PE1477/C

Cancer Research UK

PE1477 Gender neutral HPV vaccination

Summary

We are grateful to the Public Petitions Committee for this opportunity to share our views on the value of an extension to the current Human Papillomavirus (HPV) immunisation programme in Scotland to include boys. In this submission, we wish to make the following recommendations:

- Offering the HPV vaccination to both boys and girls would be the most effective option for improving public health, and this is our preferred option.
- A less effective alternative to gender-neutral vaccination at age 12-13 would be targeted vaccination of men who have sex with men ideally before, or as soon as possible after, their sexual debut. As a minimum, this should be introduced.
- We anticipate that gender-neutral HPV vaccination at age 12-13 would be shown to be cost-effective if all HPV-related disease were included in the analysis. We urgently need new cost-effectiveness studies to confirm this.

Burden of HPV-related disease in men

HPV is a significant cause of morbidity and mortality in the developed and developing world. Infections with various types of HPV in men can lead to anal [1], penile [2] and some types of oral and oropharyngeal cancer [3], as well as genital warts.

In Europe, HPV infection in men is estimated to be linked to over 17,400 cases of cancer (that is, around 30% of all HPV-related cancers in men and women), and around 300,000 new cases of genital warts each year [4]. Of these cancers, around 14,100 were oral cavity, oropharyngeal or laryngeal cancers, a further 1,800 were anal cancers, and 1,500 were penile cancers.

Oral and oropharyngeal cancers are increasing in incidence in the UK [5], and, over time, a higher proportion of cases is being linked to HPV infections [6]. It has been estimated that over the next few decades in the USA, there will be more cases of HPV-related oropharyngeal cancers than cervical cancers [7]. Trends are likely to be similar in the UK.

Efficacy of HPV vaccination at preventing these diseases

HPV vaccination is an effective way of preventing a range of HPV-associated disease in men and women. The HPV vaccine Gardasil is licensed for use in men and boys, but Cervarix is not, as it does not protect against genital warts. There is evidence to support a protective effect of Gardasil against anal pre-cancerous changes (anal intraepithelial neoplasia, or AIN) [8]. There is also new evidence that HPV vaccination can prevent oral

HPV infections [9] and therefore it is likely that it could also prevent HPV-associated oral/oropharyngeal cancers. Although this study was conducted using the Cervarix vaccine in women, it provides proof-of-principle that HPV vaccination can be effective against oral infections and, by extension, HPV-related oral/oropharyngeal cancers. Further studies will be needed to demonstrate whether Gardasil is effective against oral HPV infections and whether the protection is also seen in men. As yet, though, there is no clinical evidence to support a protective effect of HPV vaccination against penile pre-cancers or cancers, as clinical studies have either not used these as endpoints, or not had enough cases to detect any effect [10]. Cancer Research UK would like to see studies of HPV vaccine efficacy using penile pre-cancers and cancers as endpoints, and further studies with oral/oropharyngeal cancers as end-points to strengthen the evidence base.

Gardasil has also been shown to prevent genital warts [10]. Genital warts cause substantial morbidity and health service costs and thus their prevention is desirable. The effectiveness of HPV vaccination at preventing cancer and other disease is likely to improve over time as new vaccines with higher valency are developed and introduced to the market [11].

Herd immunity and inequalities

When high coverage of HPV vaccination is achieved among girls, heterosexual men will receive some protection through considerable herd immunity. This has been demonstrated in real-life settings: a reduction in genital warts prevalence in younger women and heterosexual men has been observed in Australia after the introduction of a female-only vaccination programme [12]. However, this benefit was not seen in men who have sex with men (MSM).

While this herd immunity effect protects heterosexual men, MSM won't derive a benefit from high vaccine coverage among women, and virus will still circulate in this population. MSM are already at higher risk than heterosexual men of anal cancers related to HPV [1], and if MSM are not vaccinated, this existing inequality will be perpetuated and widened [13].

One way of dealing with this inequality would be to extend HPV vaccination only to MSM. Cancer Research UK is supportive of efforts to protect MSM from HPV infections and HPV-related diseases, and vaccination would be an effective way to achieve this. The challenge, though, is how to get these men vaccinated before or as close as possible to the onset of sexual activity, so that they are less likely to be infected with HPV already and the vaccine is more likely to be effective. It would be extremely challenging to define the target population and to effectively deliver vaccine to 12-13 year olds who self-define as non-heterosexual. An alternative would be to offer HPV vaccination to older MSM, perhaps in sexual health clinics [13]. However, the benefit (and cost-effectiveness [14]) of doing this would be reduced compared to vaccinating prior to sexual debut.

Also, if it were deemed worthwhile to vaccinate after sexual debut, there would be a strong argument for also offering the vaccine to women who were over 18 when the programme was introduced.

Cost implications

Existing modelling studies on the cost-effectiveness of vaccinating boys against HPV have largely shown that offering gender-neutral HPV vaccination at ages 12-13 is unlikely to be a cost-effective option, although this clearly depends on the model inputs [15] [16]. Vaccination of boys is more likely to be cost-effective if: coverage is low among girls; all HPV 16/18/6/11-related disease in men and women is included rather than just cervical disease; or the target population for vaccination is MSM (rather than all men). In particular, a US modelling study has shown that for anal cancer and genital warts prevention, if MSM were vaccinated at age 12, it would be associated with costs of $15,290 per QALY, well within commonly accepted cost effectiveness thresholds [14]. Cancer Research UK calls for further cost-effectiveness studies into gender-neutral vaccination programmes that take into account all HPV-related disease in men and women.

If considering MSM-only HPV vaccination, it would also be useful to consider the additional cost relating to the infrastructure and any marketing campaigns which were introduced to raise awareness of vaccine availability in MSM.

Cancer Research UK position

Cancer Research UK concludes that the most effective option for improving public health would be to offer HPV vaccination to both boys and girls at age 12/13. We recognise that the current cost-effectiveness analyses do not seem to show this to be cost effective, but we note that these analyses do not include the demonstrated protective effect of HPV vaccination against anal pre-cancers, the protective effect against oral HPV infections and the likely effect against oral/oropharyngeal cancers, or any potential effect on penile cancers.

MSM are at higher risk of anal cancers than heterosexual men, and this inequality will continue and worsen over time if no change is made to the vaccination programme. The best way to reduce this inequality would be to offer HPV vaccination to all boys as well as girls, in order to protect those who will become MSM in the future. We believe that this, in addition to the protection all boys will receive from anal cancers and genital warts, is justification enough to seriously consider extending HPV vaccination to boys at the current time.

An alternative option, which would be less effective than offering vaccination to all boys, would be to make HPV vaccination available to MSM, along with targeted action to achieve vaccination as close to sexual debut as possible, ideally beforehand. Available evidence shows that it would be cost effective and would target an existing health inequality, which is very likely to widen dramatically over time if the current vaccination situation continues.

Cancer Research UK strongly supports efforts to reduce the burden of HPV-related cancers and other morbidity. It is our view that offering HPV vaccination to all 12-13 year old boys would be the most effective option for improving public health and this is our preferred option. As a minimum, HPV vaccination should be available to MSM

within the age group for which Gardasil is licensed (9-26 years), and targeted action should be taken to vaccinate at before, or as soon as possible after, sexual debut.

Cancer Research UK
9 August 2013

Cancer Research UK is the world's leading cancer charity dedicated to saving lives through research. The charity's pioneering work into the prevention, diagnosis and treatment of cancer has helped save millions of lives. Cancer Research UK has been at the heart of the progress that has already seen survival rates in the UK double in the last forty years. Cancer Research UK supports research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses. Together with its partners and supporters, Cancer Research UK's vision is to bring forward the day when all cancers are cured.

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