# Mothers' Attitudes towards Preventing Cervical Cancer through Human Papillomavirus Vaccination: A Qualitative Study

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## Abstract

**Prophylactic vaccines against human papillomavirus (HPV) types causing cervical cancer will soon be available. Success of the vaccine relies on parents' willingness to vaccinate their prepubescent daughters. We explored mothers' attitudes towards vaccination. Twenty-four mothers of girls ages 8 to 14 years took part in four focus groups. Discussions covered attitudes to vaccination in general, cancer vaccines, vaccines for sexually transmitted infections (STI), and the HPV vaccine. Discussions were recorded, transcribed, and analyzed thematically. Mothers were broadly provaccination. Some were excited about a cancer vaccine, although there were fears that it might lead to unhealthy behaviors (e.g., smoking). STI vaccines got a mixed reception. Enthusiasm was moderated by concerns about an increase in risky sexual behavior. When provided with information about the HPV vaccine, women were in favor of protecting their daughters from cervical cancer, abnormal Papanicolaou results and, potentially, from cervical screening. Some worried about an increase in promiscuity and risk of other STIs. There was disagreement about the age at which girls should be vaccinated. Although some women thought this question should be medically driven, others were concerned about discussing the vaccine with young girls and preferred to wait until they were older. In conclusion, mothers were broadly in favor of HPV vaccination but had reservations, particularly about vaccinating girls as young as 10. Larger-scale quantitative work is needed to assess acceptability at the population level. If the vaccine is introduced, information provision is likely to be key to ensuring parents understand the rationale for vaccinating at a young age.** (Cancer Epidemiol Biomarkers Prev 2006;15(7):1257–61)

## Introduction

Discovery of the viral etiology of cervical cancer has opened up the possibility of primary prevention through vaccination. High-risk sexually transmitted types of human papillomavirus (HPV) have been identified as a necessary agent in cervical carcinogenesis, and work on vaccine development has progressed rapidly. Vaccines for HPV types 16 and 18, which are implicated in ~70% of cervical cancers, as well as types 6 and 11, which cause genital warts, have been shown to be effective and may be licensed within the next 12 months (1, 2). Modeling studies have indicated that an HPV vaccine could be cost-effective, even alongside existing screening programs (3). Ideally, girls should be vaccinated before the onset of sexual activity, and estimates suggest that introducing HPV vaccination at age 12 alongside the current U.S. screening program could reduce lifetime cervical cancer incidence by up to 94% (3).

As with any new medical technology, the success of HPV vaccination will be dependent on levels of acceptability and uptake. Research in the United States has found acceptability to be high among young women (4, 5). Given the need for parental consent, research into parental acceptance is also important. Overall attitudes seem to be broadly positive in the United States (4, 6, 7), Mexico (8), and the United Kingdom (9), with acceptance rates ranging from 55% to 84%. Factors associated with acceptance include attitudes to vaccines in general, normative beliefs, and perceived benefits of the vaccine. Risk perception has been shown to be predictive in some studies (7) but not others (4), and the effect of HPV knowledge is also unclear (6, 10).

Parental acceptance of vaccination against other sexually transmitted infections (STI) seems to be high (11-16), but concerns have been identified, which center on the notion that vaccination might increase risky sexual behavior among adolescents. Previous research has found that adolescents themselves believe an effective HIV vaccine could increase risky sexual behavior (17), but parental attitudes are less clear (15, 16, 18).

It seems, then, that although attitudes to HPV vaccination are broadly positive, parents also have concerns about vaccinating young girls against STIs. This issue needs to be explored in more detail to understand and address these concerns effectively. Our own[1] analysis of media coverage of the HPV vaccine in the United Kingdom has identified a widespread assumption that the vaccine will be controversial (see, e.g., http://news.bbc.co.uk/1/hi/health/4317972.stm), but thus far, there is little evidence that this is the case. In the United States, conservative Christian groups and pro-abstinence lobbies have spoken out against the vaccine (19), but parental concerns about the possible negative effects have not been adequately explored.

The present study took an exploratory approach to investigating responses to information about the HPV vaccine among mothers of daughters ages 8 to 14 years. We used qualitative methodology (focus groups) so that themes important to the participants could emerge. We were

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particularly interested in whether an HPV vaccine would be perceived as the same as other STI vaccines, or whether it would be thought of differently because of the link with cervical cancer. Attitudes to vaccines in general, vaccines for cancer, and vaccines for STIs were elicited first. Women were then provided with information about the HPV vaccine and were asked for their responses to the information. Finally, their feelings about vaccinating their daughters against HPV were explored.

## Materials and Methods

**Participants.** With approval from the University College London Ethics Committee, 24 women were recruited to take part in four focus groups. They all had at least one daughter ages between 8 and 14 years. Women were recruited using a snowballing technique, with one contact recruiting the rest of the group from among friends and acquaintances. The four initial contacts were recruited through the social networks of the research group and, in one case, by writing to parents of children attending a school in a deprived area of south west London. Use of such ''naturally occurring'' groups has the advantage of replicating the kinds of networks within which sensitive issues, such as vaccination, might be discussed (20). Purposive selection of the contacts ensured that the groups varied in sociodemographic characteristics (see Table 1). Women were recruited in inner and outer London, Surrey, and Sussex and were reimbursed £30 each for their time. With the snowballing technique, we do not know how many women were approached to achieve the target samples, but none of the initial contacts reported any problems finding participants.

**Focus Groups.** Four focus groups were carried out between August and November 2005, each lasting around 60 minutes. Each of the authors moderated one group, and one (L.M.) moderated two. A second researcher was present at each group. The groups were carried out in a local library, at the home of a participant (two groups), or at the home of one of the researchers. The discussion was structured around a topic guide, and women were asked to talk about their experience and feelings about vaccination in general, their views on a hypothetical cancer vaccine, and their views on hypothetical vaccines for STIs. They were then provided with some brief information about the HPV vaccine (see Box 1) and asked for their responses. In addition to the information provided in Box 1, women in the third and fourth focus groups were informed that condoms may not provide full protection against HPV because it became apparent that safe sex was an important issue relating to their views about vaccinating against STIs. Women's questions about HPV, cervical cancer, and the vaccine were answered before the discussion continued.

**Table 1. Demographic characteristics of the sample**

| | Group 1 ($n$ = 5) | Group 2 ($n$ = 6) | Group 3 ($n$ = 7) | Group 4 ($n$ = 6) |
|---|---|---|---|---|
| Age (mean, range) | 36.6 (31-46) | 37.8 (35-43) | 41.9 (37-48) | 41.0 (34-37) |
| Marital status | | | | |
| Single | 1 | 1 | 0 | 0 |
| Married | 2 | 5 | 7 | 6 |
| Divorced/separated | 2 | 0 | 0 | 0 |
| Living arrangements | | | | |
| Rent from local authority | 4 | 0 | 0 | 0 |
| Own home | 1 | 6 | 7 | 6 |
| Level of education | | | | |
| No qualifications | 4 | 0 | 0 | 0 |
| GCE/O levels | 1 | 5 | 0 | 0 |
| A levels | 0 | 1 | 0 | 0 |
| Degree | 0 | 0 | 7 | 5 |
| Other | 0 | 0 | 0 | 1 |
| Employment status | | | | |
| Employed part time | 0 | 4 | 6 | 2 |
| Unemployed | 1 | 0 | 0 | 0 |
| Full time home maker | 4 | 1 | 0 | 3 |
| Student | 0 | 0 | 1 | 1 |
| Self-employed | 0 | 1 | 0 | 0 |
| Number of children | | | | |
| 1 | 0 | 1 | 0 | 0 |
| 2 | 1 | 2 | 4 | 5 |
| 3 | 0 | 2 | 2 | 0 |
| 4 | 3 | 1 | 1 | 1 |
| 5 | 0 | 0 | 0 | 0 |
| 6 | 1 | 0 | 0 | 0 |

**Box 1. Information provided to women about the HPV vaccination**

What is HPV?
- Scientists have linked nearly all cases of cervical cancer to a common virus called HPV.
- HPV is a sexually transmitted infection.
- Most sexually active women will be infected with HPV at some point because it is very common.
- Usually, the virus does not cause any problems and clears up on its own.
- If HPV persists, it can cause changes in the cells of the cervix. These changes may lead to cancer if left untreated.
- Cervical screening (the smear test) is used to detect early cell changes in the cervix that are caused by HPV. Treating these cells prevents cancer developing.
- Some people may have heard that HPV causes genital warts. This is true, but the types of HPV that cause warts are different from the ones that cause cancer.
- New research is working towards developing a vaccine to prevent HPV infection. This might be available in 5 to 10 years time.
- An HPV vaccine could dramatically reduce the levels of cervical cancer.

**Analysis.** The focus groups were tape recorded and transcribed verbatim. The transcripts were analyzed using Framework Analysis (21). This is a matrix-based approach to organizing qualitative data. After familiarization with the transcripts, a thematic framework was developed with themes organized within four broad areas: background beliefs and experiences of vaccination, cancer vaccines, STI vaccines, and HPV. Data from the transcripts were summarized in a matrix with rows for groups and columns for themes. This facilitates examination of all the data within one theme and also allows relationships between themes to be explored by looking along the rows of the matrix.

## Results

**Sample.** The demographic characteristics of each group are shown in Table 1. Women were mostly married with a mean age of 39.5 years. They were all from White British ethnic backgrounds but varied with respect to socioeconomic variables. All had at least one daughter ages 8 to 14 years.

**General Attitudes to Vaccination.** Attitudes towards vaccination were broadly positive, and the majority of women reported that their children had received all the recommended vaccinations. The main concern raised about vaccination was the possibility of side effects, both immediate reactions and longer-term problems.

**Attitudes to a Vaccine for Cancer.** Women were asked to imagine that a vaccine had been developed for cancer and their responses were elicited. There was considerable variation between groups. Women in groups 1 and 2 (the less educated groups) were strongly in favor of a cancer vaccine, using words like ''fantastic'' and ''brilliant'' and saying they would

''be there like a shot,'' ''front of the queue.'' Side effects (both long and short term) would put them off, and the issue of family history was raised (you would not need a vaccine if you were not at risk), but in general, attitudes were very positive and they would be happy for their children to be vaccinated.

Women in groups 3 and 4 (the more educated groups) were more skeptical. They found it hard to think about ''cancer'' as a single disease against which one might vaccinate and wondered how the vaccine would work. They questioned whether the benefits of the vaccine would outweigh the possible costs, and they were worried about side effects. Women in group 3 seemed more in favor of other forms of cancer prevention, such as screening and lifestyle change. Women in these two groups also worried about a complacency effect (see Box 2) and thought that people might feel falsely protected and engage in behaviors that would threaten other aspects of their health (e.g., smoking and unsafe sex). However, despite some reservations, women in group 4 concluded that ''morally,'' no one could argue with a vaccine against cancer.

**Attitudes to Vaccines for STIs.** Views on vaccinating against STIs were mixed. In group 1, attitudes were generally favorable, with women acknowledging that their children would one day be sexually active and wanting to protect them if possible. Women in group 4 held similar views, with one participant believing that the route of infection should not be important in deciding whether to vaccinate (see Box 2). Groups 2 and 3 took a different approach and were more likely to argue that children should be prevented from contracting STIs through education in ''morals'' or safe sex and condom use. They expressed the view that vaccinating children against STIs would be ''teaching them . . . that it's okay to be promiscuous'' (C.L., group 2).

### Box 2. Quotations to illustrate each of the major themes

**Cancer vaccines: Complacency effect**

G: You also don't want the children to become complacent and think ''Well, I've been vaccinated, I'll just go out now and I'll. . .''

L: And smoke twenty fags.

G: Exactly, and ''I'll be fine.'' (group 3)

**STI vaccines: Positive attitudes to protection**

I would, yeah, especially having two girls, yeah, definitely. They're going to get older and, God forbid, but yeah, if they chose to have, you know, a few partners, sexual partners, then that's up to them, but if there's a vaccine that's going to prevent them from getting anything that I wouldn't want them to get or they wouldn't want to have, then yeah, definitely. I'd definitely be up for that. (L., group 1)

**STI vaccines: Mode of transmission not relevant**

Is it morally acceptable for someone to sneeze on someone when they've got some horrendous flu? Or that they had consenting sex with someone, and they pass something on? I mean where is the moral differentiation? (L.K., group 4)

**Vaccine concerns: Effect of too many vaccinations**

Is there a point at which the body has too many vaccinations and does something different with them? One thing we didn't like was injecting them with three diseases when they're babies. I would want to be reassured about that. (C., group 3)

**HPV vaccine: An end to smears?**

An injection for my daughter to save her a life time of smear (Pap) tests, I'd go for the injection every single time, without a shadow of a doubt, as long as it was properly researched. (L., group 3)

**HPV vaccine: discussion with children**

So it's easier to give it to younger children by saying ''It's to prevent . . . cancer'' than saying to them ''You're having this because when you're older you're going to have sex and you're going to get all these horrible diseases.'' (G., group 3)

**HPV vaccine: 9 years is too young**

Ly: They're innocent at 9. They don't do things like that.

D: It's not thinkable is it, your 9-year-old doing anything like that? (group 1)

All four groups mentioned the issue of complacency or *carte blanche*, believing that vaccinating against one STI might put their children at greater risk of contracting other STIs for which no vaccine was available. In group 4, there was a lack of consensus about whether promiscuity was a bad thing per se, or whether it was only a problem because of the risk of infection. Other groups regarded promiscuity as morally wrong and wanted to prevent their daughters from having multiple sexual partners, regardless of whether they were at risk of STIs.

Some women felt that the need for vaccination against STIs would depend on the individual characteristics of the child. One woman thought that she might be more concerned if her daughters were ''messing around with the local boys'' (L., group 3), and another also thought that her daughters were less at risk than others because they did not ''hang around on the streets like I see some kids do'' (B., group 1).

In the context of discussing vaccines for multiple STIs, there was concern about giving children too many vaccines and a sense of not wanting to give them vaccines that were not strictly necessary (e.g., if the disease being vaccinated against were easily treatable; see Box 2).

**HPV.** Because familiarity with HPV is low in the population, all groups were provided with the information shown in Box 1 before the next stage of the discussion. None of the women in groups 1, 2, or 3 had heard of HPV before taking part in the focus group. All of the women in group 4 were aware of it, but this was in part because the press coverage surrounding phase III vaccine trials had occurred a week before this group.

**Reasons to Have the HPV Vaccine.** Women were keen to prevent their daughters from developing cervical cancer, particularly those in group 1 who acknowledged experience of abnormal Papanicolaou smear results and treatment for cervical intraepithelial neoplasia. For some others, cervical cancer was not much of a worry, and they felt that Papanicolaou tests provided adequate protection.

Preventing their daughters from needing to have Papanicolaou tests was seen by some as an advantage of the vaccine (although this was not described as an immediate outcome of introducing vaccination). Those who found Papanicolaou tests unpleasant were particularly keen to spare their daughters this experience (see Box 2).

In the context of cancer prevention, genital warts were seen as somewhat trivial by most. A vaccine that protected against genital warts in addition to cervical cancer was seen as favorable and did not make women less likely to want their daughters to be vaccinated. It was also suggested that given the confusion surrounding HPV, a broader vaccine would be preferable, to avoid people assuming that they were protected against warts when in fact they were not.

**Reasons Not to Have the HPV Vaccine.** With the exception of group 1, reservations were expressed in all groups. Those who had not heard of HPV before had many questions about it, and most women felt that they needed more information about the vaccine, especially regarding its safety and possible side effects, before they could have a view. In addition, many wanted to know the prevalence of cervical cancer and to weigh up the costs and benefits of vaccination.

In common with the earlier discussion about vaccines for other STIs, some women were concerned about the HPV vaccine giving girls *carte blanche* for behavior that might put them at risk of pregnancy or HIV. Others felt that the risk of disease would not really have an effect on sexual behavior, and that ''if people are going to have sex, they are going to have sex'' (L.K., group 4).

**Age of Vaccination.** Many women felt that they would want to discuss the vaccination with their daughters, and that this

would be problematic below a certain age. Some felt that below the age of 10 or 11, girls have not had much, if any, sex education at school, and that therefore discussing an STI with them would be difficult. There was a general consensus that by age 11, when girls are entering puberty and moving to senior school, it would be possible to explain HPV to them. There was a lack of consensus about the appropriateness of vaccinating girls at a younger age without explaining it to them. Some women felt that a discussion about HPV could be tailored to the child's age (e.g., by presenting the vaccine as being for cancer rather than for an STI if the child was younger, see Box 2), whereas others seemed reluctant to consider it before their daughter could understand what the vaccine was for. Vaccinating babies was seen as different, and most women seemed willing to give the vaccine to a baby if it were available.

Some women were reluctant to entertain the idea of vaccinating young girls because to have the vaccination seemed to involve an acceptance of the fact that the child would one day be sexually active. In groups 1 and 2, many of the women felt that, for this reason, 9 years was too young to vaccinate (see Box 2). Although there was an acknowledgement of the need to vaccinate children before any of them became sexually active, some women were adamant that they would not vaccinate their daughters as young as 9. It was suggested that parents could decide when their children needed to be vaccinated or that there should be a school-based program, either at the end of junior school or the beginning of senior school (at age 10-12 years).

Some of the women in group 4 felt that the age of vaccination should be ''medically'' rather than ''morally'' driven, and that children need only be given information appropriate to their age.

## Discussion

This is the first British study to use qualitative methods to explore parental attitudes towards vaccination for HPV. The use of focus group methodology ensured that the findings were grounded in the experiences and views of the participants and allowed themes that were important to the participants to emerge.

The age at which the vaccine would be given was the most contentious issue and caused a great deal of debate in all four groups. Many women were reluctant to contemplate vaccinating girls as young as 9, and this is consistent with the findings of other studies of STI vaccines (22). This reluctance must be squared with the fact that around 30% of young women report that they first had sexual intercourse before the age of 16 (23), and it should also be remembered that HPV can be passed on through genital contact, without engaging in sexual intercourse.

Because of the timing of the study, women in the final group had been exposed to a large amount of press coverage about the HPV vaccine and were reasonably well informed about it before the discussion. They were also more accepting of the vaccine, and some were willing to allow their daughters to have it at a younger age than women in other groups. This might indicate that acceptability could increase as the vaccine becomes more familiar, a hypothesis that could be tested empirically in future research.

This study highlighted the fact that vaccinations for HPV and other STIs differ from most other vaccinations in that the diseases themselves are preventable through behavior change. Whereas there is little one can do to prevent a child from catching common infectious diseases, changes in sexual behavior could reduce the incidence of STIs. This fact seemed to be important to some of the women in the study who expressed a preference for lifestyle change over vaccination to prevent disease, including cancer. This finding is consistent with a study that found parents showed a mild preference for vaccinations against infections for which there was no behavioral prevention (16).

The results of the study need to be interpreted with a degree of caution because the sample was small and, although socioeconomically diverse, was not selected to be representative of the British population as a whole. We cannot rule out the possibility that other important themes might emerge if more focus groups were carried out. Women from ethnic minority groups were not included, and there was an overrepresentation of highly educated women. No women who had refused vaccines in the past were included, although this had not been used as exclusion criterion. One further possible limitation should be noted. Although convening focus groups where participants know each other has certain advantages, mentioned earlier, it is also possible that the subject area of this study may have been particularly sensitive, causing some of the women to feel embarrassed and thus participate less in the group than others.

Nevertheless, the findings have identified some potentially important issues in considering introducing the HPV vaccine, and they provide a useful starting point for further research. The sample had the advantage of including mothers of daughters in the age range within which the vaccine is likely to be introduced, rather than asking about hypothetical daughters as has been the case in several previous studies. This study gives an indication of the issues that should be addressed in future quantitative work and suggests that communicating with women about the reasons for the early age of vaccination will be vital to ensuring high uptake. The themes identified were consistent with research in the United States and elsewhere; thus, it is likely that these issues will be of concern to parents beyond Britain.

If HPV vaccination is to be introduced, parental acceptance will be crucial to ensuring a high uptake. This study indicates that although attitudes towards the vaccine are broadly positive, the age of vaccination is likely to be a contentious issue and some parents have concerns about encouraging risky sexual behavior. Clear communication will be key to making certain that parents understand the reason for vaccinating girls early.

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