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Peter Barclay Morrison

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**Preventing Cervical Cancer in Rural Tanzania:  
A program model for health worker trainings**

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**Preventing Cervical Cancer in Rural Tanzania:  
A program model for health worker trainings**

**by**

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## **Dedication**

This report is dedicated to my loving wife who encouraged me and brought home the bacon while I studied.

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I am grateful for the support and guidance from my advisors and readers at the LBJ School of Public Affairs and UT School of Public Health, Dr. Catherine Weaver and Dr. Melissa Harrell. Dr. Mark Jacobson of Arusha Lutheran Medical Center in Tanzania was instrumental to my understanding of the local context and needs related to cervical cancer prevention in the Northern Zone of Tanzania. Dr. Jacobson introduced me to a host of Tanzanian colleagues to whom I am also grateful for their ongoing efforts to prevent cervical cancer in Tanzania and their willingness to discuss and share relevant information and resources with me. Dr. Olola Oneko of Kilimanjaro Christian Medical Center, Dr. Masalu Nestory of Bugando Medical Center, Dr. Julius Mwaiselage of Ocean Road Cancer Institute, Tara Ricle of Foundation for Cancer Care in Tanzania, Dierdre O'Mahoney of Muhimbili Pediatric Oncology Center, and Linda Jacobson each contributed to my understanding of local activities and needs.

## **Abstract**

### **Preventing Cervical Cancer in Rural Tanzania: A program model for health worker trainings**

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The University of Texas at Austin, 2015

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With a focus on Northern Tanzania, this report seeks to demonstrate the need for increased resource allocation to cervical cancer interventions, examine best practices for cervical cancer screening promotion, and develop an intervention and program evaluation framework. The intervention is a training program designed for dispensary-level healthcare providers in the Northern Zone of Tanzania and aims to increase provider awareness and knowledge of cervical cancer, and build skills among providers to educate patients on cervical cancer prevention and screening and treatment resources. This report is purely a program design and planning tool; no new data was collected, nor interventions implemented in the development of report.

The first objective of the report is to develop an intervention to be presented to Foundation for Cancer Care in Tanzania (FCCT) and the second is to develop an evaluation framework to be presented to FCCT. FCCT is a non-profit agency working to bring

comprehensive cancer services to the region. The program will complement existing and planned services related to cervical cancer prevention and treatment in the Northern Zone of Tanzania, and will be considered for implementation by the Foundation for Cancer Care in Tanzania (FCCT).

Part I of the report reviews published literature and data to demonstrate the need for increased resource allocation to cervical cancer interventions and the appropriateness of Northern Tanzania as a case selection. Part I also examines best practices for cervical cancer screening promotion in Northern Tanzania, providing evidence from the published literature to inform Part II, the intervention design and program evaluation framework. Included in the intervention design is a logic model for change, detailed training plans and curriculum, and guidelines for selecting trainers. The report recommends appointments to a local planning team and estimates a timeline and budget for the program. Additionally, the report designs a thorough program evaluation, the objective of which is to measure the effect of training and health education materials on dispensary-level healthcare providers' awareness, knowledge, and skills regarding cervical cancer prevention.

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## Chapter 1: Introduction and Methods

### INTRODUCTION

Cervical cancer is the third most common cancer among women globally. Nine out of ten cases occur in the developing world and it is the most prevalent cancer among women in Sub-Saharan Africa. Cervical cancer is the number one cause of cancer-related death in Tanzania (IARC, 2012). The objective of this report is to propose a targeted intervention to prevent cervical cancer in Northern Tanzania through the training of health workers at local dispensaries. The report seeks to 1) demonstrate the need for increased resource allocation to cervical cancer interventions in Tanzania, 2) examine best practices for cervical cancer screening promotion in Northern Tanzania, and 3) develop a program and evaluation framework for the intervention.

The United Republic of Tanzania, a low-income country located in East Africa, is one of the countries with the heaviest cervical cancer burden in the world. Cervical cancer is the most common female cancer in Tanzania with an incidence rate nearly five times as high as the next most common cancer among males and females combined (IARC, 2012). An estimated one in 17 Tanzanian women will develop cervical cancer before age 74 and an estimated one in 27 women will die from the disease (IARC, 2012)<sup>1</sup>.

Awareness and health literacy related to cervical cancer among community members are low in Tanzania, especially outside of urban centers (Lyimo & Beren, 2012). There is also a deficit of cervical cancer awareness and knowledge among healthcare providers, observations which align with published findings from other low resource settings (Shah, et al. 2012) (McCarey et al., 2011). Limited knowledge and awareness of cervical cancer among health workers in Tanzania is especially poignant at the dispensary level, the primary point of access to prevention and primary care for women in rural settings (P. Morrison, personal communication with CEO of hospital in Northern Zone of Tanzania, March, 2015).

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<sup>1</sup> Incidence Cumulative Risk (CR)=5.79, Mortality CR=3.64

The second half part this report proposes an intervention and evaluation framework. This intervention, hereafter the Cervical Cancer Prevention Training Program (CCPTP), is a program framework designed to improve awareness and knowledge among dispensary health workers of cervical cancer prevalence, prevention, and resources available to their community, and increase referrals from dispensaries to existing screening services. A solid evaluation framework given finite resources will produce a baseline assessment of healthcare providers' knowledge, attitudes, and practices at the dispensary level regarding cervical cancer prevention and referrals. Post-training and three-month follow-up surveys will evaluate changes in awareness and knowledge of cervical cancer and perceived ability to promote screening among dispensary staff. These realized outcomes will promote increased patient education and patient awareness of cervical cancer and the resources available to address it. Coupled with expanded access to “see and treat<sup>2</sup>” mobile clinics already underway at Kilimanjaro Christian Medical Center (KCMC), the long-term impact will be earlier diagnosis of cervical cancer and fewer preventable deaths among high-risk women in Northern Tanzania.

The objectives and eventual outcomes of CCPTP align with international priorities outlined in the 2015 Sustainable Development Goals.<sup>3</sup> The third goal, “Ensure healthy lives and promote well-being for all at all ages,” includes a target which calls for a one-third reduction of premature mortality from non-communicable diseases by 2030 through prevention and treatment (UN, 2015). Another target under Goal 3 calls for a substantial increase in the development and training of the health workforce in developing countries, especially in least developed countries<sup>4</sup> (UN, 2015).

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<sup>2</sup> “See and Treat” or “Screen and Treat” programs provide cervical cancer screening, diagnosis and treatment of pre-cancerous lesions using cryotherapy or LEED in a single visit.

<sup>3</sup> The Sustainable Development Goals include 17 goals that are agreed upon by the international community and serve to guide the international development agenda from 2015-2030.

<sup>4</sup> The target reads: “Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.”

## METHODS

The selection of Tanzania as the case for this intervention is based on the relatively high incidence and mortality rates for cervical cancer compared to other countries globally<sup>5</sup>, a need and desire for cervical cancer interventions nationally and locally in the Northern Zone, and existing momentum to promote program success and sustainability<sup>6</sup>.

The literature review includes peer reviewed studies selected by the author for their relevance to the Cervical Cancer Prevention Training Program in Tanzania (CCPTP). Relevance was determined by the study topic of published work and the generalizability to Tanzania. Previous studies in Tanzania are the most highly regarded and referenced studies in the review, especially those which sample from the Northern Zone. Where data does not exist for the Tanzania setting, the review references studies in other East African countries, other Sub-Saharan African countries, and finally other low-resource settings.

Additionally, personal communication with hospital executives, researchers and practitioners who are Tanzanian or work extensively in Tanzania informed the author's understanding of the local context for CCPTP in Tanzania's Northern Zone. The project rationale pulls selectively from these past personal communications between the author and the Foundation for Cancer Care in Tanzania and partner agencies. Personal communication primarily occurred during a personal trip to Tanzania in March, 2015 and subsequently at the Cancer Care in Tanzania Symposium hosted by FCCT at the University of Minnesota in April, 2015.

This report is purely a program design and planning tool; no new data was collected, nor interventions implemented in the development of the report. For these reasons the report was determined to be exempt from IRB review independently by both the University of Texas at Austin Office of Graduate Studies and UT School of Public Health Office of Research.

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<sup>5</sup> Tanzania has the fifth highest incidence and mortality rate in the world according to estimates from International Agency for Cancer Research (IARC, 2012).

<sup>6</sup> Many agencies are engaged in the issue of cervical cancer in Tanzania; an inventory of existing activities and actors is provided as part of the literature review.

The training and evaluation framework and content developed in this report borrows selectively from previously developed and implemented program materials. The author received permission to utilize a comprehensive training curriculum from Bugando Medical Center in the Lake Zone of Tanzania; the curriculum has already been approved by the Ministry of Health and Social Welfare (MoHSW) and includes several days of material on cervical cancer screening with VIA method. MoHSW also developed the comprehensive VIA and Cryotherapy Training for Health Care Providers, a six-day curriculum with supporting documents for facilitators. Additionally, Jhpiego published a full reference manual to supplement health worker training on VIA screenings and simple treatment methods. Jhpiego's reference manual has a chapter, Talking with Women about Cervical Cancer, which is an excellent supplement for CCPTP trainings. As the program content is outlined in this report, strategies and content will be linked back to evidence presented in the literature review and background. The framework and workshop content will later be reviewed, translated, and potentially adapted by the in-country Planning Group to best align with local needs.

The evaluation framework is designed to allow future implementers to assess providers' awareness and knowledge of cervical cancer. Where possible, survey questions and indicators will be replicated from previously implemented programs in other parts of Tanzania. Replicating survey questions and collecting comparable data will allow practitioners and policy-makers to triangulate findings in cervical cancer prevention across geographic regions and levels of the health system, and contribute to Tanzania's ongoing effort to improve the data environment.

One limitation of this report was relatively limited data and published studies on cervical cancer in Tanzania. Where data does not exist for the Tanzania setting, the review references studies in other East African countries, other Sub-Saharan African countries, and finally other low-resource settings.

There are several potential challenges that may hinder the implementation of CCPTP or validity of the evaluation. First, the level of funding required to implement the pilot or expand to new districts upon a successful pilot may be a limiting factor for FCCT. Additionally, program

staff may have difficulty balancing their limited time and resources with the need to host a greater number of trainings across the geographic catchment area. Hosting trainings close to one's home dispensary promotes higher participation and causes shorter absences among health workers at dispensaries. A limitation of the evaluation is its partial reliance on self-reported confidence and behaviors to evaluate change among health workers. Self-reported measures are subject to response bias, leaving this evaluation to rely somewhat on the causal assumption that increases in knowledge and awareness will increase the quantity and quality of education and screening promotion that occurs at the dispensary level. The CCPTP evaluation seeks to counterbalance issues of validity raised by reporting bias by collecting objective data on the source of referral of women presenting at screening sites in the geographical vicinity of participating districts.

Despite these limitations and challenges this report presents a solid program and evaluation framework based on a broad base of evidence from the literature and a keen awareness of the local context. The use of personal communication cited in this report between the author and Tanzanian or Tanzania-based hospital executives, researchers and practitioners informed the author's understanding of the local context for CCPTP in Tanzania's Northern Zone. Additionally, the program and evaluation framework provided in this report require review and adaptations by a local team based on greater understanding of local conditions and behaviors. These interactions and use of personal communication provide important context that enhances the potential efficacy of the program design for FCCT.



## **PART I: RATIONALE AND EVIDENCE**

### **Chapter 2: Public Health Significance**

#### **CERVICAL CANCER GLOBALLY**

Cervical cancer is the third most common cancer among women globally. According to the World Health Organization's International Agency for Research on Cancer, there were an estimated 528,000 new cases and 266,000 deaths in 2012 (IARC, 2012). Cervical cancer is most often caused by the human papillomavirus (HPV). The conventional screening method utilizes cytology-based screenings, which in the United States and much of the West is done via a papanicolau smear, i.e., Pap test. The Pap test includes an examination of the vagina and cervix, the collection of a few cells and mucus by the healthcare provider, and the subsequent examination of those cells in a laboratory. The U.S. Center for Disease Control recommends screening every three to five years, depending on age and beginning at 21 years old. When screening guidelines are followed, abnormal cells are most often detected early and treated before cervical cancer develops (CDC, 2014). Incidence can be reduced as much as 80 percent when quality, coverage, and follow-up from screenings are high (Sankaranarayanan, 2001). However, if left undetected, cervical cancer progresses to an invasive stage that is costly to treat and almost always fatal in low-resource settings (Sherris et al., 2001).

The vast majority of the global cervical cancer burden occurs in less developed countries, which account for 85 percent of incidence and 87 percent of deaths from cervical cancer (IARC, 2012). The age-standardized incidence of cervical cancer averaged across the four regions in Sub-Saharan Africa is 34.5 per 100,000 person-years, while incidence rates are drastically lower across more developed regions (10 per 100,000) (IARC, 2012). This disparity between developed and less developed countries is largely due to differences in cervical cancer screening rates, wherein

extensive cancer screening practices in developed countries are credited with lower incidence and mortality rates given earlier detection of the disease (Kamanga & Anderson, 2006).

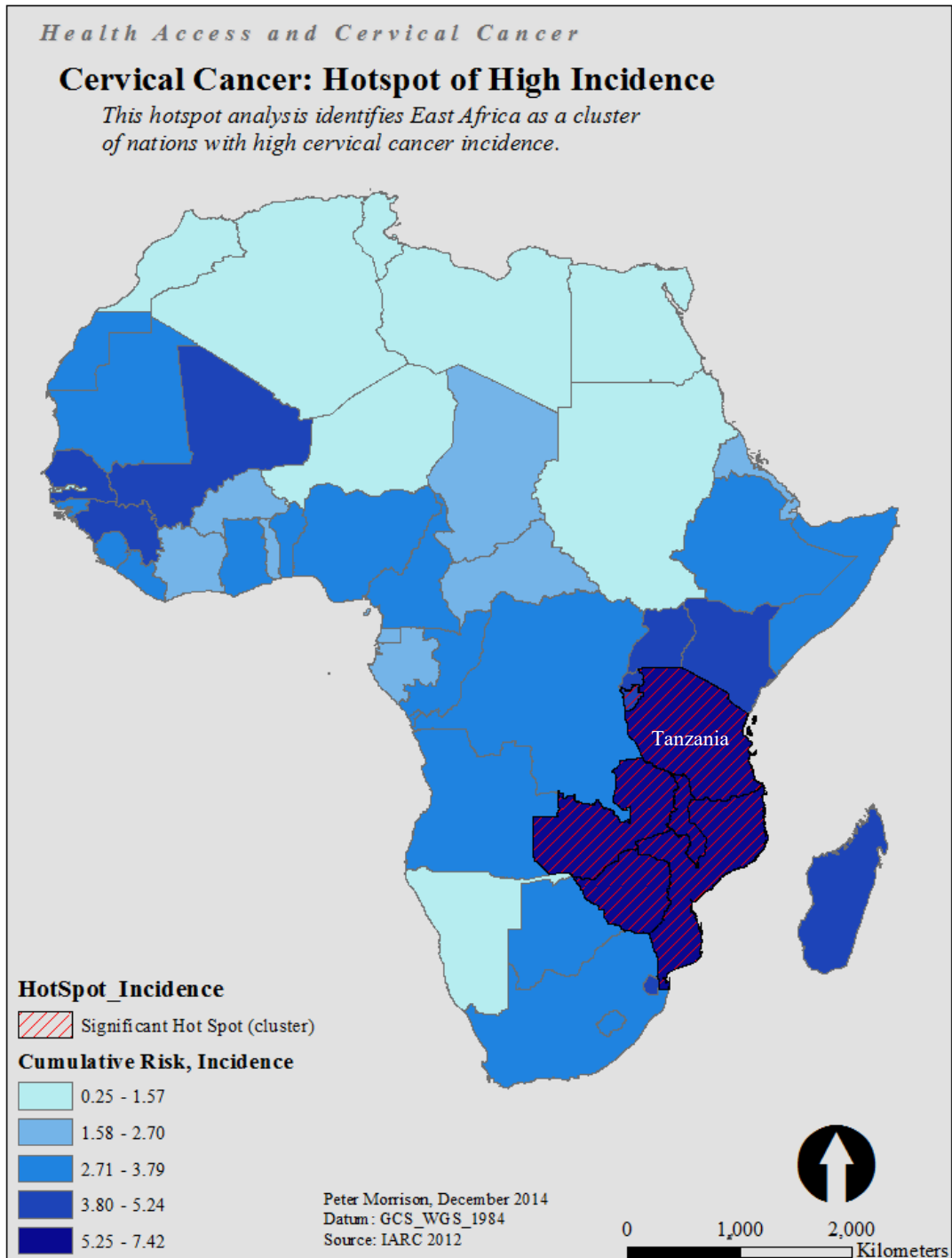


Figure 1: Cervical Cancer Incidence and Mortality in Africa

## CERVICAL CANCER IN TANZANIA

Cervical cancer is the most prevalent cancer and leading cause of cancer-related death in Tanzania. Approximately 60 percent of cancers in women in Tanzania are cervical, though this estimate may still be low (MOHSW, 2013). The Tanzanian Ministry of Health and Social Welfare (MOHSW) estimates that 80-90 percent of cancer patients are unable to access diagnostic and treatment facilities, and end up dying at home or with a traditional healer. For those women who are diagnosed with cervical cancer, about 80 percent are diagnosed at advanced stage when treatment options are limited. Previous research shows that awareness and health literacy related to cervical cancer among community members are low, especially outside of urban centers.

The International Agency for Research on Cancer (IARC) estimates Tanzania's cervical cancer incidence to be the fifth highest in the world and cervical cancer mortality rate to be the eighth highest in the world. This means that an estimated one in 17 Tanzanian women will develop cervical cancer before age 74 and an estimated one in 27 women will die from the disease (IARC, 2012).

| Select Countries' Cervical Cancer Rates |                           |                           |
|---|---------------------------|---------------------------|
| Country                                 | Incidence Cumulative Risk | Mortality Cumulative Risk |
| Malawi                                  | 7.42                      | 5.2                       |
| Mozambique                              | 6.57                      | 5.23                      |
| Comoros                                 | 6.37                      | 4.53                      |
| Zimbabwe                                | 6.31                      | 4.07                      |
| <b>Tanzania</b>                         | <b>5.79</b>               | <b>3.64</b>               |
| Zambia                                  | 5.74                      | 3.81                      |
| Burundi                                 | 4.68                      | 3.02                      |

Table 1: Countries with highest cervical cancer burden globally (IARC, 2012)

IARC incidence estimates in Tanzania are estimated based on a simple average of local data sources and regional data. Locally, two cancer registries were referenced: Kilimanjaro Cancer

Registry (2003-2007) and Dar es Salaam (2010-2011) Cancer Registry. Regionally, a simple average for Eastern Africa incorporated cancer registries from Ethiopia, Kenya, Uganda, Malawi and Zimbabwe. Mortality was estimated based on estimated national cancer incidence for 2012 and modelled survival (IARC, 2012).

Cervical cancer screening coverage in Tanzania has not changed much over the past few decades and remains very low. In 1986 the World Health Organization estimated that less than five percent of women in developing countries had received screening for cervical cancer (WHO, 1986). In 2015, Cunningham et al. published findings from a cross-sectional study with about 300 rural and 275 urban women aged 18 to 55 years in the Kilimanjaro Region, located in the Northern Zone of Tanzania. Results showed that only six percent of women interviewed had ever received a screening for cervical cancer (4% rural, 9% urban) (Cunningham et al., 2015).

Cervical cancer, along with other non-communicable diseases, has historically been a low priority in low-resource countries such as Tanzania while communicable diseases, and HIV/AIDS in particular, dominates the national health agenda (WHO, 2004). As Tanzania continues to develop and its citizens live into older age, the burden of non-communicable diseases grows (P. Morrison, personal communications with director of cervical cancer programming and health promotion at Tanzanian hospital, April 2015).

## TANZANIA IN CONTEXT

The United Republic of Tanzania is a low-income country situated on the Indian Ocean in East Africa. The country has maintained relative political and social stability since gaining independence from the UK in 1961, allowing for steady macroeconomic growth. Over the past two decades Tanzania has recorded an average of six to seven percent growth in GDP (World Bank, 2014). However,



Figure 2: Tanzania: Neighboring countries and Administrative 1 regions

macroeconomic growth has not translated to microeconomic and social development for many families in the country. Poverty is widespread and many families lack access to basic services, including health services which in theory are free and universal.

## Health Access

Poor health access for the majority of Tanzanian citizens is a primary barrier to healthy outcomes. Three out of four Tanzanians lives rurally, where long distances must be traveled over poor infrastructure to reach sometimes unreliable health services. Kahn et al. (2005) analyzed Tanzania Demographic Health Surveys and Tanzania Service Availability Statistics to assess geographic distribution of poverty and associated issues of health access and outcomes among community members. Results aligned with past studies showing that rural communities experience higher rates of poverty and poorer health outcomes compared to urban and wealthier communities.

In Tanzania, this results in many rural families have limited interaction with the formal health system and instead relying on traditional health remedies (WHO, 2004).

There is also large disparity in health access between different socioeconomic groups. Figure three displays the percent of individuals who utilized health services before death in the poorest 25 percent and wealthiest 25 percent of Tanzania's population.

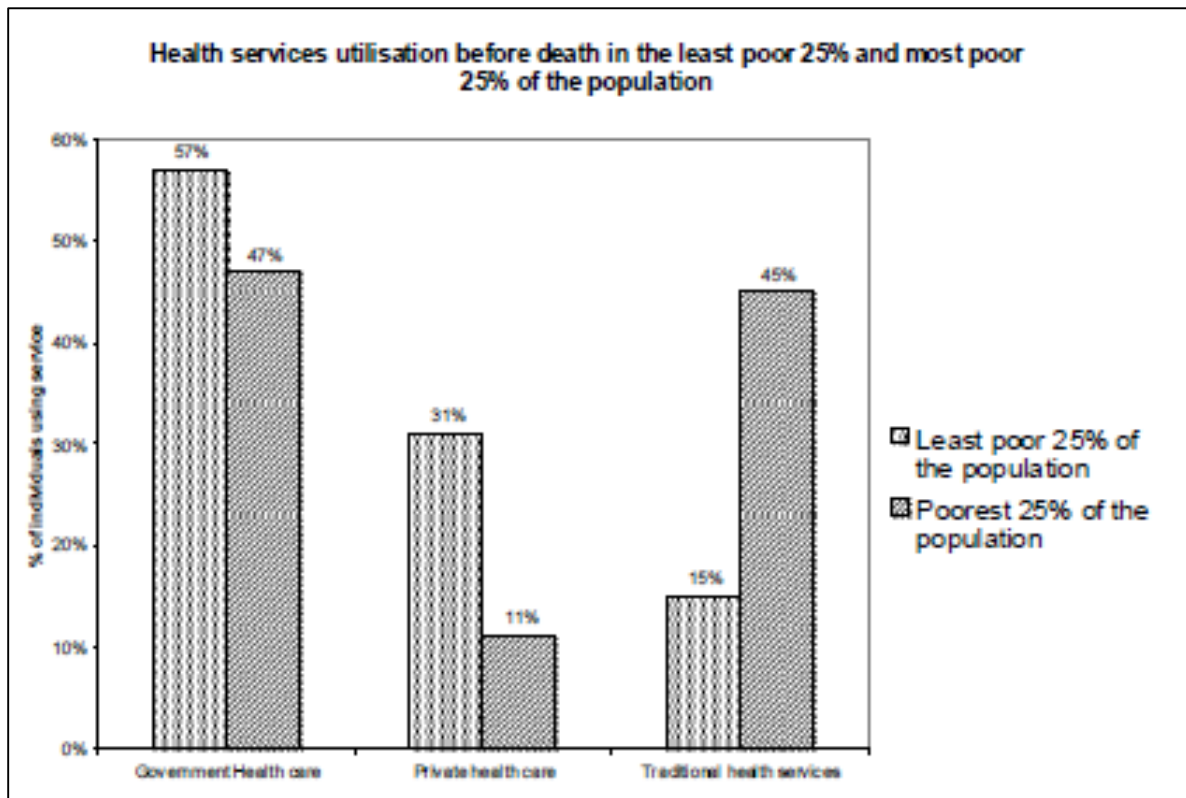


Figure 3: Healthcare Service Utilization by income (WHO, 2004)

### Health Service Delivery

Primary health care services are a key priority for the Tanzania health system and are generally provided at the district level. The referral system in Tanzania starts at the community level with village health posts and culminates at one of four referral/consultant hospitals in the country. The different levels in this referral chain, listed in order of referral process, include village health posts, dispensaries, health centers, district hospitals, regional hospitals and

referral/consultant hospitals. Appendix I includes a structural diagram of the health system tiers and branches of public and private providers.

Dispensaries, the target of this intervention, are the second tier of health services and are designed to serve a population of 6,000 to 10,000 individuals (MOHSW, 2015). There are 5,698 dispensaries in the country, averaging approximately 33 dispensaries per district (MOHSW, 2015). Dispensaries provide preventative and curative outpatient services and assist with normal deliveries (WHO, 2004). Each dispensary is also responsible for the supervision of village health posts in their coverage area (i.e., ward). At full capacity public dispensaries in Tanzania have 10 staff, 7 of which are health workers (Musau et al, 2010). Private dispensaries are required by the MoHSW to have seven staff (Musau et al, 2010). Typically, a dispensary will be staffed with one non-physician, mid-level provider who was trained in-country, one or two nurses or nursing assistants, and one administrative staff member. The average patient load at dispensaries is 20 outpatients per day (Manzi et al, 2012).

### **Financing Healthcare**

Financing the healthcare system in a low-resource country such as is Tanzania a big challenge. Over one-third of the population lives below the international poverty line (\$1.25/day) and nearly 90 percent of the population works in the informal sector (WHO, 2004). This context makes the fair and equitable collection of taxes and employee-based insurance coverage seemingly impossible solutions. The Tanzanian health system is funded partially through taxes, insurance schemes, on- and off-budget foreign aid, and out-of-pocket payments (WHO, 2004).

Tanzanian health expenditures per capita is \$49 USD, which has been trending steadily upward from \$10 USD in 2000 (World Bank 2013). Total health spending as a percent of GDP is seven percent (World Bank, 2013). Government expenditures as a percent of GDP is only three

percent (World Bank, 2013), which is generally about 12 percent of total government health expenditures (WHO, 2004). The low government expenditures is a product of the low-resource environment. Describing a conversation he had with the Director of the MOHSW, Dr. Jacobson quoted the Director to say, “If we get 30 percent of what we request for our budget we’ve been successful” (P. Morrison, personal communication with CEO of hospital in Northern Zone of Tanzania, March, 2015).

“Family Insurance” is perhaps the most common form of insurance in Tanzania. Family Insurance is an informal social insurance system that exists among extended families in Tanzania. Though no formal insurance is established and no official agreement is made, extended families pool money together to pay for services when one member gets sick, knowing that when they get sick their family members will do the same for them. There is generally no health savings account (formal or informal) by the family, but simply cost-sharing among family members when one member gets sick (P. Morrison, personal communication with CEO of hospital in Northern Tanzania, March, 2015).

User-fees are collected at all public facilities, with lower rates charged at health posts and dispensaries and increasing rates as one moves up the referral chain to consultant hospitals. Children under the age of five years and pregnant women receive fee waivers to access free care (MOHSW, 2015). One night in the hospital in Tanzania costs an average of \$10 USD (P. Morrison, personal communication with CEO of hospital in Northern Tanzania, March, 2015).

### **Health Workforce**

The World Health Organization recommendation for a minimum density threshold of health workers is 2.3 professional health workers per 1000 persons (2006). In Tanzania, the total health worker density is 0.66 per 1000 persons, which includes just 0.09 physicians and 0.24 nurses



per 1000 persons (AHWO, 2010). These figures represent a health workforce shortage that has become a crisis in Tanzania. Currently, the health sector operates with less than half of its required workforce (MOHSW, 2013).

The shortage is especially critical in rural districts due to disparities in the distribution of human resources and wide differences in population densities (NBS, 2011) (USAID, 2010). Disparity in staffing also exists across facilities. The health workforce is unevenly distributed to the public sector, and specifically to tertiary and secondary health institutions.

An additional challenge regarding the health workforce in Tanzania is limited knowledge of diseases outside of the common causes of morbidity and mortality, such as HIV/AIDS, malaria and diarrhea. Throughout the 1990's and 2000's, largely in response to the HIV/AIDS emergency, foreign aid dominated the health sector and maintained vertically oriented programs. Financers such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria, and PEPFAR provided the majority of the much-needed funds for health activities in these disease-specific programs. For instance, in 2004, half of the country's hospital beds were occupied by AIDS patients, and all treatment was paid for with foreign aid (WHO, 2004). While addressing the immediate need for health services and medications for these leading causes of death in Tanzania, vertically oriented programs disempowered the local health system and provided minimal training and education for health workers outside of the core activities.

The result of these high-burden communicable diseases and vertical health programming is a Tanzanian health system and workforce that is ill-equipped to handle the increasing burden of non-communicable diseases such as cervical cancer (P. Morrison, personal communication with senior executive at hospital in Lake Zone, Tanzania). Many qualified health workers, especially supervisors, are drawn away from primary care clinics and hospitals to work for the vertically run

programs which often pay higher salaries (Musao et al., 2010). The human resources shortage is severe in Tanzania with a near 50 percent gap from staffing levels required by the MoHSW. This national shortage of health workers affects dispensaries drastically, with public dispensaries running a 69 percent deficit and private dispensaries an 84 percent deficit (Musau et al, 2010). Additionally, pre-service training institutions and ongoing “in-service” professional development have not kept pace with advancements in health sector needs and technology, resulting in both a quantitative and qualitative gap among health workers. There are gaps in knowledge and skills among health workers, and existing training institutions do not have the capacity in terms of infrastructure, skilled instructors, and management to meet the need (Musao et al. 2010).

In February, 2013 The Tanzanian Ministry of Health and Social Welfare (MOHSW) published the National Cancer Control Strategy (2013 – 2022) to serve as a “roadmap toward the development and implementation of a comprehensive and coordinated national response to cancer in Tanzania.” The National Cancer Control Strategy (NCCS) aims to cover the entire continuum of cancer including primary prevention, secondary prevention, treatment, palliative care and control. Cervical cancer is identified as a key issue in the NCCS and referenced heavily throughout the Strategy (MOHSW, 2013).

## **SOCIAL AND ECONOMIC COSTS OF CERVICAL CANCER IN TANZANIA**

Cervical cancer in Tanzania has high social and economic costs to families and the nation. The disease affects relatively young women with mortality rates increasing as women reach about 40 years old, a time when women are critical to social and economic stability (Goldie et al., 2005). Women are often the breadwinners and caretakers of both children and elders in Tanzania; their early death impacts family poverty, educational attainment and gender equity (Wittet & Tsu, 2008). Following the death of a mother, one study found that Tanzanian fathers rarely provide emotional or financial support to their children (Yamin et al., 2013).

Using cancer data from 2000, Yang et al. (2004) found that the age-standardized rate of Years of Life Lost (YLL) was 3.95 per 1,000 women in Sub-Saharan Africa, the highest of any region globally. The study highlighted Zimbabwe's national YLL rates, which should be slightly higher than Tanzania's based on their similar incidence and mortality rates, experienced an age-standardized rate of 5.74 YLL per 1,000 women aged 25-64 years in 2000 (Yang et. al, 2004). Across various study settings including Tanzania, children were often required to drop out of school to fill the mother's role of farming and housekeeping following her death (Yamin et al., 2013).

In addition to the health and social impact, cervical cancer has a negative impact on family, community and national financial stability and economic growth (Mayige, Kagaruki & Kaushik, 2012). With about 90 percent of Tanzanians living without formal health insurance, the majority rely on out of pocket expenditures using personal funds and "family insurance" when healthcare costs arise. A chronic disease such as cervical cancer causes serious strain on the families and community members who support the sick woman, with high costs from travel to treatment and boarding during treatment, chemotherapy and other drugs, and hospital fees.

## **Chapter 3: Evidence from the Literature**

### **CERVICAL CANCER SCREENINGS IN LOW RESOURCE SETTINGS**

In low resource settings, like Tanzania, there are substantial costs involved in providing the resources necessary to run the centrally organized, cytology-based screening model as done throughout the West. Barriers to screening are numerous and significant. The first barrier that low-resource communities face to implementing and sustaining a cytology-based screening program is to develop sufficient infrastructure to obtain and transport Pap smears to laboratories. The second major barrier is that laboratories must be present and functioning. The laboratory must be staffed by highly skilled technicians who can interpret cervical smears with a high level of proficiency. Additionally, the communication infrastructure and channels must be sufficient and reliant to report testing results back to women. Finally, an abnormal test requires a referral visit to a specialist for a colposcopy, which if available are expensive and often inaccessible to poor, rural women (Denny & Quinn & Sankaranarayanan, 2006).

The heavy burden of cervical cancer on the developing world, and the major barriers that must be overcome to run an organized and effective cytology-based screening program have instigated the search for alternative screening methods and models. To implement a successful screening program in the developing world, Denny et al. (2006) recommends five essential requirements: 1) screening, diagnosis, and treatment is provided in accessible clinics, 2) low-cost and low-technology screening equipment leads to immediate treatment of abnormalities, 3) coverage is provided widely to at-risk women, 4) appropriate education is provided to healthcare workers and the community, and 5) evaluation mechanisms are built-in to the screening program (Denny et al, 2006).

The most low-technology and low-cost alternative screening method to cytology-based screenings is called the Visual Inspection with Acetic Acid (VIA).<sup>7</sup> The visual inspection involves an examination of the cervix using a bright light source with the naked eye, and one minute after swabbing or spraying with diluted (3-5%) acetic acid. In practice, over-the-counter vinegar or iodine are often used for the acetic acid. Test results are easily readable and can be determined with limited technology and infrastructure in a matter of minutes. Moreover, healthcare providers including nurses and midwives can be trained to provide screenings and interpret results in under two weeks (Denny et al., 2006). The sensitivity and specificity of VIA has varied significantly across studies; however, when pooled and adjusted for potential verification bias, sensitivity varies from 62 to 80 percent and specificity from 77 to 84 percent (Denny et al., 2006).

As early as 1986, research from the International Agency for Research on Cancer suggested that one screening every 10 years reduces cancer incidence by two-thirds (IARC, 1986). The study compares the public health reduction of this 10-year screening frequency as comparable to that of screening 30 percent of the population every three years. Additionally, IARC found that if more regular screenings can take place in a low-resource settings, women aged 35 to 60 should be prioritized as younger women often access more of the screening and treatment resources despite being at lower risk (IARC, 1986).

The highly referenced 2005 study by Dr. Sue Goldie, *Cost-Effectiveness of Cervical Cancer Screening in Five Developing Countries*, used data from five countries (India, Kenya, Peru,

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<sup>7</sup> The second common alternative to the cytology-based screening is HPV-DNA testing. This is a laboratory based test which has a high sensitivity of 66 to 100 percent and specificity of 61 to 96 percent (Denny et al, 2006). Though discussed as an alternative for over 10 years in the developing world, it was just in April 2014 that the US Food and Drug Administration approved the first HPV-DNA test for primary cervical cancer screening (FDA, 2014). While this test has high sensitivity, which is a strong benefit since women have less frequent opportunities for repeated screening in low-resource settings, its cost is often prohibitive and has not been widely implemented in the developing world.

South Africa, and Thailand), and assessed the cost-effectiveness of screening strategies to reduce mortality by cervical cancer (2005). An exhaustive list of factors are included in costs including direct medical costs and women's time, and the screening strategies under study differentiated according to number of clinical visits, frequency of screening, and targeted ages. Results showed that the most clinically and cost-effective strategies were those that relied less on laboratory infrastructure and those that improved the integration of screening and treatment through reduced number of clinical visits or improved follow-up (Goldie et al., 2005). According to the report, screening women in one or two visits with a Visual Inspection or HPV-DNA testing at the age of 35 years would reduce the lifetime risk of cervical cancer by 25 to 36 percent (Goldie et al., 2005). Across all countries, the VIA screening method had the lowest associated costs.

Today, global thought leaders in cervical cancer prevention recommend that developing countries retreat from the Western guidelines and instead target screening on high risk women at a frequency of once or twice in their lifetime (Denny et al. 2005) (Sankaranarayanan, 2001) (Goldie et al., 2005). The test must have high sensitivity as repeat screening is not likely for any women receiving false negative results, and emphasize a high coverage rate (>80%) of the target population (Sankaranarayana, 2001).

## HEALTH BEHAVIOR AND CERVICAL CANCER IN TANZANIA

A solid understanding of the determinants of screening seeking behaviors among Tanzanian women is integral to the design of an effective intervention for the region. Program components should be designed to address perceived and real barriers to screening among women, such as with issues of distance, cost, misunderstanding and fear among women in the target region. Several recent studies explored below provide important local context that will inform the program design in Part II.

A 2015 cross-sectional study, *Cervical cancer screening and HPV vaccine acceptability among rural and urban workers in Kilimanjaro Region, Tanzania*, interviewed 303 rural and 274 urban women aged 18-55 years selected through a multistage random sampling in Northern Tanzania. The average age of study participants was 34 years; 66 percent were married and 96 percent were in a monogamous relationship. Screening coverage was very low across both groups with just four percent of rural women and nine percent of urban women had ever been screened for cervical cancer. Awareness of cervical cancer was high with 82.5 percent of women in urban and rural areas had heard of the disease. Most women believed that cervical cancer was fatal (83% urban, 91% rural,  $p=0.004$ ). About one-third of women did not think that cervical cancer could be treated (Cunningham et al., 2015). The study identified several important factors to consider regarding the source of existing knowledge and perceived barriers to cervical cancer screening.

Media was the main source of awareness of cervical cancer with radio accounting for 73 percent, television for 22 percent and newspaper for 13 percent. The next most common source of awareness was through word of mouth (21%), followed by healthcare providers as the source of awareness (13%). The barriers to cervical cancer screening were assessed by asking women to “select all the reasons they had not yet been screened for cervical cancer” (Cunningham et al, 2015). The most common barriers reported include unaware that preventative screenings exist (67%),

inability to pay for a test (49%), cannot take time off work (26%), and travel distance too far (20%) (Cunningham et al, 2015).

A 2012 cross-sectional study, *Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: Three public policy implications*, was conducted with a sample of 354 women aged 18-69 years in the Moshi Rural District in the Northern Zone of Tanzania. The principal investigator, Dr. Frida Lyimo, identified several statistically significant factors associated with the uptake of cervical cancer screenings, which was quite low (22.6%) among study participants. The factors of greatest significance when examined simultaneously in a logistical regression were knowledge of cervical cancer and its prevention among patients (Odds Ratio (OR) = 8.90, 95% Confidence Interval (CI), 2.14-16.03) and distance to a facility which provides screenings (OR = 3.98, 95% CI, 0.18-5.10). This odds ratio informs us that women were four times as likely to be screened if they lived within two to five kilometers of a screening facility compared to those women who live more than five kilometers away (Lyimo, 2012). Though Tanzanian women are more likely to be screened if they live within five kilometers of a facility, Cunningham et al. (2015) found that over half of women in the same region of northern Tanzania were willing to travel greater than two hours for a screening (55% of respondents,  $p < 0.01$ ). Fortunately in Tanzania an estimated 90 percent of citizens live within five kilometers of primary health care facility (PHC), though relatively few PHCs provide cervical cancer screening services or education at this time (Musau et al., 2010).

When variables were examined separately, the perception of a husband's approval and concerns about embarrassment and/or pain from the screening were two important factors. Among this study sample, 72 percent of women were married and "Husband Approval" was cited as a



primary barrier for married women ( $F=24.89$ ,  $p<0.001$ ). If a woman believes that her husband will not approve of a screening, this study showed that she is less likely to be screened than a woman who reports higher approval rates. Though Lyimo's publication does not dig deeper into the reasons for approval or disapproval, issues of modesty and others' judgements related to HIV and STIs, which were highlighted in past studies in neighboring Kenya and nearby South Africa, may have explanatory power in Tanzania as well (Bingham, 2003).

Similarly, the statistically significant finding of perceived embarrassment or pain as a barrier to screening uptake falls into category of perceived barriers, cultural norms, and outcome expectations. Embarrassment ( $F=9.11$ ,  $p<0.001$ ) may be associated with issues of modesty and others perceptions of the woman's reason for screening, i.e. association with promiscuity. In Tanzania, another salient factor for screening uptake was the gender of the healthcare provider ( $X^2 = 1.33$ ,  $p<0.001$ ). When it is believed that only male providers are available in health facilities, women are less likely to seek screenings. Moreover, a belief that the screening will be painful was another associated factor with screening uptake ( $F=27.98$ ,  $p<0.001$ ). These perceptions among women of embarrassment and painfulness are barriers to uptake which may lessen as more women receive screenings. In Tanzania, women who had been screened were less likely to report embarrassment or consider the screening painful than those who had never been screened (Lyimo, 2012).

Mukakalisa et al. (2014) provide evidence of screening uptake behaviors from low-resource settings outside of Tanzania, summarizing results from studies in South Africa, Ghana, Kenya, Thailand, Peru and India. The study found that many women avoid or fear screenings based on perceived pain and/or feelings of shame, satisfaction after a Visual Inspection comes from the realization that the physical screening itself does not hurt nor is it highly invasive. Additionally,

satisfaction comes from the fact that women can be screened and learn results during in the same visit. Women regarded cervical cancer screenings to be highly acceptable when performed by other women, and that female screeners minimize feelings of fear and shame. Additionally, comfort increased among women in South Africa when the screening was performed by a woman of the same ethnicity (Mukakalisa et al., 2014).

## **INVENTORY OF EXISTING CERVICAL CANCER PROGRAMS**

There is limited but growing activity related to cervical cancer prevention and treatment in Tanzania today. This section describes and maps the locations and activities of agencies providing prevention and treatment services for cervical cancer in Tanzania. Longer descriptions and relevant contact information are provided in Appendix 4. Methods for identifying relevant programs and agencies included personal communication with the Foundation for Cancer Care in Tanzania and through personal communication with public health agents and hospital administrators in Tanzania and in Minneapolis, Minnesota at the *Symposium on Cancer Care in Tanzania* in April, 2015.

Treatment options are extremely limited in Tanzania for cervical cancer cases that are not identified in their pre-cancerous stages. Just two treatment centers exist in the country, which considering the poverty and poor transportation infrastructure “might as well be in London” as far as most low-income rural women are concerned (P. Morrison, personal communication with CEO of hospital in Northern Zone of Tanzania, March, 2015). Established in 1996, Ocean Road Cancer Institute (ORCI) in Dar es Salaam was the first and until recently the only provider of cancer treatment and radiotherapy in Tanzania. ORCI is an autonomous cancer hospital working under the Ministry of Health and Social Welfare (MOSHW). It is located on the east coast in Tanzania’s largest city and receives patients from all corners of the country. Its mission is “to provide equitable, accessible, affordable and high quality services for early detection and cancer care to the public through prevention, research, education and treatment using modern technology and dedicated staff” (ORCI, 2014). In 2013, ORCI saw 5479 new patients, one third of which were cases of cervical cancer. In 2014, Bugando Medical Center (BCM) opened its cancer treatment center in the Lake Zone of northwest Tanzania. BCM is a regional specialty hospital serving the Lake and Western Zones, a catchment area of about 13 million people. Muhimbili Pediatric

Hospital provides chemotherapy and palliative care for child cancer patients, and Kilimanjaro Christian Medical Center (KCMC) plans to open its pediatric cancer treatment center in 2016.

Screening and education programs are difficult to track because there is no central hub for information on screening activities. Many of the screening programs are funded or run by foreign NGOs are mobile or short-term programs which are in operation intermittently. This report identified about 10 agencies that provide screenings, though many site locations and outputs are still unknown. Table 2 provides an overview of some active screening and education programs in Tanzania.

Most cervical cancer activities carried out in the Northern Zone are implemented by or through KCMC, which began work on the issue in 2000. Today, KCMC offers a Single Visit Approach method providing screening with VIA and treatment with LEED or cryotherapy at its main hospital grounds in Moshi and at about ten satellite sites around the Kilimanjaro region. Additionally, staff at KCMC have trained staff at about 20 additional hospital and health centers around the Kilimanjaro region to administer VIA screenings. Recently KCMC medical and nursing school began including training on the Single Visit Approach methods for all students in the program (Morrison, P., personal communication with physician/professor at KCMC, March 2015).

| <b>Selection of Cervical Cancer Prevention Activities in Tanzania</b>                      |  |  |  |
|--|--|--|--|
| <b>Agency</b>  | <b>Description</b>   | <b>Activities</b>  | <b>Location</b>                                    |
| Jhpiego - Cervical Cancer and Prevention Program – “Single Visit Approach” (see-and-treat) | Jhpiego has supported the Ministry of Health and Social Welfare to develop national guidelines and training materials, and is directly supporting provision of cervical cancer screening and treatment at 15 health facilities. From April 2010 to September 2012, 7,405 women were screened, with 7% (532) of the new women screened found to be VIA-positive. Through the Single Visit Approach, 92% (414) of the VIA-positive, cryotherapy-eligible women received treatment on the same day. | “See and Treat” screening and cryotherapy; Support MoHSW; Donate equipment             | Eastern Zone (Morogoro, Iringa and Njombe Regions) |
| PEPFAR Pink Ribbon Red Ribbon Project  | The US Government’s PEPFAR program runs Pink Ribbon Red Ribbon out of George W. Bush’s presidential library in Dallas, TX. PEPFAR donated 16 cryotherapy machines and established 16 “See and Treat” sites. In their initial launch PEPFAR screened 3800 women over two days (26 suspected of cervical cancer). The program trained 87 health workers, screened 29,500 women with VIA, found (1,167 screened positive and just over 900 were treated with cryotherapy or LEEP.                   | Donate equipment; health worker trainings; screen and treat                            | Eastern, Lake and Southern Zones                   |
| Bugando Medical Center (Vanda Program)   | Recent program (Vanda Project) screened 3000 women for cervical cancer using VIA method. Screenings occurred in community and 20% of women tested positive. Transportation was provided to Bugando Medical Center for removal of pre-cancerous lesions. Developing cancer registry with Duke University. BCM also trains health providers at district hospitals and health centers to screen using VIA.  | Single Visit Approach screening and cryotherapy; Radiotherapy; Health worker trainings | Lake Zone  |
| Dodoma Christian Medical Center  | DCMC launched a cervical cancer screen and treat program that screened nearly 4000 women using VIA methods at community. Results have not yet been published. The program involved community health promotion at markets and through community health workers.   | Screening and referral; Community outreach/education                                   | Eastern Zone                                       |

Table 2: Cervical Cancer Screening and Education Activities in Tanzania (Continues Next Page)

| <b>Selection of Cervical Cancer Prevention Activities in Tanzania (Continued)</b> |   |  |                 |
|---|---|--|-----------------|
| <b>Agency</b>   | <b>Description</b>  | <b>Activities</b>                              | <b>Location</b> |
| PATH  | In collaboration with Tanzania's Ministry of Health, PATH is implementing cervical cancer prevention and control programs in Tanzania. Staff conduct trainings for health workers on cervical cancer screening using VIA and cryotherapy treatment for precancerous lesions. Cryotherapy units, technical assistance and funding is provided to the Chama Cha Uzazi na Malezi Bora Tanzania cervical cancer prevention project. | Health worker training; Donate equipment.      | Eastern Zone    |
| Ocean Road Cancer Institute (ORCI)  | ORCI created a mobile screening clinic in 2001 to provide screenings for women and train health providers at hospitals throughout the country in regions geographically close to Dar es Salaam. ORCI also provides ongoing screening onsite in Dar es Salaam. ORCI is the oldest and most comprehensive cancer center in Tanzania.  | Screenings; Treatment; Health worker trainings | Dar es Salaam   |

Table 2: Cervical Cancer Screening and Education Activities in Tanzania

## **PART I CONCLUSION**

The objective of this report is to propose a targeted intervention to prevent cervical cancer in Northern Tanzania through health worker training, wherein dispensary workers will be trained to educate and refer patients to existing cervical cancer screening services. In Part I, the report provided data to demonstrate the need for increased resource allocation to cervical cancer interventions and examined best practices for cervical cancer screening promotion in Northern Tanzania. Cervical cancer is the most prevalent cancer and leading cause of cancer-related death in Tanzania. Only six percent of women are screened for cervical cancer in the Northern Zone of Tanzania (Cunningham et al., 2015), and of the women who are diagnosed with cervical cancer, about 80 percent are diagnosed at advanced stage when treatment options are limited.

Several key factors associated with the uptake of cervical cancer screening among Tanzanian women include awareness of screening, distance and cost. Beliefs that cervical cancer is not preventable and psychosocial barriers such as fear of physical pain or having a male screening provider also contribute to low screening uptake. Program components should be designed to address perceived and real barriers to screening among women.

Evidence from literature and current practices in Tanzania suggest that Single Visit Approach methods using VIA screening and cryotherapy treatment provided in the same visit is the most cost effective method in low-resource settings such as Tanzania. Kilimanjaro Christian Medical Center provides the majority of screening services in the Northern Zone, offers the Single Visit Approach at the hospital in Moshi and at ten satellite sites around the Kilimanjaro region. Staff at KCMC have trained about 20 additional hospital and health centers around the Kilimanjaro region to administer VIA screenings. Despite the availability of cervical cancer screenings in the Northern Zone, screening rates among women remain low and only six percent of women have

been screened in the region, and only 12 percent of women who are aware of cervical cancer have learned this information from a health provider.

The Cervical Cancer Prevention and Training Program, provided in Part II of this report, seeks to improve screening rates among women through education and referrals from dispensary health workers. Part II proposes a cervical cancer prevention program and evaluation framework for the intervention. As part of the framework, this report will provide a logic model for change, detailed training plans and curriculum, and guidelines for selecting trainers. It recommends appointments to a local planning team, estimates a timeline and budget for the program. The objective of the evaluation will be to measure the effect that training and health education materials have on dispensary-level healthcare providers' awareness, knowledge, and skills regarding cervical cancer prevention. It measures program impact by tracking referral sources of women who present at existing screening sites. The report concludes with a discussion of the potential impact of CCPTP and the challenges that may present during planning and implementation.



## **PART II: INTERVENTION AND EVALUATION**

### **Chapter 4: Intervention**

#### **OVERVIEW**

The Cervical Cancer Prevention Training Program (CCPTP) is a training designed by the author (Peter Morrison) for dispensary-level healthcare providers in Northern Tanzania. CCPTP aims to increase healthcare providers' awareness and knowledge of cervical cancer, and build skills among providers to educate patients on cervical cancer prevention and resources. CCPTP seeks to complement existing and planned cervical cancer prevention and treatment activities in the Northern Zone of Tanzania in effort to align with local needs and the strategic plan of the Foundation for Cancer Care in Tanzania<sup>8</sup> (FCCT). This report will be delivered to FCCT in early 2016 for the agency's consideration as they continue plans to expand and diversify activities in the region through Tanzanian partners, Kilimanjaro Christian Medical Center (KCMC) and Arusha Lutheran Medical Center (ALMC).

The core activities of the program include an (a) interactive workshop to increase awareness and knowledge, and (b) the provision of cervical cancer educational materials for health workers to use in educating and referring patients to screening services. The workshop is a half-day interactive training involving facilitated group discussion on the burden of cervical cancer on families and communities, instruction on cervical cancer

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<sup>8</sup> Foundation for Cancer Care (FCCT) is US-based 501(c)3 non-profit with a mission to “enhance cancer care to improve the lives of the citizens of Tanzania through education, programs for prevention and screening, and services providing treatment and palliation.”

screening and treatment procedures, and skill-building activities on communication and education strategies to empower health workers to effectively promote screenings. Patient education materials will be designed by the implementing agency in a patient-friendly manner to promote understanding of cervical cancer and promote screening uptake among primarily rural, uninsured, low-literate and low health literate audience.

Only six percent of women in CCPTP's target zone have been screened for cervical cancer (Cunningham et al, 2015). Though many of these women have heard of cervical cancer<sup>9</sup>, many misconceptions exist and only 12 percent of those who had heard about it learned the information from a healthcare provider (Cunningham et al., 2015). No cervical cancer interventions or activities in the Northern Zone have targeted dispensaries to date; current and past activities are either brought directly to the community or target higher levels of the health system. Dispensary workers have limited knowledge of cervical cancer which creates overlooked or misunderstood signs and missed opportunities for education, and subsequently late presentation at screening sites (Morrison, P., personal communication with senior executive at a Tanzanian cancer treatment center). Limited awareness and understanding among community members leads to late presentation and diagnosis, and ultimately the high mortality rate from cervical cancer in Tanzania.

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<sup>9</sup> Cunningham et al. (2015) reports that 86% of study participants had heard of cervical cancer in the Kilimanjaro region in the Northern Zone. Other studies have found lower awareness; Peters et al. (2013) reported that 51% of women in a cervical cancer screening line knew what cervical cancer was and only 12% in their control group.

## **TARGET AUDIENCE**

CCPTP is a health worker training program designed for health workers in health “dispensaries” in Tanzania’s Northern Zone. Dispensaries are the most peripheral level of Tanzania’s tiered healthcare system and have a catchment area of approximately 6,000 to 10,000 people (Manzi et al., 2012). They are often the first point of access to healthcare for Tanzanian women, especially in rural communities which experience increased poverty and disparities in access and health outcomes. They are designated by the Ministry of Health and Social Welfare to provide preventative and curative outpatient services and assist with normal birth deliveries (WHO, 2004). The required staffing level for dispensaries, set by the Ministry of Health and Social Welfare, is 7 and 10 workers per dispensary for private and public sector providers respectively (Musau et al., 2010). However the national shortage of health workers affects dispensaries heavily with public dispensaries running 69 percent deficit and private dispensaries are 84 percent short (Musau et al, 2010). Typically, a dispensary will be staffed with one non-physician, mid-level provider who was trained in-country, one or two nurses or nursing assistants, and one administrative staff member. The average patient load at dispensaries is 20 outpatients per day (Manzi et al, 2012).

## **THEORY OF CHANGE**

CCPTP aims to increase healthcare providers’ awareness and knowledge of cervical cancer, and build skills among providers to educate patients on cervical cancer prevention and resources. The program targets health workers at dispensaries where no cervical cancer training activities have been targeted to date and where providers have limited knowledge

of the issue (Peters et al, 2013). Increased knowledge of cervical cancer and skill-building training on patient education and screening promotion at the dispensary level will empower health workers to educate patients about cervical cancer. Greater awareness and understanding of cervical cancer and how to access screening services will increase screening uptake among women. Increased screening practices among Tanzanian women will reduce late presentation and diagnosis, and ultimately reduce the high mortality rate from cervical cancer in Tanzania's Northern Zone.

**LOGIC MODEL**

| <b>Inputs</b>   | <b>Activities</b>   | <b>Outputs</b>   | <b>Outcomes</b>  | <b>Impact</b>  |
|---|---|--|--|--|
| Trainers<br>Dispensary Workers<br>Program Staff<br>Funding<br>Training Materials<br>Educational Materials<br>Surveys<br>Office space & supplies | Adapt, test and refine training design and materials for dispensary workers<br><br>Develop, test and refine educational materials and resource guides for dispensaries<br><br>Train Dispensary Health Workers<br><br>Distribute health education materials and provider support materials to trained dispensaries | Training curriculum and materials developed/adapted<br><br>Educational and health promotion materials developed, and in dispensaries' possession<br><br>Trained health workers at dispensaries | Among dispensary health workers there will be increased: <ul style="list-style-type: none"> <li>• awareness of cervical cancer burden and preventability</li> <li>• knowledge of cervical cancer disease progression, interventions and their purpose, and resources available to patients</li> <li>• confidence in one's ability to educate patients and community members about cervical cancer and its prevention</li> <li>• confidence in one's ability to refer a patient to a screening location</li> <li>• intent to change behavior to promote screening uptake</li> </ul> | More women are educated about cervical cancer and its prevention<br><br>More women are referred to and seek cervical cancer screenings<br><br>Increased rate of early detection and thus eligibility for simple "see and treat" methods<br><br>Reduced mortality |

Table 3: Program logic model of change developed by the author

## **PLANNING GROUP**

Local planning and program design will be key to program success. The program framework and training content proposed in this report should be adapted by a local planning group (“Planning Group”) to ensure alignment with existing strategies and initiatives in the region, and local culture, learning styles and practices. The Planning Group is a diverse group of stakeholders that will be involved in the local planning and implementation of CCPTP. Members should include Foundation for Cancer Care in Tanzania (FCCT), Kilimanjaro Christian Medical Center (KCMC), Ministry of Health and Social Welfare (MoHSW), District Health Officials, dispensary health workers, and leadership from existing cervical cancer programs in Tanzania.

Foundation for Cancer Care in Tanzania is a US-based non-profit agency whose mission is to develop a comprehensive cancer network in the Northern Zone of Tanzania. FCCT’s will mobilize program funding and provide in-country staff to oversee planning and implementation. FCCT will provide executive leadership of the program to ensure alignment with national, regional and local priorities.

Kilimanjaro Christian Medical Center is the Northern Zone’s specialty hospital and zonal hub for cancer services. The agency will host the program and serve as the principal implementing partner. During planning, KCMC will ensure CCPTP integrates with existing strategies and activities, and inform the refinement of training and education materials to promote referrals to screenings at existing locations.

Ministry of Health and Social Welfare is the federal government’s health department that provides funding, training, policies and regulations for the health sector. MoHSW is an important agency to provide in the planning to ensure alignment with their regulations and priorities, and will ultimately need to approve program plans and activities before they are implemented.

MoHSW will also play a vital role in encouraging coordination across programs through its Cervical Cancer Technical Working Group.

District Health Officials are elected positions that oversee the health and health-related activities in their district. Officials' role in the Planning Group is to inform the scheduled rollout of CCPTP based on his/her knowledge of existing and planned activities. Additionally, permission from the District Health Official is a prerequisite before implementing any trainings in dispensaries.

Representatives from relevant programs identified in Part I, "Inventory of Existing Cervical Cancer Programs," are important members of the Planning Group. These agency representatives will provide expert guidance and lessons learned based on their work in previous regions of Tanzania. Ideally these agencies will share training and survey materials from their work to be adapted for use in the Northern Zone, and allow access to their existing data to enable triangulation of findings across Tanzania.

Finally, dispensary health workers are necessary as participants in the trainings provided by CCPTP. They will also serve an important role in planning by participating in early focus groups to inform workshop design, survey content, and the usability and effectiveness of educational materials.

| <b>Planning Group Members and their Roles</b>    |   |   |
|--|---|---|
| <b>Group</b>                                     | <b>Role in CCPTP</b>  | <b>Role in Planning Group</b>   |
| Foundation for Cancer Care in Tanzania (FCCT)    | Mobilize program funding; In-country staff provide planning and implementation oversight.   | Principal planning agency. Coordinate planning and implementing group.  |
| Kilimanjaro Christian Medical Center (KCMC)      | Host the program and serve as the principal implementing partner.                           | Ensure CCPTP integrates with existing strategies and activities.  |
| Ministry of Health and Social Welfare (MOHSW)    | Approve program plans and activities and encourage coordination across programs and regions | Ensure alignment with MOHSW priorities and regulations.   |
| District Health Officials                        | Permission. Training scheduling support.  | Support plans regarding the training schedule.  |
| Dispensary Health Workers                        | Training and evaluation participants.   | Focus group participants to inform workshop design, survey content and education materials.                       |
| Existing cervical cancer program representatives | Allow access to existing program data to triangulate findings across Tanzania               | Provide expert guidance and lessons learned. Share training, survey and education materials for revision and use. |

Table 4: Planning Group and their roles

**TRAINING DESIGN**

The objective of the training is to increase dispensary health workers’ efficacy in promoting cervical cancer screening uptake among female patients. The training is a half-day interactive workshop involving facilitated group discussion on the burden of cervical cancer on families and communities, instruction on cervical cancer screening and treatment procedures, and skill-building activities around communication and education strategies to empower health workers to effectively promote screenings.

The training framework provided in this section is rooted in findings from the literature review in Part I, and borrows selectively from three primary sources to guide its development. One training guide was publically accessible (Jhpiego) while a Trainers Handbook and PowerPoint slides were shared with the author after personal communication with the agency (Bugando



Medical Center and MoHSW). Each of these curricula are designed to prepare health care practitioners to administer screening and cryotherapy treatment services, while CCPTP seeks only to increase the quality and quantity of education and referrals from dispensaries to existing screening programs in the community.

Jhpiego's 2005 publication, *Cervical Cancer Prevention: Guidelines for Low Resource Settings*, is a reference manual for healthcare providers and trainers who seek to implement a cervical cancer prevention program which uses VIA and/or cryotherapy as its core components. The manual was developed in collaboration with the Tanzania Ministry of Health and Social Welfare and has guided the establishment of 15 "see and treat" clinics in Tanzania (Blumenthal & McIntosh, 2005). The reference manual in its entirety will be an excellent resource with which to equip training participants for ongoing learning and reference. Especially useful for the development of the CCPTP training is Chapter 4: Talking with Women about Cervical Cancer (Blumenthal & McIntosh, 2005).

The Tanzania MoHSW developed a comprehensive, six-day training curriculum designed to prepare participants to establish and run VIA and cryotherapy Single Visit Approach programs within their health centers or hospitals. The training package includes workshop outlines and objectives, facilitator guides, PowerPoint presentations and practitioner guides and checklists (MoHWS, 2014). Materials from the first day of six-day curriculum are particularly relevant to the development of the CCPTP training for dispensary workers. MoHSW provides materials for a 1.5 hour facilitated overview of cervical cancer and the Single Visit Approach to screening and treatment on day-one, and a 45-minute facilitated session on counseling and education based on Jhpiego's Chapter 4: Talking with Women about Cervical Cancer<sup>10</sup>. PowerPoint slides for these

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<sup>10</sup> PowerPoint Slides for this 45-minute session are provided in Appendix II.

two presentations are provided in Appendix III and IV. Additionally, relevant sections of the curriculum's original Training Outline are provided in Appendix II.

Finally, Bugando Medical Center in the Lake Zone of Tanzania developed a curriculum which includes several days of material on cervical cancer screening with VIA (hereafter "Bugando materials"). The curriculum was previously approved by the MoHSW and is being implemented by Bugando Medical Center staff throughout the Lake Zone. The PowerPoint slides covering an overview of cervical cancer prevention methods are provided in Appendix V.

#### **TRAINING CONTENT**

The training is designed as a half-day (4 hours) workshop with diverse activities to engage participants in learning about cervical cancer, its prevention and the resources available to community members. Additionally the training seeks to empower participants to educate patients on cervical cancer and its prevention. Content is interactive and includes small and large group discussion, instruction by facilitators and skill-building activities. Table 5 outlines the activities and content for CCPTP. The framework and workshop outlined in this section should be reviewed, translated and adapted by the Planning Group to better align with local needs.

| <b>Cervical Cancer Prevention Training Program for Dispensary Health Workers in Northern Tanzania – Course Outline</b> |   |   |  |   |
|--|---|---|--|---|
| <b>Time</b>  | <b>Topic / Activity</b>                             | <b>Content</b>  | <b>Teaching Methods</b>                        | <b>Materials</b>  |
| 10 min   | Welcome;<br>Course<br>Introduction                  | Welcome participants and introductions by both participants and facilitators. Present goals, objectives and agenda for the training.  | Facilitated group discussion                   | PPT slides, printed agendas                                 |
| 10 min   | Administer Pre-Training Surveys                     | Assess providers' baseline knowledge of cervical cancer and any existing related activities in which they are involved.   | Individual completion of survey                | Printed surveys   |
| 10 min   | Ice breaker   | Participants break into small groups. Each group receives large sheet of paper and markers. Group brainstorms and list words that they associate with cervical cancer (3 mins). Each group reports back their list (1 mins/group).  | Small group breakouts and presentations        | Flipchart and markers                                       |
| 35 min   | Intro to cervical cancer and its impact in Tanzania | Ask participants if they have encountered cervical cancer in their clinical practice. Select a few participants to share their experiences. (5 minutes)<br><br>Provide overview of cervical cancer including its etiology, prevalence and health impact. (30 minutes)   | Large group discussion;<br>Interactive lecture | PPT slides  |
| 10 min   | BREAK   |   |  | Coffee, snacks  |
| 40 min   | Cervical cancer prevention and local resources      | Briefly introduce primary prevention (HPV vaccine) as a future, long-term solution. Provide high-level overview of how to prevent cervical cancer using Single Visit Approach with VIA and cryotherapy. Emphasize that cervical cancer is highly preventable when caught early. Note: Do not get bogged down in the details of VIA or cryotherapy as dispensary workers will not administer screenings as a result of this training. Provide overview of cervical cancer prevention and treatment resources available in the Northern Zone. | Interactive lecture                            | PPT slides, Northern Zone cervical cancer resources handout |

Table 5: Training outline and methods (Continues Next Page)

| <b>CCPTP Course Outline (Continued)</b> |  |  |  |   |
|---|--|--|--|---|
| <b>Time</b>                             | <b>Topic / Activity</b>  | <b>Content</b>   | <b>Teaching Methods</b>                                | <b>Materials</b>  |
| 40 min                                  | Promoting screening uptake among patients                                      | Facilitate a lecture based on the content in Jhpiego’s Reference Manual, Ch. 4: Talking with Women about Cervical Cancer. Topics include: Important points to cover in counseling/education; client rights, confidentiality and privacy; Pre-VIA screening counseling;   | Interactive lecture; flipchart to summarize key points | PPT slides, flipchart and markers   |
| 5 min                                   | BREAK  |  |  |   |
| 40 min                                  | Practice (roleplay) educating and counseling women to promote screening uptake | Participants break into pairs to role play patient-provider interactions related to cervical cancer. Handout Reference Manuals and direct participants to Ch. 4 FAQ. Participants choose role as provider or patient; “patients” reads a question and “providers” do their best to answer the question without referencing the Manual. After 20 minutes of roleplay in one position, participants switch roles and continue for an additional 20 mins. | Small group practice/role play; large group discussion | Jhpiego’s Cervical Cancer Prevention Reference Manual (1 per participant) |
| 20 min                                  | Potential barriers to educating patients                                       | Facilitate a discussion on the challenges experienced by participants during roleplay and the perceived barriers they may face when educating patients in their dispensary. List challenges and perceived barriers on flipchart. Facilitate discussion on potential ways to overcome barriers.   | Large group discussion                                 | Flipchart and markers   |
| 5 min                                   | Conclude   | Summarize objectives achieved, provide contact information for ongoing support, and field any final questions. Hand out all remaining printed materials for providers.   | Interactive lecture                                    | PPT slides; Printed materials: Reference Manual, education materials      |
| 10 min                                  | Administer post-training survey  | Assess participants’ perception of the quality of training and their knowledge of cervical cancer and prevention immediately following the training. Additionally, assess participants’ intent to change behavior and confidence therein.  | Individual completion of survey                        | Post-training surveys   |

Table 5: Training outline and methods

## **TRAINING DELIVERY**

Workshop facilitators must be respected positions of expertise and/or authority in the local health system. Kilimanjaro Christian Medical Center has an existing team of health promoters and all of its medical and nursing students are trained in how to screen patients using the Visual Inspection with Acetic Acid (VIA). Existing activities already have these staff and students entering the field to raise awareness at community gatherings and screen women on the spot. Interested and effective training facilitators should be selected from this group, taught to facilitate the Cervical Cancer Prevention Training, and compensated for their time learning and finally teaching others under the auspices of the CCPTP.

The locations and total number of trainings facilitated requires consideration of the Planning Group based on what is logistically feasible considering financial and human resources available to CCPTP. Common practice in the Northern Zone is to host centralized trainings at regional hospitals or locations in a city center, requiring health providers to travel from their home dispensaries to the training location. In this scenario, participants are incentivized to attend the training with a small financial stipend, transportation reimbursement and meals. This method is generally a less complicated and less expensive option on program planners and facilitators than alternative methods. The subsequent Timeline and Estimated Budget for CCPTP pilot phase represent the required resources for to host this method of off-site, centralized trainings. However off-site, centralized trainings are not without their faults and the Planning Group may consider alternative methods for future phases of scaling CCPTP.

Recall that public dispensaries are running 69 percent deficit in health workers and private dispensaries are 84 percent short (Musau et al, 2010). The absence of staff members while traveling to attend off-site trainings places a heavy burden on the already understaffed dispensaries (Musau et al., 2010). One study found that off-site seminars and trainings were responsible for nearly half

of the 44 percent of absentee clinical staff at dispensaries and health centers on any given day (Manzi et al., 2012). To limit the program's negative contribution to the issue of absenteeism, the CCPTP training should be facilitated on-site at each dispensary. However this option would be quite costly and time consuming due to the large number of dispensaries staffed by relatively few individuals. An additional option, and perhaps the best option, is to consider is a middle ground between hosting 1-2 trainings centrally and hosting hundreds on-site at individual dispensaries. Geographic clusters of dispensaries could be identified, perhaps by district or ward, and trainings could be held centrally in these locations requiring limited travel by participants and only a half-day of absence from work.

The physical space required for the training will vary based on whether they are held centrally or on-site. No matter which method is pursued, the training space should have ample space for group lecture and small-group breakouts and a screen or wall on which the presentation can be projected. All printed materials should be prepared before the training so participants are able to leave the workshop with resources for continued learning and tools to use as they begin educating patients in their home dispensaries.

## EDUCATIONAL MATERIALS

Educational materials that will be used by dispensary health workers to promote cervical cancer screening uptake among patients and community members should be developed locally to align with customs, culture, language and beliefs. Some of these beliefs and perceptions among women were explored in Part I and should inform the messaging of any educational materials that are developed. Table 5 provides a brief recap of some of the important factors that influence screening seeking behaviors among Tanzanian women, and a corresponding message that may “speak” to that perceived barrier or false perception of the cervical cancer screening.

| <b>Evidence-based Messaging for Educational Materials</b>   |  |
|---|--|
| <b>Evidence from the Literature</b>   | <b>Message on Education Materials</b>                |
| Research shows that many Tanzanian’s link cervical cancer to promiscuity and thus avoid screening for fear of shaming.  | “All women care for themselves”                      |
| This material explicitly states “well-woman screening” opposed to “cervical cancer screening” to address the aforementioned issue of shame, and to mitigate a belief that cancer is not curable and thus screening is futile. | “Well-woman screening”                               |
| Many women fear screening because of perceived pain associated with the procedure.  | “Pain-free”  |
| Many women, particularly in rural areas, feel shame associated with being screened by a male practitioner, and avoid screenings as a result.  | “Female nurses”                                      |
| Likelihood of a woman attending screening is higher when multiple visits are not expected of the woman.   | “Get screened and receive results in the same visit” |
| Distance of travel to the screening is important. Messages should advertise the closest screening, ideally within five kilometers of the dispensary.  | “Screening service provided at [local health post]”  |
| Many Tanzanian women report affordability as a primary barrier to receiving screening. This program will refer women to free screening services.  | “Free!”  |

Table 6: Evidence-based and messaging for educational materials

## TIMELINE

The timeline for the lifecycle of CCPTP will vary greatly based on the size and scale of the project. Size and scale must be determined by the Foundation for Cancer Care in Tanzania, and should be based on the agencies strategic agenda and availability of funding for the project. The following timeline is developed primarily for the one-year pilot phase of the project, which requires only minimal funding in the near term. The size, scale and timeline of subsequent phases should be planned by FCCT and the Planning Group should the pilot prove to be successful.

| <b>Timeline for CCPTP Pilot Program</b> |  |
|---|--|
| <b>Date</b>                             | <b>Activity</b>  |
| Y1 Q1                                   | Assemble Planning Group  |
|   | Decide on scale and locations of CCPTP   |
|   | Planning meetings and visits with Tanzanian district health officials and dispensary workers – gauge interest and gain permission from officials   |
|   | Coordinate with screening and treatment programs located in areas near dispensaries that will be trained   |
|   | Adapt presentation materials (original materials from MoHSW, Bugando Medical Center, and Jhpiego)  |
|   | Develop educational materials  |
|   | Test educational materials in focus groups with community members  |
|   | Translate Surveys to Swahili (English and Swahili versions needed)   |
|   | Focus groups with dispensary workers to test surveys   |
|   | Compare survey indicators with existing program data from Planning Group member programs and revise accordingly to promote triangulation of indicators and uniform data collection across geographic regions and levels of the health system |
| Y1 Q2                                   | Finalize educational materials   |
|   | Revise and finalize surveys  |
|   | Identify and contract Tanzanian facilitators for trainings   |
|   | Plan dates, locations, and participant dispensaries for trainings  |
|   | Facilitation of trainings  |
| Y1 Q3                                   | Administer pre-training and post-training surveys  |
|   | Continue facilitation of trainings   |
|   | Ongoing collection of pre-and post-training surveys at training events   |
| Y1 Q4                                   | Beginning 3 months after first training, revisit participating dispensaries to collect 3-month follow-up surveys   |
|   | Ongoing collection of 3-month follow-up surveys of trained dispensary workers  |
| Y2 Q1                                   | Write-up pilot study results for publication and conference presentations  |
|   | Plan and implement program scaling to new areas and dispensaries in the N. Zone  |

Table 7: Timeline for Pilot Launch of CCPTP



## ESTIMATED BUDGET

The estimated budget is designed to fund a one-year pilot of the Cervical Cancer Prevention Training Program. Additional funds are required to support the eventual expansion of CCPTP should the pilot prove successful. A Program Manager on the ground in the Northern Zone will be the primary coordinator and manager of CCPTP. Two locally recognized experts such as physicians or nurses will be contracted as training facilitators. The development of educational materials should be outsourced to a local marketing firm to create attractive, engaging health promotion materials. Other expenses include office space and materials, printing, permit fees, in-country travel expense reimbursement for program staff and Planning Group members and translation services. Finally, training and focus group participants must be provided a financial incentive to reimburse them for their time and costs incurred.

| <b>Estimated Budget for CCPTP Pilot Phase</b>  |              |             |                    |
|--|--------------|-------------|--------------------|
| <b>ITEM</b>  | <b>COUNT</b> | <b>COST</b> | <b>TOTAL</b>       |
| Program Manager (1 FTE)  | 1            | \$35,000    | \$35,000.00        |
| Contract Training Facilitators   | 2            | \$2,500     | \$2,500.00         |
| Outsourced development of education materials  | 2            | \$1000      | \$1,000.00         |
| Office Space   | 1            | \$2000      | \$2,000.00         |
| Office Supplies / Technology (phone, computer, internet connection)                                  | X            | \$500       | \$300.00           |
| Staff travel (planning, meeting MoHSW, etc.)   | X            | \$2000      | \$2000.00          |
| Research Permit from Tanzanian Gov't   | 1            | \$300       | \$300.00           |
| Incentives for focus group participants  | 25           | \$8         | \$200.00           |
| Printing of training and education materials   | X            | X           | \$250.00           |
| Translation services for surveys   | 3            | \$150       | \$450.00           |
| Travel reimbursement for Planning Group members for in-person meetings                               | 20           | \$200       | \$2,000.00         |
| Incentives for health worker participation (reimbursements for a meal, transportation and lost time) | 200          | \$20        | \$4,000.00         |
| <b>Total Budget:</b>   |              |             | <b>\$50,000.00</b> |

Table 8: Estimated Budget for CCPTP

## **Chapter 5: Evaluation**

### **EVALUATION OVERVIEW AND METHODS**

The objective of the CCPTP evaluation is to measure the effect that participation in training and the provision of health education materials for use with patients have on dispensary health workers' awareness, knowledge, and skills regarding cervical cancer prevention. The evaluation includes participant surveys immediately before and after the half-day training, a three-month post-training survey to measure sustained knowledge and self-reported changes in health worker behaviors, and ongoing data collection at screening sites in the Northern Zone.

The Program Manager for the implementing agency should take primary responsibility for the coordination and implementation of this evaluation. In the pilot phase, the CCPTP evaluation will provide data for a baseline measure among participating dispensary health workers, short-term outputs and outcomes immediately following the training, and sustained outcomes present three months after training. Post-training and three-month follow-up surveys will be compared to baseline figures to evaluate the efficacy of the training in increasing knowledge, awareness, confidence and behaviors of dispensary health workers related to cervical cancer prevention. A single-question survey at screening sites asking women about the source of referral to the screening informs evaluators of the long-term impact related to increasing screening uptake among women is measured by comparing the number of referrals from participating dispensaries to the number from non-participants.

Baseline surveys will measure awareness and knowledge of cervical cancer and its prevention among dispensary health workers; unique information that will contribute to the

national and regional dialogue on the subject<sup>11</sup>. Additionally, pre-training surveys will gather baseline data on providers' self-reported confidence in their ability to educate and refer women to screenings, and their current practices in this regard. After the half-day workshop, a post-training survey will measure initial improvements in knowledge among providers and record changes in self-reported confidence. The follow-up survey after three months will measure sustained increases in knowledge of cervical cancer, its prevention, and the resources available to patients. The follow-up survey measures outcomes related to increased knowledge and awareness, and allows providers to self-assess their confidence in promoting cervical cancer prevention and report on changes they have made at the dispensary and in their practice with patients. Potential response bias among self-reported measures are balanced in the CCPTP evaluation by tracking the referral source of women presenting at screening sites in the geographical vicinity of participating districts.

Survey questions and indicators used to evaluate CCPTP should replicate those already being measured by existing and past activities in in Tanzania<sup>12</sup>. Replicating survey questions and collecting comparable data will allow practitioners and policy-makers to triangulate findings in cervical cancer prevention across geographic regions and levels of the health system, contributing to Tanzania's ongoing effort to improve the data environment. Output, outcome and impact indicators described below should be reviewed by the Planning Group to promote this alignment.

CCPTP surveys use a Likert Scale to assess providers' perceptions of their own awareness and knowledge of cervical cancer, and ask some basic multiple choice questions about cervical cancer prevention to evaluate existing knowledge objectively. If providers have pre-existing

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<sup>11</sup> No studies or interventions for cervical cancer have focused on dispensary level health workers in Tanzania to date. Poor awareness and knowledge among dispensary health workers may contribute to the limited knowledge of cervical cancer among women, which leads to late presentation at screenings and high mortality rate.

<sup>12</sup> Agencies outlined in Part I *Inventory of Existing Program* such as KCMC, DCMC, Bugando Medical Center, Pink Ribbon Red Ribbon, and PATH should be engaged to share and cross-reference indicators and data.

knowledge of cervical cancer, participants should be asked to identify where they learned the information, a response that may inform future programming and research. Additionally using the Likert Scale, surveys prompt providers to assess their own confidence in educating patients about cervical cancer and referring them to a screening. Finally, surveys ask providers to self-assess how often they educate patients about cervical cancer and how often they refer women to screenings.

### **SAMPLING STRATEGY**

Random selection of participants in an intervention is an important contributor to the internal validity of evaluation results. However awareness of local needs and existing interpersonal relationships may interfere with the evaluator's ability to randomly select participant dispensaries to receive the CCPTP intervention. Additionally, variation in existing knowledge and resources among dispensaries will create different levels of treatment effects. For these reasons the CCPTP evaluation recommends a convenience sample selected by the Planning Group for the pilot phase.

Inclusion should be decided at the district level within a given catchment area of an existing screening program in the Northern Zone. Decisions regarding the inclusion or exclusion of districts should be based on situational awareness among Planning Group members with attempts made to control for issues of access to screenings, education, literacy rates and other potentially confounding factors. The distance one lives to a health facility that provides screenings is an important factor in determining screening uptake and thus an important factor in determining the catchment area for the study. Women are four times as likely to be screened if they lived within two to five kilometers of a screening facility compared to those women who live more than five kilometers away (Lyimo, 2012), though over half of women studied in the northern Tanzania were willing to travel greater than two hours for a screening (Cunningham et al., 2015). Treatment and control districts should be identified within the determined catchment area of a permanent

screening facility. Dispensaries in control districts do not need to be surveyed during the pilot phase, however it is important to identify them as controls in advance so as to have control districts during the monitoring of screening referral sources.

A single district has on average 50 dispensaries (P. Morrison, personal communication with CEO of Tanzanian hospital, March 2015). Each dispensary is staffed with about seven staff (Manzi et al, 2012). Inclusion in the treatment group must be determined at the district level to avoid spill-over from neighboring dispensaries, creating a pool of about 350 dispensary health workers invited to participate in the training. Three to four centralized trainings should be held to accommodate schedules and maximize inclusion of dispensary workers in the intervention, seeking a final sample of at least 200 providers.

#### **OUTPUT, OUTCOME AND IMPACT INDICATORS**

The evaluation begins simultaneously with the launch of CCPTP and several output indicators should be tracked by the Program Manager early in the program to evaluate progress.

These include:

- (5+) partner institutions join Planning Group,
- training materials developed or replicated, including: (1) PPT, (1) facilitator guide, (1) cervical cancer reference manual, and (1) local resource guide,
- (1) patient education aid and (1) local resource guide for health worker use
- (1) educational/promotional materials designed for patients is developed, tested, revised, printed,
- (1) permission to facilitate trainings received from MoHSW and (1) from a District Health Official in each target district.

Surveys administered prior to any training will measure a baseline of knowledge and self-reported confidence and practices related to prevention education and screening promotion among participating dispensary health workers. The specific indicators collected in this baseline should be cross-referenced and revised to triangulate with the existing data and indicators used by partner programs in the Planning Group. Based on existing data presented in the literature review, baseline surveys should collect information on dispensary health workers' knowledge of cervical cancer and the strategies for its prevention, and awareness and understanding of screening and treatment services that are available in the geographic vicinity. Surveys should ask study participants where and existing knowledge of cervical cancer was learned and how they learned of existing resources in their area. Using a Likert scale, baseline surveys should ask health workers to report how confident they are in their ability to educate women about cervical cancer and refer them to screening services. Self-reported practices related to educating and referring existing patients should ask health workers how often they educate women on cervical cancer and refer them to screening services.

Short-term outputs and outcomes immediately following the training should be tracked by the Program Manager and collected using a similar survey to the baseline version. Simple but important outputs that require ongoing monitoring throughout the entirety of the program include:

- (2) patient education aid and (2) local resource guides distributed to every dispensary from which health workers are trained,
- (3+) trainings facilitated in locations centralized location for target dispensaries, and
- (200+) dispensary health workers trained

Post-training surveys administered by training facilitators immediately following the workshop will measure short-term outcomes. Post-training survey responses will be compared to baseline/pre-training responses to measure significant levels of change in:

- awareness and knowledge of cervical cancer prevention and available resources among trained dispensary workers
- self-reported confidence in providers' own ability to educate and refer women, and
- self-reported intent to increase quantity and quality of cervical cancer education and screening promotion among trained dispensary health workers

To evaluate how the short-term outcomes sustain over time, a follow-up survey will be administered by the Program Manager three month after training. Again, survey questions will be similar or identical to baseline and post-training survey questions to allow for comparison of knowledge, awareness, confidence and reported behavior change from baseline, to immediately post-intervention and to three months after the training. It is important to measure the sustained level of change among these areas of interest to promote ongoing cervical cancer education and referrals to screenings from the dispensary level.

Evaluating the long term impact of CCPTP is important to understand its effect on women's health, though doing so is time consuming and costly. The CCPTP evaluation includes some methods to evaluate the impact that training dispensary workers has on women's health outcomes over time, though considering limited resources the evaluation is not designed to be robust enough to claim causality, i.e., that the training intervention caused the improved health outcomes among patients. Long term outcome indicators are the ultimate goal of CCPTP, and include:

- increased number of women being educated on cervical cancer prevention,

- increased number of women are referred to and seek cervical cancer screenings,
- increased rate of early detection and thus eligibility for simple “see and treat” methods, and
- reduced premature mortality associated with cervical cancer.

The long term indicator related to the number of women educated at dispensaries is evaluated as self-reported practices by trained health workers. Self-reported practice also shed light on the second long-term indicator, number of women referred and who seek screening. Additionally, screening seeking behaviors will be evaluated using data collected onsite at screening programs in the Northern Zone. Those programs under the purview of the implementing agency and Planning Group should ask each woman who presents for screening how she learned of the screening program. Instances of referral from specific dispensaries will be recorded by participating screening programs supplying ongoing reporting on referrals from CCPTP’s participating dispensaries and controls. Table Seven summarizes all indicators and the associate methods of collection.

| <b>CCPTP Evaluation Indicators</b>  |                   |                                       |
|---|-------------------|---------------------------------------|
| <b>Indicator</b>  | <b>Type</b>       | <b>Collection Method</b>              |
| (5+) Partner institutions join Planning Group   | Short-term output | Progress reporting by Program Manager |
| (1) Training materials developed or replicated, including: (1) PPT, (1) facilitator guide, (1) cervical cancer reference manual, and (1) local resource guide | Short-term output | Progress reporting by Program Manager |
| (1) Patient education aid and (1) local resource guide for health worker use  | Short-term output | Progress reporting by Program Manager |
| (1) Educational/promotional materials designed for patients is developed, tested, revised, printed  | Short-term output | Progress reporting by Program Manager |
| (1) Permission to facilitate trainings received from MoHSW and (1) permission received from each target district’s Health Official                            | Short-term output | Progress reporting by Program Manager |

Table 9: Indicators for CCPTP Evaluation (Continues Next Page)



| <b>CCPTP Evaluation Indicators (Continued)</b>   |                  |  |
|--|------------------|--|
| <b>Indicator</b>   | <b>Type</b>      | <b>Collection Method</b>   |
| (2) Patient education aid and (2) local resource guides distributed to every dispensary from which health workers are trained  | Mid-term output  | Progress reporting by Program Manager  |
| (3+) Trainings facilitated in locations centralized location for target dispensaries   | Mid-term output  | Progress reporting by Program Manager  |
| (200+) Dispensary health workers trained   | Mid-term output  | Progress reporting by Program Manager  |
| Significant increases in awareness and knowledge of cervical cancer prevention and available resources among trained dispensary workers immediately following training                 | Outcome          | Analysis of variation from pre- to post-survey and pre- to follow-up survey responses to knowledge-based questions       |
| Significant increases in self-reported confidence in providers own ability to educate and refer women immediately following training   | Outcome          | Analysis of variation from pre- to pos-survey responses; self-reported on Likert Scale                                   |
| High levels of self-reported intent to increase the quantity of cervical cancer education and screening promotion among trained dispensary health workers following training           | Outcome          | Self-reported intent to change current behaviors on post-training survey   |
| Significant, sustained increases in awareness and knowledge of cervical cancer prevention and available resources among trained dispensary workers three months after training         | Outcome          | Analysis of variation from baseline to follow-up survey responses to knowledge-based questions                           |
| Significant, sustained increases in self-reported confidence in providers own ability to educate and refer women three months after training   | Outcome          | Analysis of variation from baseline to follow-up survey responses; self-reported on a Likert Scale                       |
| Significant increases in the self-reported quantity and quality of education and referrals to screenings provided to patients by dispensary health workers three months after training | Outcome / Impact | Analysis of variation from baseline to follow-up self-reported practices related to education and promotion of screening |
| Significantly higher number women who present at screening report being referred to by participating dispensary compared to dispensaries that did not participate in CCPTP.            | Impact           | Screening program staff administer one-question interview, “who referred you to this screening?”                         |

Table 9: Indicators for CCPTP Evaluation

## **LIMITATIONS OF EVALUATION**

A limitation of this evaluation is its failure to evaluate true measures of change for the long-term impact of CCPTP's effect on female patients' understanding and behaviors. Three month follow-up surveys do evaluate sustained variations in self-reported confidence and practices related to educating and promoting cervical cancer prevention. However self-reported measures are subject to response bias, leaving this evaluation to rely somewhat on the causal assumption that sustained increases in knowledge of cervical cancer prevention and awareness of the resources available to patients will increase the quantity and quality of education and screening promotion that occurs with patients at the dispensary level. The CCPTP evaluation seeks to counterbalance issues of validity raised by reporting bias by collecting objective data on the source of referral of women presenting at screening sites in the geographical vicinity of participating districts.

## **Chapter 6: Conclusion**

Focusing on Tanzania, this report demonstrates the need for increased resource allocation to cervical cancer interventions, examines best practices for cervical cancer screening promotion, and develops an intervention and program evaluation framework. The intervention is a training program designed for dispensary-level healthcare providers in the Northern Zone of Tanzania and aims to increase provider awareness and knowledge of cervical cancer, and build skills among providers to educate patients on cervical cancer prevention and screening and treatment resources.

Tanzania is one of the countries with the heaviest cervical cancer burden in the world. It is the most common female cancer in Tanzania with an incidence rate nearly five times as high as the next most common cancer among males and females combined (IARC, 2012). The disease affects relatively young women with mortality rates increasing as women reach about 40 years old, a time when women are critical to social and economic stability. A mere six percent of women have been screened for cervical cancer in the Northern Zone (Cunningham et al., 2015). Of the 84 percent of women that had heard of the disease, only 12 percent learned about it from their healthcare provider (Cunningham et al., 2015). Tanzania has a growing number of activities, though none to date have targeted dispensaries which are often the first point of access for rural women.

VIA screenings and cryotherapy treatment are increasingly being offered in the Northern Zone as a “Single Visit Approach,” but screening rates remain low and many women present at screenings only after the cancer has progressed to later stages. Limited knowledge among dispensary workers may contribute to limited understanding and awareness of screenings among women and thus poor screening seeking behaviors. The proposed intervention in this report, Cervical Cancer Prevention Training Program (CCPTP) aims to increase healthcare providers’

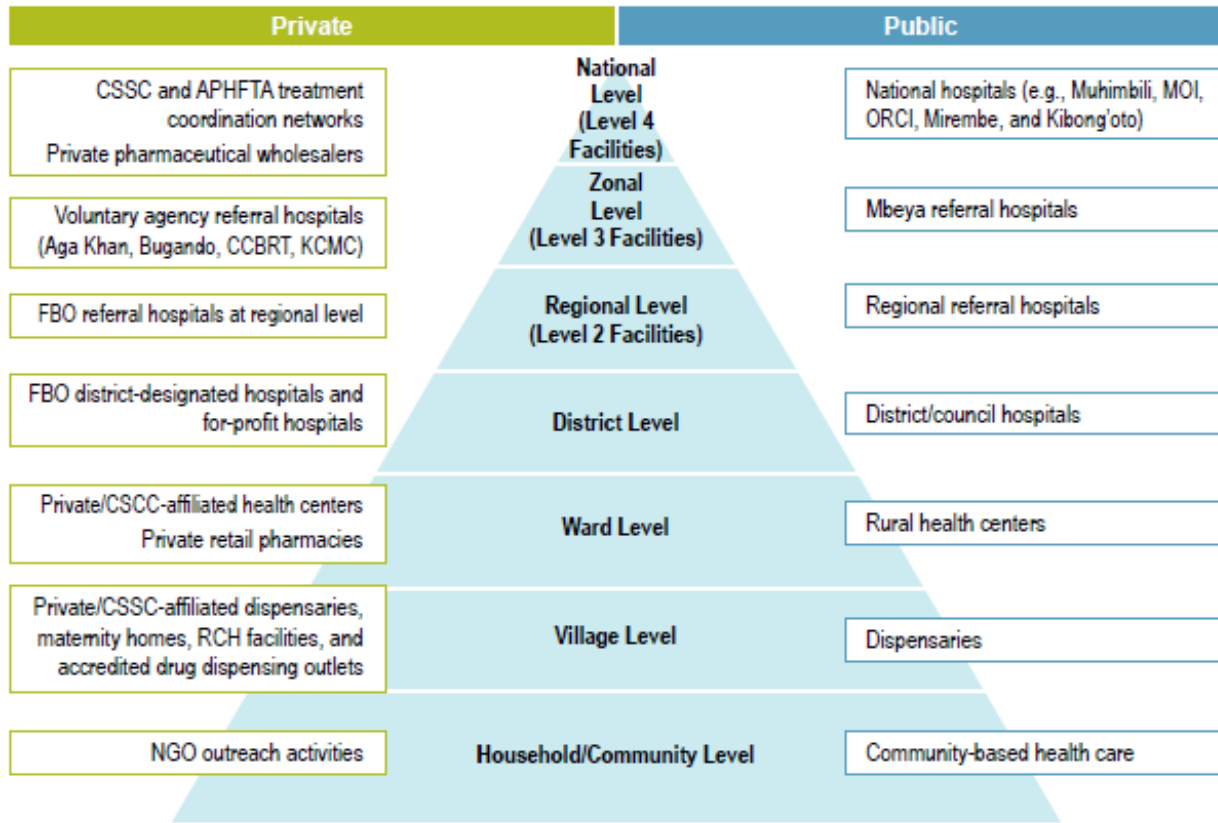
awareness and knowledge of cervical cancer, and build skills among providers to educate patients on cervical cancer prevention and resources. The program targets health workers at dispensaries where no cervical cancer training activities have been targeted to date and where providers have limited knowledge of the issue (Peters et al, 2013). Increased knowledge of cervical cancer and skill-building training on patient education and screening promotion at the dispensary level will empower health workers to educate patients about cervical cancer, which leads to higher screening rates and reduced mortality.

The CCPTP evaluation framework measures the effect that participation in training and the provision of health education materials have on dispensary health workers' awareness, knowledge, confidence and skills regarding cervical cancer prevention. The evaluation includes participant surveys immediately before and after the half-day training, a three-month post-training survey to measure sustained knowledge and self-reported changes in health worker behaviors, and ongoing data collection at screening sites in the Northern Zone.

CCPTP seeks to complement existing and planned cervical cancer prevention and treatment activities in the Northern Zone of Tanzania in effort to align with local needs and the strategic plan of the Foundation for Cancer Care in Tanzania, a US-based non-profit agency with a mission to develop a comprehensive cancer network in the Northern Zone of Tanzania. There are several potential challenges that may hinder the implementation of CCPTP. First, the level of funding required to implement the pilot or expand to new districts upon a successful pilot may be a limiting factor for FCCT. Additionally, program staff may have difficulty balancing their limited time and resources with the need to host a greater number of trainings across the geographic catchment area. Hosting trainings close to one's home dispensary promotes higher participation and causes shorter absences among health workers at dispensaries.

# APPENDICES

## Appendix A – Tanzania Health System



Notes: CCBRT – Comprehensive Community Based Rehabilitation in Tanzania, FBO – faith-based organization, KCMC – Kilimanjaro Christian Medical Centre, MOI – Muhimbili Orthopaedic Institute, ORCI – Ocean Road Cancer Institute, RCH – reproductive and child health

Figure 4: Levels of the Health System (WHO, 2004)

The Village health post is the lowest level of healthcare delivery in Tanzania. Health posts are generally staffed by two village health workers who are chosen by the village government, and given short training on preventative health measures prior to starting service. Services provided by village health posts are essentially preventative and health education, and are often provided in community members' homes.

Dispensaries, the target of this intervention, are the second tier of health services and are designed to serve a population of 6,000 to 10,000 individuals (MOHSW 2015). There are 5,698

dispensaries in the country, averaging approximately 33 dispensaries per district (MOHSW Health Facilities). Dispensaries provide preventative and curative outpatient services and assist with normal deliveries (WHO 2004, 18). Each dispensary is also responsible for the supervision of village health posts in their coverage area (i.e., ward). On average, dispensaries in Tanzania are staffed with one non-physician, mid-level provider who was trained in-country, one or two nurses or nursing assistants, and one administrative staff member. The average patient load at dispensaries is 20 outpatients per day (Manzi et al).

Health Centres, the third tier of healthcare, and are designed to serve a population of 50,000 individuals (WHO 2004, 20). Health Centres generally have 25-30 inpatient beds and see an average of 29 outpatients per day (Manzi et al). Referrals are received from dispensaries to provide basic treatments and some preventative health outreach is performed from Health Centres.

District Hospitals are designed to service a population of 250,000, and provide similar services as dispensaries and health centres, but with greater levels of expertise (WHO 2004, 20). Every district is required to have a designated District Hospital. These hospitals are either provided directly by the central government or fulfilled by faith-based organizations who receive designation as the district hospital through negotiations and cost-sharing with the central government (MOHSW 2015). District hospitals are more likely to have some diagnostic capacity and provide treatment for common diseases, illness and injuries.

Every region has a single regional hospital, which offers similar services to that of the district hospital but has greater capacity and provides a greater degree of specialty care. Regional hospitals serve as the referral center for all of the district hospitals in their region, ranging from four to eight hospitals per region (WHO 2004, 20).

The highest level in the Tanzania health system is the referral/consultant hospitals, of which there are four. Each “zone” in Tanzania (Eastern, Northern, Western and Southern) has a single referral hospital which provide the highest degree of specialized care including diagnostic services and treatment. There are about 241 operating hospitals in Tanzania, including district, regional and referral hospitals, according the MOHSW health facility database (MOHSW 2015).

**Appendix B – Day One Outline, copied directly from (MoSHW, 2014)**

| <b>CERVICAL CANCER PREVENTION CLINICAL SKILLS TRAINING FOR HEALTHCARE PROVIDERS IN TANZANIA<br/>MODEL COURSE OUTLINE (6 days, 12 sessions)</b> |   |   |   |
|--|---|---|---|
| <b>TIME</b>  | <b>TOPICS/ACTIVITIES</b>  | <b>TRAINING/LEARNING METHODS</b>  | <b>RESOURCES/MATERIALS</b>  |
| <b>SESSION ONE: DAY 1, AM</b>  |   |   |   |
| 10 minutes   | <b>Activity:</b> Welcome participants                               | Welcome by representatives of the organization(s) sponsoring the training course.   | <b>Course equipment:</b> See list of required equipment and supplies in the Course Syllabus   |
| 20 minutes   | <b>Activity:</b> Facilitate introductions of participants           | Participants divide into pairs, interview and then introduce each other sharing their partner’s name, position and one thing they expect during the course. The clinical trainers should also be involved in this activity.   |   |
| 10 minutes   | <b>Activity:</b> Provide an overview of the course                  | Present the goals and objectives of the training from the course syllabus in the participants handbook, give participants time to review the course schedule and present the agenda for the day one. Invite inputs from participants as appropriate.                      | <b>Handbook:</b> Course Syllabus  |
| 10 minutes   | <b>Activity:</b> Review course materials                            | Distribute, review and discuss materials used in this course. Review the table of contents of the reference manual and participant handbook.  | <b>Cervical Cancer Prevention Reference Manual</b> (1 per participant)<br><b>Cervical Cancer Prevention Course Handbook</b> (1 per participant) |
| 20 minutes   | <b>Activity:</b> Identify participant expectations and group norms. | Ask participants to share their expectations of the course. Record their responses on the flipchart. Next ask participants to share some norms that the group should follow during the course. Attach the flipchart page to the wall for reference throughout the course. |   |

Table 10: Day 1 outline of MoHSW VIA and Cryotherapy Training (Continues Next Page)



| <b>CERVICAL CANCER PREVENTION CLINICAL SKILLS TRAINING FOR HEALTHCARE PROVIDERS IN TANZANIA<br/>MODEL COURSE OUTLINE (6 days, 12 sessions)</b> |   |  |   |
|--|---|--|---|
| <b>TIME</b>  | <b>TOPICS/ACTIVITIES</b>                                      | <b>TRAINING/LEARNING METHODS</b>   | <b>RESOURCES/MATERIALS</b>  |
| 45 minutes   | <b>Activity:</b> Assess participants' precourse knowledge     | Ask participants to turn to the precourse questionnaire in their handbooks and answer each of the questions (or the clinical trainer may distribute copies of the questionnaire for the participants to complete). Ask the participants to close their handbook or turn the questionnaire over when finished (clinical trainer may decide to have them leave the room as they finish in order to keep the noise to a minimum). | <b>Handbook:</b> Precourse Questionnaire  |
| 15 minutes   | <b>BREAK</b>  |  |   |
| 20 minutes   | <b>Activity:</b> Identify individual and group learning needs | Group grades questionnaires, completes Individual and Group Assessment Matrix.   | <b>Handbook:</b> Individual and Group Assessment Matrix<br>Precourse Questionnaire Answer Key |

Table 10: Day 1 outline of MoHSW VIA and Cryotherapy Training (Continues Next Page)


| <b>CERVICAL CANCER PREVENTION CLINICAL SKILLS TRAINING FOR HEALTHCARE PROVIDERS IN TANZANIA<br/>MODEL COURSE OUTLINE (6 days, 12 sessions)</b> |   |   |   |
|--|---|---|---|
| <b>TIME</b>  | <b>TOPICS/ACTIVITIES</b>  | <b>TRAINING/LEARNING METHODS</b>  | <b>RESOURCES/MATERIALS</b>  |
| <b>SESSION ONE, CONTINUED: DAY 1, AM</b>   |   |   |   |
| 45 minutes   | <b>Activity: Illustrated Lecture</b><br>Chapter 1: Introduction to CECAP<br>Chapter 2: HPV and Cervical Cancer<br>Chapter 3: Pathophysiology of Cervical Cancer<br><b>PART I</b>  | Ask participants if they have encountered cervical cancer in their clinical practice. Select a few participants to share their experiences.<br><br>Present an illustrated lecture using the presentation graphics for this chapter. The clinical trainer should be interactive and ask questions throughout the presentation. | Presentation graphics for Chapter 1-3   |
| 45 minutes   | <b>Activity: Illustrated Lecture</b><br>Chapter 1: Introduction to CECAP<br>Chapter 2: HPV and Cervical Cancer<br>Chapter 3: Pathophysiology of Cervical Cancer<br><b>PART II</b> | Illustrated lecture using presentation graphics and flipcharts to orient participants to both normal and abnormal anatomy of the cervix.  | Presentation graphics for Chapter 3<br><br><b>VIA Atlas</b><br>Flipchart<br>Markers |
| <b>END SESSION 1 DAY 1, TOTAL MINUTES: 240 minutes</b>   |   |   |   |
| 60 minutes   | <b>LUNCH BREAK</b>  |   |   |
| <b>SESSION 2, DAY 1 PM</b>   |   |   |   |
| 45 minutes   | <b>Chapter 4: Talking With Women About Cervical Cancer</b><br><br><b>Topics:</b> Background<br>Clients rights<br>Confidentiality  | Present an illustrated lecture using the presentation graphics for this chapter and a flipchart to orient participants to general counseling issues.  | Presentation graphics for Chapter 4<br>Flipchart<br>Markers                         |

Table 10: Day 1 outline of MoHSW VIA and Cryotherapy Training (Continues Next Page)

| CERVICAL CANCER PREVENTION CLINICAL SKILLS TRAINING FOR HEALTHCARE PROVIDERS IN TANZANIA<br>MODEL COURSE OUTLINE (6 days, 12 sessions) |   |  |   |
|--|---|--|---|
| TIME   | TOPICS/ACTIVITIES   | TRAINING/LEARNING METHODS  | RESOURCES/MATERIALS   |
|  | Privacy<br>Who should talk with the woman<br>Being a good counselor   |  |   |
| 75 minutes   | <b>Demonstration:</b><br>Counseling for VIA<br><br>VIA on an anatomic model<br><br>Cryotherapy on an anatomic model | The clinical trainer will review the learning guides and checklist for each of the skills before demonstrating the skill.<br><br>Ensure that each participant has a copy of the presentation.<br><br>Demonstrate the skills once the learning guides are reviewed.<br><br>Remember the focus is the demonstration of the skills. | ZOE pelvic model and instruments<br>VIA equipment<br>Cryotherapy equipment<br>Cervical model (sausage)<br><br><b>Handbook:</b> Learning Guide for VIA Clinical Skills<br>Learning Guide for Cryotherapy Clinical Skills |

Table 10: Day 1 outline of MoHSW VIA and Cryotherapy Training

# Appendix C – VIA and Cryotherapy Training for Health Care Providers: Overview (MoHSW, 2014)



## Cervical Cancer Prevention (CECAP) and the Single Visit Approach (SVA)

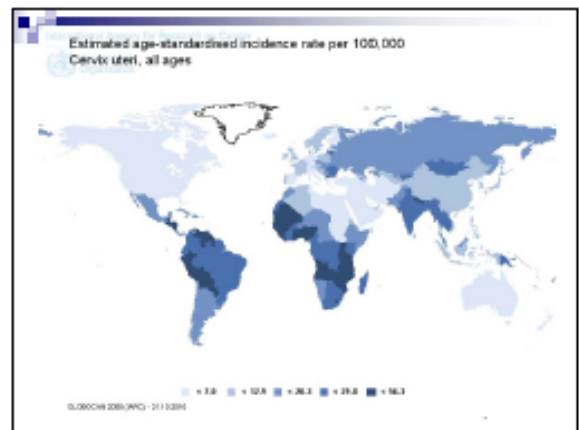
Overview:  
HPV, Pathophysiology, Screening and Treatment

### Learning Objectives

- Describe the magnitude of the problem
- Outline risk factors for developing cervical cancer
- Describe basic pathophysiology of cervical cancer
- Describe prevention methods, including visualization with acetic acid (VIA) and the single-visit approach (SVA)

### Inequitable Distribution & Outcome of Cervical Cancer

- Each year, nearly 500,000 new cases and 275, 000 deaths
- 80-85% occur in developing countries
- Leading cause of cancer mortality among women in Tanzania



### Magnitude of the Problem - Tanzania

| Country/Region | Incidence Rate (per 100,000) | Mortality Rate (per 100,000) |
|----------------|------------------------------|------------------------------|
| Tanzania       | 50.9                         | 37.5                         |
| Eastern Africa | 34.5                         | 26.3                         |
| Africa         | 26.2                         | 17.6                         |

SOURCE: GLOBOCAN 2008

### Inequitable Distribution & Outcome of Cervical Cancer - Tanzania

- Incidence of 50.9 cases per 100,000 women is *among the highest in the world.*
- Incidence is *50% higher* than Eastern Africa average and *6.5 - 9x higher* than Europe and North America.

## What Causes Cervical Cancer?

Human Papillomavirus - HPV

7

## What is HPV?

- Human Papillomavirus - HPV
- HPV recognized many years ago as the cause of warts
- Now known to be linked to cervical cancer

8

## HPV and Cervical Cancer

- Nearly all cervical cancers (99.7%) linked to infection with HPV
- HPV is sexually transmitted
- 30-80% lifetime risk of acquiring HPV - most infections are transient
- Only HPV that persists can lead to cancer

9

## HPV and Cervical Cancer (cont.)

- On cervix, HPV tends to infect cells in the squamo-columnar junction (SCJ) or transformation zone (TZ)
- Progression to cancer usually takes 10 years or more
- Precancerous stage provides opportunity to prevent progression - effective treatment

10

## Normal, Healthy Appearing Cervix



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## HPV and Cervical Cancer (cont.)

- Lesions can be treated, but no cure for HPV
- Once infected, possibly infected for life
- Active infection is usually transient
  - Immune system suppresses infection
- But it is not possible to predict when the virus will become active again

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### HPV and Cervical Cancer (cont.)

- 15-20 of the nearly 100 HPV types are oncogenic
- 16, 18, 31, 35, 39, 45, and 59 most often detected oncogenic types
- 16 and 18 account for 70% of cases globally
- Tests for presence of HPV DNA exist, but not usually available in developing countries

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### Risk Factors for Developing Cervical Cancer

All women - but increased risk

- Early sexual intercourse
- Multiple sexual partners
- Exposure to sexually transmitted infections (STIs)
- Smoking
- HIV (or other immunosuppression)
- Mother or sister with history of cervical cancer

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### HIV/AIDS, HPV Infection, and Cervical Cancer

- 39.5 million people living with HIV/AIDS in 2006; almost half are women
- Heterosexual contact main mode of transmission in new cases
- In HIV-infected women:
  - HPV detected more frequently, resolves more slowly
  - HPV-associated diseases more difficult to treat
  - Progression of precancer accelerated

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### Natural History of Cervical Cancer

- Persistent HPV infection
- HPV infection causes precancerous changes
  - CIN 1, 2, 3 or mild, moderate, severe dysplasia
- Precancerous changes progress to cancer
  - Most precancerous lesions spontaneously regress
  - Usually takes 10 years or more to progress to cancer

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### Cervical Cancer *Is* Preventable

- Primary Prevention - prevent HPV infection
- Secondary Prevention - treat precancerous lesions
  - Cervical cancer is almost 100% preventable - but, must detect and treat precancerous lesions

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### Primary Prevention

- Abstinence, delayed sexual activity
- Condoms
- Healthy living
- Vaccine

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## Primary Prevention

- Vaccine: Quadrivalent and Bivalent (16 and 18)
  - Near 100% effective at preventing clinical disease (at 3-5 years)
  - Cost, logistical issues
- Prevention must therefore focus on changing sexual practices and other behaviors that increase risk of infection
- Risk reduction counseling should be incorporated at all levels of health care system

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## Secondary Prevention

- Screening test must be effective at *identifying* women with easily treatable precancerous lesions
- Health care workers must be able to *treat* these precancerous lesions safely and effectively
- Must *link* screening with treatment
- Must be *feasible and acceptable* in local setting

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## The Need for Screening



Normal

Cancer

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## The Need for Screening (cont.)

- No signs or symptoms at precancerous (easily treatable) stage
- Signs and symptoms only occur at late stage of cancer

22

## VIA: An Alternative Approach

- Visual inspection with acetic acid (VIA)
  - An evidence-based alternative approach
  - Safe, effective, feasible, highly acceptable, and sustainable in low-resource settings
  - Promotes linkage of screening with treatment

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## How is VIA performed?

- Clean cervix with 3-5% acetic acid solution (white vinegar)
- Wait one minute - visualize cervix with unaided eye
- Abnormal tissue temporarily appears white
- *Immediate* results

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### Categories for VIA tests results



Negative

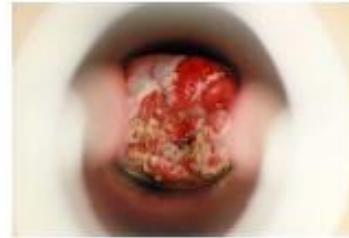


Positive

Photo source: JPHIEGO

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### Categories for VIA test results



Suspicious for Cancer

Photo source: JPHIEGO

26

### VIA vs. Pap Smear

- VIA has sensitivity to detect precancerous lesions comparable to or greater than pap smear
- VIA provides immediate results
- VIA allows immediate treatment, or referral if needed
- Pap smear leads to delayed/unreported results and required treatment not being performed

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### SINGLE VISIT APPROACH: STEPS

- 1 Counseling
- 2 Speculum Exam to see Cervix
- 3 Apply 3-5 % Acetic Acid to Cervix
- 4 Inspect Cervix for acetowhite lesions
- 5 Discuss results with the woman. Offer treatment option if positive



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### SINGLE VISIT APPROACH: STEPS

- 6 Speculum exam to re-view cervix
- 7 Apply Cryoprobe and freeze for 3 minutes
- 8 Defrost for 5 minutes
- 9 Re-freeze for 3 minutes
- 10 Post treatment and followup instructions



Cryotherapy  
Before and After



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### CRYOTHERAPY

- Ablative therapy for cervical lesions
- Freezing process that results in rapid expansion of fluid
- Freezing accomplished through special probes using carbon dioxide or nitrous oxide gas, or liquid nitrogen

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## CRYOTHERAPY

### Effectiveness

- Overall cure rate for CIN - 89.5% (86-95%)
- Higher cure rates for CIN 1-2
  - CIN 1 (91-100%)
  - CIN 2 (75-96%)
  - CIN 3 (71-92%)

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## CRYOTHERAPY

### Safety

- Bleeding - << 1% (1-5% with LEEP)
- Local infections - 1-3%
- PID - < 1% (same as LEEP)
- Long-term sequelae (stenosis, negative impact on fertility, obstetrical outcomes) not evident from literature

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## CRYOTHERAPY

### Acceptability

- > 98% satisfied in large study (Thailand)
- Discharge (thick or watery; clear, white, or pink-tinged; may have slight odor) can be heavy and last up to 4-6 weeks
- Mild to moderate uterine cramping (rarely severe)

23

## Treatment Options: Cryotherapy and LEEP

|                                     | Cryotherapy<br>(CO <sub>2</sub> or NO <sub>2</sub> Ultracure) | LEEP (Electrosurgical unit and power required)                              |
|-------------------------------------|---|---|
| Client<br>- burden single treatment | 85-95% - Effective with small-moderate size lesions           | >90% - Effective for all lesions, (better for large or more severe lesions) |
| Minor side effects                  | 1-3%  | 1-5%  |
| Provider                            | Nurse or Physician  | Physician   |
| Anesthesia                          | No  | Yes (local)   |
| Time obtained                       | No  | Yes   |
| Cost                                | +   | +++   |
| Patient Acceptability               | High  | High  |

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## Advantages and Disadvantages of the Single Visit Approach

- Advantages:
  - Reduces the number of women lost to followup
  - Can occur at lowest level of health care system
- Disadvantages:
  - VIA has considerable false-positive rate
  - Proportion of women who are VIA-positive do not have precancerous lesions

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## Links to Other Reproductive Health Services

- Linking cervical cancer screening and treatment to other services is essential and logical
- These services are often separate, leaving women without access to care and contributing to women's poor health status
- Cervical cancer prevention must be integrated with existing reproductive health care services

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### **Links to Other Reproductive Health Services (cont.)**

- District-based implementation of interventions will ensure that health services are available close to where people live
- Nurse or midwife who works in the community is usually the best person to provide community-based, appropriate, safe and cost-effective care

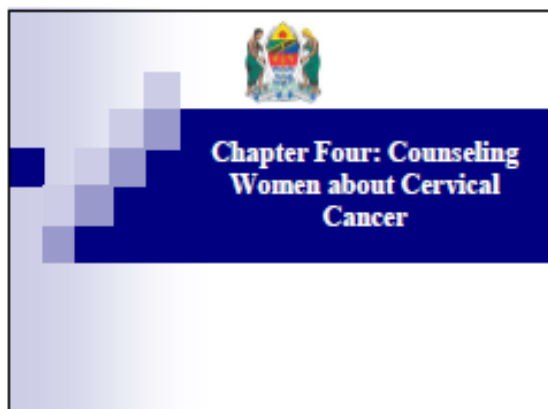
27

### **Summary**

- Cervical cancer causes very high levels of suffering and death in Tanzania
- Cervical cancer is nearly 100% preventable if detected and treated in its precancerous stage
- VIA and SVA offer an excellent opportunity to significantly decrease cervical cancer rates in Tanzania
- To be most effective, these services should be part of a comprehensive strategy and be linked to other reproductive health services

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## Appendix D – VIA and Cryotherapy Training for Health Care Providers: Counseling Patients (MoHSW, 2014)



#### Learning Objectives

- Understand the concept of client rights
- Describe the characteristics of a good counselor
- Explain why cervical cancer screening is important.
- Describe how VIA screens for cervical precancer and cancer, and treatment options
- Describe Cryotherapy, including effectiveness, side effects, risks, and self-care

#### Definition of terms

- What is counseling
- Definitions
  - ROLES
  - REUNDA

#### Background

- Women need accurate information about cervical cancer prevention, testing, and treatment
- Counseling allows women to make an informed decision about being screened and treated (if indicated)

#### Background (cont.)

- Important points to cover in counseling—
  - What and where the cervix is
  - What is cervical cancer and how is it detected
  - What causes cervical cancer and the risk factors for developing it
  - What can be done to prevent cervical cancer
  - A brief description of the test

#### Client Rights—Overview

- Right to information
- Right to discussion and confidentiality
- Right to privacy
- Right to express her views

## Client Rights (cont.)

- **Right to information:**
  - Results of test
  - Time frame for treatment, if any
  - Procedure to be used, as well as risks and benefits
  - Her consent for treatment
  - Need for referral to another facility, if necessary

7

## Client Rights (cont.)

- **Right to discussion:**
  - A woman should feel safe and confident to openly discuss her concerns and condition
  - All procedures should be discussed in advance of performing them

8

## Client Rights (cont.)

- **Right to confidentiality:**
  - All client information should be kept confidential (except in case of emergency)
  - Health care staff not directly involved in the woman's care should not have access to her records
  - The woman's wishes about whether to share information with a spouse/partner should be respected

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## Client Rights (cont.)

- **Right to privacy:**
  - Use a separate counseling area to encourage open communication
  - Draw curtains around treatment area
  - Use drapes to cover woman during examinations and procedures
  - Limit number of people in client care area

10

## Client Rights (cont.)

- **Right to express her views:**
  - Client opinions and suggestions for improvements about services received are important in ensuring quality of care
  - Woman should be regularly interviewed about services received

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## Being a Good Counselor

- **A good counselor:**
  - Encourages maximum participation by woman
  - Is an information giver, facilitator and problem solver
  - Does not prescribe solutions
  - Helps woman to reveal her situation rather than make assumptions
  - Determines her concerns

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### Being a Good Counselor (cont.)

- General advice when counseling:
  - Listen and encourage her to express her concerns
  - Use supportive nonverbal communication
  - Answer her questions directly
  - Keep message simple
  - Use words woman will understand
  - Give written information (if available and appropriate)
  - Ask her to repeat back key points

10

### Being a Good Counselor (cont.)

- Counseling is an ongoing process:
  - Before VIA
  - During VIA
  - After VIA
  - Before cryotherapy
  - During cryotherapy
  - After cryotherapy

10

### Counseling prior to VIA Testing

- Woman interested in getting the VIA test should be given information about:
  - Nature of cervical cancer and consequences of HPV infection
  - Risk factors for the disease
  - Role and importance of VIA testing
  - Consequence of not being tested
  - Treatment options if the VIA test is abnormal

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### Counseling prior to Cryotherapy

- All women have a right to decide freely:
  - Explain in detail: procedure, risks and benefits
  - Encourage woman to ask questions
  - Ask woman if she gives consent for treatment

11

### Counseling prior to Cryotherapy (cont.)

- Expected side effects of cryotherapy:
  - Cramping
  - Vaginal discharge (profuse, watery)
  - Spotting/light bleeding

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### Counseling following Cryotherapy

- Self-care at home
- Conditions that might require coming to clinic:
  - Fever for more than 2 days
  - Severe lower abdominal pain
  - Bleeding heavier than heaviest days of menstrual bleeding
  - Bleeding with clots

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### **Counseling following Cryotherapy (cont.)**

- Abstaining from sex for 4 weeks, plus a 2-month supply of condoms, if needed
- When she should return for next visit

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### **Summary**

- Client rights are an important part of CECAP services
- Being a good counselor allows women to make an informed decision
- Counseling occurs before, during, and following any procedure

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## Appendix E – Bugando Medical Center – Cervical Cancer Treatment Methods slides

### Cervical Cancer screening methods

#### Objectives:

- Principles of screening methods
- Cervical cancer screening methods – strength and limitations
- Appropriate screening method for low resource setting

#### WHAT MAKES A GOOD SCREENING METHOD

1. Accurate
2. Reproducible
3. Inexpensive
4. Easy to perform and easy to follow up
5. Acceptable
6. Safe

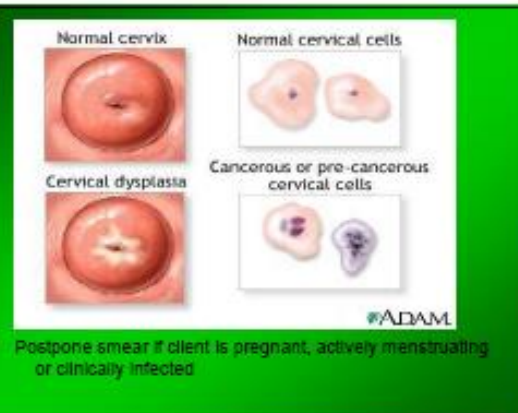
#### Screening methods

- **CYTOLOGY:**  
Pap smear and liquid base
- **HPV DNA TEST**
- **VISUAL INSPECTION**  
with acetic acid (VIA) or with Lugol's iodine (VILI)

#### CONVENTIONAL PAP SMEAR

##### PROCEDURE

- Take sample of cervical cells from the transformation zone (wooden spatula or brush)
- Smear onto a glass slide
- Fixative spray
- Stain, examine under microscope



## STRENGTHS

- The Pap smear takes less than 5mins to perform, is not painful, and can be done in an outpatient examination room
- This test has high specificity
- The Pap smear method has reduced cancer mortality in developed countries

## LIMITATIONS (Pap smear)

- -results not immediately available.
- -requires laboratory quality assurance.
- -has moderate sensitivity.

## LIQUID-BASED CYTOLOGY

Introduced in the mid-1990s and is used in high resource settings.

### Procedure:

Instead of smearing cervical cells on a slide they are transferred from the brush to a preservative solution. The specimen is sent to the lab where the slide is prepared.

## STRENGTHS (Liquid based cytology)

- Fewer unsatisfactory specimens.
- Higher sensitivity than Pap smear.
- Samples can be used for HPV testing.

## LIMITATIONS (Liquid based cytology)

- Results not immediately available.
- More expensive than conventional cytology.
- Laboratory staff need to be specially trained.

## HPV DNA-BASED SCREENING METHODS

### • PROCEDURE

This is based on the detection of high-risk HPV DNA in vaginal or cervical smears collected using a swab or brush. The specimen is collected into a small container with a preservative solution.



## LIMITATIONS

- Results are not immediately available
- High cost
- Complex lab requirements and specimen transport.
- Low specificity in young women leading to over treatment.

## STRENGTHS

- Collection of specimen is simple.
- Automated processing.
- Can be combined with Pap smear to increase sensitivity.
- High specificity in women over age 30.

## VISUAL INSPECTION (VIA, VILI)

### PROCEDURE

A trained provider examines the cervix after staining it with acetic acid and with Lugol's iodine. Abnormalities are identified by inspection of the cervix without magnification.



- Acetic acid turns abnormal cervical tissue white [acetowhite]



- Lugol's iodine makes abnormal tissue appear mustard or saffron-yellow in colour and squamous epithelium stains brown or black.



## STRENGTHS (VIA, VILI)

- Relatively simple and inexpensive
- Results available immediately
- Can be performed by a wide range of personnel after short training
- Low level of infrastructure required

## LIMITATIONS (VIA, VILI)

- Lower specificity resulting in high referral rate and over treatment.
- Lack of standardization.
- There is no permanent record of the test that can be reviewed later.

## Choice of screening test

Decision based on:

- organization of the health system
- funds available
- number and type of health workers
- availability of laboratory services and transport
- availability and cost of the various screening tests

## Closing remarks

- The most extensive and long-term experience in cervical cancer screening is with cytology
- Cytology based screening programmes have reduced cervical cancer incidence and mortality by as much as 80% in Canada, the USA and Nordic countries.
- Because of the problems of implementing quality cytology-based screening in low resource settings, alternative methods, such as visual inspection have been developed.

- These methods have shown promise in controlled research settings and are most appropriate for our settings.
- HPV-based tests are now also commercially available but have above mentioned disadvantages

**THANK  
YOU**

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