PRB Policy Brief
POPULATION REFERENCE BUREAU

PREVENTING CERVICAL CANCER WORLDWIDE

by Lori Ashford and Yvette Collymore

New and effective approaches now make it possible to reduce the burden of cervical cancer in developing countries, where the disease takes its heaviest toll. This preventable disease results from abnormal cell changes on the cervix (the opening of the womb) and kills more than one-quarter of a million women every year worldwide. The cancer is most likely to develop in women ages 35 and older—women who are often missed by conventional maternal and child health services.

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Women need accurate and complete information about cervical cancer and prevention and treatment options.

The Alliance for Cervical Cancer Prevention has studied screening and treatment approaches in Africa, Latin America, and Asia, with the understanding that many women in these regions may only be screened once or twice in their lifetimes. The results of their research demonstrate that it is possible to reduce illness and death from cervical cancer with relatively modest investments in health services and training.

Disease Has High Burden in Developing Countries

Cervical cancer has a major impact on women's lives worldwide, particularly in developing countries where it is the leading cause of cancer deaths among women. According to the latest global estimates, 493,000 new cases of cervical cancer occur each year among women, and 274,000 women die of the disease annually.[1] Four out of five new cases, and a similar proportion of deaths, occur in developing countries where screening programs are not well established or effective.

The hardest-hit regions are among the world's poorest. Central and South America, the Caribbean, sub-Saharan Africa, and parts of Oceania and Asia have the highest incidence rates—over 30 per 100,000 women. These rates compare with no more than 10 per 100,000 women in North America and Europe.[2] Because the disease progresses over many years, an estimated 1.4 million women worldwide are living with cervical cancer, and two to five times more—up to 7 million worldwide—may have precancerous conditions that need to be identified and treated.[3]

If it is not detected and treated early, cervical cancer is nearly always fatal. The disease, which affects the poorest and most vulnerable women, sends a ripple effect through families and communities that rely heavily on women's roles as providers and caregivers.

Screening Programs Have Been Lacking or Ineffective

The lack of effective screening and treatment strategies is a major reason for the sharply higher cervical cancer rates in developing countries compared with developed countries.

To date, screening efforts have relied largely on the Pap smear, a laboratory test developed in the 1940s to detect abnormal cell changes. The test has achieved tremendous success in industrialized countries that offer periodic, high-quality screening. But Pap smear programs are complex and costly to run and have failed to reach a significant proportion of

women in developing countries where health systems and infrastructure are weak. In addition, screening programs often target younger women who are easy to reach through maternal health programs; these women are often screened multiple times.

Without access to viable programs, women from poor communities generally seek care only when they develop symptoms and the cancer is advanced and difficult to treat. Health care providers often can do little to save their lives at this stage and even drugs for easing pain may be unavailable. Other barriers to prevention and treatment may include a lack of awareness of cervical cancer and of ways to prevent the disease (see Box 1), difficulty getting to clinics and hospitals, the need for multiple visits, and high costs associated with screening.

New Evidence for Prevention Programs

The ACCP has worked since 1999 to assess and promote prevention approaches that are inexpensive, safe, and widely acceptable. ACCP projects in 17 countries have tested the feasibility of a number of screening and treatment approaches for low-resource settings. Their findings provide a base of evidence upon which future programs can be built.

Innovative Screening Approaches

Health care providers can use relatively simple technologies to screen women for precancerous conditions. Two approaches currently being evaluated, visual screening and HPV testing, have the potential to save more lives at lower cost than traditional approaches using Pap smears.

Box 1

Understanding How Cervical Cancer Develops is Key to Screening and Treatment

Cervical cancer results from the abnormal growth and division of cells at the opening of the uterus or womb—the area known as the cervix. The main underlying cause is the human papillomavirus (HPV), a common and often undetectable sexually transmitted infection that women may contract when they are young. No cure currently exists for HPV.

More than 50 known types of HPV can affect the genital area, and of these, a handful can cause abnormal cell changes in the cervix. Most mild abnormalities regress or do not progress, particularly in women under age 35. When the abnormalities persist over time and become severe, the cells develop into cancer cells (see figure). Progression from HPV infection to cancer can take up to 30 years.[1]

Women generally contract HPV in their teens, 20s, or 30s, and cervical cancer can develop 20 years or more after HPV infection. About 80 percent to 90 percent of confirmed cervical cancer cases occur among women age 35 or older, according to data from cancer registries in developing countries.

Preventing deaths from cervical cancer is straightforward: If precancerous changes in cervical tissue are identified early and successfully treated, the abnormal tissue will not develop into cervical cancer. Health services can reduce illness and death from cancer by screening women for precancerous changes (an optimum age is 35 to 40), testing for the presence of HPV if possible, and destroying or removing abnormal tissue. Though no cure exists yet for HPV, the possibility of a vaccine, now some years away, offers additional hope for cancer prevention.

The Progression of Cervical Disease

HPV INFECTION →	MILD CERVICAL DYSPLASIA* →	SEVERE DYSPLASIA* →	CERVICAL CANCER
Extremely common among women of reproductive age. A small percentage of cases lead to abnormal cell changes.	Abnormal cell changes, called dysplasia, are usually temporary. Some cases, however, progress to severe dysplasia.	Severe dysplasia is far less common than mild dysplasia. It can progress to cancer in 10–15 years.	Invasive cancer develops over many years and is most common among women in their 50s and 60s.

* Dysplasia refers to abnormal cell tissue on the cervix.

[1] Alliance for Cervical Cancer Prevention (ACCP), "Natural History of Cervical Cancer: Even Infrequent Screening of Older Women Saves Lives," *Cervcial Cancer Prevention Fact Sheet* (Seattle: ACCP, 2003).

Among the most promising alternatives are visual screening methods that involve swabbing the cervix with a vinegar or iodine solution and examining the cervix with the naked eye to spot abnormal tissue. Visual screening (or inspection) has particular advantages in low-resource settings. It is relatively simple and inexpensive, relying on little infrastructure, assuming the treatment services are in place. Nonphysicians can perform the procedure, provided that they receive adequate training and supervision. Furthermore, results of the procedures are available immediately, making it possible, in principle, to offer treatment and referral options during the same visit (see Box 2).

Another alternative involves testing women for the presence of HPV on their cervices. Interest in HPV testing is growing, but the tests are not in widespread use because they are expensive and technologically demanding. Efforts are now underway to develop a test that is low cost and easy to use.

Box 2

Screen-and-Treat Approaches Can Reduce Health Care Visits and Costs

Newer screening methods, such as visual inspection for abnormalities on the cervix, make it possible to screen women and provide treatment (or a referral to a treatment center) in one or two visits, without having to wait for a clinically confirmed diagnosis. Such delays typically result in a loss of follow-up care for women. The "screen and treat" approach provides women with immediate results and treatment options, if necessary, and reduces the need to track women to make sure they attend follow-up appointments.

While it is cost-effective for health services and convenient for women to reduce health care visits, the screen-and-treat approach remains controversial. Some women may be falsely identified as requiring treatment, which can overburden the health care system and cause unnecessary anxiety for women. Health planners need to weigh these drawbacks against the benefits of offering more comprehensive services in a single visit, thereby giving women access to the care they need.

Low-Cost Treatment Approaches

To be effective, cancer prevention programs must link testing with appropriate treatment, including low-cost outpatient procedures. Relatively simple procedures can be used to either destroy or remove abnormal cervical tissue.

Two such procedures are particularly appropriate in low-resource settings. Cryotherapy uses extremely low temperatures to destroy the abnormal tissue. The method needs no electricity and is effective even where physicians, health supplies, and infrastructure are severely limited.[4] Another method, the loop electrosurgical excision procedure (LEEP), involves using a thin wire to remove the affected area. While LEEP requires more medical backup and equipment than cryotherapy, the procedure allows tissue to be extracted for diagnostic confirmation, reducing the possibility that advanced cancer will go unnoticed.

For women with early cancer, programs need to make some surgical treatment available at referral centers for removal of part of the cervix or a hysterectomy. For women with untreatable conditions, home-based care to relieve pain and suffering may be the most realistic and compassionate option.

The Need to Act

Many developing countries have had cervical cancer prevention programs in place for some time but have failed to reduce death rates from the disease. Increased awareness of the feasibility of new prevention strategies, however, has led to growing interest in addressing this preventable disease. ACCP research has demonstrated that programs can safely and effectively screen and treat women in only one or two clinic visits, using the low-cost techniques described here. In many settings, prevention programs can be integrated into routine health services, assuming adequate resources are available.

To be effective, a cervical cancer prevention program must include a package of education, screening, and precancer treatment services that reach the majority of women at risk of the disease. Good prevention programs for cervical cancer have a number of key features. They should:

- Use locally understood messages to increase awareness of the disease and motivate women to get tested at least once;
- Screen a significant proportion of women in their 30s and 40s for cervical abnormalities;
- Make outpatient treatment for precancer widely available;
- Track patients and arrange for appropriate follow-up care; and
- Monitor and evaluate program effectiveness.

For more information

This brief is adapted from a longer report, *Preventing Cervical Cancer Worldwide*, by the Population Reference Bureau and the Alliance for Cervical Cancer Prevention. To order copies, contact PRB at the address listed below. For more information and resources related to cervical cancer prevention programs, visit the Alliance's website: www.alliance-cxca.org or write to ACCP c/o PATH, 1455 NW Leary Way, Seattle, WA 98107, USA.

To achieve these goals, programs may need to remove regulatory barriers that prevent services from expanding, such as those that do not allow nonphysicians to provide services. Service providers at all levels need training in cervical cancer prevention, including counseling skills. To be effective, services may need to coordinate with other health programs that reach women in their 30s and 40s, and they should minimize the number of visits a woman must make to receive appropriate care.

Future research will help fill a number of gaps in cervical cancer prevention. For example, the prospect that an effective HPV vaccine may become available in the next five years brings additional hope to the field of cervical cancer prevention. Even with broad access to a vaccine, however, secondary prevention—screening women for precancerous conditions—will remain necessary for many years to come.

Continuing to strengthen programs based on evidence from the ACCP and other groups will help to reduce the burden of disease from cervical cancer worldwide. To support the expansion of programs, the ACCP provides practical program tools for health planners, managers, and clinicians in low-resource settings.

References

[1] Jacques Ferlay et al., *GLOBOCAN 2002: Cancer Incidence, Mortality and Prevalence Worldwide*, IARC CancerBase No. 5, version 2.0 (Lyon, France: IARC, 2004), accessed online at www-depdb.iarc.fr/globocan/GLOBOframe.htm, on Sept. 30, 2004.

[2] Ferlay et al., *GLOBOCAN 2002*.

[3] Ferlay et al., *GLOBOCAN 2002*. Based on the number of patients with clinically recognized cervical cancer still alive five years after diagnosis.

[4] Alliance for Cervical Cancer Prevention (ACCP), "Effectiveness, Safety, and Acceptability of Cryotherapy: A Systematic Literature Review," *Cervical Cancer Prevention Issues in Depth*, no. 1 (Seattle: ACCP, 2003).

Acknowledgments

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