

# DELIVERING CERVICAL CANCER PREVENTION IN THE DEVELOPING WORLD



As committed advocates for maternal health and universal access to reproductive health services, we recognize that our battle to advance the health of girls, women and mothers does not end with a safe pregnancy. The same weak health systems that leave women at risk for pregnancy-related mortality are also responsible for unacceptably high rates of cervical cancer and other diseases that affect women after their childbearing years. Cervical cancer, which is preventable and treatable, is the number one cancer killer of women in developing countries. The disease is far too common among the same women who struggled to survive childbirth. Today, cervical cancer causes more than 275,000 deaths each year, over 88 percent of which occur in developing countries.<sup>1</sup>

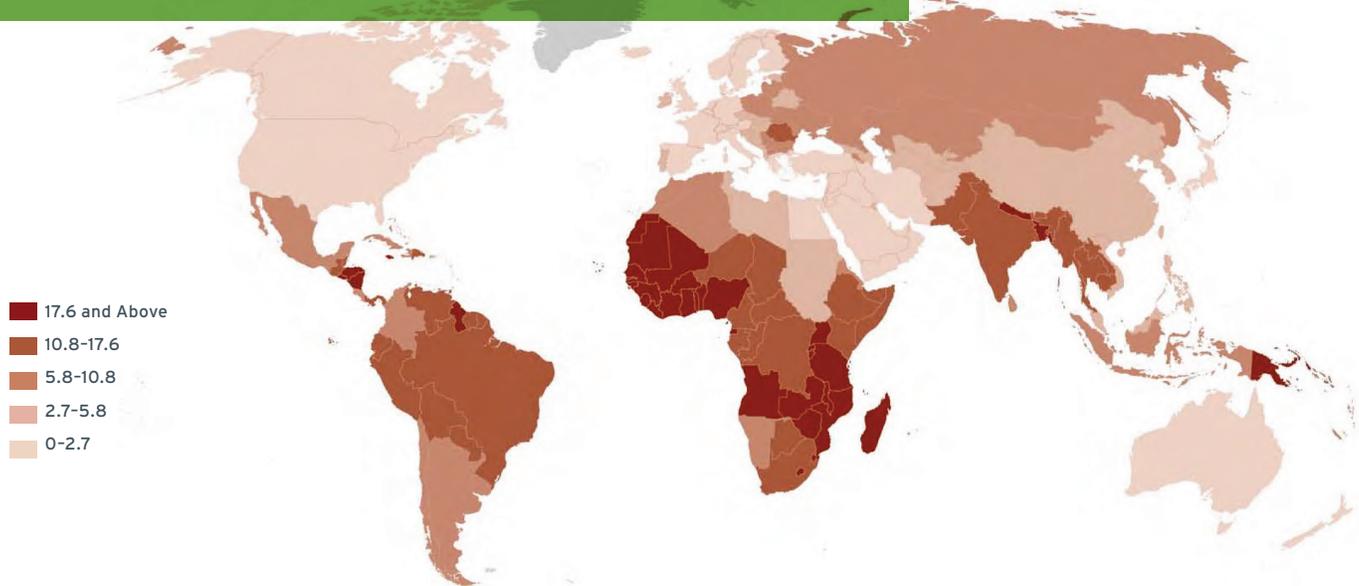
Over the past decades, scientists, public health researchers, clinicians, policymakers, women's health and cancer advocates and private sector partners have worked tirelessly to raise global awareness of cervical cancer. They have identified and developed high-impact low-cost solutions to prevent this devastating disease. Today, there are a combination of new and affordable high-tech tools and effective simple solutions.

The question is no longer how—but when and where—we will protect our daughters and mothers by ensuring that comprehensive cervical cancer prevention programs are provided to all women. As profiled in this brief, recent projects throughout the developing world have demonstrated that a new way forward is possible, and we can improve women's access to health services throughout their lifetimes.

Until now, cervical cancer was truly a neglected area of women's health. The GAVI Alliance's November 2011 decision<sup>2</sup> to include HPV vaccines among the vaccines it supports for developing countries is a significant moment in the global effort to improve access to reproductive health for women. We count this as one of the most promising advances in women's health in decades.

The efforts to prevent cervical cancer and improve maternal health in developing countries are interconnected. As women's health advocates chart the road ahead, this brief aims to spotlight the political leadership, public-private partnerships, and civil society efforts that are models for change. Each effort profiled here—from Bolivia to Rwanda to Thailand, and more—is changing the course of this disease.

**CURRENT CERVICAL CANCER MORTALITY RATE**  
ESTIMATED AGE-STANDARDIZED MORTALITY RATE  
PER 100,000, CERVIX UTERI.



Sources: Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10. Lyon, France: International Agency for Research on Cancer; 2010. [globocan.iarc.fr](http://globocan.iarc.fr).

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## WHAT IS CERVICAL CANCER?

**CERVICAL CANCER, WHICH IS PREVENTABLE AND TREATABLE**, is caused by the sexually transmitted human papillomavirus (HPV). HPV is very common; it is estimated that up to 80% of sexually active women will be infected with HPV at least once during their lifetime, usually between late teenage years and the early thirties. There are more than 100 strains of the virus, two of which—strains 16 and 18—cause about 70 percent of cervical cancers worldwide.<sup>3</sup>

In recent years, vaccines have been developed and introduced to protect girls and women from infection with the cancer-causing strains of HPV. Currently, the two HPV vaccines available are Merck & Co.'s Gardasil® and GlaxoSmithKline's Cervarix®.

Most girls and women's immune systems will eliminate HPV infection spontaneously—they will not even know they were infected. For a very small proportion of women, however, the HPV can be persistent and cause pre-cancerous changes in cells (called CIN or cervical intraepithelial neoplasia).<sup>3</sup> The process from low-grade CIN to cervical cancer can take about 10 to 20 years,

during which time screening for pre-cancerous lesions and early treatment to remove them is highly effective in preventing the onset of the disease.<sup>3</sup> There are several methods to identify pre-cancerous lesions, including the Pap test, visual inspection with acetic acid, and the HPV DNA test.

For those women who develop cervical cancer, because they were not vaccinated or screened in time, the disease can be treated with combinations of surgery, chemotherapy and radiotherapy. Access to potentially life-saving treatment relies upon a timely and correct diagnosis, well-equipped facilities and highly skilled professionals. Given these requirements, which most women in developing countries do not have access to, vaccination and screening is even more important to save lives.<sup>3</sup>

A comprehensive cervical cancer program focuses on cervical cancer prevention strategies, as outlined in this brief, but also includes effective monitoring systems and strong referral systems; disease management, palliative care, and end-of-life care; and a national cancer registry to monitor program progress and impact.<sup>19</sup>

# NEW LIFE-SAVING TOOLS TO PREVENT CERVICAL CANCER

Over the past five decades, widespread access to cervical screening and early treatment has been a cornerstone of basic reproductive health services for women in wealthy countries. The Papanicolaou test or “Pap smear” has significantly reduced the burden of cervical cancer in developed countries. In resource-rich settings, women are usually able to make repeated visits to seek screening, diagnosis and treatment in clinics. The health system is equipped with skilled lab technicians, referral systems and clinicians capable of effectively managing this disease.<sup>3</sup>

In developing countries, health systems are often ill-equipped to effectively provide Pap-based screening to women and are plagued by challenges in reaching women and in appropriately testing, following up and treating women with pre-cancer. Studies show that if a woman is screened only once in her lifetime between the ages of 30 to 40 it would reduce her lifetime risk of cervical cancer between 25-36 percent.<sup>4</sup>

## SCREENING AND EARLY TREATMENT: SAVING WOMEN TODAY

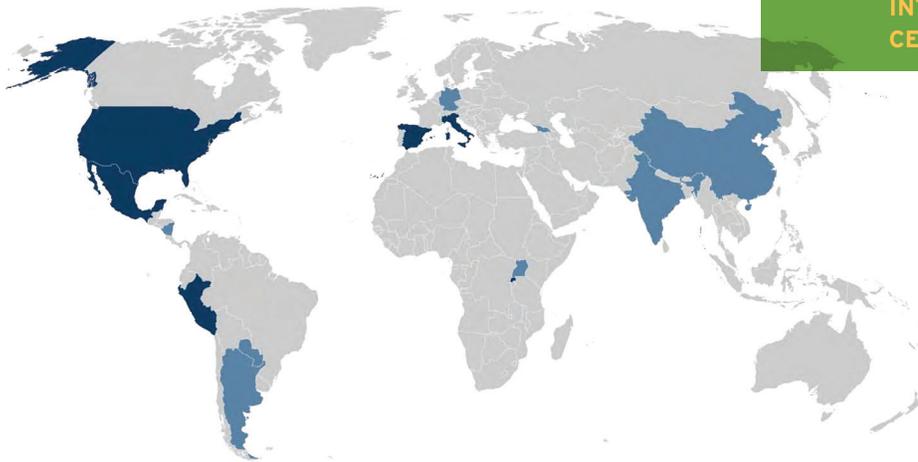
Today, highly effective low-cost screening and early treatment technologies are available that are appropriate for developing country settings and can save women’s lives now. These breakthrough tools and approaches resolve many obstacles that once prevented Pap-based screening systems from being effective. Visual inspection with acetic acid (VIA) and HPV DNA testing offer two new options for screening, and can be provided in conjunction with cryotherapy treatment, a highly effective, low-cost approach to early treatment. Together, these new tools allow for combined screening and treatment, known as the screen-and-treat approach, that can be performed on the same day.<sup>5</sup>

VIA identifies abnormal areas by washing the cervix with acetic acid (vinegar) or iodine. The abnormal areas, which can be pre-cancerous



Source: Cervical Cancer Action, “Progress in Cervical Cancer Prevention: The CCA Report Card”, [http://www.cervicalcanceraction.org/pubs/CCA\\_reportcard\\_med-res.pdf](http://www.cervicalcanceraction.org/pubs/CCA_reportcard_med-res.pdf), accessed Nov. 21 2011

**INTRODUCTION OF HPV DNA TESTING FOR  
CERVICAL CANCER SCREENING**



- **National Programs:** HPV DNA testing in the national screening norms and available on a limited or universal basis through the public sector
- **Pilot Programs:** HPV DNA testing available through pilot or demonstration projects organized by the Ministry of Health or NGO partners
- **No HPV DNA Testing Program**

The information represented here has been collected through interviews with individuals and organizations involved with the countries represented and has not been verified with individual Ministries of Health. Any oversights or inaccuracies are unintentional.

Source: Cervical Cancer Action, "Progress in Cervical Cancer Prevention: The CCA Report Card", [http://www.cervicalcanceraction.org/pubs/CCA\\_reportcard\\_med-res.pdf](http://www.cervicalcanceraction.org/pubs/CCA_reportcard_med-res.pdf), published April 2011, accessed Nov. 21 2011

lesions, become white and can be seen with the naked eye or low magnification. VIA does not require highly skilled lab technicians, is less expensive than other screening tests, and can quickly yield a result, reducing the need for women to make follow-up visits. If a lesion is found, it is sometimes possible to receive cryotherapy treatment immediately (see below).<sup>3</sup>

The most recent development in cervical cancer screening is the HPV DNA test, which detects the presence of cancer-causing strains of HPV in cells taken from the cervix or vagina.<sup>3</sup> HPV DNA tests can be expensive and most often are only available in wealthier countries.

However, QIAGEN, in collaboration with PATH, has developed *careHPV™*, a version of the HPV DNA test that is low-cost, portable, and requires minimal training. HPV DNA tests can also use self-collected swabs of vaginal cells; although self-sampling results can be slightly less sensitive, this method is well-suited for women who do not want to undergo a pelvic exam or who live in settings where pelvic exams are not commonly available.

Cryotherapy is treatment which destroys pre-cancerous areas by freezing them with a probe cooled by gas. It is worth noting here that the cervix has few nerve endings, so the procedure does not require anesthesia. Cryotherapy is safe and there are very few side effects. The technique can be taught to nurses and other health care professionals, meaning women do not need to see a specialist doctor. In cases in which cryotherapy is not indicated, another treatment option is loop electrosurgical excision procedure, or LEEP, which is more expensive and specialized than cryotherapy. Removing all abnormal cells from the cervix is essential in order to prevent cancer and so must be offered with screening.

**HPV VACCINES: INVESTING IN GIRLS**

Vaccinating girls with HPV vaccines today will have a dramatic impact on cervical cancer rates in the coming decades. Current HPV vaccines are designed to protect against two of the most common cancer-causing strains of HPV, 16 and 18, which cause over 70 percent of cervical cancer globally. Since these and other types of HPV

are transmitted through sexual exposure, HPV vaccines must be given to girls before they are sexually active.

Since 2006, more than 35 governments worldwide have introduced HPV vaccines in their national health and immunization programs.<sup>6</sup> HPV vaccines were quickly introduced to developed countries, where cervical cancer rates are among the lowest globally. Middle- and low-income countries have struggled to find ways to introduce the vaccine in already cash-strapped health systems that have little experience providing health services to adolescent girls.<sup>6</sup>

The government of Mexico was the first to launch a pilot HPV vaccine project, appropriately nestled within a broader effort to upgrade its cervical cancer prevention efforts. In 2008, the Mexican Secretariat of Health began the pilot program in the 125 municipalities where cervical cancer rates were the highest. Girls were vaccinated with HPV vaccines while women were screened with HPV DNA tests and provided any necessary treatment.<sup>7</sup> Panama soon followed suit by announcing the first national HPV vaccination program in a middle-income country.<sup>8</sup> Since that time, national HPV vaccination programs have been launched in Malaysia, Peru, Argentina, and other countries.<sup>6</sup>

Although middle-income countries recognize the importance of HPV vaccination, finding the resources and securing an affordable price for the vaccine has been difficult. Early on, countries negotiated prices directly with the vaccine manufacturers to secure price drops.<sup>9</sup> These prices, however, are still too far out of reach for most countries. The Pan American Health Organization's (PAHO) EPI Revolving Fund, which pools vaccine purchasing demand from participating countries in Latin America and the Caribbean and negotiates a low group price for participating countries, began an effort to secure a more affordable price for the HPV vaccine. PAHO has been successful in securing new prices in the

range of \$14–15 per dose for Latin America and the Caribbean<sup>6</sup>, but even lower prices are still necessary to put this vaccine within reach of most middle-income countries.

**Unnecessary suffering and death will only be prevented when all women and girls are provided access to information, services and tools to prevent this disease.**

Efforts to understand how to introduce the HPV vaccine in low-income countries began as early as 2006, when the vaccines were introduced into wealthy countries. With support from the Bill & Melinda Gates Foundation, PATH began HPV vaccine pilot projects in India, Peru, Uganda and Vietnam to understand how best to deliver HPV vaccines and whether they would be acceptable to and in demand by girls, parents and communities.<sup>10</sup> In partnership with governments, research groups and non-governmental organizations in these countries, PATH's work has formed an essential understanding of how to make HPV vaccination programs possible for low- and middle-income countries.

With donated vaccines from the manufacturers, HPV vaccine pilot projects have taken place in more than 25 countries including national scale introduction programs in Rwanda and Bhutan.<sup>6</sup> These projects have been successful and have often achieved high coverage rates. Clearly, HPV vaccination is both feasible and in demand in developing countries.

GAVI's decisions to support HPV vaccinations for two million girls in nine countries by 2015 builds on this positive experience. The commitment to prevent and treat cervical cancer deserves our attention and support. As with maternal mortality, cervical cancer cannot be prevented by partially introducing one tool, or by implementing a comprehensive strategy that reaches only a few

women. Unnecessary suffering and death will only be prevented when *all* women and girls are provided access to information, services and tools to prevent this disease.

Strong cervical cancer prevention programs have the capacity to help build better reproductive health services for women. HPV vaccination, which

targets girls, can help improve the dissemination of health information and build demand for services among parents and other members of the community, which could later lessen the likelihood of pregnancy-related complications. Screening and early treatment programs are equally valuable, as they provide critical reproductive health services for women beyond their childbearing years.

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## NATIONAL INTRODUCTION OF THE SCREEN-AND-TREAT APPROACH: THAILAND

Only a decade ago, less than five percent of Thai women had been screened for cervical cancer.<sup>11</sup> Although this rate remains tragically common in many parts of the developing world, in Thailand today an increasing number of women have access to early screening and treatment. After years of unsuccessful efforts to provide Pap testing in Thailand's many rural communities, a new solution emerged. In an early and innovative partnership beginning in 2000, Jhpiego, the Ministry of Public Health and the Royal Thai College of Obstetricians and Gynecologists began training nurses to use VIA to deliver single-visit cervical cancer screening and to use cryotherapy for treatment in rural clinics in four districts.<sup>11</sup> With support from the Thai Ministry of Public Health and funding from the Bill & Melinda Gates Foundation through the Alliance for Cervical Cancer Prevention, the feasibility, effectiveness and acceptability of the single-visit approach to women and health care providers were all studied.<sup>11</sup> The results were exceptional and paved the way for the adoption of the single-visit approach nationally.

As a result, Thailand has adopted and scaled this approach throughout the country. Today, over 1,175 nurses and 150 physicians have been trained, and the single-visit approach is available in rural clinics in 29 of Thailand's 75 provinces.<sup>11</sup>

Additionally, the Parliament has changed national regulations that once prohibited nurses from providing cryotherapy.<sup>12</sup> The Thailand Nursing Council endorsed nurses performing the single-visit approach after completing training on VIA and cryotherapy. The Thai government's efforts to provide cervical screening and treatment in these rural areas has benefited over 600,000 women in Thailand and inspired and informed the adoption of VIA and cryotherapy in more than 30 countries around the world.<sup>11:6</sup>

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Today, the creative partnership between the Thai Ministry of Public Health and Jhpiego continues with a new Mother-Daughter Initiative, an operations research project with support from Merck & Co. that seeks to mobilize mothers who are informed and have been screened for cervical cancer in order to encourage their daughters' HPV vaccination. A similar effort is also underway in the Philippines.<sup>11</sup>

## HPV VACCINE INTRODUCTION: BOLIVIA'S SUCCESS STORY



In Bolivia, which has one of the highest cervical cancer mortality rates in the Americas, finding a solution to staggering rates of cervical cancer seemed improbable.<sup>13</sup> After years of Pap testing with little impact, the government and its partners were looking for another solution. In 2009, the Centro de Investigación, Educación y Servicios (CIES), a non-profit Member Association of International Planned Parenthood/Western Hemisphere Region (IPPF/WHR) in Bolivia, approached the government with a plan to test the delivery of HPV vaccines.<sup>14</sup> Working together, CIES and the Ministry of Health and Sports could pilot the HPV vaccine in the various distinct geographic and cultural areas of the country. By doing so, the vaccine would protect thousands of Bolivian girls, while increasing public awareness and demand for services throughout the country. Finally, it was hoped that the program would bolster political support, providing the government and its partners the boost they needed to improve screening and early treatment systems.<sup>14</sup>

In a short time, CIES was able to secure enough donated vaccines from the Gardasil Access Program for an initial pilot phase of 3,800 girls, with the aim of delivering the vaccine through both school-based strategies and mobile clinics in

distant communities.<sup>14</sup> When necessary, Ministry of Health or CIES clinics were also used to provide vaccines to girls who missed a planned dose.<sup>14</sup>

The project aimed to do more than just provide vaccines. It sought to build awareness and support for cervical cancer prevention among teachers, parents and clinicians—all of whom are important to achieving the high coverage rate sought by the program. Since the vaccines would only be available to girls aged 9-13, the project also aimed to improve cervical cancer screening and early treatment in its target communities. Demand for cervical screening rose among mothers and female teachers who were part of community-based education efforts before vaccinations began. Similarly, national advocacy and a broad communications effort to increase awareness of and support for cervical cancer prevention among the public spurred unprecedented commitment to end the disease nationally.<sup>14</sup>

Over the past three years, the program has grown from its initial target of 3,800 to 81,336 girls in 26 municipalities.<sup>14</sup> This partnership between CIES and the Ministry of Health and Sports, with technical support and funding from IPPF/WHR, has achieved impressively high coverage rates.<sup>14</sup>

Over 90 percent of girls successfully received all three doses.<sup>14</sup> As a result of the widespread support, the Bolivian government has been able to expand its commitment to cervical cancer prevention at all levels including initiating VIA training in the country, training Bolivian health workers through

south-to-south cooperation with colleagues from Peruvian training excellence centres, passing a national law to allow women to take a day off from work for screening, and committing to national introduction of the vaccine in 2013, subject to affordability.<sup>14</sup>

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## A NATIONAL CERVICAL CANCER PREVENTION PROGRAM: RWANDA

Until 2011, Rwanda—like many developing countries—had a significant cervical cancer problem, but no solution. The country, which did not have an organized national screening and treatment program, capacity to care for women with cancer, or a cancer registry, was losing the battle against cervical cancer.

With support from a variety of groups, including the highest levels of government, parents, religious leaders and girls, Rwanda has turned the tide on this devastating disease. Building on successful efforts in other countries to introduce the HPV vaccine screening and treatment tools, Rwanda now has one of the most ambitious national efforts in Africa. The country's prevention program is designed to be national and comprehensive, meaning that it includes vaccination, screening and early treatment.<sup>15;16</sup> The goal is to reach every Rwandan woman and girl with the best possible prevention methods.

The government's program was launched in April 2011 with three years of support from Merck & Co. and QIAGEN. Merck donated two million doses of the HPV vaccine and QIAGEN donated 250,000 tests with the necessary equipment and training.<sup>16</sup>

Through 2011, Rwanda has successfully vaccinated more than 133,000 girls aged 12-15. The efforts underway this year are only the beginning, as

Rwanda plans to expand its program to protect all girls and women from cervical cancer.<sup>17</sup> With the news that GAVI will begin to support HPV vaccination in target countries, Rwanda is one step closer to receiving the support that it needs.

**The goal is to reach every Rwandan woman and girl with the best possible prevention methods.**

The screening strategy, which is currently focused on introducing VIA, will expand to include HPV DNA tests as those become available.<sup>16</sup> Treatment efforts are seen as paramount. With no radiotherapy and no chemotherapy capacity, Rwanda must do everything to prevent a woman from developing cancer.<sup>18</sup> Currently, the government is bolstering training for nurses and physicians to provide treatment for pre-cancer and early cancer. Subsequent efforts will include creating a cancer registry to allow the government to monitor and track its current cancer burden and the impact of its efforts and to improve cancer treatment, which is currently available only to those who can travel to a hospital in Uganda.<sup>18</sup> Rwanda recognizes that these more expansive steps will require international support.

## CONCLUSION



The recent innovations and commitments discussed in this brief brings us closer to protecting girls and women from cervical cancer. As we identify and advocate for proven solutions that save the lives of girls and women during pregnancy and childbirth, we also must examine solutions that keep these same individuals alive and thriving throughout their lives. Efforts to eliminate cervical cancer and improve maternal health are synergistic; both require comprehensive, easily-

accessible prevention and care for all women, regardless of where they live. We can realize these goals by working together, including civil society, government, UN agencies, the private sector and health care providers. By sharing ideas, energy and resources, cervical cancer can be a disease of the past. We are closer now than ever before to making this a reality.

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## FOR MORE INFORMATION, VISIT THESE RESOURCES:

**Cervical Cancer Action**  
[www.cervicalcanceraction.org](http://www.cervicalcanceraction.org)

**RHO: cervical cancer**  
[www.rho.org](http://www.rho.org)

**PATH: cervical cancer prevention**  
[www.path.org/cervical-cancer.php](http://www.path.org/cervical-cancer.php)

**Alliance for Cervical Cancer**  
[www.alliance-cxca.org](http://www.alliance-cxca.org)

**WHO/ICO Center on HPV and Cervical Cancer**  
[www.who.int/hpvcentre](http://www.who.int/hpvcentre)

**GLOBOCAN**  
[globocan.iarc.fr](http://globocan.iarc.fr)

## ENDNOTES

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