



WOMEN'S HEALTH: FIGHTING THE GLOBAL CERVICAL CANCER CRISIS

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ABSTRACT

CERVICAL CANCER IS A treatable and preventable public health problem among women in the United States and developing countries. This paper discusses the issue of cervical cancer and how it has affected women around the world. The paper contends that information about cervical cancer must be conveyed to women in order to get them to understand the dangers and act upon the importance of cervical cancer screening on an annual basis. Ultimately, the paper explores the possibilities of developing effective education, screening and follow up programs to help combat the crisis in the United States and abroad.

OVERVIEW OF CERVICAL CANCER

CERVICAL CANCER IS THE second most common cancer among women in the world (1). Although treatable, and almost 100 percent curable with proper treatment if detected early, the disease continues to be a potentially fatal problem. Still, the mortality rate for cervical cancer in the North America has declined over the last 10 years, thanks in part to the Pap test (Papanicolaou cytologic test). It remains constant in the developing countries. According to the American Cancer Society it is estimated that in 2007, there would be 11,150 new cases of invasive cervical cancer diagnosed in the United States and estimated 3,670 women will die from the disease (2). By 2010, approximately 60% of new cancer cases will occur in the developing world, higher than rates of those in developed countries (3).

Cervical cancer is caused by a change in the cells that line the wall of the cervix (1). There are two main types of cervical cancer. The most commonly diagnosed is squamous cell carcinoma, which represents about 80% to 90% of the cases. The other 10% to 20% of cases are adenocarcinomas (2). Cervical dysplasia (cervical intraepithelial neoplasia [CIN]) is often the precursor for cervical cancer because it is the abnormal growth of cells on the surface

of the cervix. Although this is not cancer, it is considered a pre-cancerous condition. Depending on the extent of the changes, the condition is further categorized as: CIN I -- mild dysplasia (a few cells are abnormal); CIN II -- moderate to marked dysplasia; CIN III -- severe dysplasia to carcinoma-in-situ (cancer confined to the surface layer of the cervix) (4).

Cancer of the cervix does not develop suddenly from normal, healthy cells in the cervix. Instead, for a variety of reasons, normal cells in the cervix can undergo a series of changes that, in some people, will result in cancer. Cervical cancer is different from other cancers because it progresses very slowly. The progression of cells through pre-cancerous stages can take years and is not foreseeable even once it has started. Cervical cancer is most common in women over the age of 50. Half of women diagnosed with this cancer are between the ages of 35 and 55. It rarely occurs in women younger than 20 (1, 4).

RISK FACTORS

THERE ARE NUMEROUS RISK factors for cervical cancer in the United States and abroad. While all women are at risk, some are at greater risk for developing cervical cancer than others. If all women had routine cervical screening, most pre-cancerous lesions could be detected and treated before a woman develops cancer. The risk factors listed below are those that are universal to women:

- **Human papillomavirus infection (HPV):** Being infected by HPV greatly increases the chances of cervical cancer. HPV is a group of more than 100 related viruses that are spread from an infected person to his or her sex partner. HPV can cause warts on some parts of the body. Certain types of HPV can cause cancer of the cervix. Although it is necessary to have had HPV for cervical cancer to develop, most women with this virus do not develop cancer. Doctors feel that other factors must come into play for cancer to develop (5). Certain types of sexual behavior increase a woman's risk of getting HPV infection: having sex at an early age; having many sexual partners; having a partner who has had many sex partners; and having sex with uncircumcised males (7). HPV is spread by skin-to-skin contact. At present, there is no cure or treatment for the HPV that causes changes in the cells of the cervix, but often the HPV infection goes away on its own without any treatment (6). There is currently in the U.S. a Human Papillomavirus Recombinant Vaccine, Quadrivalent



that can be administered to prevent infection.

Four common viruses can lead to cervical cancer:

- **Human immunodeficiency virus (HIV):** The virus that causes AIDS weakens the immune system and makes a person less able to fight early cancers. Although condoms do not protect against HPV, they do protect against HIV and other sexually transmitted germs.
- **Smoking:** Women who smoke are about twice as likely as non-smokers to get cervical cancer. Smoking exposes the body to many cancer-causing chemicals that affect more than the lungs.
- **Family history:** Women whose mothers or sisters have had cervical cancer are more likely to develop the disease themselves.
- **Diet:** Women with diets low in fruits and vegetables may be at increased risk for cervical cancer. Also, overweight women are more likely to develop this cancer.
- **Socioeconomic and educational status:** Low socioeconomic status and the lack of proper education about cervical cancer. Many women with low incomes do not have ready access to adequate health care services, including Pap tests. This means they may not get treated for precancerous cervical disease.
- **Birth control pills:** Long-term use of birth control pills increases the risk of cervical cancer. Some studies show a higher risk after five or more years of use. Women should talk with their doctors about the pros and cons of birth control pills based on their medical history and lifestyle.

DETECTION AND CLINICAL TRIAL SCREENING METHODS

EARLY DETECTION AND ROUTINE screenings are the best measures for preventing cervical cancer. Since its inception, nearly 60 years ago the Papanicolaou cytologic test (Pap smear), named after George Papanicolaou, has been responsible for 90% decrease in deaths from cervical cancer (9). When fully successful, conventional Papanicolaou cytologic screening reduces cervical cancer rates by 60% to 90% within 3 years of introducing to populations that have not previously been screened (5). The Pap test is a test to find cell changes (dysplasia) in the cervix. It is performed during a pelvic exam by using a small soft brush to take a few cells from the cervix. Of the screening tests, the Pap test is the most cost effective method.

Visual inspection with acetic acid (VIA) is another method for

detecting dysplasia. In this procedure, diluted acetic acid (3-5%) solution is applied to the cervix and the reaction is viewed by the naked eye (6). Abnormal tissue temporarily appears white. It is then possible to determine whether the test result is positive or negative for possible precancerous lesions or cancer. Because the results of VIA testing are available immediately to the provider and the woman and do not require laboratory support, it is possible to offer immediate treatment. This is an advantage of VIA testing in settings where transportation and time spent away from home and family activities can be particularly problematic. The visual inspection with Lugol's Iodine (VILI) is the same method, but using a different solution to achieve the same result. These methods are currently in the research stage with the Alliance of Cervical Cancer Prevention (ACCP).

In recent years, the number of individuals presenting with genital human papillomavirus (HPV) infection has increased. Human papillomavirus infection DNA screening is ordered if results indicate abnormal changes that may be due to a high-risk type of HPV, and then DNA HPV testing may be ordered as a follow-up test. It is not routinely used as a screening tool for women 30 years and younger. There has been more publicity about the importance of getting routine pelvic exams and HPV screenings have become more prevalent for those with multiple sex partners.

WHY IS CERVICAL CANCER A GLOBAL CRISIS?

THE MAJOR REASON FOR cervical cancer's high mortality rate is that it is often dormant for 10–15 years and may not produce any clinical symptoms during this period. Despite implementation of many state and national screening programs, developing countries continue to produce a high rate of cervical cancer cases. Of those developing countries, Latin America, the Caribbean, sub-Saharan Africa and South and South East Asia have the highest rates (see Figure 1). The vast majority of cervical cancer cases in these areas are caused by the infection of certain subtypes of HPV (10).

In the United States, incidents of cervical cancer have decreased by 50% over the last three decades but continue to be a serious health threat. Risk factors mentioned previously play a key role in the cervical cancer crisis. However, incidence rates for Hispanic women are higher than those for non-Hispanic women. Even though the mortality rate for African American women has declined more rapidly than the rate for White women, the African



American mortality rate continues to be more than double that of Whites. In developing countries, screening accessibility, education, beliefs and risk factors are only a few reasons why the crisis has grown. In the Latin American and the Caribbean, cervical cancer is disproportionately high.

A STATISTICAL OVERVIEW

THE STATISTICS ON CERVICAL cancer are alarming. Cervical cancer is the second most common cancer among women globally and the third most common cancer for American women. It is estimated that 466,000 new cases of cervical cancer are diagnosed each year (7). In addition, 231,000 women die of cervical cancer each year and of those. Over 80% of this estimated burden will have occurred in developing countries, where cervical cancer is the leading cause of malignancy among women (8).

United States:

In the majority of states, incidence and mortality rates of cervical cancer for black and Hispanic women were higher than for white women, although screening rates were as high, if not higher, for black women than for white women. Screening for Hispanic women in some states and for Asian-Pacific Islander women and American Indian/Alaska Native women around the country continued to lag. The mortality rate for black women was nearly twice the rate or higher than for white women in half of all states (10). It is estimated that more than \$2 billion per year is spent in the United States on the treatment of cervical cancer (11).

2003 United States Incidence and Mortality Statistics - Cervical Cancer

Incidence		Mortality	
11,820	Women diagnosed with cervical cancer	3,919	Women died of cervical cancer
1,902	African-American	794	African-American
452	Asian/Pacific Islander	141	Asian/Pacific Islander
73	American Indian/Alaska Native	31	American Indian/Alaska Native
1,846	Hispanic	391	Hispanic

Source: Center for Disease Control and Prevention - Comparing Cervical Cancer by Race and Ethnicity 2003

Central & South America and Caribbean:

Latin America and the Caribbean have some of the highest cervical cancer incidence and mortality rates in the world; the annual rates of cervical cancer remain high, generally greater than 20 cases per 100,000 females. For the Region of the Americas, it was estimated that 92,136 cases and 37,640 deaths would occur, with Latin America and the Caribbean accounting for 83.9 and 81.2 percent, respectively, of the total estimated cervical cancer cases and deaths (see Table 1) (13).

Africa:

Accurate data on the magnitude of morbidity and mortality from cervical cancer in the countries of East, Central and Southern Africa (ECSA) are scanty and usually hospital based (See Table 1) (13).

Asia (East, Southeast, South Central, Western):

Asia has a relatively high incidence rate for cervical cancer in comparison to other developing countries (see Table 1). Thorough and accurate data was not immediately available to compare with other developing countries. However, researchers contended that South and Southeast Asia are mostly affected. India accounts for one-fifth of the world burden of cervical cancer (15).

IMPACT ON WOMEN'S HEALTH

CERVICAL CANCER HAS A great impact on women's health because it is preventable and treatable if detected early. It is also a cancer that progresses very slowly making it a silent killer when left untreated. Education and preventative health programs encourage routine screenings yearly during pelvic exams starting at the age of 18 or at the onset of sexual activity. The risks factors mentioned early paint a small picture and if left undetected, pre-cancerous lesion may develop into cancer.

Precancerous changes of the cervix usually do not cause pain. In fact, they generally do not cause any symptoms and are not detected unless a woman has a pelvic exam and a Pap test. Symptoms usually do not appear until abnormal cervical cells become cancerous and invade nearby tissue. The most common symptoms that occur once abnormal cells are present include: abnormal bleeding, increment of smelly vaginal discharge, discomfort during intercourse, excessive menstrual bleeding, and bleeding



after menopause. All are common symptoms for other sexually transmitted diseases. Therefore, it is important to obtain routine pelvic exams and Pap smears.

EDUCATION AND PREVENTION

RESearchers have concluded that the best measure for preventing cervical cancer is through education and screening programs, along with the use of vaccine. In developed countries like the United States where screenings are more readily available, there is still the need for global education. It is essential to dispel the myth that Pap smears are simply to detect cancer, rather than to prevent cancer. Pap smear programs can be difficult to implement in low-resource settings, because the infrastructure and training needed to establish and maintain them are often too costly or unavailable (16). As a result, it is crucial to identify safe and effective alternative treatment approaches that will be conducive to the environment and target population. However, the main focus should be to increase the access and improve the quality of existing screening programs in the high-risk age group of 30 to 60 years. This has been identified as the key component for early detection in low-resource settings (16). Availability, affordability and high-quality screenings and treatment services are essential for cervical cancer prevention programs to achieve the high coverage for effective disease reduction in this population. Underutilization of cervical cancer prevention in developing countries and the notion that cervical cancer evokes the image of death may explain the behavior patterns of some women. In addition, adequate privacy is an issue in low resource communities where women are reluctant to have a pelvic exam.

The Alliance for Cervical Cancer Prevention (ACCP) is an organization committed to educating and developing sound technological screening programs to help developing countries combat the cervical cancer crisis. The ACCP was established in 1999 through a gift of \$50 million from Bill and Melinda Gates Foundation. It is a partnership between Engenderhealth, International Agency for Research on Cancer (IARC), JHPIEGO, Pan American Health Organization (PAHO), and Program for Appropriate Technology in Health (PATH) all of which have a dedicated interest in cervical cancer. The goals of the organization are: 1.) Assess innovative approaches to screening and treatment; 2.) Improve the service delivery system; 3.) Ensure that community perspectives and needs are incorporated into program design 4.) Heighten awareness of cervical cancer and effective prevention strategies. Research projects sponsored by the organization have

identified four key components in helping developing countries to identify effective ways to increase women's voluntary participation in prevention programs and to improve overall coverage of screening programs (19). The four approaches include

- Developing community partnerships;
- Responding to the community needs through appropriate cultural messages;
- Increase access to quality screening services;
- Identify effective ways to encourage women to complete diagnostic and treatment regimens.

Developing community partnerships by identifying key stakeholders from local women's organizations or community based organizations, local religious and education institutions adds value to prevention programs because existing social networks may facilitate the women's ability to make informed decisions about their health. Community partnerships have been found to be beneficial in public health through means such as peer support, overall recruitment of populations and helping sustain long-term projects (19).

Responding to community needs through cultural appropriate messages that address women's concerns and dispel myths may enhance the likelihood that women will adopt preventive behavior. The ACCP explored the informational needs of the target population and discovered that the existing information on cervical cancer used fear to persuade women and contained misinformation. The ACCP used material that highlighted the benefits of cervical cancer screenings instead.

Increasing the accessibility and quality of service includes addressing the structure of health services and approaches to staffing and scheduling issue. Low rates of attendance at screening services are often attributed to poor availability, accessibility, and poor quality of care. Therefore, the ACCP took a client center approach to reaching those less like to seek preventative screenings. The program ensured that all providers were carefully trained and experienced in performing pelvic exams and cervical screening tests, guaranteeing that providers were respectful, ensuring continued access to supplies and equipment, and developing a client feedback process. The COPE (client-center, provider efficient) method for quality improvement was adapted for use in cervical cancer prevention and is a process used by health care staff to continuously assess and improve the quality of care that they provide (19). Additionally, in some areas, screening services were offered closer to where women lived and provided free of



charge. This was especially important for women with financial constraints and living in rural areas.

It is necessary to identify effective ways to encourage women to complete diagnostic and treatment regimens because some women do not return for follow treatment once diagnosed. Therefore, educating the women about the importance of follow care and treatment options has proved to be helpful in counseling sessions. Involving the male partner, if treatment is required, has also been beneficial to ensure with compliance with post treatment care

CULTURAL BELIEFS

CULTURAL BELIEFS ABOUT CERVICAL cancer and the screening process add to the cervical cancer crisis. Education is the essential tool to address this concern, but devising communication strategies for women in the United States, who have low literacy rates and who live low-resource settings, is a challenge. Researchers have concluded that the cultural beliefs about cervical cancer of Latin women in South and Central American have been based on “moral values.” Latinas focused largely on sexual behaviors as the cause of the disease. Chavez et al. (2001) documents that cultural beliefs matter but found the story to be complex in nature. The article provided examples that some Latinas women believe that physical stress and trauma to the body can eventually cause cancer, while others believe that if a woman has cervical cancer and the husband had relations outside of his marriage, it was because the husband was not careful. Non-Latino white women believed that a combination of hereditary and lifestyle behaviors caused cervical cancer.

Other beliefs thought to cause cervical cancer included rough sex; women who engaged in unnatural and ‘immoral’ behaviors such as having many lovers, sex during menstruation, and abortions. Brazilian women concluded that cervical cancer was caused by a sexually transmitted disease (17). The cultural beliefs of the Xhosa women of South Africa conclude that the husband is the “owner of the vagina” and a pelvic exam can be seen as direct competition with men’s exclusive rights to examine their wives’ bodies (16). As a result, it is important to provide effective communication and education regarding a pelvic exam and cervical cancer to remove any misconceptions.

TREATMENT OPTIONS

ONCE CERVICAL CANCER IS detected and diagnosed, follow up care is essential. Treatment options depend on different variables, such as stage of cancer, size of tumor, desire to have children, and age. After cervical cancer has been diagnosed, there is a variety of tests to determine if the cancer cells have spread within the cervix to other parts of the body. The information determines the stage of the disease. It is important to know the stage in order to plan treatment. The following tests and procedures may be used in the staging process:

- chest x-ray,
- CT scan,
- lymph angiogram,
- surgery,
- ultrasound,
- MRI

Once the proper series of tests are performed, treatment options are available. The options are surgery, radiation therapy and chemotherapy. Varieties of surgical options are available depending on the stage of the cancer. A few options include cryosurgery, total or radical hysterectomy and loop electrosurgical excision procedure (LEEP). Radiation and chemotherapy are methods of treatment used depending on the stage of the cancer as well and are both used as a means of killing the cancer cells. Through ongoing clinical trials, new methods are being tested for the treatment of cervical cancer.

There has been much debate about the new HPV vaccine and its effects. Since HPV is the major risk factor for development of cervical cancer. In June of last year the U.S. Food and Drug Administration (FDA) approved the use of a new vaccine to prevent infection from four types of the human papillomavirus (HPV). Two of the HPV types targeted by the vaccine (HPV-16 and HPV-18) are responsible for about 70 percent of the cases of cervical cancer worldwide (18). Neither of these HPV vaccines has been proven to provide complete protection against persistent infection with other HPV types, some of which cause cervical cancer. Therefore, about 30 percent of cervical cancers and 10 percent of genital warts will not be prevented by these vaccines. In addition, the vaccines do not prevent other sexually transmitted diseases, nor do they treat HPV infection or cervical cancer. Therefore, the debate of the vaccine is two-fold. What message are we sending to young women about early sexual activity if the government wants to vaccinate adolescents and what about the



importance of pelvic exams?

CONCLUSION

THERE IS NO QUESTION that cervical cancer is a global crisis. Although efforts in the United States have improved, with the latest emphasis of HPV (among other risk factors), there is much work to be done. In developing countries, the workload is even greater. The task at hand is how to provide the services to those low resource communities while maintaining a level of care that is deserved by all women. First and foremost, education is essential. We must first understand the risk factors and how cervical cancer develops while also emphasizing that it is a cancer that is easily treatable and preventable. The many organizations represented in this paper have spent tremendous amount of time and money developing programs to combat cervical cancer with some success. Those same efforts and energies are needed abroad. The ACCP provides a solid framework of how to reach, educate and screen women in developing countries. Communicating the importance of screening and (trying to) maintain a lifestyle to reduce the risk factors is also important.

Advocacy groups play a key role in bringing cervical cancer and HPV awareness to the forefront. Advocates are beating the pavement and educating women, young and old about, the importance of routine pelvic exams, while dispelling the myths of pelvic exams and cervical cancer. Open communication in providers' offices, schools, local community forums and any other sector where women and men can be educated and informed is the first step. Stressing the importance of routine pelvic exams is the second step in the process and follow up is third. Information that is accurate and has the ability to reach all economic and education levels is also important. The need to reach out to the community is where the problem lies. We as a nation cannot wait for women to come to us with the problem when we should continue to take proactive measures to ensure quality screenings and accurate information. Again, those in low resource communities pose the greatest task but with the continued efforts of ACCP and other organizations, cervical cancer rates can decline.

Table 1

Malignant Neoplasm of the Cervix uteri: Age-Standardized Incidence and Mortality Rates (per 100,000 population, by region, 2000)

Region	Incidence Rate	Mortality Rate
East Africa	44.32	24.24
Middle Africa	25.08	14.16
North Africa	16.77	9.08
Southern Africa	30.32	16.45
West Africa	20.28	10.87
Caribbean	35.78	16.84
Central America	40.28	17.03
South America	30.92	11.97
North America	7.88	3.23
East Asia	6.44	3.19
Southeast Asia	18.26	9.65
South Central Asia	26.47	14.95
Western Asia	4.77	2.5
Eastern Europe	16.81	6.2
Northern Europe	9.84	4
Southern Europe	10.18	3.25
Western Europe	10.43	3.74
Australia	7.72	2.66
Melanesia	43.81	23.78
Micronesia	12.31	6.16
Polynesia	28.98	15.2

Figure 1: International Incidence Patterns

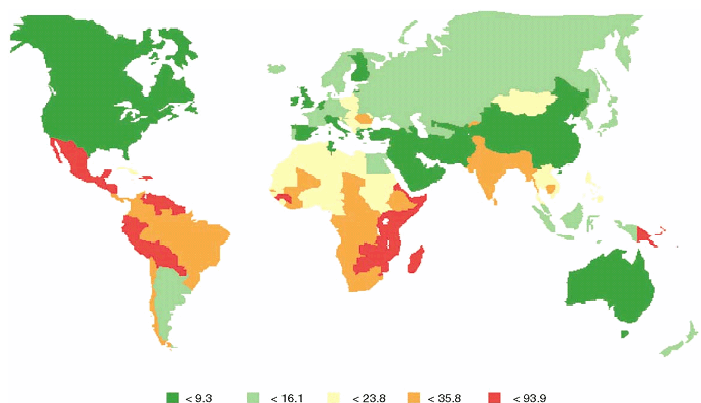


Figure 1: National Cancer Institute Health Disparities - Cervical Cancer Retrieved On March 9, 2007 From <http://www.Dceg.Cancer.Gov/Disparities/Cervical.html>



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