

Alison Gehring is the Policy Manager at the Royal Society for Public Health and Caitlyn Donaldson is the Managing Editor of Publications at the Royal Society for Public Health. For correspondence please email: [cdonaldson@r sph.org.uk](mailto:cdonaldson@r sph.org.uk)

## Alison Gehring and Caitlyn Donaldson

# HPV vaccination: why education is the key to ensuring it is a public health success

The UK Human Papillomavirus (HPV) vaccination programme is under way and education is the key to ensuring it is a public health success. The evidence suggests that HPV infection in girls starts to rise from age 14, so immunising before then (at age 12-13) is preferred to protect the greatest number of girls from infection.

According to Cancer Research UK, each year around 3000 cases of cervical cancer are diagnosed in the UK, and there are over 1000 deaths, making it the second most common cancer in women under 35 years, after breast cancer.

Almost all cases of cervical cancer are attributed to HPV, of which there are over 100 different types. Of these, only a few high risk types cause cervical cancer, principally types 16 and 18, although some other types are associated with other diseases, including genital warts. In virtually all cases HPV transmission is through genital skin-to-skin contact, although not necessarily sexual intercourse. About 8 out of 10 women will get HPV at some point in their lives and men can also carry the virus. In most cases it will disappear on its own accord, however, there is no treatment or cure for HPV and if the immune system doesn't get rid of it, it can lie dormant in the body for years with or without symptoms, before in some cases, going on to cause cervical cancer.

Therefore the development of two HPV vaccines for women - Gardasil (by Sanofi Pasteur MSD) and Cervarix (by GSK) - was met with great expectation, offering a powerful weapon in the fight against cervical cancer. Trials have showed that the vaccines provide immunity against 70% of

high risk HPV-type infections, and they (one or both) have been approved in many countries. The UK held its first pilot scheme in Manchester and in September 2008 it launched the routine HPV vaccination programme for 12 & 13 year old girls countrywide, using the Cervarix vaccine and delivered largely through schools.

However, unlike Gardasil, Cervarix does not protect against genital warts, something that led to some disappointment that Cervarix has been chosen by the UK Government for the routine vaccination programme. Dr Sarah Jarvis, GP at Richford Gate Medical Practice and RCGP spokesperson on women's health comments "With 80,000 cases a year of genital warts, this was a clear opportunity to address a significant public health problem, at the same time as preventing serious disease."

Trials into whether males would also benefit from the vaccination are also being carried out. Men are the vectors of HPV, and the virus is also associated with anal and penile cancers. Men who have sex with men would also benefit as a result of vaccinating boys. However, even if men are not vaccinated, some argue that they will benefit from herd immunity (the idea that in communicable disease transmission, it is more difficult to maintain a chain of infection when large numbers of a population are immune). Conversely, it is also argued that without the inclusion of boys in the vaccination programme, herd immunity will be difficult to attain.

While the development of the vaccine itself might have been the biggest hurdle, there remains the obstacle of delivery. The

Manchester trial had a 70% uptake of the vaccine, which is a good start, but as Dr Anne Szarewski, Clinical Consultant at Cancer Research UK and Honorary Senior Lecturer at the Wolfson Institute for Preventative Medicine says, "If you think about this, the people who join trials have already decided that they want to do it" and thus PCT might struggle to meet their targets of 90% uptake. If the vaccination campaign is to be a success nationwide, many people (parents in particular) need to be convinced of its benefits and safety. Vaccination has long been used as a method of transmitting immunity. From Edward Jenner's smallpox vaccine in 1796 to more recent developments, it has been used worldwide as a reliable and effective method. Extensive testing is required before a vaccine can be licensed, and in the case of HPV, testing has not stopped with the licensing of the vaccines - follow up studies are still taking place to determine how long immunity lasts and whether a booster will be necessary.

HPV vaccines are well tolerated. Studies have shown that the HPV vaccine is safe with very few side effects, and also very effective at protecting against high risk HPV infection (around 99% effective against high risk types 16 and 18). Despite the evidence to the contrary, a study by Wardle et al. published in *Vaccine* in 2007 showed that 65% of mothers were concerned about the potential side effects of the HPV vaccine, and 43% were concerned about giving their daughters too many vaccines. Dr. Anne Szarewski adds that past experiences have not helped to assuage the fears of parents "MMR had a lot of effect on vaccine uptake in general in this country, and I think that people are a bit worried about vaccines generally".

The age at which the vaccine is administered is also a subject requiring education. From a public health perspective, the HPV vaccine ideally should be given before the age of sexual debut, as there is no

evidence that it will protect against an HPV type that has already caused an infection. The evidence suggests that HPV infection in girls starts to rise from age 14, so immunising before then (at age 12-13) is preferred to protect the greatest number of girls from infection.

However, parents have their own set of concerns and the evidence suggests that around 12% of mothers think receiving the HPV vaccination will make girls more likely to have sex; and 18% think that vaccination will increase the risk of unprotected sex. "The Manchester trial had a lower uptake from ethnic minorities," says Dr Szarewski, "and I think that some groups are possibly more sensitive to the idea of vaccinating their 12 year old against cervical cancer." Studies to verify the truth in parental concerns have shown that sexual activity is not increased by school-based sex education and condom-availability programmes. They have also shown that fear of contracting a STI is not a major motivation for abstinence in 15-19 year olds in USA, and that parental advice on sexual behaviour is unlikely to be undermined by a single vaccine. The important point is that parents are being given the opportunity to protect their daughter against a cancer that kills.

Of course, choosing to only routinely vaccinate a certain age group will result in the exclusion of many girls who could benefit hugely from the vaccine, which is licensed for women up to 26 years. The UK Government is planning a 'catch up' programme between 2008 and 2010, with 17 and 18 year old girls being vaccinated this year as well, so all girls leaving school after 2010 will have received the vaccine. For anyone outside of these age-groups, who believes they would benefit from the vaccine, Government advice is to discuss with their GP. However this could be another example of a post code lottery and Dr Sarah Jarvis says that GPs are unclear about their role in the vaccination programme. "There is as yet no definitive

guidance on availability to GPs from a central source and their role in offering opportunistic immunisation either in the first wave or after implementation of the catch up programme in Autumn 2009, or 2008 in the case of Scotland." She notes that this could have a serious adverse impact on uptake of the new vaccine.

For all women, whether vaccinated or not, cervical screening will remain essential.

The evidence suggests that the vaccination is safe - both physiologically and with little effect on adolescent sexual behaviour. The low levels of knowledge among women and parents about HPV and the vaccine indicates the need to educate parents and their daughters if a dent is to be made in the cervical cancer statistics. "One of the big issues," says Dr Szarewski, "is that people don't actually know what HPV is in the first place, let alone the vaccine".

"Success requires an investment not just in vaccine delivery, but also in the health promotion measures necessary to create a supportive educational and organisational environment. We are concerned to ensure therefore that education is not an 'add-on' in this process, but a prerequisite" said Richard Parish (Chief Executive, RIPH and RSH).

Studies show that once informed about the safety and effectiveness of HPV vaccination, most parents are happy to consent to their daughters receiving it. It has also been demonstrated that parents are more likely to accept the vaccine if their peers are positive about it - showing that there is a social aspect to vaccination, and that if the normative beliefs of the group are pro-vaccination, it is likely to facilitate public support. In addition, mothers who think their husbands or partners and GPs would support the vaccine are more likely to accept it themselves.

Different groups have different concerns and thus it is important that those involved in its dissemination take a patient-centred approach, and that primary care staff support young adolescents and parents in

the decision making process. There is also a need to address the effect that this intervention may have on health inequalities and to encourage targeted campaigns for 'hard-to-reach' groups. Those with lower socio-economic status are already known to have lowest HPV awareness, and in addition are generally less likely to attend cervical screening. People from every background should be empowered to benefit from this health protection intervention.

The UK HPV vaccination programme is largely school-based, and implementation is the role of PCTs. However Dr Jarvis is concerned that there is a lack of consensus and guidance about who should be implementing the programme. "I have spoken to various groups of school and practice nurses, as well as PCT officials within the last month, and there is enormous confusion about the practicalities of implementation and communication between community based healthcare professionals." Despite this confusion, it will be the responsibility of the PCTs to ensure that consent is obtained from those concerned, and while the Gillick ruling (which says that if a child of 16 or under fulfil certain criteria, they can consent to their own medical treatment without need for parental involvement) applies, but nevertheless it is unlikely that a girl will be given the vaccine without parental consent. Girls do have the right to decline to participate, but the education needs to be available so that they understand the implications of doing so.

The RSH, with sponsorship from Sanofi Pasteur, has spent the last 18 months developing an education programme to raise awareness and knowledge about HPV & cervical cancer and to support the introduction of the national vaccination programme. To receive a FREE curriculum linked learning & teaching resource, please email [hpvinfo@rsph.org](mailto:hpvinfo@rsph.org) or visit [www.rsph.org.uk](http://www.rsph.org.uk)