

Future acceptance of adolescent human papillomavirus vaccination: A survey of parental attitudes

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Abstract

The main target group for vaccination against human papillomavirus (HPV), the sexually transmitted virus that causes cervical cancer, will be young adolescents. We undertook a population-based survey to assess parental consent and potential HPV vaccine uptake in eight secondary schools using stratified randomisation according to school type and ethnicity. Our results suggest that in socially and ethnically mixed populations such as Manchester, an HPV vaccine uptake rate of 80% may be achievable if the vaccine is perceived to be safe and effective. However, most parents lack knowledge about HPV and some are concerned about sexual health issues that would arise as part of a HPV vaccine programme. It will be important to raise general awareness of the role of HPV in cervical cancer without stigmatizing the vaccine. © 2006 Elsevier Ltd. All rights reserved.

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1. Introduction

Soon to be licensed are vaccines against human papillomavirus (HPV), a ubiquitous sexually transmitted virus that causes cervical cancer [1,2]. Randomised clinical trials have demonstrated their immunogenicity and short-term effectiveness in preventing incident and persistent type-specific HPV infections, as well as cytological abnormalities [3,4]. The main target group for HPV vaccination will be young adolescent girls (and possibly boys) and the accepted strategy would be to vaccinate prior to onset of sexual activity. It is not yet known how the general public will view vaccinating (pre)-pubescent adolescents against HPV. In the wake of scares about measles–mumps and rubella (MMR) vaccines, parents are more cautious about vaccine safety and are less trusting of scientific evidence [5–7]. Many women do not know that cervical cancer is linked to sex and may be shocked to

discover that it is caused by a sexually transmitted infection (STI) [8]. Linking cervical cancer to a potentially stigmatising STI risks a negative impact on vaccine uptake and there is scope for anxiety that vaccination could encourage promiscuity [9]. Conversely, the vaccine could provide a key opportunity for increasing awareness of STIs and their prevention among young people, leading to wider sexual health benefits.

There have been no studies to assess the climate for HPV vaccines in the UK. The objectives, therefore, of this study were to assess perceptions and attitudes to HPV vaccination as determinants of acceptance of HPV policies among a representative sample of parents of young adolescents living in the city of Manchester.

2. Materials and methods

2.1. Sample

The study was designed to sample randomly parents of year 7 (age 11–12) pupils in the city of Manchester. Based

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on data from Manchester City Council's Education Department, all the 26 community, voluntary-aided and independent schools were stratified into eight strata according to school type and ethnicity. Using a purpose-written computer program, one school was randomly selected from each stratum, with alternative second and third choice schools available in the event of refusals. This gave a potential sample of between 1300 and 1900 pupils and allowed sampling across all school types. The alternative of sampling within schools was rejected because the required sampling frame was not available. With an anticipated response rate of 30%, this sample size enabled quantification of a 5% proportion holding a minority view with a 95% confidence interval width of $\pm 2\%$.

2.2. Data collection

A questionnaire was drafted following two focus group discussions with primary school parents, and was refined over three rounds of validation. Questions were formulated to explore the vaccine policy decisions that formed the main outcome indicators for the study: agreement to vaccination (Likert scale), information to accompany school vaccination (6 yes/no questions), agreement with universal vaccination (Likert scale), involving the child in the decision to vaccinate (yes/no) and provision of the vaccine at sexual health clinics independent of parental consent (Likert scale). Information was also collected on social and demographic background, attitudes towards STIs and current knowledge of HPV and cervical cancer. As it was apparent that knowledge was limited, 11 facts were provided (Box 1) and parents asked how many they knew prior to receiving the questionnaire. The University of Manchester Committee on the Ethics of Research on Human Beings approved the study and final questionnaire.

Two schools refused to participate. One could not be replaced because it was the only school of its type in the voluntary-aided non-Christian stratum, which left seven schools in the sample. Between March and April 2005 questionnaires, background information and pre-stamped envelopes for return posting, were mailed by school staff to Year 7 parents. This arrangement maintained parent anonymity as mandated by the Ethics Committee. Follow-up of non-responders accordingly relied on general reminders to parents by the schools.

2.3. Data analysis

From data made available by the Education Department on ethnic composition, entitlement to free school meals and pupil gender in Manchester for January 2005, response rates were inferred for ethnic and gender groups, and weights obtained to estimate population frequencies. For Independent schools, pupil numbers were based on data from the UK Department for Education and Skills. In these schools, for weighting purposes the sex ratio of mixed schools was

Box 1: Facts about HPV and cervical cancer

- (a) HPV is a virus in the genital area that is sexually transmitted.
- (b) HPV is very common.
- (c) Both men and women get infected, and pass the virus to partners.
- (d) Adolescents are likely to get infected once they start having sex.
- (e) Most HPV infections have no symptoms and last 6–24 months.
- (f) There is no treatment for HPV infection.
- (g) In women, if the virus persists, it causes an abnormal cervical smear.
- (h) Other factors, like smoking, increase the risk of the virus persisting.
- (i) Over 95% of cervical cancer is due to persistent HPV infection.
- (j) About 2000 new cases of cervical cancer are diagnosed each year.
- (k) Vaccination against HPV will prevent cervical cancer.

These facts were provided to parents at the start of the questionnaire.

assumed to be 50:50 and ethnic distribution was taken from the sample. Allowing for the survey structure plus post-stratification on school strata and ethnicity, estimates of the population proportions and their standard errors were calculated to adjust for differential sampling and response using the "survey" package in the statistical program R [10,11]. To test for associations between vaccine acceptability and responder characteristics, proportional odds ordinal regression models were applied adjusting for the sample stratification. The "no" and "probably not" categories were pooled for this analysis.

Parental beliefs and attitudes in relation to all vaccine policy outcomes were similarly explored by ordinal regression, using a proportional-odds model. A simplified "information desired" outcome variable was collated using the number of information items requested, and grouped as low (0–3), "medium" (4–5) and "high" (all six items selected). For this analysis six respondents were excluded on account of missing data and the number of variables in the model was reduced by amalgamating similar questions based on subject knowledge and exploratory principal components factor analysis and cluster analyses. Five questions loaded onto multiple factors, indicating that they explored multiple issues and were excluded. One question (whether parents thought vaccination would encourage sexual activity) was considered an independent factor. For grouped data a simple average response was computed, weighted by the length of the scale.

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