

# HPV vaccination protects against cervical cancer

Vaccination against human papilloma virus (HPV) was implemented in the Danish childhood vaccination programme in 2009. The vaccine provides protection in up to 70% of all cervical cancer cases. Denmark has one of the highest incidence rates of cervical cancer in Europe. Combined with the cervical screening programme, the vaccination programme can prevent the majority of cervical cancer cases over time.

The Danish Health Authority recommends that all girls are vaccinated against HPV at the age of 12. The Danish Health Authority still estimates that the benefits of vaccination by far outweigh any possible adverse reactions from the vaccine.

## Facts about cervical cancer in Denmark

- Every year, around 375 women are diagnosed with cervical cancer.
- About half of the 375 women are younger than 45 years.
- Every year, around 100 women die from the cervical cancer.
- Every year, 6,000 women have surgery for early stages of cervical cancer (conic section).
- 8,500 women have survived cervical cancer, but many women experience pain after the treatment.
- The cervical screening rate is 67%, but the aim is that at least 75% will accept the invitation.
- Cervical cancer is caused by infection with certain HPV types, also termed 'wart virus', that is widespread and transmitted through sexual contact.

## HPV vaccines

- The Danish childhood vaccination programme uses one of the authorised HPV vaccines: Cervarix or Gardasil. From 1 February 2016, the Danish childhood vaccination programme uses Cervarix.
- The European Commission has authorised the HPV vaccines upon recommendation by the European Medicines Agency's (EMA) Committee for Medicinal Products for Human Use. The European Commission's authorisation is also valid in Denmark.
- Gardasil and Cervarix protect against the HPV types 16 and 18, which cause about 70% of all cervical cancer cases.
- HPV is transmitted through sexual contact. Condoms provide poor protection against HPV. To get the full effect, the vaccine should be given before sexual initiation.
- Globally, more than 19 million people have been vaccinated with Cervarix and more than 63 million with Gardasil.
- In Denmark, more than 0.5 million people have received the HPV vaccine. The vast majority have been vaccinated with Gardasil.

## The vaccine works

New Danish research by the Danish Cancer Society shows that the Danish HPV vaccination programme works. The risk of cervical changes at an early stage was reduced by 73% among women born in 1993 and 1994, who had been vaccinated with the HPV vaccine compared with those who had not been vaccinated. Scientific studies made in the USA, Australia and Sweden show the same development.

In the coming years, we expect to see a further decline in the occurrence of early stage cervical cancer, in the number of conic sections, and in the number of women diagnosed with cervical cancer and women who die from cervical cancer. The Danish Cancer Society estimates that the Danish vaccination programme has prevented at least 1,400 cervical cancer cases and saved around 280 lives.

## The safety of the vaccine

HPV vaccines may cause adverse reactions, just like other vaccines and medicines. The European Commission's authorisation of the HPV vaccines is based on extensive clinical studies of the vaccines' efficacy and any adverse reactions. More than 20,000 women participated in the studies. The vaccines are still closely monitored and worldwide reports of suspected adverse reactions form part of the EMA's review. In 2014, a Danish-Swedish scientific study was published, comprising just under 1 million girls aged 10-17 years, about 300,000 of whom had received close to 700,000 HPV vaccine doses. The study found no causal relationship between HPV vaccination and the development of a number of autoimmune, neurological and thromboembolic (blood clots) conditions. The known adverse reactions are described in the vaccines' product information.

## Monitoring of reported adverse reactions from HPV vaccines

An adverse reaction is an unwanted and harmful effect of the vaccination. People are not alike, and some people may experience rare and serious adverse reactions from certain types of medicine. Both healthcare professionals and citizens can report suspected adverse reactions directly to the Danish Medicines Agency. A suspicion is enough to submit a report. You can send a report if you suspect that the symptoms may be caused by the vaccine – you do not have to be sure that there is a link.

### Reports about HPV vaccines

Since HPV vaccination was implemented in the Danish childhood vaccination programme in 2009, we have received 2,320 reports of suspected adverse reactions from HPV vaccines up to and including 2016. 1,023 of the reported adverse reactions have been categorised as serious. In the same period, 1,724,916 vaccine doses were sold.

### Assessment of relationship with the vaccine

When we assess reports of suspected adverse reactions, one of the things we look at is whether there is a greater likelihood that other diseases or circumstances can explain the symptoms. To gain reliable knowledge about the relationship between the vaccine and symptoms,

## Definition of serious adverse reactions

In accordance with international criteria, the Danish Medicines Agency defines an adverse reaction report as serious if the condition requires hospitalisation or prolongation of hospitalisation, results in persistent or significant disability or incapacity (or inability to attend school), birth defects, congenital anomaly, or is life-threatening or results in death.

The reports related to HPV vaccination that we have classified as serious include reports of the condition Postural Orthostatic Tachycardi Syndrome (POTS), fainting, neurological symptoms and a number of diffuse symptoms, such as long-term headache, fatigue and stomach ache.

It is important to examine whether a disease occurs more frequently in vaccinated persons than in unvaccinated persons. The major population surveys conducted so far suggest no causal relationship between HPV vaccination and a number of serious diseases.

### Special measures related to the review of adverse reactions from HPV vaccines

In the autumn 2015, the EMA's Pharmacovigilance Risk Assessment Committee (PRAC) made an extraordinary review of the safety profile of HPV vaccines and focused on the two syndromes POTS and CRPS. Denmark asked PRAC to make the review. The conclusion is that data do not provide support for a causal relation because the two syndromes POTS and CRPS do not occur more frequently in HPV vaccinated individuals than in unvaccinated individuals. The thorough review was based on published research data, data from clinical trials and reports of suspected adverse reactions from patients and

healthcare professionals as well as data from the member countries, including a recent review of adverse reaction reports submitted by the Danish authorities. PRAC also consulted a group of leading experts in this field and took into account detailed information from a number of patient groups. All members of the committee agreed on the recommendation.

All members of PRAC and members of the expert group are subject to the EMA's rules on impartiality.

### General procedures for changing the use of vaccines

The European Commission has authorised the HPV vaccines and will decide on any changes to the use of HPV vaccines on the basis of its general procedures. As for other medicines, such changes can be:

- Addition of new adverse reactions or recommendations to the product information.
- Limitations to the authorisation of the vaccines.

- Suspension of the authorisation so that the vaccines must no longer be sold.

If the European Commission wants to make changes to the authorisation, documentation that the vaccines cause adverse reactions is required.

In Denmark, the Danish Parliament has decided to implement HPV vaccination in the Danish childhood vaccination programme on the basis of a scientific assessment from the Danish Health Authority.



Reporting



Registration in the  
DKMA's database



Distribution  
to the EMA, the WHO and  
the pharmaceutical  
company



New evaluations and scientific  
studies that can determine  
whether symptoms are adverse  
reactions from the vaccine