Challenges and successes with cervical cancer early detection and treatment in Kenya

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Where are we as a program

• 8 screening sites in western Kenya
• 43 Nurses trained in VIA and cryotherapy
• 6 Nurses trained and certified in colposcopy/LEEP provision
• Trained other non Gynecologists such as physician assistants in cervical cancer screening and treatment
• Graduated 5 Gynecologic oncologists and others in training
• Attracted research Grants – U54
• Recognized locally and regionally as a training center.
## Cervical Cancer Screening

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL SCREENED</th>
<th>POSITIVE VIA</th>
<th>COLPO/BIOLOGY</th>
<th>CRYOTHERAPY</th>
<th>LEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009/2010</td>
<td>1724</td>
<td>256</td>
<td>218</td>
<td>0</td>
<td>87</td>
</tr>
<tr>
<td>2011</td>
<td>6422</td>
<td>1115</td>
<td>665</td>
<td>292</td>
<td>64</td>
</tr>
<tr>
<td>2012</td>
<td>8830</td>
<td>1279</td>
<td>721</td>
<td>590</td>
<td>114</td>
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<tr>
<td>2013</td>
<td>6789</td>
<td>644</td>
<td>724</td>
<td>121</td>
<td>150</td>
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<tr>
<td>2014</td>
<td>6735</td>
<td>613</td>
<td>412</td>
<td>93</td>
<td>111</td>
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<tr>
<td>2015</td>
<td>16855</td>
<td>943</td>
<td>412</td>
<td>63</td>
<td>105</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>47355</strong></td>
<td><strong>4850</strong></td>
<td><strong>3152</strong></td>
<td><strong>1159</strong></td>
<td><strong>631</strong></td>
</tr>
</tbody>
</table>
VIA Screening
CLINICAL ARTICLE

Successes and challenges of establishing a cervical cancer screening and treatment program in western Kenya

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ABSTRACT

Objective: To examine the successes and challenges of integrating a public-sector cervical screening program into a cancer care system in western Kenya. Methods: The present study uses a programmatic description and a retrospective chart review of data collected from a cervical screening program run through visual inspection with acetic acid and VBM (between June 2009 and October 2011). Results: In total, 4,767 women were screened (1,351 (28\%) women with VBM, 2,593 (54\%) had HPV DNA, 238 (5\%) women underwent conization, and 4,326 (90\%) had a negative screen. Conclusion: The establishment of a cervical screening program in a low-resource setting using visual inspection with acetic acid and VBM has been successful and can be used as a model for similar programs in other low-resource settings.

1. Introduction

Cervical cancer is one of the leading causes of mortality among women in low- and middle-income countries. The WHO estimates that there will be 275,000 new cases and 218,000 deaths from cervical cancer each year worldwide. Approximately 85% of cases and 90% of deaths from cervical cancer occur in low-income countries [1,2]. In many regions, cervical cancer is the most common cancer among women and the leading cause of cancer-specific mortality. Due to the limited screening and diagnostic capabilities in these countries, most women present with late-stage disease [3]. In the ongoing population growth of low-income countries, death due to cervical cancer is projected to rise by almost 20% in the next 10 years [4]. In Kenya, the crude incidence of cervical cancer is estimated to be at least 30 cases per 100,000 women per year, although this is probably an underestimate given limited access to cervical screening and diagnostic services [5]. In western Kenya, cervical cancer incidence is higher, with rates ranging from 11.1 to 72 per 100,000 women per year [6]. Despite these challenges, the incidence of cervical cancer is much higher in high-income countries. Many of the countries with the highest burdens of cervical cancer also face an overwhelming HIV epidemic. For example, the prevalence of HIV among women aged 15-49 years in Kenya is 7.2% (4.7-10.5%) [6]. HIV infection is a risk factor for developing cervical dysplasia and cancer. In a meta-analysis of cervical intraepithelial neoplasia (CIN) 2/3, women with HIV were 4.3 times more likely to develop CIN 2/3 than women without HIV [7]. Additionally, women with HIV have a higher incidence of cervical cancer, with some estimates suggesting that women with HIV have a 10- to 100-fold higher risk of cervical cancer compared to HIV-negative women [8].
Factors Associated with Uptake of Visual Inspection with Acetic Acid (VIA) for Cervical Cancer Screening in Western Kenya

Eileen Omwenga Ong’oroi, Judy Wacchiha, Frederick Chibo Aswale, Rebe Abayo Macharia, Florence Kipruto, Kipyego Kiplagat, Oivesan Oliven, Alfred Katari, Anna Mwangi, Thomas Imwi, Muthoni Onyango, Elizabeth Njoroge, April Collins, Emily Mora, Tracy Turner, Mariam M. Aden, Mary A. Kans Arm, Tuma E. Kansiime, Elizabeth M. Ouma, Njiru Aguyi, Jepchumo Reuben, Jane M. Wangari, Rebecca M. Njiru

Abstract

Purpose
Cervical cancer screening has been successful in reducing the rates of cervical cancer in developed countries, but this disease remains the leading cause of cancer death among women in sub-Saharan Africa. We sought to understand factors associated with limited uptake of screening services in our cervical cancer-screening program in Western Kenya.

Participants and Methods
Using data from a previously validated cancer awareness questionnaire repurposed for use in cervical cancer and cervical cancer screening in Kenya, we interviewed 5,426 women aged 15–55 years receiving care in gynecology clinics or seeking services in 4 health facilities in Western Kenya between April 2014 and September 2014. We used logistic regression modeling to assess factors associated with uptake (or non-uptake), associated odds ratios (ORs), and the 95% confidence intervals (95% CI).

Results
Only two hundred and seventy-three women out of 5,426 (11%) accepted VIA cervical cancer screening. Knowledge of how women are screened for cervical cancer was significantly associated with reduced uptake of cervical cancer screening (OR 0.53; CI 0.36–0.73) as was fear that screening would reveal a cancer (OR 0.73; CI 0.53–0.97), and reliance on prayer with the onset of illness (OR 0.43; CI 0.25–0.71). Participants who thought that one should go for cervical cancer screening even if there were no symptoms were more than twice as likely to accept cervical cancer screening (OR 2.71; 95% CI 1.38–4.90). Other patients, patients living with HIV and women who do not know if bleeding immediately after
Treating Cervix Cancer

• April 2010- 2 Gynecologists at Moi were trained to perform radical hysterectomy + pelvic lymphadenectomy for early cervical cancer. This module was delivered by a Gynecologic oncologist from PMH. To date about 210 radical hysterectomies have been completed.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical cancer</td>
<td>912</td>
</tr>
<tr>
<td>Ovarian Cancer</td>
<td>243</td>
</tr>
<tr>
<td>Gestational Trophoblastic Neoplasia</td>
<td>78</td>
</tr>
<tr>
<td>Vulva</td>
<td>27</td>
</tr>
</tbody>
</table>
Treating Cervix Cancer

- Protocol was developed to use neo-adjuvant chemotherapy for down sizing of cacx and for palliation

- Treatment protocols for ovarian and GTN malignancies.
Protocol Development for Ovarian Cancer Treatment in Kenya
A Brief Report

Lynn Sterling, Luc van Leerhuis, MD, T. Bob NTungang, MD, EF, Matthew Stricker, MD, EF, Needham Njuka, MD, EF, and Barry Rosen, MD, FRCPC*

Introduction: Ovarian cancer is a leading cause of cancer death for Kenyan women. Most women are diagnosed with an advanced stage of disease. The current National standard of care includes surgery followed by chemotherapy and radiation. No further drug is available for Kenyan women. We performed a literature search investigating chemotherapy in low-resource countries with the aim to write an evidence-based chemotherapy protocol for women diagnosed with ovarian cancer in Eldoret, Kenya, at the Moi Teaching and Referral Hospital.

Methods: We systematically searched Pubmed and EMBASE for articles describing chemotherapy treatment outcomes of ovarian epithelial cancer in low-resource settings. After data analysis, a secondary review was undertaken on randomized controlled trials (RCTs) aligning with chemotherapy availability in Kenya.

Results: We identified 184 articles. Fourteen met our criteria: ovarian epithelial cancer, low-resource, chemotherapy use, and survival or response data. No publications were RCTs or had a cohort larger than 100 patients. There was no consistency in drug choice between substudies. After this review, we received commonly quoted and relevant RCTs and metaanalysis conducted on ovarian cancer since the 1980s. Although RCTs in the developed world suggest carboplatin and taxol provide optimal survival benefits, these drugs are unavailable in Kenya. Cyclophosphamide and cisplatin provide the next most optimal survival benefits, with acceptable and manageable toxicity. Because these drugs are more available and affordable in Kenya, we have developed a protocol recommending their use, which has been accepted by the Moi Teaching and Referral Hospital.

Conclusions: Currently, there is a paucity of published RCTs that may guide treatment in low-resource settings. One considerable barrier to establishing and evaluating chemotherapy protocols in low-resource settings may be the cost of chemotherapy drugs. There needs to be an international movement to make cancer chemotherapeutics available at lower prices in low-resource settings.

Key Words: Chemotherapy, Developing countries, Gynecology, Ovarian cancer, Review

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* () 2011 by GOG and ESGO
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Grants and Awards

- **Lifespan/Tufts/Brown CFAR, CFAR GRANT NUMBER:** P30AI042853 Leeping Ahead: See and Leep training for primary care providers in Kenya.
- **Abbie Foundation Grant. Goal:** To provide knowledge and cervical cancer screening to all women in the Chulaimbo region.
- **US4 Grant AMPATH Oncology Institute:** HPV and Cervical Cancer in Kenyan Women with HIV/AIDS.
- **Grand Challenges Canada:** Taking a LEEP! Implementing a “See and LEEP” strategy for women in Western Kenya with positive cervical cancer screening.
- **Princess Margaret Hospital Foundation (“PMH”).** University of Toronto project number 0560013914 and fund number 471041
- **Centre For AIDS Research (CFAR) supplement** – *Association of cryotherapy with HIV-1 RNA genital shedding.*
- **Centre For AIDS Research (CFAR) International Developmental Research Award** 2013 for a research project entitled *Outcomes of Excisional Treatment for Cervical Neoplasia in HIV Infected and HIV Uninfected Women in Western Kenya*.
- **Title of Grant: The IU Simon Cancer Centre (IUSCC) AMPATH-Oncology Institute (AOI):** An Exemplar of Care for the Developing World and a Population-based Research Environment for IUSCC. WCF #: 0110.01.
Conference Presentations

- Factors Associated with Uptake of Cervical Cancer Screening in Western Kenya- Kenya Obstetric Gynecology (KOGS) Annual Scientific Meeting 2016
- Innovative Sub-specialty Training in Low and Middle Income Countries- an enigma that is not.- KOGS 2016
- Comparison of Pap Smear and Cervical Biopsy Results of HIV-infected Womenbetween Kenyan and Brown University Pathologists: Quality Assurance Program - CROI 2014
- Visual Inspection With Acetic Acid (VIA) Agrees Reasonably Well With Pap Smear and HR HPV Typing for Follow-up AfterVIA/Cryotherapy in HIV-infected Women- CROI 2014
- The Kenyan Cervical Cancer Screening Program (CCSP): A Comprehensive Screening and Treatment Model for Sub-saharan Africa- Poster presentation GOC 2013
- MULTIFACETED INTERVENTION TO REDUCE LOSS TO FOLLOW UP IN A CERVICAL CANCER SCREENING PROGRAMME.- 9Th Stop Cervical, Breast, and Prostate cancer in Africa
- Developing a Comprehensive Approach to Cervix Cancer: Is it possible? 9Th Stop Cervical, Breast, and Prostate cancer in Africa
- Development of Innovative Sub-specialty Training in Gynecologic Oncology for Low-Income Countries- AORTIC 2013
- Implementation of Oncology Surgery in Western Kenya- AORTIC 2013
- Cost of Cervix Cancer Screening in a Low Resource Setting in Africa.- IGCS 2012
- Challenges in building cervical cancer screening in Africa- UICC 2012
Challenges/Barriers

- Costs of travel for patients
- Lack of radiotherapy equipment
- Cost of surgery
- OT time
- Competing needs for the scarce resources- High HIV/AIDS burden, infectious diseases, other NCDs.