

# Three doses of HPV vaccine recommended against genital warts

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Two doses of vaccine against human papillomavirus (HPV) provide good protection against genital warts, but three doses is better according to an extensive register study by researchers at Karolinska Institutet in Sweden. The results are published in the scientific periodical *JAMA*.

Since 2012, girls in Sweden between the ages of 10 and 18 are offered free vaccination against HPV. The vaccine provides protection against various types of HPV, including some that cause [cervical cancer](#) and those that cause [genital warts](#). Current recommendation is three doses of the vaccine however there is an ongoing discussion about reducing to a two-dose regime. Currently there is not enough evidence whether two doses are as effective as three in terms of duration of protection.

The researchers behind the current study have taken advantage of the Swedish health care registers to study all girls and young women (between 10 and 24 years of age) in Sweden between 2006 and 2010, in more than a million individuals. The girls were divided into groups, depending on whether they were unvaccinated or had received 1, 2 or 3 doses of the Gardasil vaccine. Almost 8 out of 10 of those who were vaccinated during the period received all three doses. The researchers studied the occurrence of genital warts because it is the earliest measurable prevented disease outcome for the HPV vaccine. The vaccine is primarily administered to prevent the occurrence of cervical cancer, which takes significantly longer time to develop and therefore cannot yet be studied.

In the studied population, more than 20,000 cases of genital warts were noted during the follow-up period, on average 3.8 years. There was an association between the occurrence of genital warts and the number of vaccination doses received.

"When it comes to the [vaccine](#)'s ability to protect against genital warts in girls between 10 and 16 years of age we can see that two doses provide good protection, up to 71 per cent, but that three doses is better, up to 82 per cent, " says Lisen Arnheim Dahlström at the Department of Medical Epidemiology and Biostatistics at Karolinska Institutet. "Our results suggest that we should continue with the recommended three doses, but open up for a future two-dose schedule after more studies have been conducted regarding the protection against genital warts and initial stages of cervical cancer."

Between 2007 and 2011, Swedish girls between 13 and 17 years of age were offered subsidised HPV vaccinations. From 2012 HPV vaccination is for free for girls between 10 and 18 years of age.

**More information:** 'Association of varying number of doses of quadrivalent human papillomavirus vaccine with incidence of condyloma', Eva Herweijer, Amy Leval, Alexander Ploner, Sandra Eloranta, Julia Fridman Simard, Joakim Dillner, Eva Netterlid, Pär Sparén, and Lisen Arnheim-Dahlström, *JAMA*, online 11 February 2014. doi:10.1001/jama.2014.95

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