



EUROPEAN MEDICINES AGENCY  
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## **EPAR summary for the public**

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### **Cervarix**

human papillomavirus vaccine [types 16, 18] (recombinant, adjuvanted, adsorbed)

This document is a summary of the European public assessment report (EPAR) for Cervarix. It explains how the Committee for Medicinal Products for Human Use (CHMP) assessed the medicine to reach its opinion in favour of granting a marketing authorisation and its recommendations on the conditions of use for Cervarix.

#### **What is Cervarix?**

Cervarix is a vaccine. It is a suspension for injection that contains purified proteins for two types of the human papillomavirus (types 16 and 18). It is available in vials or prefilled syringes.

#### **What is Cervarix used for?**

Cervarix is used in males and females from the age of 9 years to protect against the following conditions caused by certain types of the human papillomavirus (HPV):

- cancer of the cervix (neck of the womb) or anus;
- precancerous lesions (abnormal cell growth) in the genital area (cervix, vulva, vagina or anus).

Cervarix is given according to official recommendations.

The vaccine can only be obtained with a prescription.

#### **How is Cervarix used?**

Cervarix is given as two or three doses depending on age.

People aged 9 to 14 years can be given two doses, six months apart. If necessary, the second dose can be given between 5 and 13 months after the first dose.



People aged 15 and above are given three doses. It is recommended that there is one month between the first and second doses, and five months between the second and third doses. However, the second and third doses can be given after longer gaps if necessary.

It is recommended that individuals who receive the first dose of Cervarix should complete the course of vaccination. The vaccine is given as an injection into the shoulder muscle.

## **How does Cervarix work?**

Papillomaviruses are viruses that cause warts and abnormal tissue growth. There are more than 100 types of papillomavirus, some of which are associated with genital and anal cancers. HPV types 16 and 18 cause approximately 70% of cervical cancers and 90% of anal cancers.

All papillomaviruses have a shell or 'capsid', which is made up of distinctive proteins called 'L1 proteins'. Cervarix contains purified L1 proteins for HPV types 16 and 18, which are produced by a method known as 'recombinant DNA technology': they are made by cells into which a gene (DNA) has been introduced that makes the cells able to produce the L1 proteins. The proteins are assembled in 'virus-like particles' (structures that look like HPV, so that the body can recognise them easily).

When a patient is given the vaccine, the immune system makes antibodies against the L1 proteins. The antibodies help to destroy the virus. After vaccination, the immune system is able to produce antibodies more quickly when it is exposed to the real viruses. This will help to protect against the diseases caused by these viruses.

The vaccine is made using an 'adjuvant system' that contains MPL, a purified lipid (a fat-like substance) extracted from bacteria, which enhances the response of the immune system to the vaccine. The vaccine is 'adsorbed', which means that the virus-like particles and the MPL are fixed onto an aluminium compound, to stimulate a better immune response.

## **How has Cervarix been studied?**

For the prevention of precancerous lesions or cancer of the cervix, Cervarix has been investigated in one main study involving almost 19,000 women aged between 15 and 25 years. Cervarix was compared with another vaccine that is not active against HPV (in this case, a vaccine against hepatitis A virus). The study looked at how many women, who in the vast majority had no current infection with HPV types 16 or 18 at the start of the study, went on to develop precancerous lesions in the cervix linked to infection with these types of HPV. The women were followed up for up to four years after the first dose of the vaccines.

A second main study looked at the effect of two doses of Cervarix in girls aged 9 to 14 years compared with the effect of three doses in girls and women aged 15 to 25. The main measure of effectiveness was the development of protective antibodies against HPV types 16 and 18 one month after the last dose in previously unvaccinated subjects.

Five additional studies also looked at the development of antibodies in girls and women from 9 to 25 years of age who were given three doses of Cervarix.

The company also presented data on protection against precancerous vulvar and vaginal lesions in patients given Cervarix.

For the prevention of anal lesions and cancer, four studies were carried out. One study compared the level of protective antibodies developed in adult women after Cervarix use and compared it with those of another HPV vaccine already authorised for anal lesions and cancer. A similar study was carried out

in girls aged 9 to 14 years of age. To support the use in boys and men, two other studies compared the development of protective antibodies in males versus females.

### **What benefit has Cervarix shown during the studies?**

Cervarix was more effective than the comparator vaccine in preventing abnormal cell growth in the cervix. In the first main study, after an average of 39 months, four of the more than 7,000 women who received Cervarix and who had not been infected with HPV types 16 or 18 before, developed precancerous lesions in the cervix linked to these HPV types. This compared with 56 of the more than 7,000 women who received the other vaccine. The study also showed that Cervarix can provide protection against infection or lesions linked to some other HPV types.

The second main study showed that two doses of Cervarix given 5 to 13 months apart were no less effective in girls aged 9 to 14 than a standard three-dose vaccination was in older subjects: all previously unprotected subjects had developed high levels of protective antibodies against virus types 16 and 18 one month after their last dose.

The additional five studies also showed that all of those aged 9 years and older who were given three doses of Cervarix developed high levels of antibodies against HPV types 16 and 18. Taken together these results suggested that the vaccine would be effective at protecting from infection with these HPV types when given from 9 years of age, and that a two-dose vaccination is suitable in those aged 9 to 14.

Data on protection against precancerous vulvar and vaginal lesions indicated that Cervarix could be effective in protecting against these lesions.

For the prevention of anal lesions and cancer, the studies that compared either 2 doses or 3 doses of Cervarix with another HPV vaccine authorised for anal cancer showed that antibody levels in women and girls were similar or better with Cervarix than with the other vaccine. The studies looking at the levels of antibodies in males showed that their levels were similar to those in females. These data indicate that Cervarix could be effective in protecting against anal lesions and cancer in males and females.

### **What is the risk associated with Cervarix?**

The most common side effects with Cervarix (seen in more than 1 patient in 10) are headache, myalgia (muscle pain), reactions at the site of injection including pain, redness and swelling, and fatigue (tiredness).

For the full list of all side effects and restrictions with Cervarix, see the package leaflet

### **Why has Cervarix been approved?**

The CHMP decided that Cervarix's benefits are greater than its risks and recommended that it be given marketing authorisation.

### **What measures are being taken to ensure the safe and effective use of Cervarix?**

Recommendations and precautions to be followed by healthcare professionals and patients for the safe and effective use of Cervarix have been included in the summary of product characteristics and the package leaflet.

## Other information about Cervarix

The European Commission granted a marketing authorisation valid throughout the European Union for Cervarix on 20 September 2007.

The full EPAR for Cervarix can be found on the Agency's website: [ema.europa.eu/Find medicine/Human medicines/European Public Assessment Reports](http://ema.europa.eu/Find%20medicine/Human%20medicines/European%20Public%20Assessment%20Reports). For more information about treatment with Cervarix, read the package leaflet (also part of the EPAR) or contact your doctor or pharmacist.

This summary was last updated in 07-2016.