



Factsheet: HPV vaccine

What is HPV? HPV is an extremely common virus. HPV is the most widespread sexually transmitted virus; 80% (four out of five) of the world's population will contract the virus once.

There are over 100 identified types of HPV; each different type has been assigned a number. HPV affects the skin and mucosae (any moist membranes such as the lining of the mouth and throat, the cervix and the anus). Different types affect different parts of the body and cause different lesions.

Around 40 of the HPV types affect the genital areas of men and women, including the skin of the penis, vulva (area outside the vagina), anus, and the linings of the vagina, cervix, and rectum. Around 13 of these types are thought to be associated with the development of cancer, so are called high risk. The remaining genital HPV types have been designated low risk as they do not cause cervical cancer but they can cause other problems such as genital warts.

What is the HPV vaccine?

The HPV vaccine provides protection against two high risk types of HPV (types 16 and 18) that cause 70% of all cervical cancers. Two vaccines are available: Gardasil and Cervarix. Gardasil, developed by MSD Merck and marketed by Sanofi Pasteur MSD received its European license in September 2006. The other vaccine, Cervarix, developed by GlaxoSmithKline received its European license in September 2007 and since 2008 has been used by the NHS as part of the national HPV immunisation programme. From September 2012, the UK changed from Cervarix and is now vaccinating girls with Gardasil.

Both vaccines prevent infection by HPV 16 and 18. Gardasil also protects against the low risk HPV types 6 and 11 these types cause genital warts.

Vaccines are given by injection into the muscle, usually the upper arm. Two separate doses are needed.

The second dose should be given anytime between six to 12 months after the first, but it can be given up to 24 months after.

Where can girls get the vaccine?

The UK's national HPV immunisation programme was introduced into schools in 2008. The vaccination is free for all girls from the age of 12 up to their 18th birthday but only girls aged 12-13 will be routinely offered the vaccine. Girls are normally offered the vaccine in school but it is also possible to obtain the vaccines via a local GP surgery. If you are under 18 and have not been offered the vaccine please contact your GP for further advice.

If you are not eligible for the free vaccine you can pay for them privately. Some local chemists are also offering the vaccine. Check with your pharmacist to see if the vaccine is available near you.

Will being vaccinated prevent all cases of cervical cancer?

No, Gardasil and Cervarix protect against the two most common HPV types that cause cancer, types 16 and 18. It has been estimated that this will prevent about 70% of cervical cancers. You should note however, that it is important to attend regular cervical screening when invited even if you have been vaccinated so that abnormalities caused by other HPV types may be detected.

How effective is the vaccine?

Both Gardasil and Cervarix are over 98% effective in preventing cervical abnormalities associated with HPV 16 and 18 in women who have three doses and in those who have not yet been infected with HPV [i](#), [ii](#), [iii](#) and [iv](#).

In September 2014 the NHS changed the number of doses required from three to two. This change has been made because recent research shows that antibody response to two doses in adolescent girls is as good as a three dose course in the age group.

However, regardless of the number of doses the vaccine is less effective if the girl being vaccinated has already contracted the virus. Although neither of the vaccines protect against all types of HPV there is evidence that at least in the short term, they provide cross-protection against other HPV types *v*. Research indicates that the HPV vaccine could prevent two thirds of cervical cancers in under 30s by 2025 but only if uptake of the HPV vaccination is at 80% *vi*.

Are there any side effects from the vaccine?

Thousands of girls and women of different ages took part in the clinical trials for the HPV vaccines. The UK has been using Gardasil since September 2012 however, the vaccine has been extensively used in other countries across Europe and in the US since it was licensed in 2006. More than 26 million people worldwide have been vaccinated with Gardasil and its safety is well established.

Side effects for the Gardasil HPV vaccine include:

Very common side effects (may occur in more than 1 per 10 doses of vaccine) reported by girls who have received the vaccine are:

- Injection site problems such as redness, bruising, itching, swelling, pain or cellulitis
- Headaches.

Common side effects (may occur in less than 1 per 10 but more than 1 per 100 doses of vaccine):

- Fever
- Nausea (feeling sick)
- Painful arms, hands, legs or feet.

Rare side effects (may occur in less than 1 per 100 but more than 1 per 1,000 doses of vaccine):

- More than 1 in 10,000 people who have the Gardasil HPV vaccine experience: an itchy red rash (urticaria)
- Fewer than 1 in 10,000 people who have the Gardasil HPV vaccine experience: Restriction of the airways and difficult breathing (brochospasm) *vii*.

How is the safety of the vaccine monitored in the UK on an ongoing basis?

The Medicines and Healthcare products Regulatory Agency (MHRA) is the government agency responsible for ensuring that medicines and medical devices work, and that they are acceptably safe. The MHRA collects information from both healthcare professionals and patients on suspected drug reactions and suspected defects in medicinal products via yellow card reports. The MHRA records these reports onto a specialised safety database that allows for the analysis of pharmaceutical products and devices.

Will someone who has had the vaccine need to go for cervical screening?

The HPV vaccines are not a substitute for cervical screening. Having the vaccine reduces the risk of developing cervical cancer however, it does not protect against ALL cervical cancers. It is really important for girls who have received the vaccine to attend cervical screening when invited, later in life.

References

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- ii. Szarewski A. 2012. Cervarix®: a bivalent vaccine against HPV types 16 and 18, with cross-protection against other high-risk HPV types. *Expert Rev. Vaccines* 11(6), 645–657.
- iii. Dillner J. 2010. Four year efficacy of prophylactic human papillomavirus quadrivalent vaccine against low grade cervical, vulvar, and vaginal intraepithelial neoplasia and anogenital warts: randomised controlled trial. *BMJ* 340: c3493. Available online: <http://www.bmj.com/content/341/bmj.c3493>. Accessed 09.09.2014.
- iv. Kjaer S et al., 2009. A pooled analysis of continued prophylactic efficacy of quadrivalent human papillomavirus (Types 6/11/16/18) vaccine against high-grade cervical and external genital lesions. *Cancer Prevention Research* 2 (10), 868-878.
- v. Wheeler CM et al., 2012. Cross-protective efficacy of human papillomavirus (HPV) - 16/18 AS04- adjuvanted vaccine against cervical infection and precancer caused by non-vaccine oncogenic HPV types: end-of-study (4-year) analysis of the randomised, double-blind PATRICIA trial. *Lancet Oncology* 13(1), 100-110.
- vi. Cuzick J, Castanon A, and Sasieni P. 2010. Predicted impact of vaccination against human papillomavirus 16/18 on cancer incidence and cervical abnormalities in women aged 20–29 in the UK. *British Journal of Cancer* 102, 933-939.
- vii. NHS choices website <http://www.nhs.uk/Conditions/vaccinations/Pages/hpv-vaccine-cervarix-gardasil-side-effects.aspx>. Accessed 09.09.2014.

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