EDITORIAL

HPV vaccination programme reduces incidence of cervical cancer

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THE NATIONAL HUMAN PAPILLOMA VIRUS (HPV) VACCINATION PROGRAMME FOR GIRLS IN ENGLAND has led to a substantial reduction in incidence of cervical cancer and grade 3 cervical intraepithelial neoplasia (CIN3), a register based observational study has shown.

The HPV vaccination programme using a bivalent vaccine (Cervarix) was first introduced in England in 2008 initially targeting girls aged 12-13 years. The programme was extended to include girls aged 14-18 years in catch up programmes from 2008 to 2010.

Early modelling had suggested that HPV vaccination would have no perceptible effect on cervical cancer rates for at least eight years after vaccination but that there would be a substantial reduction in incidence in women aged 20-29 years by the end of 2019.

'HPV vaccination with high coverage in 12-13 year-old girls has almost eliminated cervical cancer and cervical precancer up to age 25'

To confirm this, data were obtained from the National Cancer Registration and Analysis Service from 2006 to 2019 on diagnoses of cervical cancer and CIN3. Three cohorts were considered, girls who had received the vaccine at ages 12-13, 14-16 and 16-18 years respectively.

As controls, the researchers identified unvaccinated girls from earlier years followed up from when they would have had the vaccination if it had been available at the time. Adjustment for confounding was made using information on changes in cervical screening policy and historical events such as the impact of 'celebrity' diagnoses and public awareness campaigns prompting increased screening that might have affected cervical cancer incidence.

The study included a total of 13·7 million-years of follow-up of women aged 20-29 years in the three vaccinated cohorts.

Compared with the unvaccinated cohort incidence rates of cervical cancer were calculated to be:

- 34% (95% CI: 25-41%) lower in the cohort where vaccine had been offered at age 16-18 years
- 62% (95% CI: 52-71%) lower in the cohort where vaccine had been offered at age 14-16 years
- 87% (95% CI: 72-94%) lower in the cohort where vaccine had been offered at age 12-13 years

The corresponding effectiveness of the vaccination programme in preventing CIN3 was demonstrated by reductions of:

- 39% (95% CI: 36-41%) in those vaccinated at age 16-18 years
- 75% (95% CI: 72-77%) in those vaccinated at age 14-16 years
- 97% (95% CI: 96-98%) in those vaccinated at age 12-13 years

Overall, these results represent a very significant reduction in cervical cancer and CIN3 rates ($P < 0{\cdot}0001$) in vaccinated groups compared with those who were unvaccinated.

In women aged 20-29 it was estimated that there had been 448 (95% CI: 339-556) fewer cases of cervical cancer and 17,235 (95% CI: 15,919-18,552) fewer cases of CIN3 in those vaccinated as children.

The study authors conclude: 'We have shown that HPV vaccination with high coverage in 12-13 year-old girls has almost eliminated cervical cancer and cervical precancer up to age 25 (the extent of the observed data).

'Girls and women eligible for HPV vaccination should be encouraged to receive the vaccine, at any age but ideally when first offered it, to ensure that this hugely successful vaccination programme continues to benefit younger generations.'

Herd immunity is likely to be further strengthened by the introduction of HPV vaccination for boys in 2019.

REFERENCE
1 Falcaro M, Castañon A, Ndlela B et al. The effects of the national HPV vaccination programme in England, UK, on cervical cancer and grade 3 cervical intraepithelial neoplasia incidence: a register-based observational study. *Lancet* Published Online 3 November 2021

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