Cervical cancer is the second most common cancer in women worldwide. A woman dies every two minutes from cervical cancer1 with about 500,000 new cases and 275,000 deaths each year.

Cervical cancer incidence and death are increasingly concentrated among the poor: nearly 90% of those deaths occur in developing countries where cervical cancer is the most common cancer in women and women lack access to cancer screening and treatment services.

Virtually all cervical cancer cases (99%) are linked to genital infection with human papillomavirus (HPV), which is the most common viral infection of the reproductive tract.

There are 40 different genotypes of HPV that can infect the genital area of men and women. Two “high-risk” genotypes (HPV 16 and 18) are responsible for the majority of HPV-related cancers.

The peak incidence of HPV infection generally occurs between the ages of 16 and 20 years. HPV infection usually resolves spontaneously, but it may persist, and precancerous cervical lesions may follow. If untreated, these may progress to cervical cancer over a period of 20–30 years.

Cancer, death rates per 100,000 population, age standardized, females. 2008

Source: WHO

During the period of persistent HPV infection, precancerous changes may be detected in the cervix; early detection of these changes is an effective strategy for prevention of cervical cancer. Ensuring universal access to cervical cancer prevention, screening and treatment services is key to reducing the burden of cervical cancer worldwide.

However, in developing countries there are many barriers that hinder successful implementation of cervical cancer screening programs. Besides the lack of necessary equipment and human resources, competing healthcare priorities (e.g. maternal and perinatal mortality, AIDS or TB), or the low level of education of women and limited access to health information. As a result most women in developing countries are not screened and adequate treatment for cervical cancer is largely unavailable.

Countries with well-organized programmes to detect and treat precancerous abnormalities and early stage cervical cancer can prevent up to 80% of these cancers.

Today, there are new technologies are available like the Visual Inspection with Acetic Acid (VIA) screening system that are appropriate for developing country settings as they are a highly effective, low-cost approach to early treatment.

However, effective screening programmes and follow-up of women with abnormal screening tests have been difficult to implement in low-and middle-resource settings. Mortality rates from cervical cancer are therefore much higher in the developing world.

Thus, the women at higher risk of death from cervical cancer have the least access to secondary prevention and their only hope to prevent cancer of the cervix is through an HPV vaccine.

**HPV immunization**

HPV vaccines that prevent against 16 and 18 infections are now available\(^2\) and have the potential to reduce the incidence of cervical and other anogenital cancers. The HPV vaccine addresses a critical public health need, and is one element of a comprehensive cervical cancer control strategy.

**World age-standardized incidence rates of cervical cancer**

On 17 November 2011, the GAVI Board announced its decision to take first steps to introduce vaccines against cervical cancer for eligible countries, responding to projected demand from countries and recommendations by the World Health Organization (WHO).

WHO recommends “HPV vaccination of girls aged 9-13 years through national immunisation programmes in countries where cervical cancer constitutes a public health priority and where vaccine introduction is feasible, sustainable financing can be secured, and the vaccines are considered cost-effective”.

GAVI’s decision to provide HPV vaccine support to poorer countries is a significant step forward in the global effort to improve access to reproductive health for women.

The high price of HPV vaccines is a barrier to their introduction in developing countries. GAVI is working with manufacturers to reduce the price of the vaccines to a level that is affordable and sustainable.

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\(^2\) In June 2006, Merck’s Gardasil received approval from the US Food and Drug Administration and, shortly afterwards, was provisionally recommended by the US Advisory Committee on Immunization Practices for girls and women aged 9 to 26. The quadrivalent vaccine gives 100% protection against infection from HPV types 16 and 18, which are responsible for around 70% of all cervical cancers. It also protects against HPV types 6 and 11 that cause genital warts. GlaxoSmithKline Biologicals applied to the European Agency for the Evaluation of Medicinal Products for international regulatory approval in March 2006 to market its bivalent vaccine Cervarix for HPV types 16 and 18.  

\(^3\) WHO/ICO HPV Information Centre, 2010.
As of May 2013 GAVI announced a **record low price for HPV vaccines** (US$ 4.50 per dose) that has opened the door for poor countries to have access to a sustainable supply of HPV vaccines.

On World Cancer Day 2013, several countries mostly in the African region including Ghana, Kenya, Madagascar, Malawi, Niger, Sierra Leone, Tanzania and Lao were approved for GAVI support and are introducing the HPV vaccine protecting girls aged 9 to 13, mainly through school based programmes throughout the 2013-2014 period.

Up to two million women and girls in these nine developing countries could be protected from cervical cancer by 2015.

**Mozambique** will be running a more focused **HVP demonstration project** as a first step towards an HPV roll-out strategy to vaccinate girls aged 10 integrated as part of a national cancer prevention and screening plan.

The **service delivery strategy and promotion** of HPV vaccines will need to be based on country-specific considerations of what is affordable, feasible and culturally acceptable.

**Mozambique: context**

With a population of 22,894,000 Mozambique has 6.18 million women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 3,690 women are diagnosed with cervical cancer and 2,356 die from the disease.4

Cervical cancer ranks as the first most frequent cancer in Mozambique, and the first most frequent among women between 15 and 44 years of age.

The **incidence rates of cervical cancer** in the country are among the highest in the world, with 42-60/100,000 women/year.

About 32% of women in the general population are estimated to harbour cervical HPV infection at a given time, and 79% of invasive cervical cancers are attributed to HPVs 16 or 18.

Men and women in Mozambique face a variety of **threats to their sexual and reproductive health**. About half of Mozambique’s population is younger than the age of 18. More than 1.4 million5 people in Mozambique are living with HIV, and many are unaware of their status. More than 520 women die in childbirth each year for every 100,000 women who experience live births6.

Forty-two percent of the country’s women aged 20-24 reported having given first birth before the age of 187.

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5 UNAIDS, 2009.
7 Best data available during the 2000-2009 period Mozambique Demographic and Health Survey 2003.
8 WHO/ICO HPV Information Centre, 2010
Given that the HPV vaccine is primarily intended for young adolescent girls prior to sexual initiation; it is worth noting that the median age at first sex intercourse among young men and women (15-24 years) for women is approximately 16.1 years of age. And 28% of young women (15-24 years) reported having had sex before the age of fifteen.

Although primary school enrolment figures have improved, many young adolescent girls, especially those in rural areas, have little or no education. Only 4% of adolescent girls are enrolled in secondary school in Mozambique. Female young women (15-24 years) literacy rate is 47.5%.

Knowledge about the burden of Human Papillomavirus (HPV) infections in Sub-Saharan Africa is very limited. A study conducted among women in the Manhiça district of Mozambique reported a percent prevalence of HPV infection of 75.9%.

The distribution of human papillomavirus (HPV) types in cervical cancers is essential for design and evaluation of HPV type-specific vaccines. While HPVs 51 and 35 were the two most common types in cytologically normal women in Mozambique, HPVs 16 and 18 remained the two most frequently identified types in cervical cancer.

According to a study the most common worldwide major oncogenic HPV types 16 and 18 were present in 69% of cervical cancers, suggesting that a vaccine targeting HPV-16 and -18 would hence have a substantial impact on cervical cancer also in Mozambique.

Type-specific vaccines against Human Papillomavirus (HPV) may be an efficacious strategy to combat invasive cervical cancer in African high-risk countries such as Mozambique where there is a high incidence of invasive cervical cancer and where there are no effective screening programs in place.

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**Our work in cervical cancer**

Since 2001 ISGlobal’s research centre, CRE-SIB, in collaboration the Centro de Investigação em Saúde de Manhiça (CISM), a Mozambican biomedical research centre, and other organizations has conducted studies in Mozambique in order to:

- Determine the genotype distribution of HPV infections
- Identify the Vaccine-related HPV genotypes in women with and without cervical cancer
- Describe the prevalence and the etiology of Sexually Transmitted Infections and the prevalence of cervical neoplasia among Women from a Rural Area of Southern Mozambique.

The CISM is supporting the Mozambican Ministry of Health (MISAU) by conducting operational research in Mozambique to inform decisions about how to introduce the HPV vaccine. The CISM has been appointed by the MISAU as the managing organization of the HPV demonstration programme, following GAVI’s approval of a HPV demonstration project in Mozambique.

The CISM and ISGlobal are currently assessing the feasibility and acceptability of implementing a HPV vaccination program among adolescent girls in rural and urban areas of Mozambique.

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9 Mozambique Demographic and Health Survey 2003.
13 IDIBELL, Institut Català d’Oncologia (ICO), L’Hospitalet de Llobregat, Barcelona, Spain; Department of Pathology, Maputo Central Hospital, Maputo, Mozambique, Department of Pathology, Faculty of Medicine, University Eduardo Mondlane, Maputo, Mozambique;The Manhiça Health Research Center (CISM), Manhiça, Mozambique; DDL Diagnostic Laboratory, Voorburg, The Netherlands; Institut d’Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Universitat de Barcelona, Barcelona, Spain.
14 Feasibility and acceptability of HPV vaccine introduction in the districts of Manhiça and KaMavota, Mozambique.