

HPV vaccination significantly reduces cervical disease

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A LANDMARK STUDY FROM SCOTLAND HAS SHOWN THAT BIVALENT HPV VACCINE CONFERS significant protection against cervical epithelial dyskaryosis and dysplasia, both precursors of invasive cervical cancer.¹

Certain serotypes of HPV, particularly types 16 and 18, have oncogenic potential and exposure is associated with cervical and vaginal cancer in women and anal/perianal and pharyngeal cancers in women and men. The bivalent vaccine targets these two oncogenic viruses.

A total of 138,692 women were identified retrospectively from national registries. All were born between 1988 and 1996, and all had a cervical smear test performed at the age of 20. Three groups of women were studied: unvaccinated women born between 1988 and 1990, routinely vaccinated women born between 1995 and 1996 and vaccinated aged 12-13 years, and women born between 1991 and 1994 who were vaccinated as part of a catch-up programme when aged 14-17 years.

In the unvaccinated women born between 1988 and 1990, the rates for moderate and severe dyskaryosis at age 20 were 1.18% (95% CI: 1.04-1.36%) and 0.75% (95% CI: 0.63-0.89%) respectively. For fully vaccinated women the equivalent figures were 0.27% (95% CI: 0.21-0.35%) and 0.06% (95% CI: 0.04-0.11%). This represents a 77% and a 92% reduction respectively.

Similar striking improvements were seen in histological results in those women who had a cervical biopsy performed. High grade cervical intraepithelial neoplasia (CIN) rates fell from 0.59% (95% CI: 0.48-0.71%) in unvaccinated women to 0.06% (95% CI: 0.04-0.11%) in fully vaccinated women; a decrease of 89%.

The benefits of the programme were not limited to those who had been vaccinated. Compared with unvaccinated women born between 1988 and 1990, women born between 1995 and 1996 who were not routinely vaccinated had 63% (95% CI: 11-85%), 67% (95% CI: 19-86%) and 100% (95% CI: 69-100%) lower rates of CIN grades 1, 2 and 3 respectively. The authors attribute this to herd immunity.

Women receiving just one or two doses of the

bivalent vaccine did not show a reduced level of benefit compared with those having the full three dose course. However, the numbers of women involved were relatively small and not sufficient for robust analysis.

The study authors state: 'This study reports statistically significant reductions in all grades of CIN, equating to vaccine effectiveness estimates of 80% or greater after routine immunisation at age 12-13 years.'

As the author of an accompanying editorial says: 'The findings are dramatic and document a considerable reduction in high grade cervical disease over time.'²

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This study has demonstrated that the three dose bivalent HPV vaccination programme for 12- to 13-year-old girls produced a highly significant reduction in both cytological and histological changes associated with oncogenic HPV exposure. This in turn should significantly reduce the

incidence of cervical cancer in vaccinated women.

The authors plan to determine if the protection seen in these young women persists over time by conducting longitudinal studies.

Since the study was performed a two dose quadrivalent vaccine has been introduced and the age of first cytological screen has been moved to age 25 years. A two dose nonavalent vaccine, licensed for protection against cervical cancer and genital warts has also become available.

Although it is likely that the improvement in herd immunity is shared by heterosexual young males, some countries already have a policy of vaccinating teenage boys too.³ Vaccination of boys improves herd immunity still further. From the 2019-20 school year, it is expected that 12- to 13-year-old boys will also become eligible for the HPV vaccine in the UK.⁴

REFERENCES

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- 4 <https://www.nhs.uk/conditions/vaccinations/hpv-human-papillomavirus-vaccine/#hpv-vaccination-for-men-and-boys>

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