative form of treatment for cryotherapy. In a randomized control trial, cold coagulation produced similar cure rates of 95.5% compared to 93.8% of cryotherapy.28 In a meta-analysis of 5 facilities29 cold coagulation is a safer method of treatment for cryotherapy. Cold coagulation produces similar cure rates of 95.5% compared to 93.8% of cryotherapy.28 In a meta-analysis of 5 facilities29 cold coagulation is an alternative form of treatment for cryotherapy. Cold coagulation produced similar cure rates of 95.5% compared to 93.8% of cryotherapy.28 In a meta-analysis of 5 facilities29 cold coagulation is an alternative form of treatment for cryotherapy. Cold coagulation produced similar cure rates of 95.5% compared to 93.8% of cryotherapy.28


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