Progress in Cervical Cancer Prevention: The CCA Report Card

DECEMBER 2012

Cervical Cancer ACTION
A Global Coalition to STOP Cervical Cancer

American Cancer Society · AVAC Global Advocacy for HIV Prevention · Cancer Research UK · PATH · IPPF International Planned Parenthood Federation · UICC global cancer control · Pan American Health Organization Regional Office of the World Health Organization · FIGO

HER EXCELLENCY MADAME ZUMA
FIRST LADY OF SOUTH AFRICA

PROFESSOR HARALD ZUR HAUSEN
2008 NOBEL LAUREATE
PHYSIOLOGY OR MEDICINE

FOREWORD

A New Era for Cervical Cancer Prevention

We live in an extraordinary time, one in which our human need to generate knowledge, implement creative solutions and follow through on heartfelt commitments has resulted in a phenomenal opportunity to virtually eliminate one of the greatest causes of suffering and loss for families and communities around the world.

Low-cost, effective solutions are required for the prevention and treatment of cervical cancer in less developed countries where the disease is the primary cause of cancer-related deaths in women, and where annual cervical cancer death rates are much higher than in more developed countries. Such solutions should be underpinned by education and advocacy initiatives to raise awareness of the disease and its impact on women, their immediate families and their countries.

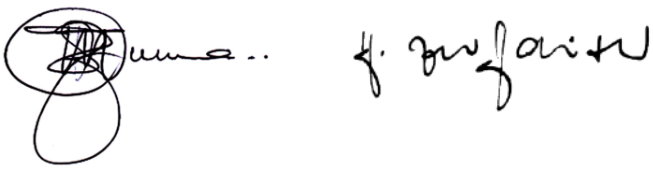
Over the past decade, dedicated scientists, researchers, clinicians, frontline health workers, community leaders and advocates have worked tirelessly to bring the scourge of cervical cancer to the world's attention and to develop and apply the necessary knowledge and technologies to prevent cervical cancer in developing countries. From Mumbai to Mexico City, Kampala to Kathmandu, innovative programs have demonstrated how to successfully deliver effective cervical cancer prevention and treatment to the women and girls who need them most.

As this report highlights, countries are taking bold steps to improve cervical cancer screening and treatment for adult women and to successfully vaccinate girls against human papillomavirus (HPV), the virus that causes cervical cancer.

Recently, the international community has begun to take notice. Commitments by the GAVI Alliance to offer HPV vaccines at subsidized rates to the poorest countries worldwide represent the latest exciting ramp-up of international leadership and support.

In order to save lives today, there must be an equal, if not greater, commitment to expanding cervical cancer prevention programs. Without support for a comprehensive approach to preventing this disease—an approach that includes cervical cancer screening and treatment and HPV vaccination—countries with the highest burden of cervical cancer are likely to be the last to offer these lifesaving services at national scale.

With powerful solutions now within reach for all countries, we have an obligation to change the course of this disease. We strongly urge the international community to recognize the need, opportunity and commitment documented in this report and to act swiftly to provide the leadership and resources necessary to encourage the expansion of programs to save the mothers of our nations and the families they nurture and preserve.



Cover Photo: John-Michael Maas/Darby Communications

Introduction

Based on the laboratory work of Professor zur Hausen and his colleagues and critical epidemiological studies of Dr. Nubia Muñoz and her colleagues, research over the past decades has shown infection with certain cancer-causing types of *human papillomavirus* (HPV) to be the necessary, but not sufficient, cause of cervical cancer. This knowledge has proven fundamental to establishing an unprecedented moment in cervical cancer prevention where new locally appropriate screening and early treatment technologies can dramatically reduce cervical cancer in communities where the disease continues unabated. At the same time, the advent of HPV vaccines, and their promise of unprecedented prevention for the next generation, has sparked a renewed interest in cervical cancer globally. This confluence of knowledge, science and possibility has triggered important changes in many high-income countries and an astounding number of low-income countries where, despite the near total lack of resources, governments and civil society leaders have rallied to take action.

Six years after HPV vaccines first became available, and thirteen years after the founding of the Alliance for Cervical Cancer Prevention (ACCP)—the first global partnership aimed at reducing cervical cancer in high-burden countries—Cervical Cancer Action offers this snapshot of the international community's collective efforts to improve cervical cancer prevention, particularly in low- and middle-income countries where the burden of disease remains unacceptably high.

Successful national programs have a number of elements in place that allow for a comprehensive strategy to reduce both current and future incidence and mortality from this disease. Endorsed by the WHO and other leading institutions, an effective comprehensive approach to cervical cancer prevention should:

- Educate women, providers and communities about cervical cancer—its cause and prevention
- Prevent HPV infection, where possible, through vaccination of adolescent girls
- Ensure women's access to screening to detect pre-cancerous changes and early treatment before invasive cancer occurs
- Encourage the development of national plans to strengthen coordination and mobilize adequate human and financial resources to sustain prevention efforts, and
- Strengthen vital health information systems to monitor program impact.

This report documents efforts taken by countries, communities and their international partners to fight this disease, particularly in low- and middle-income countries where prior efforts failed to deliver. These early steps have been hard won. In the absence of international support, many developing countries are struggling with the high cost of inaction and the challenge of garnering the resources necessary for success. We hope this report will help the international community better understand the scale and commitment of the effort underway in low- and middle-income countries and the importance of its own engagement to ensure a better future for women, families and communities.

"IN THE ABSENCE OF INTERNATIONAL SUPPORT, DEVELOPING COUNTRIES ARE STRUGGLING WITH THE HIGH COST OF INACTION..."

Photo: PATH/Wendy Stone

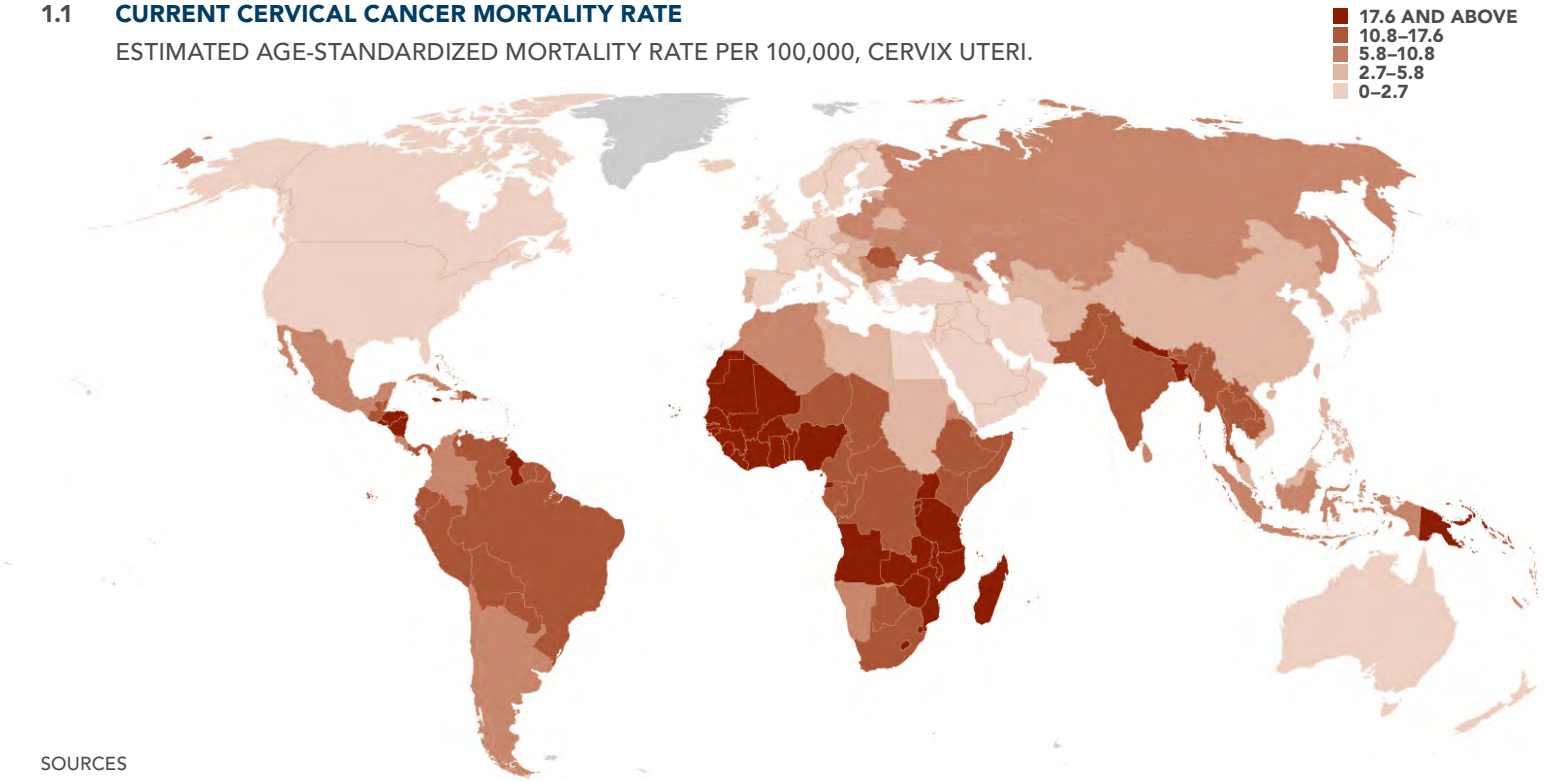
CHAPTER 1

The Global Burden of Cervical Cancer

Global cervical cancer mortality highlights the inequities of our time—inequities in wealth, gender and access to health services. Women worldwide are exposed to HPV, yet it is primarily women in the developing world who—over decades—have little or no access to early screening and treatment and who die from the consequences of this virus. Today, cervical cancer is the second most common cancer among women in the developing world, and

1.1 CURRENT CERVICAL CANCER MORTALITY RATE

ESTIMATED AGE-STANDARDIZED MORTALITY RATE PER 100,000, CERVIX UTERI.



SOURCES

- Ferlay J, 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. Accessed October 5, 2010.

Photo: PATH/Nga Le

"BY 2030, CERVICAL CANCER IS EXPECTED TO KILL OVER 474,000 WOMEN PER YEAR—OVER 95% OF THESE DEATHS ARE EXPECTED TO BE IN LOW- AND MIDDLE-INCOME COUNTRIES."

the largest cancer killer among women in most developing countries. Each year, over 500,000 women develop cervical cancer and about 275,000 women die from the disease.[1] The vast majority of these unnecessary deaths occur in developing countries, or in disadvantaged communities within wealthy countries.

Over the past several decades, we have witnessed a steady drop in cervical cancer incidence and mortality rates in high-income countries. Effective early screening and treatment technologies have driven these reductions, allowing clinicians to detect and remove cervical anomalies before invasive cancer develops. In many countries, these efforts have been complemented by public education, clinician training, improved cancer treatment and strong health information systems designed to capture data and assess the impact of programs and policies. Despite ongoing challenges in reaching marginalized communities, these efforts have paid off. For example, between 1955 and 1992, cervical cancer mortality in the United States declined by nearly 70% and rates continue to drop by about 3% each year.[2] Similarly, in the United Kingdom, cervical cancer rates were 70% lower in 2008 than they were 30 years earlier.[3]

In low- and middle-income countries, similar success has not yet been achieved. After decades of effort to implement the strategies of high-income countries, less-developed countries are still struggling to find an effective response. Meanwhile, the disease continues to grow, fanned by gains in life expectancy and population growth. By 2030, cervical cancer is expected to kill over 474,000 women per year and over 95% of these deaths are expected to be in low- and middle-income countries. In sub-Saharan Africa alone, cervical cancer rates are expected to double.[4]

The loss of these women—mothers, daughters, sisters, wives, partners, and friends—is almost entirely preventable. The following chapters will describe efforts underway to change the course of this disease in low- and middle-income countries.

1. Ferlay J, 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. Accessed October 5, 2010.
2. Detailed Guide: What are the key statistics about cervical cancer? American Cancer Society website. www.cancer.org/Cancer/CervicalCancer/Detailedguide/cervical-cancer-key-statistics. Revised December 16, 2010. Accessed January 31, 2011.
3. Cervical Cancer UK Mortality Statistics. Cancer Research UK website. info.cancerresearchuk.org/cancerstats/types/cervix/mortality/. Accessed November 23, 2010.
4. Projections of mortality and burden of disease, 2004-2030. World Health Organization website. www.who.int/healthinfo/global_burden_disease/projections/en/index.html. Accessed November 23, 2010.

CHAPTER 2

Screening and Early Treatment

Over the last decade, our knowledge, tools and capacity to screen and treat cervical pre-cancer have changed dramatically. The Papanicolaou test, commonly called the Pap test or smear, has been the gold standard for cervical cancer screening worldwide. This strategy has been effectively employed in high-income settings despite its sub-optimal performance in correctly identifying women with pre-cancerous lesions. This challenge has been mediated by frequent testing, strong systems to recall women with abnormal results and high rates of follow-up among women who need to return to a clinic for treatment.

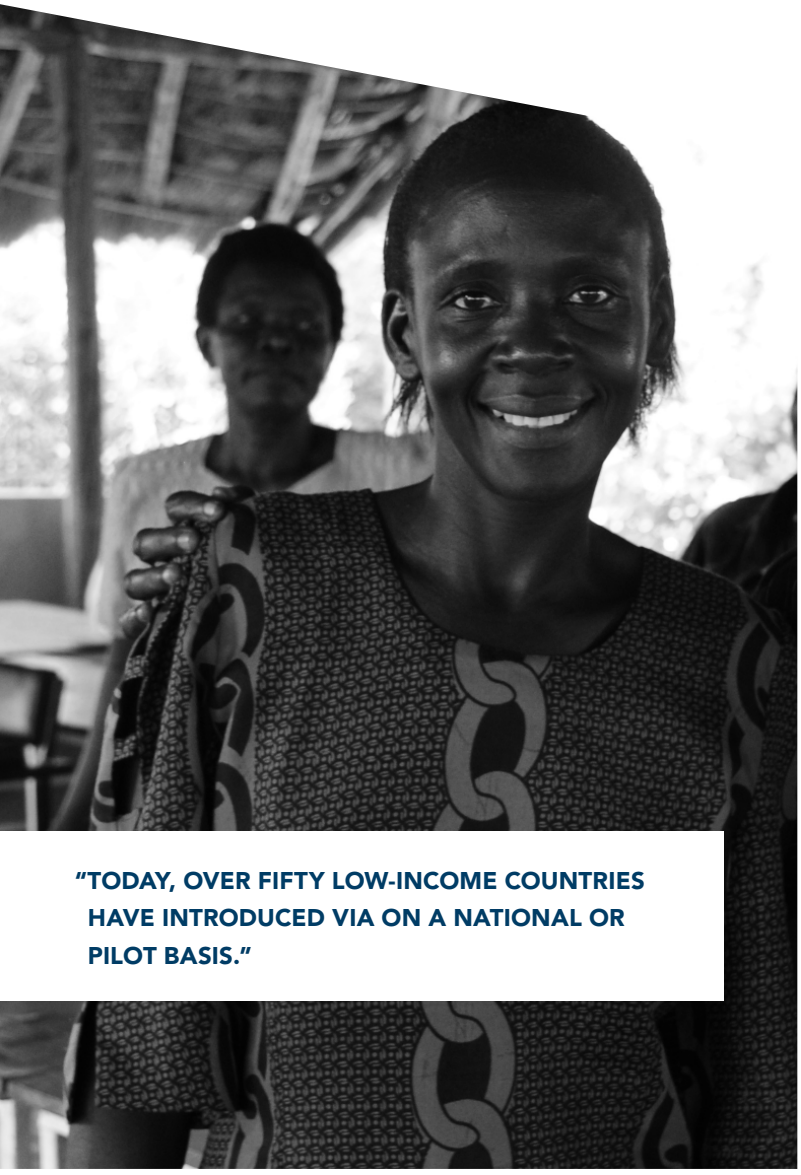
In low- and middle-income settings, however, the Pap has performed even less ideally—as the confluence of poor test performance, limited recall systems, cost and challenges preventing many women from traveling repeatedly to clinics have crippled screening systems for decades. Today, new alternatives to the Pap test represent a breakthrough in our ability to deliver effective cervical cancer prevention in all resource settings. Over the next decades, new and effective screening and early treatment methods will be the primary drivers of reduced suffering and death from cervical cancer since HPV vaccination will not show an impact on incidence and mortality for years to come.

CHAMPION PROFILE

ERICK ALVAREZ-RODAS, MD
DIRECTOR, NATIONAL CERVICAL CANCER PREVENTION PROGRAM, GUATEMALA

An inspiration to all who have worked with him, Dr. Erick Alvarez-Rodas has committed his career to improving the health of women in his native Guatemala. An obstetrician/gynecologic oncologist, surgeon and committed advocate, Dr. Alvarez-Rodas has worked tirelessly to improve the quality and scope of Guatemala's cervical cancer prevention program. Dr. Alvarez-Rodas is the Medical Director of Guatemala City's Center for Cancer Prevention and Care and Director of Guatemala's national cervical cancer prevention program within the Ministry of Health and Social Services. At the helm of Guatemala's cervical cancer prevention effort, Dr. Alvarez has sought untraditional ways to reach women in isolated indigenous communities where cervical cancer rates have been extraordinarily high. He has been credited with making cervical cancer a national priority, introducing visual inspection with acetic acid (VIA) and expanding cryotherapy, and improving training for the next generation of clinicians through the development of innovative education programs and the accreditation of colposcopists at all levels of the Guatemalan national health system.

As shown in figures 2.1 and 2.2, important new screening methods and approaches are becoming available in high-, middle- and low-income countries. Pap testing is likely to be complemented or even replaced as two new methods become available: one that responds to the technical and logistical challenges mentioned above and another—a highly sensitive and objective test that detects HPV, enabling a shorter turnaround time to identify and treat pre-cancerous lesions. Both have the potential to significantly improve the reach and outcomes of cervical cancer prevention programs.



"TODAY, OVER FIFTY LOW-INCOME COUNTRIES HAVE INTRODUCED VIA ON A NATIONAL OR PILOT BASIS."

Photo: PATH/Wendy Stone

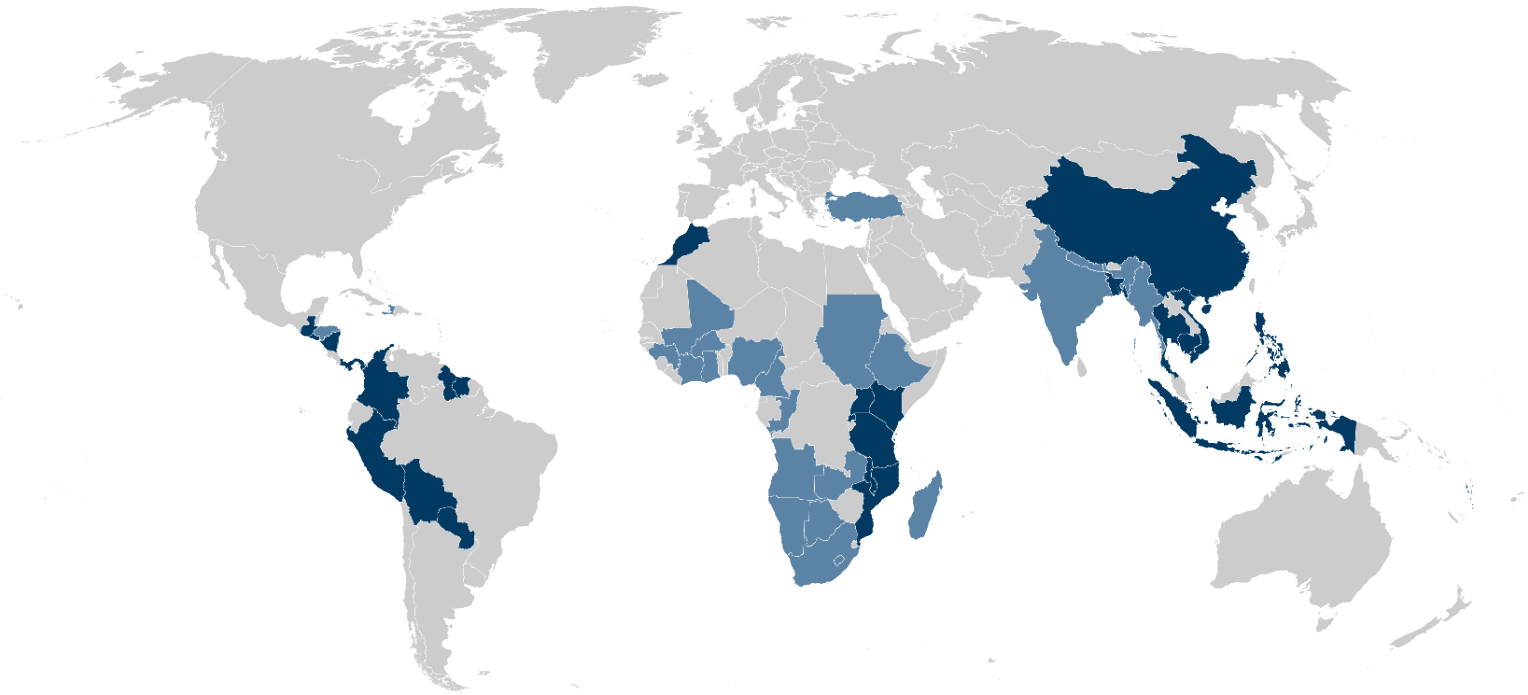
VIA AND THE "SCREEN AND TREAT" APPROACH

International research, pilot programs and innovative public-private partnerships in low-resource settings have established a solid evidence base and new array of tools that are shifting the paradigm of cervical cancer screening. Largely driven by the research efforts of the ACCP, new approaches were developed to counter program challenges often encountered in developing countries, while at the same time delivering high-quality care for women. The ACCP and other partners proved that visually inspecting the cervix after applying a staining solution of acetic acid (VIA) or Lugol's iodine (VILI) was as effective or more effective at identifying women with pre-cancerous lesions as the Pap test. This technologically simple approach can be performed by mid-level health personnel. Cryotherapy can be offered for pre-cancer treatment the same day, or very soon after screening and without an additional diagnostic confirmation step. This approach has proven its safety, effectiveness and appropriateness in the most difficult to reach communities, especially as it significantly reduces the burden of repeat visits for women who live far from health services. Compressing cervical cancer prevention into as few visits as possible increases program impact by reducing the likelihood that women may be lost to follow-up.

Several international NGOs have been instrumental in establishing pilot programs and providing technical assistance to governments, which are increasingly including VIA and the Screen and Treat approach in their national norms and programs. Today, over fifty low-income countries have introduced VIA on a national or pilot basis. Thailand is the first nation to use VIA throughout the country. Twenty-four other countries have included VIA in their national norms and have introduced the method in areas previously lacking screening services. Twenty-eight countries have ongoing VIA pilot programs. In countries like Vietnam, although VIA is currently not included in the national norms, it is available through NGO partners in many areas of the country. Additionally, in many of the countries highlighted in figure 2.1, the first-time introduction of screening methods has been complemented by crucial efforts to increase community awareness about cervical cancer and to improve follow-up and referral mechanisms for women in need of more advanced cancer care. Drivers of change, visual inspection strategies offer a viable solution to communities where previously there were no options.

2.1 INTRODUCTION OF VISUAL INSPECTION (VIA) FOR CERVICAL CANCER SCREENING

STATUS: OCTOBER 2012



NATIONAL PROGRAMS: VISUAL INSPECTION IN THE NATIONAL SCREENING NORMS AND AVAILABLE ON A LIMITED OR UNIVERSAL BASIS THROUGH THE PUBLIC SECTOR

PILOT PROGRAMS: VISUAL INSPECTION AVAILABLE THROUGH PILOT OR DEMONSTRATION PROJECTS ORGANIZED BY THE MINISTRY OF HEALTH OR NGO PARTNERS

NO VIA 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.

NATIONAL PROGRAMS

Bangladesh
Bolivia
Cambodia
China
Colombia
El Salvador
Guatemala
Guyana
Indonesia
Kenya
Malawi
Morocco
Mozambique
Nicaragua
Panama
Paraguay
Peru
Philippines
Rwanda
Suriname
Tanzania
Thailand
Uganda
Vietnam

PILOT PROGRAMS

Angola
Bangladesh
Botswana
Burkina Faso
Cameroon
Côte d'Ivoire
Ethiopia
Ghana
Grenada
Guinea
Haiti
Honduras
India
Lesotho
Madagascar
Mali
Myanmar
Namibia
Nepal
Nigeria
Republic of Congo
Rwanda
South Africa
St. Lucia
Sudan (North)
Turkey
Vanuatu
Zambia

SOURCES

- Cervical Cancer Action communication with PATH (September 2012), Jhpiego (September 2012), the Australian Cervical Cancer Foundation (November 2010), Grounds for Health (October 2010), Basic Health International (October 2010) and the Pan American Health Organization (September 2012).

"OVER THE NEXT DECADE, NEW AND EFFECTIVE SCREENING AND EARLY TREATMENT METHODS WILL BE THE PRIMARY DRIVERS OF REDUCED SUFFERING AND DEATH FROM CERVICAL CANCER."

Photo: PATH/Mike Wang

HPV DNA TESTING

HPV DNA testing is a new molecular approach to screening that detects the presence of cancer-causing types of HPV. This testing approach is most appropriate for women over 30 years of age, when persistent infection with these types of HPV indicate an important risk factor for cervical pre-cancer and cancer. Increasingly available in high-income settings, current HPV DNA testing platforms are suited for areas with developed laboratory infrastructure. Much like a Pap test, a cervical sample is taken during a clinical exam (or by self-sampling), then transported to a laboratory for processing. For those who can afford to introduce HPV DNA testing, this powerful screening method has proven to be significantly more capable of identifying positive cases than either the Pap or visual inspection methods. This allows for earlier and more effective treatment, resulting in reductions in cervical cancer rates and mortality.[1] It also introduces the possibility to reduce the number of screenings needed in a woman's lifetime.

As indicated in figure 2.2, the United States and Mexico have included HPV DNA testing in their national norms and have made the test broadly available. The United States was the first country to introduce HPV DNA testing as a primary screening protocol, in conjunction with the Pap test. Italy and Spain also have included HPV DNA testing in their national norms and have made the test available in a pilot capacity in target communities and provinces. In addition, over a dozen European countries are currently investigating the cost and operational impact of a full-scale switch to HPV DNA testing in their national screening

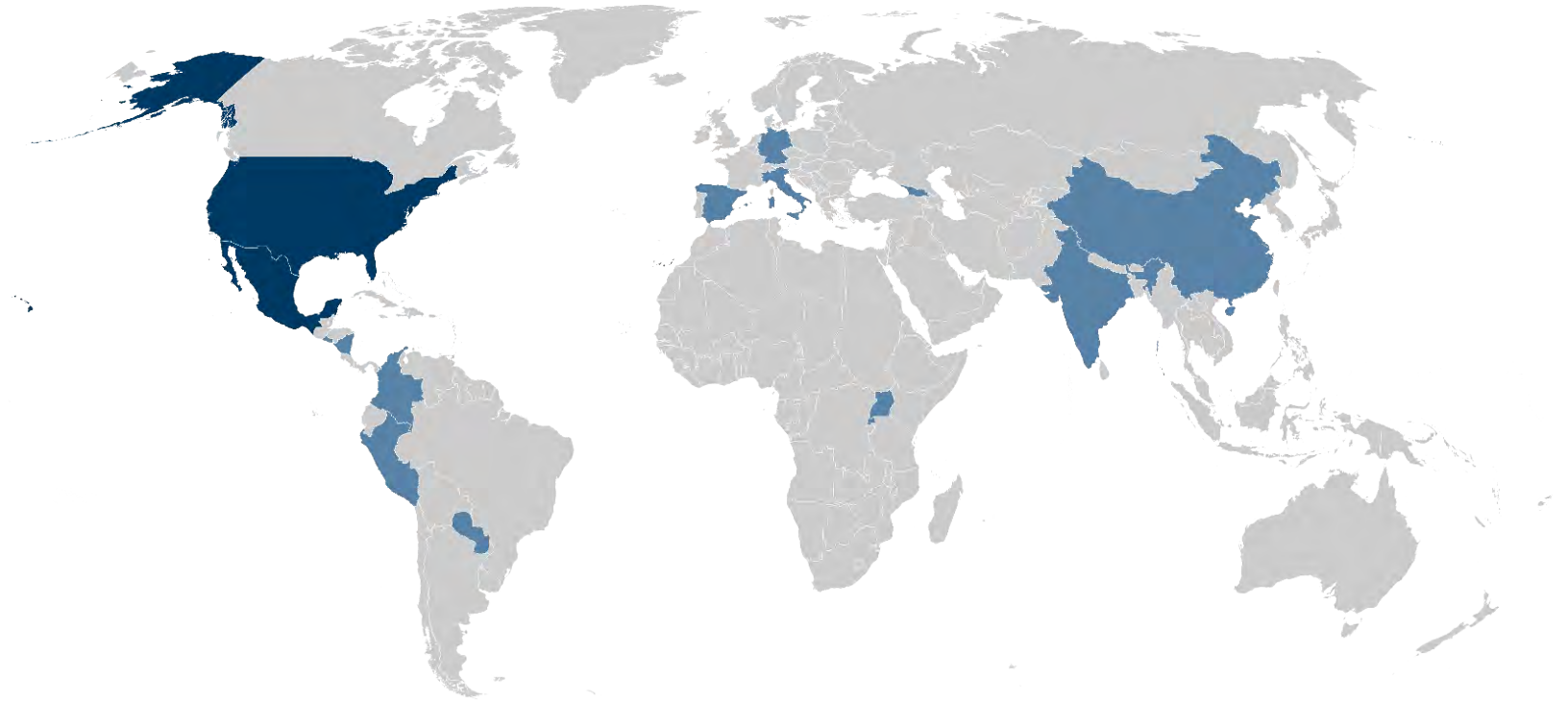
SPOTLIGHT

*CARE*HPV AND SELF-SAMPLING: BREAKING PARADIGMS

In some low-resource settings, long waits at clinics or patient embarrassment seeing male providers can reduce a woman's comfort and adherence with screening regimens. Current field studies examining the introduction of the *care*HPV test are researching the effectiveness of self-sampling coupled with HPV DNA testing. Studies comparing specimens collected by physicians to those collected by women themselves are finding only a slight drop in test performance for the vaginal self-samples. Assuming the response from women and providers continues to be positive, allowing women to take their own samples might prove an effective and efficient way forward, encouraging more women to get screened and reducing the burden of cervical screening on already pressured health systems.

2.2 INTRODUCTION OF HPV DNA TESTING FOR CERVICAL CANCER SCREENING

STATUS: OCTOBER 2012



- **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**

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NATIONAL PROGRAMS

Mexico
United States

PILOT PROGRAMS

China
Colombia
El Salvador
Germany
India
Italy
Nicaragua
Paraguay
Peru
Republic of Georgia
Rwanda
Spain
Uganda

"MEXICO WAS THE FIRST COUNTRY IN LATIN AMERICA TO INTRODUCE HPV DNA TESTING INTO ITS NATIONAL SCREENING PROGRAM."

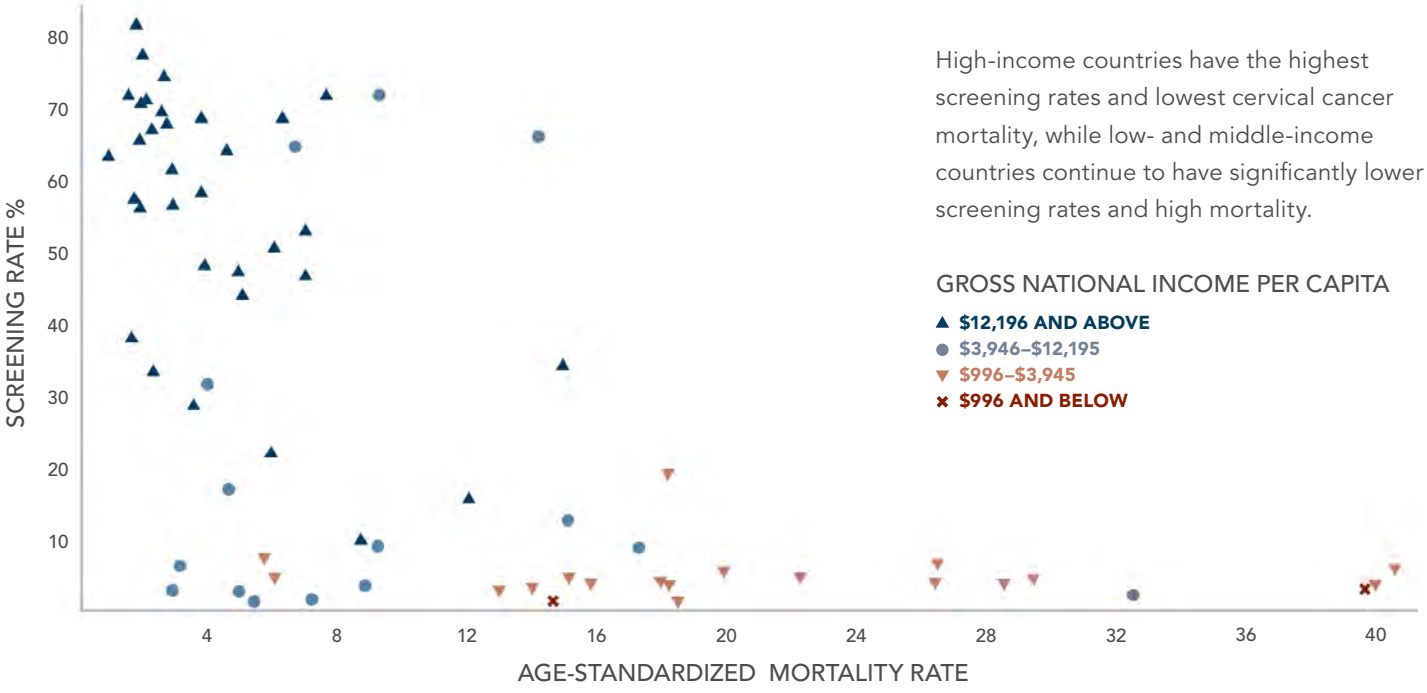
Photo: PATH/Mike Wang

SOURCES

- Cervical Cancer Action communication with PATH (September 2012), the Pan American Health Organization (September 2012) and QIAGEN (September 2012).

2.3 WEALTH, SCREENING COVERAGE, AND MORTALITY

A SAMPLE OF COUNTRIES REPORTING ON 3-YEAR SCREENING RATES



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- GNI per capita, PPP (current international $). The World Bank Group website. data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD. Accessed December 4, 2010.
- Ferlay J, 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. Accessed October 5, 2010.

programs. It is anticipated that several will begin using the method as a primary screening test in the coming years.

In low- and middle-income countries, the uptake of HPV DNA testing has been slower and more challenging. The cost of current HPV tests, along with the necessary infrastructural costs of improving treatment and reporting systems, has been daunting. Knowing that its investments will ultimately translate into financial savings and also will reduce suffering, Mexico became the first country in Latin America to introduce HPV DNA testing into its national screening program.

The interest and enthusiasm for HPV DNA testing among other low- and middle-income governments is considerable. However, many are patiently anticipating a new HPV DNA testing platform that is expected to make this technology viable even in low-resource settings. Based on the laboratory HPV DNA test, but adapted for use in areas with minimal laboratory infrastructure, the *care*HPV™ test was developed through a public-private partnership between PATH and one of the primary manufacturers of HPV DNA tests. *Care*HPV™ will potentially allow for same-day testing and treatment in low-resource settings. Anticipated to become available soon, there is a growing need to provide guidance and technical support to countries interested in introducing this technology at a national level.

AVAILABILITY OF TREATMENT

Regardless of the screening method, no cervical cancer prevention program can be effective without offering treatment for women with pre-cancer, and referral and higher-level treatment for women with cancer. Even today, access to early treatment remains the Achilles' heel of cervical cancer prevention programs. Fortunately, some low- and middle-income countries are beginning to seek international support to improve their early treatment systems. Over the past several years, governments and non-governmental partners have looked to improve cryotherapy equipment, train providers in cryotherapy and help put sustainable systems in place.

The treatment of cancer within developing country health systems remains tragically weak. Few middle-income countries and even fewer low-income countries have the resources to treat a woman with invasive cervical cancer or help manage the horrible pain of cancer sufferers.

A much stronger investment in screening and treatment systems is needed urgently. At present, no international donor provides financial resources for the scaling up of screening and treatment programs in the lowest-income countries. The challenge of establishing the infrastructure, training the providers, and securing the necessary equipment to provide services at scale continues to plague governments that are all too familiar with the ravages of this disease.

1. Sankaranarayanan R, Nene BM, Shastri SS, et al. HPV Screening for Cervical Cancer in Rural India. N Engl J Med. Apr 2 2009;360(14):1385-1394.

SPOTLIGHT

DATA SUPPORT THE USE OF CRYOTHERAPY

Ensuring that women with abnormal screening outcomes have access to safe, effective and affordable early treatment is crucial to saving lives and having an impact on cervical cancer rates. The lack of trained physicians and poor access to surgical facilities have been key treatment barriers in low- and middle-income countries. A method called cryotherapy, which uses a compressed gas to freeze and destroy abnormal cervical cells, is a proven alternative. This outpatient procedure does not rely on electricity or sophisticated medical infrastructure and can be safely performed by trained non-physician providers.

Research in Asia and Africa has shown that cryotherapy is a feasible and effective way to prevent and treat cervical cancer in low-resource settings, and can be combined with VIA or VILI to "Screen and Treat" women. To successfully include the method in their health systems, many countries will need to resolve logistical issues, such as securing a reliable local gas supply. They will also need to revise practice guidelines to shift treatment tasks to non-physician providers and train providers according to standardized guidelines to ensure quality care. The WHO and its partners are currently developing new guidance on technical specifications and clinical recommendations.

SOURCES

- JHPIEGO. Glossary of Cervical Cancer Terms. The Reading Room website. www.reproline.jhu.edu/english/6read/6gloss/glosscc.htm. Accessed November 29, 2010.
- Jacob M, Broekhuizen FF, Castro W, Sellors J. Experience using cryotherapy for treatment of cervical precancerous lesions in low-resource settings. *Int J Gynaecol Obstet.* May 2005;89(suppl 2):S13-20.

CHAPTER 3

Preventing HPV Infection

Screening and early treatment are used to identify and treat pre-cancer after infection has already occurred and persisted, but newly developed HPV vaccines can prevent infection with the two most common cancer-causing types of HPV. In order for this vaccine to be most effective, a girl should be vaccinated prior to HPV infection, which often occurs soon after sexual debut.

Since 2006, HPV vaccine has become available in many countries either through government vaccination programs or to individuals who can afford to pay through the private sector. Effectively targeting the two most common cancer-causing types of HPV (types 16 and 18), the HPV vaccine has the potential (if successfully introduced) to dramatically reduce the future burden of cervical cancer. Because cervical cancer takes years to develop, reductions in vaccine-preventable disease will not become apparent for years to come. In Australia, however, a recent reduction of genital warts among women provides early indication that the quadrivalent vaccine (which also protects against HPV 6 and 11, the causes of genital warts) is working against HPV infection.[1] Post-introduction monitoring has demonstrated that HPV vaccines have an excellent safety profile.[2]

Australia, Canada, New Zealand, the United Kingdom and the United States were among the first countries to introduce HPV vaccine in 2007 and early 2008. Acknowledging the potential of the vaccine to alleviate the public health and financial burden of national cancer prevention and treatment programs, many other high-income countries quickly followed suit. In some countries, including Australia, Canada, Denmark, the Netherlands, New Zealand and the United Kingdom, early vaccination efforts included catch-up campaigns to reach the maximum number of girls and young women who could possibly benefit from HPV vaccination. Even though they have robust screening and early treatment programs in place, and relatively low cervical cancer mortality, the number of high-income countries establishing HPV vaccine programs continues to grow. By vaccinating, these countries hope to further reduce mortality and minimize morbidity and costs related to treatment.

As of September 2012, there were 51 national public sector HPV immunization programs and 26 pilot programs globally.

The greatest public health impact of HPV vaccination will be in low- and middle-income countries where large portions of the population live with limited or no access to early screening and pre-cancer treatment, and where cancer treatment and palliative care continue to fall short of need. Among middle-income countries, Mexico was one of the earliest to introduce a public sector HPV immunization program. In 2008, Mexico initiated a pilot program targeting girls in the 125 municipalities (representing 10% of Mexican municipalities) with the lowest human development indices. Also in 2008, Panama became the first middle-income country to provide universal access to HPV vaccination. Peru plans to follow suit in 2011. The availability of HPV vaccine through the Pan American Health Organization's EPI Revolving Fund gives participating governments in Latin America and the Caribbean access to the HPV vaccine at significantly reduced prices—the high-income country vaccine prices being vastly out of reach for low- and middle-income countries. This price drop is expected to increase the speed with which governments in the Americas can introduce HPV vaccine and consequently foster additional future price decreases.

SPOTLIGHT

THE GAVI ALLIANCE STEPS UP TO MAKE HPV VACCINE AVAILABLE IN LOW-INCOME COUNTRIES

Over half of the global cervical cancer burden exists in countries that are eligible for GAVI support, and the organization is responding by offering HPV vaccine for the first time in 2013. With the goal of vaccinating tens of millions of girls by 2025, GAVI is working closely with governments and civil society to introduce HPV vaccine in countries throughout the developing world.

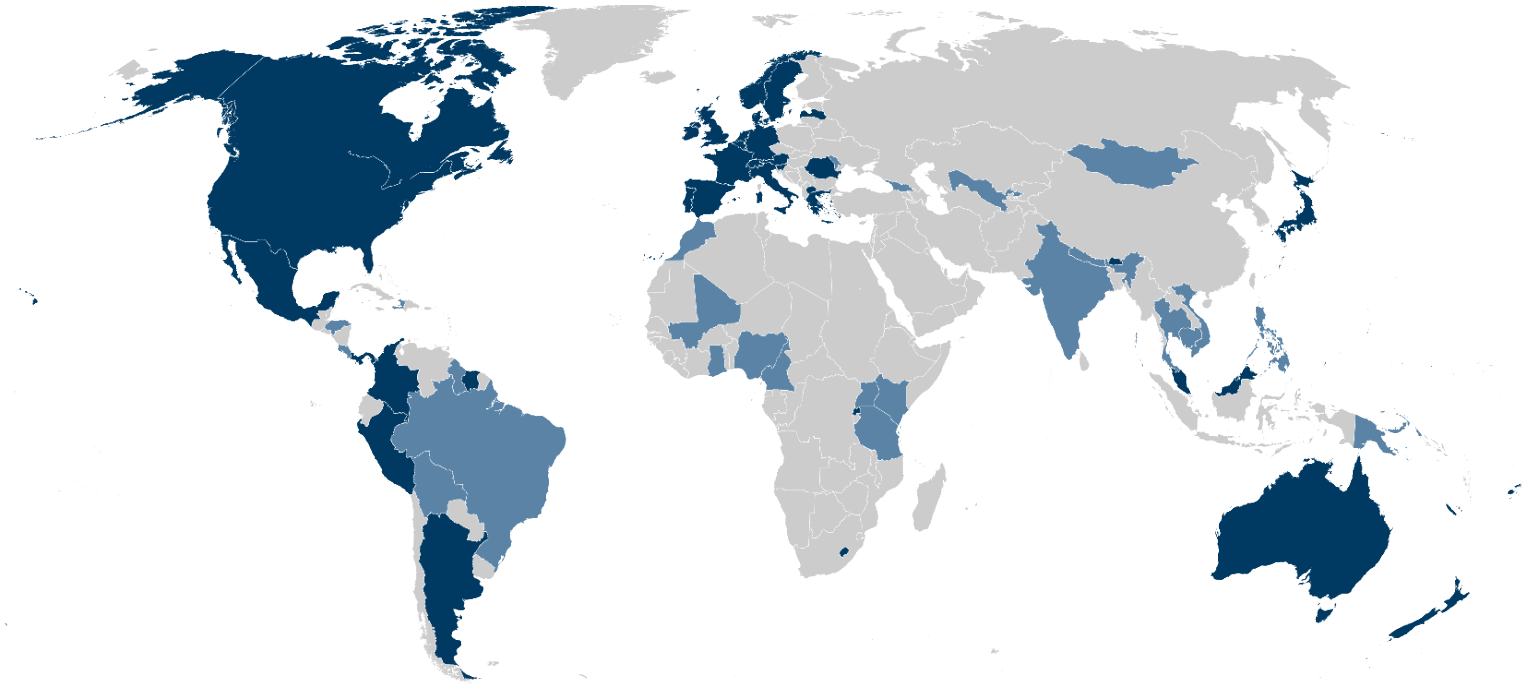
There are two ways that countries may apply for HPV vaccine support through GAVI: Countries that meet GAVI's eligibility threshold (low-income and DTP3 coverage of 70%) and have demonstrated the ability to reach adolescent girls with HPV or other multi-dose vaccines, can apply for GAVI-supported national introduction. Eligible countries that do not yet have enough experience reaching these girls may apply for vaccine and support to conduct a smaller-scale, demonstration project. The demonstration program provides the opportunity for countries to "learn by doing" and gain the experience necessary to apply for national rollout of vaccine.

GAVI has been working with vaccine manufacturers on strategies to reduce the price of HPV vaccine, so that it is affordable and sustainable for poorer countries. In 2011, one manufacturer made an indicative price offer to GAVI countries of US$5 per dose. GAVI and partners are working towards a further price reduction within the tender process. GAVI's co-financing policy means that low-income countries carrying out national introductions will pay only 20 cents per dose as co-payment, a fraction of the actual vaccine price.

GAVI's decision to tackle the burden of cervical cancer in countries with the most need will accelerate the reach of HPV vaccination, and help to protect future generations of women against a preventable cancer.

3.1 INTRODUCTION OF HPV VACCINE

STATUS: OCTOBER 2012



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NATIONAL PROGRAMS

American Samoa
Argentina
Australia
Austria
Belgium
Bermuda
Bhutan
Brunei
Canada
Cayman Islands
Colombia
Cook Islands
Denmark
Fiji
France
French Polynesia
Germany
Greece
Guam
Ireland
Italy
Japan
Latvia
Lesotho
Luxembourg
Malaysia
Marshall Islands
Mexico
Micronesia
Netherlands
New Caledonia
New Zealand
Niue
Norway
Northern Mariana
Palau
Panama
Peru
Portugal
Republic of Macedonia
Romania
Rwanda
San Marino
Singapore
Slovenia
Spain
Sweden
Switzerland
Suriname
United Kingdom
United States

PILOT PROGRAMS

Bolivia
Brazil
Cambodia
Cameroon
Costa Rica
Ghana
Guyana
Haiti
Honduras
India
Kenya
Kiribati
Mali
Moldova
Mongolia
Morocco
Nepal
Nigeria
Papua New Guinea
Philippines
Republic of Georgia
Tanzania
Thailand
Uganda
Uzbekistan
Vietnam

"LESSONS NOW EMERGING FROM THESE EARLY PROJECTS ARE ESTABLISHING A SOLID EVIDENCE BASE FOR THE WIDESPREAD INTRODUCTION OF HPV VACCINE, EVEN IN THE MOST CHALLENGING SETTINGS."

Photo: PATH/Amynah Janmohamed

Over the past six years, ministries of health, civil society and international institutions have focused on creating a foundation for future HPV vaccine introduction in low- and middle-income settings. For example, beginning in 2006, PATH, an international NGO, established demonstration projects in India, Peru, Uganda and Vietnam to assess the acceptability of HPV vaccination and compare vaccine delivery strategies. Encouraged by early positive results, other developing countries also have organized pilot projects—and more will begin to with help from GAVI.

COUNTRY PROFILE

FROM EVIDENCE TO IMPACT: HPV VACCINES AND PERU

Introducing any new service can be challenging for health systems. This is especially true in communities where there's a lack of awareness that cervical cancer is preventable. The *HPV Vaccines: Evidence for Impact* project—a collaboration between PATH and the Peruvian Ministry of Health (MINSA)—set out to generate the information that policymakers and communities needed to make informed choices about the most efficient and cost-effective strategies for delivering HPV vaccines in their communities. For example, does it make more sense to vaccinate at schools—where health teams can reach many girls in one location—or to ask parents to bring their daughters to a clinic to receive the three vaccine doses?

From 2008 to 2009, more than 10,000 Peruvian girls received HPV vaccines through the project, implemented by the National Expanded Program for Immunization (ESNI) of the Ministry of Health. Studies evaluating the pilot provided critical lessons on how to reach every girl with HPV vaccine, whether she is in an urban, rural or peri-urban area, and on how to talk to communities about cervical cancer, HPV vaccination and adult screening and treatment. The success of this collaborative effort provided the government of Peru with the evidence it needed to begin national immunization in 2011—a victory for cervical cancer prevention in one of the Latin American countries hardest hit by this disease.

For a summary of lessons learned in all four PATH projects, visit: www.rho.org/HPV-practical-experience.htm.

These programs continue to dispel concerns that HPV vaccine might prove unacceptable to families, or too difficult to deliver in lower-resource settings. In fact, the opposite seems to be true: There has been an extraordinary demand for vaccine among girls, parents, physicians and ministries of health. With good planning and strong communication and community mobilization efforts, vaccine coverage rates have been high—usually 80% or more. Furthermore, efforts to introduce HPV vaccine show a secondary benefit of increasing public awareness about cervical cancer in general and increasing demand for screening among adult women.

The World Health Organization (WHO) and other health institutions now advocate for the introduction of HPV vaccine as part of a national cervical cancer control strategy in countries where it is feasible and cost-effective, and where the vaccine can be delivered to adolescent girls effectively.

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CHAPTER 4

A Comprehensive Cervical Cancer Response: Planning and Investment

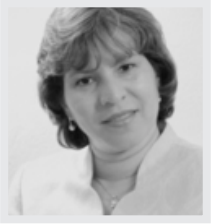
Increasingly, governments and health leaders in developing countries recognize the burden of cancer on their communities. Among all cancers, cervical cancer remains one of the most deadly, yet it is the one for which we have the necessary tools in-hand to nearly eliminate. As highlighted in the previous pages, programs are effective when a concerted effort is made to improve knowledge and expand access to high-quality prevention services. Support for planning, policy development and implementation are needed to reinforce these efforts.

PLANNING

Cervical cancer is a disease that affects multiple parts of the health system. Mobilizing these disparate components requires a coordinated plan at the country level, and clarity and agreement that cervical cancer is a national priority. Integrating cervical cancer into a national cancer control plan (NCCP), or developing a national cervical cancer strategy, is an important step in establishing a platform for action and financial support. An added benefit of developing a plan is that a wide group of stakeholders can become aware of the local burden of cervical cancer, set priorities for prevention and control based on proven strategies, and work to allocate sufficient funding to achieve targets. Program plans can also provide a framework to assess the efficacy of current approaches and encourage fresh thinking about alternative uses of limited resources.

CHAMPION PROFILE

JACQUELINE FIGUEROA, MD, MPH
DIRECTOR, NATIONAL CANCER REGISTRY, HONDURAS



An accomplished physician, registry advocate and public health leader, Dr. Jacqueline Figueroa has dedicated her career to improving the effectiveness of cervical cancer prevention programs and local and national cancer registries in Honduras. In addition to working closely with disadvantaged communities, Dr. Figueroa successfully established both the hospital registry of the Centro de Cáncer Emma Romero de Callejas in Tegucigalpa and—with passion and perseverance—the National Cancer Registry of Honduras, where she currently serves as Director. The tremendous effort put forth by Dr. Figueroa has helped paint a more accurate picture of the scope of cervical cancer care in Honduras—one that will enable health authorities to plan effective interventions that make the best use of limited resources.

To date, few high-burden countries have completed a NCCP or cervical cancer strategy. Some countries, such as Bolivia, Tanzania and Uganda, have drafted targeted cervical cancer strategies to allow focused cervical cancer efforts to move forward in the absence of a larger NCCP or non-communicable disease plan. As more countries undertake planning, what matters is that they receive the necessary support to develop realistic and achievable strategies to reduce the burden of cervical cancer affordably, equitably and quickly.

HEALTH INFORMATION AND CANCER REGISTRIES

The public sector's ability to implement effective cervical cancer strategies has been hampered by the lack of awareness about disease burden in their countries. Cancer registries are crucial for understanding the burden of disease, but vary widely in their quality and scope. Although the greatest burden of cervical cancer is found in eastern Africa and in South Asia, these regions have traditionally lacked the resources and information systems necessary to record cancers in population-based registries. Similarly, few countries document the number of women screened according to schedule, and even fewer collect data on the number of women with abnormal screening results who actually receive test results and appropriate follow-up services.

In the absence of health indicators and systematic reporting, health planners and policymakers must rely on estimates of disease burden and on qualitative reports of cervical cancer prevention efforts in the public sector. As women who die of cervical cancer are often marginalized, every effort must be made to identify a woman in need of care before cancer occurs, but we must also count those we have failed to protect. The collection of information about cervical cancer and the conduct of present programs must be substantially improved. Inclusion of cervical cancer indicators in multi-country health research initiatives—such as the World Health Survey—could have a strong impact on our knowledge of the disease and on our ability to measure success.

COSTS OF A COMPREHENSIVE RESPONSE

To date, success in curbing cervical cancer has largely been achieved only in wealthy countries. In the past, the cost of Pap-based screening and early treatment systems placed prevention outside the reach of many countries. When low- and middle-income countries invested in modest Pap-based screening systems, in most cases these efforts did not translate into a reduced burden of cervical cancer. Introduction of more affordable and efficient approaches, increased early screening and treatment, and lower vaccine costs are essential to expanding the reach and impact of national investments.

4.1 % OF POPULATION COVERED BY POPULATION-BASED CANCER REGISTRIES, BY REGION

SOURCES

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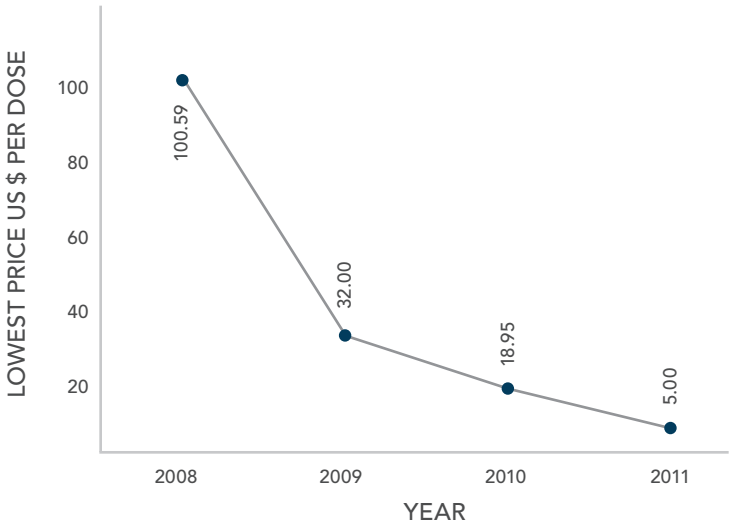
Sophisticated modeling studies have concluded that new cancer prevention tools such as HPV vaccines and VIA are "good buys" for public health. They offer countries new, potentially cost-effective options for designing locally appropriate cervical cancer control strategies. These new screening tools and approaches could make cervical cancer control significantly more affordable and prevention a realistic possibility for the first time.

However, the full costs of implementing a comprehensive cervical cancer strategy are unknown. For many low-income countries, allocating funds to combat cervical cancer is a new cost that must be weighed against competing health needs. Without data on the operational costs of implementing these approaches, concerns about affordability and sustainability may prevent countries from moving forward. The international community can support countries to assess the cost and impact of their current efforts. Redirecting resources that have been committed to unrealistic Pap-based efforts could allow countries to implement better prevention and control measures in feasible, affordable and sustainable ways.

4.2 HPV VACCINE PRICES DROPPING FAST



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FINANCING HPV VACCINATION

Despite evidence that HPV vaccine will have a particularly strong impact on disease in low- and middle-income countries, the pace of its introduction has lagged. Issues surrounding the financing of HPV vaccination are important factors in the uptake of the vaccine and merit attention. Over the past few years, countries interested in introducing HPV vaccine have negotiated directly with vaccine manufacturers. Vaccine prices are only beginning to drop now, five years after they became commercially available. A price reduction of 30% was recently announced in Canada, providing evidence that HPV vaccine prices are negotiable.[1] In 2012, the Pan American Health Organization (PAHO) negotiated a price of US$13.48 per dose for the bivalent vaccine and US$14.25 per dose for the quadrivalent vaccine on behalf of member nations that purchase vaccines through the PAHO EPI Revolving Fund. And, as noted earlier, GAVI will pay US$5 or less per dose.

When GAVI begins rolling out the vaccine, 57 of the world's poorest countries will gain affordable, sustainable access to a highly effective prevention tool. Middle-income countries, however, are not eligible for GAVI support, and for them the cost may be prohibitive. In these countries especially, economic analyses, such as cost-effectiveness studies, can provide important evidence for committing national resources to HPV vaccination.

FINANCING SCREENING AND TREATMENT

It is important that national screening programs not be abandoned to fund HPV vaccination programs. Current vaccines do not protect against all cancer-causing types of HPV, and women who have already been infected with HPV do not benefit much from the vaccine. Even with high coverage for HPV vaccination, cervical cancer screening will remain a necessity for decades. Despite cervical screening having been identified as a "best buy" in global public health, little donor support exists for expanded access to screening methods or for supplying low-cost tools for early treatment.

Although approaches such as VIA are less resource-intensive, providing effective screening and treatment services requires investments by each country to support personnel, training, and a well-functioning referral process. One exception has been PEPFAR, which has committed to providing US$30 million over the next five

years for cervical cancer prevention among HIV-positive women through the Pink Ribbon Red Ribbon (PRRR) initiative. This public-private partnership includes the U.S. State Department, the George W. Bush Institute, Susan G. Komen for the Cure and the Joint United Nations Programme on HIV/AIDS (UNAIDS). PRRR aims to fight breast and cervical cancers in sub-Saharan Africa and Latin America.

GLOBAL INVESTMENT TO PREVENT CERVICAL CANCER

In high-income countries, routine women's health care includes cervical cancer prevention. In developing countries, women's health services rarely exist beyond family planning and maternal care. Through pilot efforts and targeted national introduction, developing countries are demonstrating their interest in new cervical cancer prevention tools. However, commitments from the global community to support population-based implementation are lacking. Donor investment and technical assistance must be increased to move current efforts beyond pilot scale and ensure accessibility in high-burden areas.

Cervical cancer places an immeasurably tragic and unjustifiable social and economic toll on women, their families and communities—a toll that will rise in coming decades unless concerted action is taken. Developing a focus on proven and affordable cervical cancer prevention provides the global health community with an unprecedented opportunity to dramatically reduce this burden, and to deliver on its commitments to protect women's health throughout the lifecycle.

COUNTRY PROFILE

PLANNING FOR SUCCESS IN BANGLADESH

National cancer control plans are important frameworks that allow countries to clarify their priorities and mobilize human, political and financial resources to achieve their cancer control goals. Surprisingly few countries, even in the developed world, have operational and funded national cancer control plans.

Bangladesh is a recent exception. Its "National Cancer Control Strategy and Plan of Action, 2009-2015" was developed in 2008 through a consultative process that engaged important stakeholders in the development of national cancer priorities and strategies. This plan is shaping current efforts by the Ministry of Health and its partners to reduce cervical cancer, which is estimated to kill over 10,000 Bangladeshi women each year.

The plan aims to improve access to prevention, treatment and care services, and encourage coordinated planning and integrated resources for cancer control activities. Ensuring early clinical diagnosis and treatment of cervical cancer through improved screening programs, enhanced laboratory capacity and high-quality early treatment at the district level are among the plan's key objectives.

Implementing a plan comprised of evidence-based interventions, with well-defined goals and a robust system to monitor progress, will enable the Bangladeshi government to achieve better cervical cancer outcomes for the greatest number of people.

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4.3 DISEASE BURDEN AND INVESTMENT: CERVICAL CANCER AND PREGNANCY-RELATED COMPLICATONS (MATERNAL MORTALITY)

	PREGNANCY-RELATED COMPLICATIONS (MATERNAL MORTALITY)	CERVICAL CANCER
ANNUAL DEATHS	**273,500 women** DIE ANNUALLY	**275,000 women** DIE ANNUALLY
MORTALITY TRENDS	↓ **34%** DECREASE IN MORTALITY 1990-2008	↑ **45%** INCREASE IN MORTALITY 1990-2008
PRIORITIZATION IN MILLENIUM DEVELOPMENT GOAL (MDG)?	**YES** (MDG 5—IMPROVING MATERNAL HEALTH FROM PREGNANCY-RELATED COMPLICATIONS)	**NO**
CURRENT ANNUAL INVESTMENT IN DEVELOPING WORLD	**USD 12 billion**	**???** EXACT FIGURE UNKNOWN

WOMEN AT RISK, AT DIFFERENT TIMES IN THEIR LIVES

In recent years, impressive progress has been achieved decreasing mortality from pregnancy-related complications (maternal mortality) in developing countries. This is the result of significant investment in evidence-based best practices and rigorous impact monitoring, driven in part by desire to achieve Millennium Development Goal 5.

Our success reducing maternal mortality is cause for great hope that, with similar investments, these same mothers, having been saved during pregnancy, also will be protected 10 or 20 years later in life when they face the threat of cervical cancer.

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Conclusion

As this report illustrates, the last decade has been one of extraordinary change for cervical cancer prevention. Ten years ago, the knowledge and tools to allow for an effective approach to the disease in low-resource settings had not been developed or validated. Physicians, planners and policymakers in developing countries were aware of the toll of cervical cancer, but found their single prevention tool—the Pap test—to be inadequate, except in certain settings. Today, after extraordinary scientific breakthroughs, strategic field research and tireless efforts by governments and their partners, a new reality is emerging.

New, more effective approaches to prevention and treatment are being introduced in many places. In both low- and high-resource settings, women, girls and communities are more aware of cervical cancer and, thus, are increasingly likely to seek preventive services. With these positive, early results, we are now at a turning point. We have the knowledge, tools and vision to enact change. Yet we still lack sufficient leadership and adequate resources to make cervical cancer a disease of the past. Despite calls from Ministers of Health, First Ladies and current and former global health leaders, and the significant efforts made by coalitions and their partners, cervical cancer still is not considered a 'priority' among many international agencies and donors. Preventing the unnecessary and untimely deaths of 275,000 women each year—and at the same time making progress on related issues of poverty and inequity—has yet to be embraced.

It is time for international agencies, governments and donors to step up their efforts to support national cervical cancer prevention initiatives. The engagement of the international community on this issue could result in one of the most significant "easy wins" in global public health today. By working to improve current prevention programs, we have the unique opportunity to strengthen health systems, expand equity and access for underserved populations of young adolescents and mature women, and establish important links between traditional women's health issues—like sexual and reproductive health, maternal and child health, and female cancers.

"THE ENGAGEMENT OF THE INTERNATIONAL COMMUNITY ON THIS ISSUE COULD RESULT IN ONE OF THE MOST SIGNIFICANT 'EASY WINS' IN GLOBAL PUBLIC HEALTH TODAY."

The world must set ambitious goals for the next five years. Cervical Cancer Action calls on international governments, agencies, donors, NGOs, advocates and health care providers to work together towards these feasible goals:

- **Ensure cervical cancer achieves deserved 'priority status' in the global public health arena.** Over the past three years, global and regional advocacy efforts have been successful in documenting demand from low- and middle-income countries and sparking greater interest globally. Looking forward, we must work to broaden our base of supporters by integrating cervical cancer into the emerging priority areas of global health. One opportunity for doing so is through the global movement to prevent non-communicable diseases. Building on the momentum of the UN High-Level Summit on Non-communicable Diseases in September 2011, Member States at the World Health Assembly have committed to a 25% reduction in premature deaths from non-communicable diseases by 2025. Cervical cancer prevention should be at the center of this agenda going forward.
- **Secure a solid international resource base for cervical cancer.** Partnerships between international donors and developing country governments will be required to take the next steps towards reducing HPV vaccine price and increasing access to HPV immunization, screening and early treatment. In the coming years, a coordinated donor effort will be necessary to tackle the financial demands of GAVI subsidization of HPV vaccine and to expand national efforts to improve screening programs for women who are not vaccine-eligible. A sizable commitment by international donors to support comprehensive cervical cancer prevention efforts will be essential.
- **Strengthen policy and planning at the country level.** The development of cervical cancer strategies, ideally backed by national cancer control plans, will be necessary to catalyze national efforts and clarify the need for international technical, political and financial support in the near future. Strengthening the measurement capacity of national cancer registries will also be an essential step.

SPOTLIGHT

AFRICA LEADS THE WAY ON HPV VACCINE ADVOCACY

From the earliest days of HPV vaccine availability, African health advocates and political leaders have recognized the potential of the vaccine to save lives. Encouraged by the impressive efforts of a handful of dedicated women—including Princess Nikky Onyeri, a Nigerian women's cancer advocate; the Honorable Sarah Nyombi, an outspoken Ugandan parliamentarian; First Lady of Uganda, Madame Museveni; and First Lady of South Africa, Madame Zuma—African advocacy has been among the strongest globally. Efforts have included six regional "Stop Cervical Cancer in Africa" conferences, including one in July 2012 hosted by First Lady Dr. Christine Kaseba Sata and the government of Zambia. These conferences, and other regional and national events, have inspired thousands of grassroots advocates, physicians, parliamentarians, journalists and African public health leaders to work together in the fight against cervical cancer.

From left to right: Her Excellency Mrs. Tobeka Madiba-Zuma, First Lady of the Republic of South Africa, Her Excellency Princess Nchegechege of Swaziland, Princess Nikky Onyeri of Nigeria (Founder and Executive Director of the Princess Nikky Breast Cancer Foundation, and the conference host), and Her Excellency Hon. Janet Museveni of Uganda at the Third Annual Stop Cervical Cancer in Africa Meeting in Cape Town, South Africa in 2009.

Photo: Princess Nikky Breast Cancer Foundation

- **Expand high-quality, comprehensive screening and early treatment programs.** In the coming decades, effective screening and early treatment programs will remain our most powerful tools to save lives. The international community must support national efforts to achieve population-based coverage of all women eligible for screening and ensure that systems are in place to make a significant impact on this disease. These programs should include prevention education in the community, delivery of quality treatment for pre-cancer and creation of cancer registries to track and measure the effectiveness of programs. Cost estimates are needed to plan for the financial investments required to expand current programs.
- **Support HPV vaccine introduction in the world's 57 poorest countries through the GAVI Alliance.** GAVI's commitment to support HPV vaccine introduction has the potential to alter the course of this disease throughout the developing world.
- **Expand partnerships.** Cervical cancer prevention has already proven to be a catalytic issue—bringing together supporters and advocates from the fields of sexual and reproductive health, cancer, immunization, HIV/AIDS and gender, and non-communicable diseases. In the evolving global health landscape, we are hopeful that even more organizations will see the potential for and importance of a multi-disciplinary effort to improve and expand prevention programs.

Together, we have arrived at a spectacular moment in the history of global health. For the first time, the chance to eliminate one of the world's most devastating cancers is within our reach.

Cervical Cancer Action calls on our partners to join us in taking these next important steps towards making cervical cancer a disease of the past.

ABOUT CERVICAL CANCER ACTION

Cervical Cancer Action: A Global Coalition to Stop Cervical Cancer (CCA) was founded in 2007 to expedite the global availability, affordability, and accessibility of new and improved cervical cancer prevention technologies to women in developing countries.

We would gladly receive information and updates to complement the information provided in this report. Please email us at info@cervicalcanceraction.org with any comments or suggestions.

FOR MORE INFORMATION:

Cervical Cancer Action
www.cervicalcanceraction.org
Email: info@cervicalcanceraction.org

ADDITIONAL RESOURCES

- **Cervical Cancer Action:** www.cervicalcanceraction.org
- **RHO Cervical Cancer Library:** www.rho.org
- **Alliance for Cervical Cancer Prevention:** www.alliance-cxca.org
- **The GAVI Alliance:** www.gavialliance.org/support/nvs/human-papillomavirus-vaccine-support
- **Union for International Cancer Control:** www.uicc.org/programmes/cervical-cancer-initiative-cci/issue
- **WHO/ICO (Institut Català d'Oncologia) Information Center on HPV and Cervical Cancer:** www.who.int/hpvcentre/en
- **World Health Organization—Cervical Cancer:** www.who.int/reproductivehealth/topics/cancers/en/
- **International Federation of Gynecology and Obstetrics (FIGO) Guidance on Cervical Cancer:** www.figo.org/publications/miscellaneous_publications/global_guidance

FOR MORE INFORMATION:

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