Effects of human papillomavirus vaccination

Surveillance data from Australia suggests a reduced incidence of genital warts following the introduction of vaccination against human papillomavirus for girls and young women.

Overview: Human papillomavirus (HPV) is a virus that infects squamous epithelia including the skin and mucosae of the upper respiratory and anogenital tracts. About 40 types of HPV can infect the genital tract. Although most infections are asymptomatic and self-limiting, genital infection by HPV is associated with genital warts and anogenital cancers in both men and women. HPV viruses are classified as either high-risk or low-risk types depending on their association with the development of cancer.

Current advice: In the UK, a quadrivalent vaccine against 4 types of HPV (types 6, 11, 16 and 18) has been routinely offered to girls aged 12–13 years since September 2012, with 'catch-up' programmes available for older girls (mainly aged 13–18 years).

NICE has guidance on reducing differences in the uptake of immunisations, although no specific recommendations were made about the HPV immunisation programme because of a bivalent vaccine had only recently been introduced at the time the guidance was issued. The 'Green book' from Public Health England includes information about vaccines and vaccination procedures used in the UK including HPV.

New evidence: Ali et al. (2013) reported surveillance data on genital warts in young people in Australia 5 years after introducing a programme using the quadrivalent HPV vaccine. The vaccine was offered to girls aged 12–13 years, and 2 'catch-up' programmes were available for girls aged 13–18 years and for women aged 18–26 years. Analysis was based on comparisons of the pre-vaccination period (January 2004 to June 2007) and the vaccination period (July 2007 to December 2011) using data from 8 sexual health services.

Overall, of 85,770 people seen for the first time at participating sexual health services from 2004 to 2011, 7686 (9.0%) were diagnosed with genital warts. The proportion of women diagnosed with genital warts declined from 9.6% in 2007 to 2.7% in 2011. A smaller reduction was seen in men, from 11.7% in 2007 to 7.4% in 2011. Rates of genital warts diagnosis were significantly lower in the vaccination period compared with the pre-vaccination period for women and heterosexual men aged up to 30 years (p<0.001) and for homosexual men (p=0.003), but not for men or women aged older than 30 years or for bisexual men. No cases of genital warts were diagnosed in the 235 women younger than 21 years presenting to the clinic in 2011 who reported receiving the HPV vaccination.

Commentary: "In 2007, Australia became the first country to introduce a national government-funded HPV vaccination programme, with high vaccine coverage and an extensive catch-up campaign for girls and women aged 12–26 years. It will be decades before the impact of vaccination is seen on cervical cancer. However, large reductions in diagnoses of genital warts, together with corresponding
Australian reports on declines in pre-cancerous cervical abnormalities, provide the first indications that vaccination is having an effect on the incidence of disease due to HPV.

Interestingly, decreases in warts diagnoses also occurred in heterosexual men, who have largely yet to be vaccinated. This confirms expectations that HPV vaccination provides indirect protection (herd immunity) by preventing onward transmission, and hence has wider benefits beyond the vaccinated population. Indirect protection is also hinted at in reports from the USA of substantial decreases in HPV prevalence among 14–19 year-old girls despite much lower vaccine uptake compared to Australia. All these early indicators suggest that decreases in HPV-related disease should soon be seen in the UK, where bivalent HPV vaccination was introduced in 2008 with high coverage, and a switch to quadrivalent vaccine occurred in 2012.” – Mark Jit, Senior Scientist, Public Health England and Senior Lecturer, London School of Hygiene and Tropical Medicine

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