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## **Equitable Vaccination for HPV-the road ahead**

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For those of us that treat cancer, it was impossible to understand the resistance against gender-neutral human papilloma virus (HPV) vaccination. The incidence of potentially HPV-related head and neck squamous cell carcinomas has been rising, especially in males<sup>1,2</sup>. The other, non-cervical HPV driven cancers are also increasing in incidence. Boys couldn't be vaccinated by the NHS, unlike girls who were covered by a national vaccination programme. Australia agreed to vaccinate boys with the quadrivalent vaccine at ages 12-13 with a catch up at 14-15 during 2014, despite evidence that its geography would make "herd immunity" more likely. The UK excluded boys from this preventative program for malignant disease, despite its geography making "herd immunity" far less likely to be effective.

The government's vaccination advisory committee, JCVI (Joint Committee on Vaccination and Immunisation) has been considering whether boys should be included in the vaccination programme and issued the 2017 interim report<sup>3</sup>. The JCVI was consulting with stakeholder groups on this interim report after serious concerns that its recommendations were discriminatory were raised by influential professional groups like the Cancer Services

Committee of the RCS England and public special interest groups. The majority of cancer treating clinicians welcome the official announcement that boys will now be included in the vaccination programme.

The actual cost of annual vaccination is estimated to be a quarter of the cost of treatment of just HPV driven oropharyngeal cancer. Often in the NHS clinicians spend hours trying to provide a comprehensive business case for a new device or technique. However, it was not clear what we were trying to cost, when evaluating the cost-effectiveness of the HPV vaccine. An attempt to cost the human suffering from the cancer and its treatment, the price of cancer on families, patient working hours lost, costs of treatment and survivorship, was a fruitless task. The cost in human and fiscal terms of HPV related oropharyngeal and other non-cervical cancers has been grossly underestimated. Only now does the JCVI appear to recognise this.

Patient reported outcomes (PRO's) are often used in oncology to evaluate disease and treatment. Regarding HPV vaccination, the majority of parents are motivated to protect their children and prevent disease<sup>4</sup>. Clinicians have a duty to provide unambiguous information in a timely manner and be in a position to address parental concerns regarding vaccine safety.

Data regarding HPV vaccine safety is available and hence this is not an argument that can be used against vaccination. The argument that high levels of vaccine uptake in females can provide herd immunity for most males, has been taken into account in British government decision making. The uptake of HPV vaccine is dropping worldwide<sup>5</sup>. A recent review indicated suboptimal levels of HPV vaccine uptake<sup>6</sup>. This in addition to the free movement within Europe renders the 'herd protection' arguments invalid.

Now that gender neutral vaccination is a reality the road ahead is not easy. Well-designed prospective research is essential in order to understand the role of the vaccine in prevention and possibly treatment of established HPV driven cancers<sup>7</sup>. This may have an impact in health related quality of life and the overall survival.

**Conflict of interest:** The authors have no conflict of interest to declare

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