



Short Communication

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## Cervical Cancer Screening in the Developing World and the Challenge of Caring for Women with Cancer

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### Abstract

Cervical cancer is one of the leading causes of cancer death for women in low and middle income countries (LMICs). Low cost screening programs have been developed. Currently cancer treatment services are inadequate and the majority of women diagnosed with cervical cancer will die from their cancer in LMICs. Current challenges to cancer care are reviewed.

### Keywords

Cervical cancer; Screening; Women

Low-cost cervical cancer screening is a well-established goal in low and middle-income countries (LMICs). Since the mid 1990s, "see and treat" programs have developed worldwide with a focus on countries in Latin America, South and Central Asia, India and Africa [1]. While statistics are sparse because of a lack of a medical record infrastructure, limited national data collection and poor patient follow-up, data from the World Health Organization suggests that cervical cancer tops the list in both cancer incidence and death in LMICs. The most recent cancer statistics from 2008 show that the incidence of cervical cancer in South Central Asia and Africa is 23 to 30 per 100,000 and has a mortality incidence rate of 52% with 275,000 deaths reported in these countries (Table 1) [2]. In contrast, the United States (US), a country of 320 million people, had 12,357 annual cases of cervical cancer (6.7 per 100,000) and 3,909 cervical cancer-related deaths [3]. The difference is thought to be due to both a rigorous cervical cancer-screening program in the US coupled with a well-established infrastructure for cancer care.

Low cost screening programs called "Visual inspection with Acetic Acid" (VIA) have been successful and well validated. See and treat modalities such as cryotherapy and loop electrosurgical excision procedures (LEEP) are cheap and readily available. Although efforts have been made to improve cervical cancer screening services, it is still not yet well established in some LMICs. However, all that is required are speculums; dilute vinegar to swab the cervix, a safe place for private examinations, and a cryotherapy machine to freeze visible precancerous lesions [1]. The nursing and doctor shortage crisis

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Table 1: Cervical Cancer Incidence and Mortality Worldwide in 2008: Summary [2].

Estimated numbers (thousands)	Cases	Deaths
World	530	275
More developed regions	76	32
Less developed regions	453	242
WHO Africa region (AFRO)	75	50
WHO Americas region (PAHO)	80	36
WHO East Mediterranean region (EMRO)	18	11
WHO Europe region (EURO)	61	28
WHO South-East Asia region (SEARO)	188	102
WHO Western Pacific region (WPRO)	105	46
IARC membership (22 countries)	193	96
United States of America	11	3
China	75	33
India	134	72

in LMICs can be overcome by training community health workers to perform pelvic examinations and identify lesions. But what do health workers in a country with limited medical resources and little-to-no infrastructure for cancer care do when women with cervical cancers are identified through their screening program? Cancer care is expensive. The cost of a hysterectomy, the operating room and anesthesia, exclusive of other medication and lab testing, may average ten thousand US dollars (USD) [4]. Radiation therapy is not readily available and is equally costly, ranging from 10,000 to 50,000 USD [5]. These medical costs do not account for the hidden, societal costs of training oncologists, developing nursing support and building hospitals. In the developing world, healthcare insurance is nonexistent. Patients and their families have the financial responsibility of paying for surgical gloves, suture material, medications and even the hospital bed, in addition to the actual cost of treatment.

Most women in LMICs are diagnosed with surgically unresectable stage three and four cervical cancers. While the current standard of care is a combination of intensive radiation with concurrent chemotherapy, many of these countries have limited radiation facilities. For instance, in Uganda there is one radiation therapy machine in Kampala and six-month waits for treatment are common. For women who must leave their families and their child care responsibilities to travel up to 200 miles to Kampala for a six-week course of daily radiation treatments, their chance of receiving effective therapy is unlikely. There are also the uncounted societal costs of losing women, most of whom are mothers, to cervical cancer. Mothers are important for the survival of young children in LMICs. In one large survey from Bangladesh, the cumulative probability of survival to age 10 years was 24% in children whose mothers died before their tenth birthday, compared with 89% in those whose mothers remained alive [6].

Of the 191 out of the 194 countries in the world for which there is data, 130 countries (68%) have total health expenditures per capita per year of less than 1,000 USD and in 33 (17%), it is less than 100 USD per year [7]. In these countries, this expense averages 5 percent of the gross domestic product. In contrast, the United States spends 8,233 USD per capita per year which is 17.6% of GDP. The practical outcome of these figures is that Ministries of Health, when allocating

healthcare funds, and local health care workers, when seeing individual patients, have to make tough choices about where their resources will go.

There is a growing acknowledgement of the need to address cervical cancer as part of the global health agenda [8]. The call for a worldwide policy on both cervical and breast cancer reflects new data that these cancer-related deaths now outnumber pregnancy-related deaths in the LMICs of Asia, Africa, and Latin America [9]. The management of cervical cancer as part of an integrated health systems approach continues to focus on treatment of preinvasive disease [10]. However, the challenges to cervical cancer treatment have been recently examined. A 2013 survey of healthcare professionals from Uganda identified four major barriers to cervical cancer care: 1) lack of awareness; 2) inadequate knowledge of healthcare professionals 3) barriers of both access (long distances and lack of transport to facilities) and resources (few gynecologists, pathologists, palliative care services, pain management); and 4) lack of designated cancer centers [11]. Proposed remedies by respondents included community education, the establishment of regional cancer centers, professional training and development of healthcare providers, and the establishment of both radiotherapy services and pathology services. Cancer care education through both internet-based programs and local surgical teaching in cancer surgery has been the main current effort to improve cancer care in LMICs [12,13].

There is a growing interest in the US in global health that springs from our profound sense of global connectedness and our sense of responsibility to share our knowledge and resources. There have been many successful programs in LMICs for cervical cancer screening. Yet we face a moral dilemma of discovering advanced cancers through these screening programs without having anything to offer the women that we identify. One choice is to only treat women with easily treatable preinvasive and early invasive cancers and ignore the large majority with late stage disease. This option is financially expedient and focuses on the prevention of advanced cancer in the future. However, as global health workers providing care to women, we need to develop low-cost infrastructure for cancer care concurrently with cervical cancer screening. To do this part of our funds can be allocated towards teaching local healthcare workers the surgical skills necessary to treat cervical cancer. In addition, a portion of current cervical cancer screening funding should focus on buying and maintaining radiation therapy facilities. Our calling is to confront these tough ethical choices through education and multidisciplinary collaboration and to create programs that not only address prevention, but also cancer care and care at the end of life for those afflicted with cervical cancer.

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