

# HPV (Human papillomavirus)

## Quick facts

- HPV (human papillomavirus) is the primary cause of cervical cancer.
- Worldwide, cervical cancer affects 490,000 women each year with more than 270,000 deaths.
- About 85 percent of women dying from cervical cancer reside in developing countries.
- Two HPV types – 16 and 18 – account for 70 percent of cervical cancer cases (though regional variations exist).

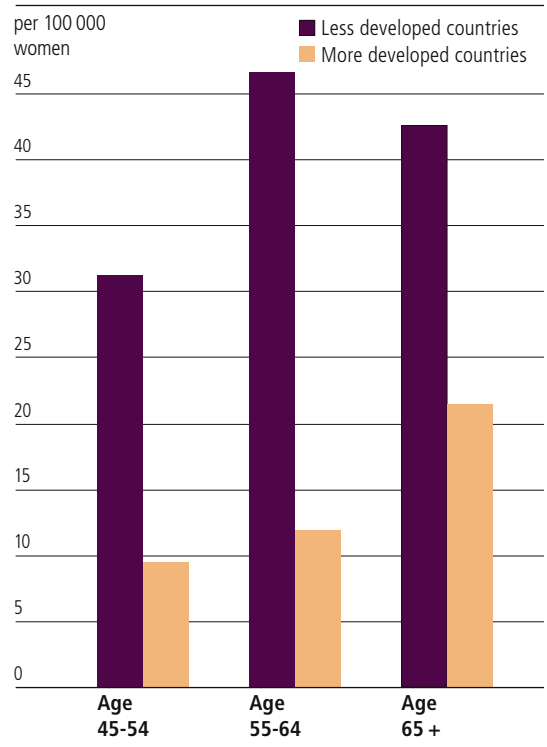
**Many more women die of cervical cancer in the developing world than in wealthier countries. Lack of screening programmes in the developing world means that the disease is not identified until it is too late, resulting in higher mortality.**

- HPV also causes other health problems including penile cancer, anal cancer, vaginal cancer, oral cancer, and genital warts.
- The two new HPV vaccines are highly effective at preventing HPV 16 and 18 and related precancerous lesions, and they are safe. The vaccines have proven to be effective for at least the 5 years they have been used in trials. It is anticipated that they will continue to protect women for many more years.
- Women most often are infected with HPV during sex. Vaccination is only effective before women or girls are infected with the targeted virus types, therefore it is best to immunize prior to sexual debut.
- Computer modelling suggests that, in terms of cervical cancer prevention, it is more cost-effective to focus on vaccinating as many girls as possible, rather than vaccinating both girls and boys.
- Several studies have shown that decision-makers worldwide are under-informed about cervical cancer, HPV, and the new vaccines. They need more information in order to make informed choices about cervical cancer control strategies.

## Cervical cancer treatment and prevention

Cervical cancer is easy to prevent, even among unvaccinated women, if pre-cancerous lesions are detected and treated early on. Over the past few decades, routine Pap smear screening has dramatically reduced cervical cancer mortality in the industrialised world. But Pap smears, and other screening methods, have proved difficult to implement in developing countries. While it is important to continue looking for effective ways to expand screening for women already infected with HPV the new vaccines offer a complementary strategy for reducing cervical cancer morbidity and mortality worldwide.

## Age specific cervical cancer mortality rates



## HPV vaccines

Two HPV vaccines are being licensed in a number of countries. In clinical trials, both vaccines were at least 95 percent effective in preventing persistent HPV infection and 100 percent effective in preventing type-specific cervical lesions. The Merck vaccine also protects against genital warts.

Both vaccines require three doses within six months. Research is ongoing to determine if alternative dosage schedules, which may be more suitable to developing world situations, will provide the same levels of protection.

The new vaccines are expensive on the retail market – costing at least \$ 360 for the three-dose series in the US. However, both companies have committed to offering the vaccines at reduced prices in the developing world.

## HPV vaccination challenges

It is best to offer HPV vaccine prior to sexual debut – for that reason programmes are seeking to protect girls before puberty or in their early teens. But most health care systems in developing countries do not offer routine adolescent health visits – the children only present for medical emergencies or when they become pregnant. Reaching these girls and young women with new adolescent health initiatives will be one of the primary challenges.

Identifying predictable financing for the new vaccine (and new adolescent health systems) and negotiating public sector pricing also remain to be done.

Cultural barriers and rumours fuelled by misinformation also may hinder HPV vaccine acceptance. However, to date response to the vaccine has been largely enthusiastic and supportive among the health care community, women's groups, and the general public in the industrialised world.

Finally, we lack evidence on duration of vaccine protection, the best ways to reach girls, the impact of vaccinating both girls and boys, and vaccine efficacy among HPV+ populations.

Many organisations are actively involved with clinical and operational research, policy analysis, and advocacy related to HPV vaccine. The Bill & Melinda Gates Foundation is a major supporter of much of this work. Collaborating partners and their main roles include:

- **The World Health Organization (WHO)**, global HPV advocacy, technical information sharing, developing standards.
- **The Catalan Institute of Oncology (ICO)**, web-based HPV database for country and regional decision-makers.
- **Harvard University**, modelling of health impact and cost effectiveness of various HPV programme approaches.
- **International Agency for Research on Cancer (IARC)**, epidemiological studies assessing HPV type-specific prevalence among various populations.
- **PATH**, operational research in India, Peru, Uganda, and Viet Nam to gather the evidence for informed decisions about how to introduce HPV vaccine.
- **Alliance for Cervical Cancer Prevention**, field studies, especially in relation to screening approaches.
- **Vaccine manufacturers and academia**, clinical research.

## Resources

**RHO Cervical Cancer Prevention**  
[www.rho.org](http://www.rho.org)

**WHO – Cancer**  
[www.who.int/cancer/en/](http://www.who.int/cancer/en/)

**PATH – Cervical Cancer**  
[www.path.org/cervicalcancer](http://www.path.org/cervicalcancer)

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

This fact sheet was developed by GAVI in collaboration with PATH. Most of the information presented here comes from two documents: "The Case for Investing in Cervical Cancer Prevention," Alliance for Cervical Cancer Prevention, 2004 and "HPV Vaccines: Promise and Challenges," PATH, 2007.  
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