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Cervical Cancer and Its Impact on the Burden of Disease

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Executive Summary

Although cervical cancer is no longer a major issue in developed countries, it is still a serious concern in developing countries such as Tanzania, where the prevalence continues to rise. Cervical cancer causes more deaths among Tanzanian women than any other form of cancer. This trend, which is also observed in other developing countries, is not occurring in developed countries; this difference suggests that it is feasible to reduce the incidence of cervical cancer in Tanzania.

When considering the issue of cervical cancer in Tanzania, it is important to understand the underlying causes and the severe negative outcomes. Certain risk factors make women more likely to develop the disease. These include multiparity (having multiple births) and sexually transmitted infections such as HIV and human papilloma virus (HPV), which increase the sensitivity and regeneration of cervical cells.

If not treated, cervical cancer is fatal. The consequences of losing a mother are devastating for a family, but even when the disease is not fatal, the consequences are severe. Surgical and radiological treatment of cervical cancer often leads to physical, psychological, and sexual issues, as well as infertility. These debilitating outcomes warrant policies to reduce the prevalence of cervical cancer in Tanzania.

Once the cells of the cervix become malignant, it is important to identify the malignancy early to prevent mortality and reduce morbidity. Because cervical cancer is asymptomatic until its advanced stages, the only way to diagnose cervical cancer early is by screening women regularly. In developed countries, the Pap smear test is a common and widespread method that is effective in identifying malignancy; however, it is an expensive option that is not practical in low-income countries. The World Health Organization (WHO) has recently attempted to promote a cheap and effective screening option called visual inspection by acetic acid, or VIA, but the method is not yet in widespread use.

Stakeholders such as the WHO and the International Agency for Research on Cancer (IARC) have been at the forefront of cervical cancer prevention and treatment in Tanzania and other developing countries, but more aid is needed. Other stakeholders such as the media, patients, women at risk, and health systems and hospitals are important to consider, but they have little influence. By providing more funding and resources for education and a VIA screening program, the Tanzanian government could inexpensively decrease cervical cancer while simultaneously improving maternal health, a Millennium Development Goal that is not currently on track to be accomplished by Tanzania. A cost-effective program would make Tanzania a pioneer among developing countries, and could even catch the attention of developed countries and further accelerate Tanzania's climb out of poverty.

Policy options should aim to combat the factors that contribute to the high incidence of cervical cancer in Tanzania. Young women and the general public seem poorly informed about the risks and severe consequences of cervical cancer. Any policy should therefore include efforts to educate these groups. Barriers to extensive Pap smear screening stem mainly from the high cost of such a procedure, so implementing a policy that includes the cheaper VIA test should be considered.

Your assignment is to compel the Ministry of Health of Tanzania to implement a low-cost and effective program that will reduce the negative impact of cervical cancer, keeping in mind the stakeholders in this issue, their available resources, and their interests.

Background

The slow improvement of treatment strategies and technology for disease in Africa has led to an epidemiological transition: the rates of death from acute infections and communicable diseases such as malaria and tuberculosis have decreased. As people are surviving these ailments and living longer, the prevalence and number of deaths from chronic illnesses and cancer are increasing (Robberstad, Hemed, and Norheim 2007). Cervical cancer is a particularly concerning problem among women in Africa, and in developing countries in general. Chirenje et al. (2001) found that cervical cancer is "the most common cancer and the leading cause of death" (p. 127) among female cancer patients. Cervical cancer has several causes and implications that create a heavy burden of disease for the subject and her society.

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Cervical cancer is the most prevalent cancer among women in Tanzania, with an incidence of 40.6 cases per 100,000 women per year. Approximately 7,515 Tanzanian women are diagnosed with cervical cancer annually, and nearly 11 million Tanzanian women of reproductive age are at risk of cervical cancer. The grim threat of cervical cancer is specific to the developing world. Although largely controlled in developed countries thanks to regular screening procedures and recent biomedical breakthroughs, there has been a rise in the incidence of cervical cancer in Tanzania and other East African countries (WHO/ICO HPV Information Centre 2010).

Combating cervical cancer in a population, regardless of how developed the country is, requires people—particularly women—to have a basic understanding of its symptoms. Clinical symptoms of cervical cancer can vary from one patient to another and include abnormal vaginal bleeding between regular menstrual periods, after sexual intercourse, or during a pelvic exam; foul-smelling discharge; pelvic pain; and pain while urinating (Fayed 2009). What makes cervical cancer so deadly is that clinical symptoms are usually not seen until the late stages of the disease. Precancerous lesions usually last for about 10 years before cancer symptoms develop (Monga 2006).

For a visual representation of the causes and impacts of cervical cancer, see Figure 1 below.

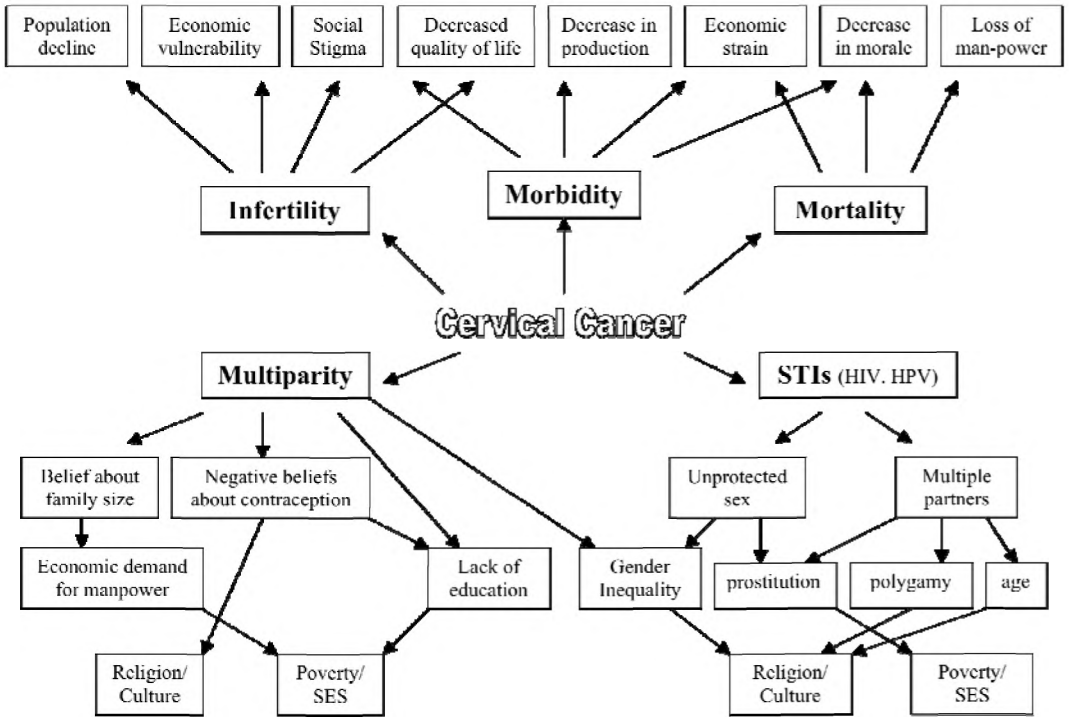

Figure 1: Problem Tree

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Indirect Causes of Cervical Cancer

Cervical cancer has been called a silent killer. Because the disease is asymptomatic until its advanced stages, women are often unaware of their condition until it is too late to treat the disease effectively. If the population does not understand the disease and its risk factors, high rates of mortality will persist. Knowledge of cervical cancer is still low among females in Tanzania. In a survey conducted at a Secondary School in Tanzania, only 9.8 percent of participating female students knew about cervical cancer (Secondary school survey, interviewed June 15, 2010).

A study done in Mexico City by Villafuerte et al. (2007) found that most women thought they did not need a Pap smear test if they had no clinical symptoms. Another study found that some women thought they were not at risk of contracting cervical cancer and thus did not seek screening services despite the fact that they had several risk factors (Mutyaba, Mmiro, and Weiderpass 2006). Considering these women's lack of information, their attitude toward the disease, and the time frame for symptom development, they would be likely to seek treatment very late. A study conducted at Muhimbili National Hospital in Tanzania found that most women reported to the hospital at a late stage of the disease. This situation was attributed to their lack of knowledge of the basic symptoms of cervical cancer (Kidanto, Kiwelo, and Moshiro 2002). Also, a lack of understanding about the asymptomatic nature of cervical cancer might lead women to report to the hospital at a late stage.

Immediate Risk Factors of Cervical Cancer

Development of cervical cancer is attributable to a series of cofactors linked to both biomedical and sociocultural issues. Multiparity, or having many births, and sexually transmitted infections (STIs), particularly HIV and HPV, can all work either together or independently to make women vulnerable cervical cancer.

Multiparity and Biological Linkages to Cervical Cancer. Multiparity increases a woman's risk of cervical cancer because the birthing process is taxing on the delicate epithelium of the woman's internal reproductive system. The trauma to the cervix during delivery causes the cervix to regenerate cells. In most cases the cells are regenerated without defects, but each additional pregnancy increases the likelihood that the cells of the cervical epithelium will form abnormally, potentially making the woman more vulnerable to cervical cancer (Monga 2006). A study by Bayo et al. (2002) on risk factors for invasive cervical cancer in Mali found that women with 10 or more children had a fivefold increase in risk for developing cervical cancer compared with women who bore 5 or fewer children.

Sociocultural Factors in Multiparity. The 2004–05 Tanzania Demographic and Health Survey (TDHS) collected information on the childbearing desires of Tanzanian women. The total fertility rate is 5.7 children. Unmarried women on average reported a desire for 5.0 children whereas married women reported a desire for 5.4 children (National Bureau of Statistics and ORC Macro 2005).

There is some evidence to suggest that the more children a man has fathered, the more children he desires. The TDHS found that married men with 6 children desired 8.6 children (National Bureau of Statistics and ORC Macro 2005). These statistics reflect an overall cultural and societal value on large families with many children.

The TDHS also found that as education and wealth increase, the ideal number of children decreases. Whereas women without any education desire 6.2 children, women with some secondary education prefer 3.6 children. Similar statistics were found for men. Men without any education desire 7.9 children on average whereas men with at least some secondary education desire 3.8 children (National Bureau of Statistics and ORC Macro 2005). Lack of education is thus correlated with larger ideal family size.

Similar differences are found when comparing ideal family size for men and women from rural versus urban areas. Women from rural Tanzania desire on average 1.5 times more children than women from urban areas. For urban men, the average desired family size is 3.9 children whereas men in rural areas desire 5.8 children (National Bureau of Statistics and ORC Macro 2005). This disparity in desired family size may be attributable to a need for human capital in families because children are often sources of income and labor, particularly in developing countries. Parents may elect to have a high number of offspring for the potential increase in income and labor (Schultz 2007). This preference

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may be greater in rural areas, where income is largely dependent on farming.

Views on contraceptive use may also play a role in determining parity. Knowledge of contraceptives is high in Tanzania. Of all women who have ever had sex, more than 96 percent knew at least one effective method of contraception, and 97.3 percent of all men in Tanzania who have ever had sex knew at least one effective method of contraception. Knowledge of effective contraception does not, however, guarantee effective use of contraceptive methods. Religion may be one determining factor. For instance, Zanzibar, which is heavily populated by religious Muslims, has a far lower rate of contraceptive use (15 percent versus 27 percent) than Tanzanians on the mainland (National Bureau of Statistics and ORC Macro 2005).

Alternatively, medical knowledge can discourage contraceptive use. Some medical literature reports contraception as a risk factor for cervical cancer (Villafuerte et al. 2007).

All of these factors for multiparity are intricately tied to gender inequality. The more status and discretion a woman has within her family, the more control she has in determining family size. The TDHS reports:

> The ability of women to effectively make decisions has important implications on their fertility preferences and practice of family planning....The mean ideal number of children is found to decrease with the increasing number of decisions in which a woman has a final say. Similarly, the number of children a woman wants increases with the number of reasons she believes that wife-beating is justified. Thus the data suggest that the more empowered the woman, the fewer children she desires (National Bureau of Statistics and ORC Macro 2005, 120).

Sexually Transmitted Infections and Biological Linkages to Cervical Cancer. HPV, which is endemic in Africa, is causally linked to cervical cancer. HPV is said to be a "necessary cause" in development of cervical cancer, though the infection alone without exposure to other risk factors is not sufficient to cause the disease (WHO/ICO HPV Information Centre 2010).

In addition, according to the National Cancer Institute (2008):

> HPV is a group of viruses that can infect the cervix. An HPV infection that doesn't go away can cause cervical cancer in some women. HPV is the cause of nearly all cervical cancers....Some types of HPV can cause changes to cells in the cervix. If these changes are found early, cervical cancer can be prevented by removing or killing the changed cells before they can become cancer cells (p. 5).

A combination of STIs can increase the risk of cervical cancer. Several studies have demonstrated the association of HIV/AIDS and HPV. A study by Maiman et al. (1998) found statistically significant higher rates of cervical intraepithelial neoplasia in women who were HIV-positive. Cervical intraepithelial neoplasia refers to the abnormal growth of cervical cells, which may indicate malignancy. In addition, researchers have found that HIV-positive women are more at risk than HIV-negative women for persistent HPV infections, which are causally linked to the development of cervical cancer. Temmerman et al. (1999) looked at more than 500 patients with HIV at a Kenyan family planning clinic. They found that an HIV-positive woman's risk of a squamous intraepithelial lesion—another type of abnormal cervical cell growth found in cervical cancer patients—was five times higher than that of an HIV-negative woman.

Sociocultural Factors in Sexually Transmitted Infections. The biological vulnerability of women with STIs to cervical cancer is only part of the larger picture of the prevalence of cervical cancer in Tanzania. Adding to women's inherent risk are sociocultural factors that may increase the likelihood of contracting an STI and consequently cervical cancer. Participating in unprotected sex and having sexual relations with multiple partners significantly increase the likelihood of contracting an STI.

Unprotected sex—despite high rates of knowledge about protection—places women at great risk for contracting an STI and consequently developing cervical cancer. The 2004–05 TDHS reports that only 22.5 percent of all women of reproductive age in Tanzania use contraception, though the rate for unmarried women of reproductive age is significantly

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higher—about 40 percent. One commonly cited reason for participating in unprotected sex is a lack of access to contraceptives. However, despite the low rate of use of contraceptives among women in Tanzania, it appears that many—if not all—women have a wide variety of choice about where to get contraceptives and methods of protection. The TDHS reports, "Seventy-seven percent of male condom users report the private sector as their source, specifically pharmacies (36 percent) and shops or kiosks (37 percent)" (National Bureau of Statistics and ORC Macro 2005, 81). In addition, male condoms can be obtained from any number of government/parastatal health centers, faith-based organizations, or private medical centers. In fact, more than 20 percent of male condoms are obtained from government or parastatal health centers (National Bureau of Statistics and ORC Macro 2005).

According to the TDHS, gender inequality is a strong predictor of whether or not protection is used. It states, "A woman who feels that she is unable to control her life may be less likely to feel she can make and carry out decisions about her fertility" (National Bureau of Statistics and ORC Macro 2005, 77). The fewer reasons a woman gives for refusing sex with her husband, the fewer decisions that the woman has a say in. The more reasons the woman says wife-beating is justified, the less likely she is to report that the man used a condom during sexual encounters (National Bureau of Statistics and ORC Macro 2005). Also, women may be unable to negotiate condom use because of the perception of such requests. Ackermann and de Klerk (2002) find that although women often have favorable attitudes toward condom use, the suggestion to use a condom is often associated with being a prostitute or is insulting to their partner because it questions his faithfulness.

The cultural context may make women feel that they are responsible for satisfying the man's sexual needs. In Tanzania the Zaramo (and a few other tribes as well) are famous for their special *unyago* ritual for young women who are about to be married. This ritual may last from one day up to three months. It involves educating the woman on sex, womanhood, hygiene and makeup, and how to treat the man and his family (*History of unyago*, n.d.). Such rituals can lead women to believe that they are obligated to satisfy a man, even if it means sacrificing their own health.

In addition, women with multiple partners—through either direct or indirect contact—are at greater risk for STIs. Although women may willingly have multiple sexual partners, research indicates that women are often involuntary participants in larger rings of sexual practice. For instance, a woman married to a polygamous man is indirectly exposed to any infections in her husband's other wives. A study conducted in Mali (Bayo et al. 2002) found that polygamy increased women's risk of cervical cancer twofold, and that risk increased with each additional wife. Ackermann and de Klerk (2002) write:

> Traditionally, a man's need for sex and the right to more than one partner have been sanctioned/accepted in many African cultures. However, urbanization and modernization have changed the organization of sexual partnerships, and what has emerged is a sexual structure allowing mistresses and love affairs (p. 169).

Because of poverty or other sociocultural factors, some women may be forced into prostitution (Ackermann and de Klerk 2002). Prostitution and other similar activities and occupations place women at risk not only because of the quantity of partners, but also because they frequently lack the bargaining power to demand safe-sex practices.

Early Age of First Sexual Intercourse. The age of first sexual activity has also been a subject of debate in Tanzania. A study in Mwanza primary schools found that about 68 percent of female students were already sexually active. Most of these students were forced by adults, either relatives or teachers (Matasha et al. 1998). In Mwanza 50 percent of females reported having had first sex before age 16 (Munguti et al. 1997).

One cause of early sexual activity is the need for financial support. In Tanzania the concept of "sugar daddies" has been a point of discussion. Schoolgirls are lured into sexual activity by adults, and in return they receive economic support (Silberschmidt and Rasch 2001).

Culture is a major contributor to the early age of first intercourse. The district commissioner of Newala stated in a speech that pregnancies in primary schools have been one of the greatest challenges in her district and that cultural practices are the main

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cause (Mkulo 2010). The *unyago* ritual (also known to be practiced by the Newala people), though specifically for women who are about to be married, is also performed with young girls in primary school, who then begin to experiment with their new knowledge.

Studies have concluded that early of age of first intercourse is a significant risk factor in STIs, including HPV. The delicacy of the vaginal tract during pre-adolescence and adolescence can cause colonization of persistent HPV infections. And the earlier one begins sexual activity, the more one is exposed to these disease agents (Greenberg, Magder, and Aral 1992). In addition, it may be that hormonal changes during adolescence can lead existing HPV to cause the newly formed epithelium to become malignant (Louie et al. 2009).

Impact of Cervical Cancer on Women and Society

Mortality. If cervical cancer is in its advanced stages before the patient receives any treatment, it is often fatal. As a result, cervical cancer causes more deaths annually than any other cancer among women in Tanzania, with an annual mortality rate of 32.5 per 100,000 women of all ages. Breast cancer and Kaposi's sarcoma are a distant second and third at 8.8 and 6.3 deaths per 100,000 women (WHO/ICO HPV Information Centre 2010). The high prevalence of cervical cancer is an important issue that needs to be resolved because it has serious and long-lasting effects on its victims and on society. Of the 200 patients sampled at the Kilimanjaro Christian Medical Center (KCMC) out of 374 cervical cancer patients, 30 percent were discharged for palliative care and 17 percent died in the hospital (Mosha et al. 2009). Women play an integral role in child rearing, cooking, and other household activities that are essential for a family to function efficiently. When the mother of a family is lost, a great burden is placed on the rest of the family. The children of the family now must take on the myriad responsibilities that the mother once completed. Furthermore, losing a mother takes a serious emotional toll on all members of the family.

Quality of Life. Even if a woman survives a bout of cervical cancer, she may experience debilitating effects on her quality of life after cancer. Numerous studies have documented the physical, mental, and sexual effects of radiation and surgical treatments on the patient's quality of life years after the procedures (Ashing-Giwa, Lim, and Tang 2010; Bartoces et al. 2009; Vistad, Fossa, and Dahl 2006).

The physical well-being of patients immediately following radiation therapy is known to be poor, and long-term effects are significant but underreported. Frequent urination and diarrhea following radiation therapy are observed as long as two years after treatment. A combination of surgery and radiation therapy resulted in an inability to control urination and defecation in approximately 40 percent of patients (Vistad, Fossa, and Dahl 2006). The immediate effects of radiation therapy, such as nausea and vomiting, are also significant burdens on the physical quality of life.

The physical changes that occur after radiation and surgical treatment of cervical cancer often result in long-lasting psychological issues. The changes in physical appearance (such as weight gain), in relationships, and in self-perception can cause the patient to experience a drastic reduction in self-esteem (Bartoces et al. 2009). Low self-esteem can result in depression, and a review by Vistad, Fossa, and Dahl (2006) noted that 33 percent of those who received radiation therapy or surgery for cervical cancer were depressed 97 weeks after treatment. Bartoces et al. (2009) argue that the psychological problems are more important than the physical problems because of their long-lasting impact and call for psychological follow-up assessments for several years after treatment.

A patient's sex life after cervical cancer treatment suffers because of a culmination of physical and psychological effects. Of the patients who required their ovaries to be removed during surgery, 38 percent experienced vaginal dryness and 33 percent experienced hot flashes, both of which tend to hinder a healthy sexual relationship. These physical side effects can translate into psychological sexual disorders. Dyspareunia, or painful sexual intercourse, is one such disorder. Fifty-five percent of patients who received radiation therapy experienced dyspareunia as long as two years after treatment. Feelings of low self-esteem can also lead a woman to worry about the satisfaction of her partner and make her reluctant to participate in sexual relations. Nearly every subject who underwent radiation or surgery reported a decreased frequency of sexual activity (Vistad, Fossa, and Dahl 2006).

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Infertility. In addition to its impacts on the quality of life, cervical cancer also frequently results in infertility. Infertility is a serious consequence, particularly in a society such as Tanzania's in which childbearing is strongly valued and both mothers and fathers desire many children (National Bureau of Statistics and ORC Macro 2005).

Infertility may cause a woman to be subject to severe social stigma. In societies that place great importance in having children, infertility will be a major limitation to a married couple. It can have massive effects on an infertile person's life, relationships, and social well-being. Andrews, Abbey, and Halman (1991) found that the negative impacts of infertility on quality of life are stronger for the wife than for the husband in a relationship. Women often feel highly responsible for matters of fertility, subjecting themselves to personal pressure, but pressure can also come from outside sources—particularly in-laws. Parents may place significant pressure on their children to have children, at times even forcing the son to have a child outside the marriage. The husband's family is a frequent source of social stigma regarding infertility.

Studies suggest that women are more vulnerable to social stigma than men. Vieira da Cunha et al. (2008) observed that the prevalence of common mental disorders was high among women with infertility. In addition, women who are infertile may be deprived of certain privileges and vulnerable economically. In some societies women who are infertile are denied any privileges when it comes to the husband's wealth since they have no children.

Screening Options

It is possible to avoid the drastic consequences of cervical cancer by screening women regularly. If cervical cancer is caught early, the surgery required is minor and most of the negative side effects of treatment are rare. However, unlike the United States and other developed countries, Tanzania currently has no widespread screening program for cervical cancer.

Perceived Barriers to Screening. Significant research has been done on the barriers to seeking cervical cancer screening and methods for overcoming such obstacles. One obstacle is the notion of going to a doctor when one feels healthy. Some women may have difficulty in convincing their partner to provide funds for them to get screened without a visble illness. Another barrier may be the confusion between cervical cancer screening and STI screening, which is often heavily stigmatized. Negative associations with gynecological care are also prevalent in many developing countries. It may be associated with immense discomfort, loss of female sexuality, and even infertility. Furthermore, there may be significant discomfort with seeing a male gynecologist. In addition, some barriers to seeking service are not unique to cervical cancer screening, such as lack of infrastructure (paved roads and transport, for example) to reach screening clinics and lack of knowledge about clinics (Bingham et al. 2003).

Current Screening Practices. Current budget constraints limit the Tanzanian government's ability to incorporate cervical cancer screening practices into health clinics and hospitals on a large-scale basis. According to the Kilimanjaro District Medical Officer, however, there are plans to distribute a portion of the basket funds of Moshi, Tanzania, to cervical cancer screening programs in the near future as awareness and prevalence continue to rise (District medical officer, interviewed June 17, 2010).

In high-income countries, testing for cervical cancer typically includes a Pap smear. The WHO recommends that a low-income country like Tanzania, however, with limited funds and heavy dependence on foreign donors, use nontraditional methods of screening for cervical cancer. A simple, innovative test called visual inspection with acetic acid (VIA) is recommended because of its accuracy and ease (WHO 2002).

Tanzania is already making great strides in screening as part of a pilot study on the effectiveness of VIA screening. The method, although not as accurate as a Pap test, is noninvasive, simple, and provides an immediate result. If a white area is visible on the cervix after the application of 5 percent acetic acid (vinegar is usually used), the test is positive for cervical cancer (Sankaranarayanan 2003). With financial help and training from the WHO and other organizations, a cervical and breast cancer screening clinic was set up in November 2004, testing up to 20 patients a day, two times a week. Screening is free to women, and demand has grown significantly, prompting the opening of 10 satellite screening clinics (Consulting gynecologist, interviewed June 18, 2010).

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Treatment Options

Once cervical cancer has manifested itself in the patient, there are a variety of treatment options. One common treatment is radiation therapy, which, though expensive, is effective in eradicating advanced cancer cells. Another common procedure for treating advanced cervical cancer is a hysterectomy, in which the entire female reproductive system is removed. If necessary, these treatment options can be combined to increase effectiveness (Vistad, Fossa, and Dahl 2006). However, because of the high cost of treatments for advanced-stage cervical cancer, such as chemotherapy, radiation, and complex surgical procedures, they are available only at major specialized hospitals such as the Ocean Road Institute in Dar es Salaam (Sankaranarayanan 2003).

If the cancer is caught early enough, the malignant cells of the cervix may be small enough to be removed by a minor surgical excision. A procedure called loop electrosurgical excision procedure, or LEEP, is being investigated as a low-cost approach that effectively treats cervical cancer in its early stages (Sankaranarayanan 2003). The procedure is simple enough that with training, doctors and nurses at the district level would be able to perform LEEP.

Conclusion

The high rate of prevalence and the debilitating and mortal consequences of cervical cancer warrant extensive policymaking to reduce the incidence of the disease. Given that the causes of cervical cancer are well known, policies should target these risk factors. The prevalence of cervical cancer in Tanzania is significantly higher than in other countries, particularly developed countries like the United States (WHO/ICO HPV Information Centre 2010). Even if screening and treatment options improve, the impacts of cervical cancer on the quality of life make it necessary to evaluate survivors and make sure they survive comfortably in the years after their bout with cervical cancer (Ashing-Giwa, Lim, and Tang 2010).

Policy Issues

Inadequate Awareness of and Education about Cervical Cancer

Because there is a direct correlation between STIs and cervical cancer, it is important to reduce the prevalence of these infections. One main method of reducing STIs is through education. Our surveys (Secondary school survey, interviewed June 15, 2010) have shown that a majority of students in secondary school are not aware of cervical cancer and its association with STIs. As long as a lack of knowledge and education about cervical cancer exists, its prevalence will not be reduced.

As a result of lack of education as well as social stigma, young women seem apprehensive to seek out reproductive health care (Managers of a local NGO, interviewed June 17, 2010). As a result, they are less likely to catch cervical cancer in its early stages, which is crucial to increase the chance of survival.

Lack of Interest in Preventative Screening

Because the symptoms of cervical cancer are often concealed and difficult to observe until the cancer is in an advanced stage, women must be screened even when they are healthy. But young women are not well educated on the facts surrounding cervical cancer, so they see no need to go to a doctor to be screened for a disease that they do not think they have. As a result, few women in Tanzania and in other developing countries are regularly screened for cervical cancer, and the disease is not diagnosed until it has advanced enough to produce symptoms, at which point it is difficult to treat. According to Mosha et al. (2009), most patients seen at KCMC come at a late stage (56 percent), necessitating a referral rate for radiotherapy of 47 percent, which reflects poor early detection of precancerous stages.

High Cost of Traditional Pap Smear Screening

In the United States it is recommended that women older than age 21 receive an annual Pap smear screening. In developed countries such as the United States, access to Pap smear screening is widespread and common—in fact most women are screened more frequently than recommended—and

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as a result fewer cases of late-stage cervical cancer are presented (Smith et al. 2010). Pap smear screening is expensive. Since the Pap test is a cytology-based screening program, it requires the input of a histopathologist to interpret the results of a screening (Sherris et al. 2009). Although this is not an issue in the United States, in Tanzania there is a limited number of histopathologists and a shortage of funds to conduct cytology-based screening. The Tanzanian government has little free capital and requires funding to cope with a plethora of communicable diseases and other problems; therefore a program to implement regular Pap smear screening would be too expensive.

Stakeholders

Nongovernmental Organizations

Nongovernmental organizations (NGOs) could help significantly reduce the incidence of cervical cancer in Tanzania, and many have made large strides in reducing cervical cancer worldwide. One organization that plays a large role is the Alliance for Cervical Cancer Prevention (ACCP), which is a collaboration of multiple NGOs including EngenderHealth, Partners in Health, and several others. ACCP works with developing countries to create and improve screening and treatment programs, strengthen delivery systems, and heighten awareness and prevention of cervical cancer (ACCP 2003).

World Health Organization

The WHO is an active stakeholder in combating cervical cancer. By publishing papers that detail statistics on HPV and cervical cancer, the WHO has helped expose the burden of the disease and the disparity of prevention and care between developed and developing countries (WHO/ICO HPV Information Center 2010). It also has a major role in sponsoring projects designed to reduce the burden of cervical cancer in developing countries. The WHO, through the Initiative for Vaccine Research, has sponsored several groups that conduct vaccine trials for HPV (WHO 2010).

The International Agency for Research on Cancer (IARC), which is the cancer research department of the WHO, is currently managing a pilot program that aims to determine the effectiveness of the screening method known as VIA. The Ocean Road Cancer Institute, with funding from the WHO, plans to screen 5,000 Tanzanian women aged 25–59 with VIA (Sankaranarayanan 2003).

Ministry of Health

The vision of Tanzanian health policy is "to improve the Health and well being of all Tanzanians, with a focus of those at risk. In order to achieve this vision the health sector will facilitate the provision of equitable, quality and affordable basic health services, which are gender sensitive and sustainable" (United Republic of Tanzania Ministry of Health 2003, 4).

The health sector is a major priority in the Tanzania Growth and Poverty Eradication 2025 Plan, and reproductive health is an area of focus for the Ministry of Health in this plan. Cervical cancer, as a disease of the female reproductive system, is included in the plan (United Republic of Tanzania Ministry of Health 2003). Lack of income, however, has always been a major constraint to developing countries like Tanzania, which face countless other issues that require funding. In the 2001 Abuja Declaration, African Union countries pledged to try to allocate at least 15 percent of their annual budget for the improvement of health care (Economic Commission for Africa 2001). In 2005 Tanzania's Ministry of Health received less than 5 percent of the country's annual budget. In 2010 the Minister of Finance announced that the health sector budget would receive a 25.2 percent increase in funds.

Specific regional and district health administrations are also planning various strategies for dealing with cervical cancer. In the Moshi rural area, for example, a program is being planned to train health professionals in district hospitals and provide screening programs in all health facilities. The administration is facing a serious funding challenge, however, because of a high dependence on donors). Capital from the basket fund has been put toward programs for HIV/AIDS and malaria, but little has been allocated for cervical cancer (District Medical Officer, interviewed June 17, 2010).

With the issue of cervical cancer, the Tanzania Ministry of Health has an opportunity not only to help achieve its vision of improving the health of its citizens, but also to distinguish itself among developing countries as an effective health system. With more funding and resources for education and a VIA screening program, the ministry could

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significantly reduce mortality from cervical cancer without cutting deeply into the budget.

Ministry of Education

The education sector has nearly the same level of influence as the Health Ministry, though not necessarily the same level of interest in this issue. The Ministry of Education focuses on ensuring that high-quality and affordable education is provided to all, as well as fostering a highly educated population that has the tools to solve the challenges and problems of today. Although the ministry is not directly involved in health, one of its objectives is to improve the quality of life and social well-being. This creates an opportunity for the Ministry of Education to invest in health awareness programs for cervical cancer.

Results from the secondary school survey (Secondary school survey, interviewed June 15, 2010) showed that many students had misconceptions about STIs, and almost none were aware of cervical cancer. This lack of knowledge at a relatively prestigious secondary school is likely widespread throughout the country, and it accentuates the need to improve education about cervical cancer and STIs. Increasing awareness and knowledge of cervical cancer and screening is the first crucial step in curtailing the prevalence of the disease.

Media

Because the media delivers information to the community, they have significant potential for influence. Advertisements can be useful in conveying information, and health programs on cervical cancer can be broadcast. Media outlets in Tanzania frequently use surveys to gather an overview of public perceptions of various issues. It is in the media's interest to promote health in the society, inform the government of what is going on in the country, and constructively criticize the political system, not as part of a personal vendetta but for the benefit of the people.

Currently the media's interest may be small. Media outlets need to make a profit, and cervical cancer is not a major priority in Tanzania. The media have a greater interest in current issues. However, media outlets can improve their reputation among the government and the people by running advertisements that increase awareness of cervical cancer, particularly in areas where screening is available.

Health Delivery System

The health delivery system refers to the health workers (doctors, nurses, and others) who provide health care to patients on a day-to-day basis. It is in the interest of this group to have the burden of work reduced. Although health workers do not create policies, they are ultimately responsible for implementing them. Thus, they have significant—though unofficial—influence.

As mentioned earlier, cervical cancer is the leading cause of death from malignancies among women in Tanzania. Research in East and Southern Africa has shown that although the vast majority of primary health care centers and hospitals have the necessary resources to screen for cervical cancer using the VIA method, only a small percentage of women are screened because these facilities do not have policy guidelines or the necessary training (Chirenje et al. 2001).

In Tanzania, the Ocean Road Cancer Institute is the only institute that has major facilities for treatment of malignant illnesses. The vast majority of health centers in Tanzania have no screening equipment. The health professionals at Ocean Road thus face a heavy workload.

According to a gynecologist at Kilimanjaro Christian Medical Center, since 2004 VIA has become increasingly common within Kilimanjaro region, and more than 10 satellites have been established in the northern zone of Tanzania (Consulting gynecologist, interviewed June 18, 2010). More health personnel in the northern zone are being trained, and the screening process has spread beyond the KCMC. Hence the workload on the medical practitioners at KCMC is more bearable than in the past. Training more nurses could further reduce this burden.

Women at Risk

To reduce the incidence of cervical cancer in Tanzania, more effort must be made to reduce the transmission of sexually transmitted infections such as HPV and HIV. The secondary school survey (June 15, 2010) found that a majority of students did not fully understand how to prevent STIs, nor did they know about cervical cancer. Most of the female students were willing to be screened if screening was offered to them. It seems that cervical cancer is still a mystery to those who are

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highly vulnerable. There is also a need to include men, since they play a role in transmitting STIs, particularly HPV, and therefore the occurrence of cervical cancer.

Patients

Approximately 8 women per 100,000 who are diagnosed with cervical cancer in Tanzania survive (WHO/ICO HPV Information Centre 2010). Women who have survived or are fighting cervical cancer require extensive treatment and care, and often they rely on another party or the government to pay their hospital bills. Those who survive often experience radiation sickness, hysterectomy, and other consequences for their quality of life. The self-esteem of patients who have survived cervical cancer is likely to suffer as life circumstances change and relationships are affected (Bartoces et al. 2009). Patients have a great interest in reducing the prevalence and negative outcomes of cervical cancer, but their influence is limited.

Policy Options

Targeting cervical cancer in Tanzania presents a valuable opportunity to build on existing strengths and accomplishments of the Tanzanian health care system and government. Steps are already being taken to alleviate the burden, but much more needs to be done before significant progress is made.

Increase Awareness and Education to Break Down Barriers and Encourage Screening

Widespread education and awareness of cervical cancer are crucial to the success of any policy options. Women must know about the gravity of cervical cancer, the ease and importance of early screening, and the options for treatment. Increasing awareness and education should help eliminate myths, misconceptions, and other mental barriers to screening.

First, legitimate inclusion of the issue of cervical cancer in existing school health education might be considered. Despite the district medical officer's reassurance that reproductive tract infections were being covered in youth education, results from the secondary school survey suggest otherwise (District medical officer, interviewed June 17, 2010; secondary school survey, interviewed June 15, 2010). As previously reported, few students knew of cervical cancer or its link to STIs. The government could add health education to the regular school curriculum rather than just holding sporadic seminars. Health education could include a broad view of reproductive health, including cervical cancer and other common diseases that affect reproductive health. The curriculum could include both lectures and group discussions. The Ministry of Education might also wish to improve the curriculum to reduce misconceptions about STI transmission. The causes and symptoms of cervical cancer must be included in the education curriculum in order to increase awareness of the disease at a young age. It is the responsibility of the Tanzanian government to ensure that such education programs reach the youth of the country. Educating youth is a long-lasting method that will contribute significantly to eradicating the problem. As a saying in Swahili goes: *Samaki mkunje angali mbichi* (It's important to bend the fish while it's still fresh, for once it is dry, if you bend it, it will break).

Second, women who are no longer in school could be educated and made aware of cervical cancer and its associated issues. Women between ages 30 and 50 are generally most at risk for developing cervical cancer, so increasing awareness in that population should be a cornerstone of any policies implemented. The Alliance for Cervical Cancer Prevention (ACCP 2003) presents a series of policy options for promoting women's knowledge of cervical cancer. Involving women as leaders and key developers of awareness programs and initiatives will garner interest as well as a sense of connection and investment in the mission of increasing awareness. According to the ACCP, effective methods for reaching women include direct personal contact, community meetings, posters, newspaper ads and articles, and radio and television messages. The ACCP recommends contacting women who have been screened or treated for cervical cancer, leaders of women's groups (particularly in faith-based groups), community leaders, and health practitioners.

Third, the ACCP has identified several key messages that are effective at raising awareness and eradicating negative myths or misconceptions about cervical cancer:

- Good health practices can help prevent cancer.
- Cervical cancer develops slowly and is preventable.

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- Screening can detect treatable, pre-cancerous lesions before they progress to cancer.
- The screening procedure is relatively simple, quick, and painless.
- The small number of women who need treatment after screening can receive a simple procedure to remove the lesion (ACCP 2003).

The Western Kenya Cervical Cancer Prevention Project, a program geared to creating a cervical cancer prevention program in a low-resource locale in an African country, found success in breaking down barriers, eradicating myths, and reaching women while simultaneously increasing their awareness of cervical cancer (PATH 2004). Therefore, the Western Kenya Cervical Cancer Prevention Project may provide a strong base upon which to formulate policy recommendations to eliminate cultural barriers and reach a wide base of women. This project found peer-based and interactive strategies to be particularly helpful. It also framed key messages within the broader idea of positive health practices. In addition, because it may be difficult for women to convince their male partner that they need to be screened, active support of husbands and boyfriends was strongly encouraged (PATH 2004). Like the ACCP (2003), the Western Kenya Cervical Cancer Prevention Project found that mobilizing women's groups, particularly those within religious communities, was especially effective. According to this project, it is these techniques for mobilizing the community that help to build a strong, sustainable program (PATH 2004).

Furthermore, creating a national "holiday" dedicated to raising awareness of cervical cancer could significantly alleviate the burden of the disease. This is where the media could play a humanitarian role. Tanzania has had great success with its national HIV/AIDS days and malaria days (USAID 2002). For instance, on the HIV/AIDS days, people can be screened for free as well as receive education about HIV/AIDS. Since these HIV/AIDS days were started, the prevalence of HIV/AIDS has significantly decreased, and today Tanzania's prevalence rate of HIV/AIDS is 5.7 percent (UNAIDS and WHO 2009). It is evident that Tanzania has a formula for success with such holidays. By applying this formula to the problem of cervical cancer, Tanzania could mitigate the burden of the disease.

Achieving all of these goals will require multi-sectoral involvement. The Ministry of Education could get involved to ensure the provision of education regarding cervical cancer in schools. There may be a need to engage the Ministry of Community Development, Gender, and Children, which is involved in women's empowerment. As already mentioned, when women become empowered, cervical cancer risk factors are likely to be reduced. The private sector and NGOs could also be included in the plan. They could contribute to an increase in educational satellites, thereby including a larger proportion of the population in such education programs. Involvement of NGOs makes such proposals more cost-effective for the Tanzanian government because the NGOs assume a significant proportion of the financial burden.

Implement Effective and Simple Screening Programs

As mentioned, Pap smear screening procedures, which are common in the United States, are not feasible in low-income countries like Tanzania because of constraints in both manpower and funds. Fortunately, researchers have developed an alternative method of screening that requires minimal manpower, simple technology, and limited resources. The VIA method requires no laboratory work, provides immediate results, and is significantly less costly than Pap smears. Furthermore, the immediate results of a VIA test allow for testing and treatment on the same day. The International Agency for Research on Cancer, in collaboration with the International Network for Cancer Treatment and Research, has organized two pilot programs—one in Tanzania and one in Nepal—to test this method in an attempt to alleviate the burden of cervical cancer (Sankaranarayanan 2003). The Kilimanjaro Christian Medical Center has been involved in this pilot program, and the results (though not published) appear to be positive. The clinic in Kilimanjaro was opened in November 2004. The clinics are open for two days a week and provide free screening to all. Demand quickly exceeded capacity, and 10 satellite clinics have opened since November 2004.

Expanding on the existing framework for this apparently successful program could yield even more positive results. Working under the necessary assumption of continued funding, this program appears promising, and every effort should be made

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to keep it alive and thriving. In addition, training additional personnel to screen for cervical cancer using the VIA method could increase the screening capacity of health care facilities. Medical students are currently trained in this method, but doctors are limited in number and have little time. Though nurses are similarly busy, educating more medical personnel to perform the simple acetic acid test can only help. Screening procedures such as VIA should be included in nurses' training.

Another option would be to combine HIV testing with cervical cancer screening. Kahesa et al. (2008) recommend that a low-income country with limited funding consider implementing an approach that addresses both HIV and cervical cancer simultaneously. The interconnection between HIV/AIDS and cervical cancer fosters such an approach. According to Kahesa et al. (2008, 6):

> Antiretroviral therapy (ART) for HIV provides a golden opportunity to improve cervical screening through the sharing of ART resources and the frequent check-ups of women on ART that can also be used to screen for cervical cancer. This approach would enable the Tanzania Ministry of Health and Social Welfare to develop the capacity for cervical screening and treatment in a gradual and feasible manner, while mobilizing additional resources and the population that would be essential for a national cervical cancer screening and treatment program.

Conclusion

As the burden of infectious diseases declines in Tanzania and life expectancy increases, the incidence of cervical cancer is bound to increase, but the prevalence of cervical cancer is something that can be easily reduced. If cervical cancer does not receive more attention and funding than it does now, the prevalence and the mortality will manifest into very serious issues. However, with the implementation of simple screening procedures and basic education, the incidence of cervical cancer can be held in check, and Tanzania can distinguish itself as a well-functioning and effective country that truly cares about the welfare of its mothers and the rest of its population.

Assignment

Your assignment is to compel the Ministry of Health of Tanzania to implement a low-cost and effective program that will reduce the negative impact of cervical cancer, keeping in mind the stakeholders of the issue, their available resources, and their interest.

Additional Readings

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District medical officer of Moshi Rural, Tanzania. Interviewed at the DMO office of Moshi, Tanzania. Interviewed by Gabriel Isdori, Michael

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Managers of a local NGO family planning facility of Moshi, Tanzania. Interviewed at the NGO's facility in Moshi town. Interviewed by Michael Napolitano, Erasto, and Mary Koethe. Notes taken by Michael Napolitano. June 17, 2010. Interview #3.

Secondary school students in the local Moshi area. Surveyed at a secondary school in Moshi, Tanzania. Surveyed by Gabriel Isdoria., Elisia Mpango, Erica Schonman. June 15, 2010. Interview #4.

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