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## Parents' views on human papillomavirus vaccination for sexually transmissible infection prevention: a qualitative study

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### Abstract

**Background**—Human papillomavirus (HPV) is the most common sexually transmissible infection (STI) in the United States (US) and an important cause of several cancers. Vaccines that prevent HPV infections are now recommended for routine use in adolescents but coverage remains suboptimal in the US. Because they are often promoted as cancer prevention vaccines, little is known about parents' views on vaccination for prevention of an STI.

**Methods**—In this qualitative study, parents and caregivers of children ages 10–18 years completed an in-depth interview. Participants ( $n = 38$ ) were recruited from an urban hospital-based primary care centre serving a low-income population in the northeastern US during May 2013–February 2014. Interviews were transcribed and coded using a thematic content approach.

**Results**—Five major themes emerged with relevance to the topic of HPV vaccination for STI prevention: (1) low awareness of HPV as an STI; (2) favourable opinions about STI prevention messages for vaccination, including at young ages; (3) salience of sexual mode of transmission, given the unpredictability of adolescent sexual behaviour and high rates of other STIs and teen pregnancy; (4) recognition that sexual health is a topic of conversation between adolescents and health care providers; and (5) relevance of personal experience.

**Conclusions**—Discussing STI prevention in the context of HPV vaccination appears to be well accepted by urban, low-income minority families. In addition to providing information on cancer prevention, these messages may help to raise awareness, acceptability and uptake of HPV vaccines.

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#### Conflicts of interest

LMN has received consulting fees from Merck.

## Additional keywords

adolescents; attitudes; cancer prevention; low-income households; United States

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## Introduction

Human papillomavirus (HPV) is the most common sexually transmissible infection (STI) in the United States (US), with an estimated 79 million prevalent cases in 2008, representing over 70% of all STIs.<sup>1</sup> Many infections are self-limited and transient, but persistent infection with a high-risk type is associated with nearly all cases of cervical cancer.<sup>2</sup> Furthermore, HPV infections are also associated with several other cancers, including anal and oropharyngeal cancers in men and women, vaginal and vulvar cancers in women, and penile cancer in men, in addition to genital warts in both sexes.<sup>3,4</sup> The majority of sexually active individuals, both males and females, will acquire an HPV infection at some point during their lifetime.<sup>3</sup>

Two prophylactic vaccines are currently available in the US for protection against HPV infections in a three-dose series to be given over 6 months. Both the bivalent and quadrivalent vaccines prevent infection with HPV types 16 and 18, which cause 70% of cervical cancer. The quadrivalent vaccine that is used most frequently in the US also prevents types 6 and 11, which cause 90% of genital warts. In 2006, the quadrivalent vaccine was recommended in the US for adolescent females aged 11–12 years, with catch-up vaccination through to 26 years old; in 2009, this recommendation was expanded to include the bivalent vaccine.<sup>5</sup> In 2011, the recommendation was expanded again to include routine vaccination of boys aged 11–12 years and catch-up or permissive vaccination through to 26 years old.<sup>6</sup> Most insurance companies cover the cost of the HPV vaccine, and the federal Vaccines for Children Program provides free vaccination to providers of low-income children through to 18 years of age.

Despite proven high efficacy and safety,<sup>7,8</sup> HPV vaccine uptake remains suboptimal, with ~54% of adolescent females and 21% of adolescent males having received 1 dose.<sup>9</sup> Coverage is also lower than for other vaccines recommended for adolescents to prevent tetanus, diphtheria, pertussis (85%) or meningococcal disease (74%).<sup>9</sup> Uptake in the US, where vaccination is typically administered by health care providers (typically paediatricians) in clinical practice, also lags substantially behind that of other industrialised nations with national HPV immunisation programs that are often administered through schools.<sup>10</sup> For example, adolescent females in Australia, Denmark and England have more than 70% coverage with all three doses.<sup>11–13</sup>

Though challenges to uptake are likely to be multifactorial,<sup>14</sup> one important aspect may be how the vaccine is presented to parents of eligible children. Because HPV is sexually transmissible and is an important cause of cancer, approaches may focus on either one or both of those aspects. The general reluctance of many segments of society to discuss sex, sexual health and STIs, and the focus on cancer in early marketing strategies may have resulted in a preponderance of cancer prevention framing messages.<sup>15,16</sup> Furthermore, low levels of knowledge about the sexually transmissible nature of HPV and its association with

genital warts may be limiting the possible usefulness of these messages.<sup>10,17</sup> In the early years of vaccine availability, several studies showed that there were limited effects of different framing (e.g. cervical cancer v. genital wart prevention) on parental intentions or behaviours to vaccinate adolescent daughters.<sup>18–20</sup> However, this has not been recently examined and the current levelling of uptake rates in the US<sup>9</sup> necessitates a renewed effort to examine ways of optimising coverage. Therefore, the purpose of this analysis was to explore parents' attitudes and beliefs about STI and cancer prevention in the context of HPV vaccination using qualitative research methods.

## Methods

Participants were parents or caregivers (subsequently referred to as 'parents') of adolescents regardless of HPV vaccination status recruited from the paediatric and adolescent primary care clinics at a single urban hospital in the north-eastern US serving a low-income and predominantly ethnic minority population. Parents were eligible to participate if they had a child (male or female) between the ages of 10 and 18 years. A convenience sample was recruited by approaching patients in the clinic waiting area. Interviews were scheduled for a time and location that was convenient for the participant and were conducted in dedicated research spaces at the hospital. All participants provided written informed consent and all study procedures were approved by the institutional review boards at the participating university and hospital. Participants received a \$20 gift card.

In-depth semistructured interviews with open-ended questions and targeted probes were conducted with participants, which lasted a median of 28 min. The guide was designed to elicit discussion about parents' knowledge, attitudes and experiences with HPV vaccination, and barriers and facilitators to initiating and completing the three-dose series. The guide was used to ensure that all participants were asked the same set of core questions on key topics. It also included several probing questions that could be used for each question as needed or appropriate to allow collection of more detailed and informative responses. Interviewers were trained in the use of the specific guide for this research project as well as how to build rapport, establish a conversational style, probe as needed, and remain neutral and nonjudgmental. Demographic information was collected using a brief instrument in a face-to-face manner. Materials were translated into Spanish for use with non-English speaking participants.

Interviews were audio-recorded and transcribed verbatim for thematic content analysis. During data collection, summaries and transcripts were reviewed by study team members and discussed to identify emergent themes, revise the interview guide and provide ongoing training. Data were analysed using established methods including coding, displaying, counting and identifying themes.<sup>21</sup> The initial coding guide was developed to include the main topics from the interview guide. The coding guide was updated and modified in an iterative manner as it was applied to interviews. The first eight interviews were coded by two investigators and checked for concordance. Discrepant coding was resolved through discussion, elaboration on definitions, and merging or splitting of codes until >80% concordance was achieved. The remainder of interviews was coded by at least one investigator.

Data displays for relevant codes and simple frequencies were used to identify and verify common patterns and emergent themes. For this analysis, codes related to knowledge about HPV, STI prevention, cancer prevention, sexual health and personal experience were examined. Preliminary analysis was conducted on the first 22 interviews and initial themes were developed. The final analysis was conducted on the complete dataset (38 interviews) and the results did not differ substantially from the preliminary analysis, suggesting that saturation was approached. Data were coded and organised for thematic analysis using ATLAS.ti ver. 7 software (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany).

## Results

Sample characteristics ( $n = 38$ ) are presented in Table 1. Participants included 33 parents, 4 grandparents and 1 step-parent. The sample was predominantly female ( $n = 31$ ), and Black ( $n = 18$ ), Hispanic ( $n = 13$ ) or mixed ethnicity ( $n = 4$ ). Ages ranged from 31 to 63 years. Participants had a total of 61 children (28 females, 33 males) between the ages of 10 and 18 years, with all ages represented in the sample. Five major themes emerged with relevance to the topic of HPV vaccination for STI prevention: (1) low awareness of HPV as an STI; (2) favourable opinions about STI prevention messages for vaccination, including at young ages; (3) salience of the sexual mode of transmission, given the unpredictability of adolescent sexual behaviour and high rates of other STIs and teen pregnancy; (4) recognition that sexual health is a topic of conversation between adolescents and health care providers; and (5) relevance of personal experience.

### Low awareness of HPV as an STI

*'Never heard of it.'* (Black mother of son aged 14)

Awareness of HPV was generally low among many study participants. A few parents reported knowing it was an STI:

*'Um, it's a virus that can um be spread uh, sexually from a man to a woman or from a woman to a man as well. Um, it's uh, it could also lead to, I believe, cervical cancer.'* (Hispanic mother of son aged 16 and daughter aged 13)

However, most reported either never having heard of it or knowing very little about it. Some parents knew of the association with cervical cancer, but not the mode of transmission. Very few knew that HPV causes genital warts and some parents expressed surprise after learning HPV was an STI.

*'Maybe I heard that word but don't know exactly what it's about. I heard it somewhere. HPV, I heard those three letters but don't know what there about; maybe I'm wrong.'* (White mother of sons aged 17 and 10)

*'I've heard of it; I've heard the name, but I don't know what it is...I've heard people talk about it, but I don't know how it gets passed on or what it is.'* (Hispanic mother of son aged 16 and daughter aged 15)

*'But I didn't know that it was sexually transmitted. Wow!'* (Black mother of son aged 12)

## Favourable opinions about STI prevention framing for HPV vaccine including at young ages

*'Anything that would help them out today because there's so much out there.'*  
(Black grandmother of granddaughter aged 18)

A vast majority of respondents had positive attitudes towards the HPV vaccine, with only three parents expressing less favourable attitudes: one was concerned about vaccines in general, one didn't think her daughter needed it because she wasn't sexually active and one chose to defer vaccination for her daughters from 11 years old to 13 years old. Most of the parents in this sample also approved of STI prevention messages. Parents described strong feelings of wanting to 'protect' their children and 'prevent' diseases from occurring. Some parents reported that STI prevention framing was important even for children as young as 9 years old. They recognised the young ages at which many adolescents initiate sexual activity. Other parents felt that vaccination was important regardless of the initiation of sexual activity. The benefits of preventing an STI were noted by a range of parents, including males and females, blacks and Hispanics, and parents of sons and daughters.

*'I would love that she be protected so she wouldn't get it [an STI], you know. We talked about that to her, you know, and her minds open a little bit.'* (Hispanic father of daughter aged 15)

*'So, yes, I think 11, even 10 years old, 10, 9, 10, 11, 12. The vaccine should be given because they're starting earlier and earlier to have sex.'* (Mixed ethnicity mother of daughter aged 15 and son aged 12)

*'If the child was sexually active then by all means, they should have it, because I found out that my son was 10 when he started experiencing, so why not if they're experiencing that young, then yeah.'* (Black mother of sons aged 18 and 16)

In some instances, parents with limited knowledge about HPV and the vaccine expressed increased enthusiasm for the vaccine after learning more about the sexually transmissible nature of HPV.

*'The doctors talked to me about it but I didn't, I didn't accept it because I wanted to be more knowledgeable, knowledgeable about it, so. But now that you telling me more about it, that's what's making it even better.'* (Black father of sons aged 17, 13 and 10)

Relative to cancer prevention, some parents noted that both STI and cancer prevention messages were equally important and that invoking both messages can be beneficial. A small number of parents preferred cancer prevention framing over STI prevention by noting the potential relative severity of a cancer diagnosis. However, these parents did not generally express disapproval of STI prevention messages but rather the relative importance of cancer in their minds.

*'Because neither one of them are good.'* (laughs). *'They're both bad. It, it kills two birds with one stone.'* (Black mother of daughter aged 18)

*I feel like I am protecting them, doing something, and I want to protect them, especially from cancer. You know, the warts too. But I think I would like that this*

*can help protect them from getting cancer. I think the warts would be easier to take care of. Less suffering or painful than cancer, because cancer is very frightening.*  
(Black grandmother of grandson aged 15)

Only one parent expressed explicit disapproval for STI framing by noting that he didn't 'even want to put a sexually transmitted disease in her head, period' in reference to his 9-year-old stepdaughter.

### **Salience of this mode of transmission, given the unpredictability of teenage sexual behaviour and high rates of other STIs and teen pregnancy**

*'You still don't know what can happen when they're not around you. So protect them. You gotta do what you gotta do.'* (Black mother of son aged 12)

Parents also realised that adolescent sexual activity was sometimes unexpected and that they may not know when their children become sexually active. Therefore, they viewed vaccination as valuable protection in advance. Other parents described the high frequency of sexual activity among adolescents in their communities by referring to teen pregnancy and other STIs. They discussed knowing adolescents who had become pregnant – their own children, in some instances – and they discussed knowing about the problems of other STIs that affect their communities, including HIV.

*'I think it's great. I think, um, no matter how much you talk to your children, there's always gonna be a time when you're not gonna be there, and you're not gonna be able to, uh, stop them from sometimes making certain decisions.'*  
(Hispanic mother of son aged 16 and daughter aged 13)

*'I am all for it because at the end of the day, they are only human and they make mistakes. Things can happen, you know; things happen. So if there is something that can help them prevent it from happening, by all means, I'm for it.'* (Black mother of sons aged 18 and 16)

*'It's very good that it does that [prevents STI] especially for umm, adolescents that, you know, in this day and age where they like to, you know, have sex, you know, young teenagers and getting pregnant and you know...A lot, you know, a lot of disease that are out there...' Cause this day and age, these young kids think it's OK to have unprotected sex...They all think it's OK but they don't realise the consequences of all the diseases that are out there.'* (White mother of daughter aged 15 and son aged 12)

### **Recognition that sexual health is a topic of conversation between adolescents and health care providers**

*'I've been there [clinic]. There is some kid that comes in there openly, like, really wants to talk to her [doctor], like "I gotta talk to you." That's really cool.'* (Black grandmother of grandson aged 15)

Several parents discussed knowing that their children talk about sexual health with their doctors. Parents recognised that these opportunities are created when their children go to the doctor without them, or when the parents step out of the room for part of the visit, as is

typically done for this age group. In some instances, parents recognised that their children may prefer to talk to a doctor rather than a parent. Most parents valued that providers were someone their child could talk to.

*‘So in a sense, with boys, they are not going to tell me. They told their doctor. That’s how I found out. They came home with a bag of condoms.’* (Black mother of son aged 16 and daughter aged 13)

*‘So I kind of, I want to keep this relationship between him and his doctor strong. Because if ever he do get afraid to say something to me, as long as he can say it to her, it’s even more important that he can, you know, talk to her and stay comfortable with her.’* (Black grandmother of grandson aged 15)

### Relevance of personal experience

*‘Because my girlfriend, her daughter has it...And she says she wishes she could have had it for her daughter, to get the shot.’* (Black grandmother of grandson aged 15)

The benefits of preventing an STI were often influenced by parents’ own past experiences or experiences of other family members or friends. For example, a few mothers described their own diagnosis of cervical dysplasia as a motivating reason to vaccinate children. Another mother discussed a previous diagnosis of genital warts in one of her children. Parents similarly discussed personal or family experiences with cancer as motivations to vaccinate their children.

*‘I told her that it is a good idea that she did get it [HPV vaccination]. I didn’t go into too much detail, but I did say that mommy had it; it wasn’t nice. You’d have to get this procedure done. You don’t want to get that done. And she was like, OK!’* (Black mother of son aged 16 and daughter aged 13)

*‘Maybe I better get ‘em checked because I do have one of my children who has warts. So I don’t know if she’s been checked or had...Or if they can still give her this shot.’* (Black mother of daughters aged 15 and 13)

### Discussion

STI prevention framing for HPV vaccination was viewed as not only acceptable but also as important by most respondents in this study of low-income, predominantly minority parents and caregivers. Furthermore, several parents expressed greater enthusiasm for HPV vaccination after learning of the sexually transmissible nature of HPV, recognising the burden of STI and teenage pregnancy in their communities. The high rates of STI<sup>22</sup> and teen pregnancy<sup>23</sup> among racial and ethnic minorities in the US further support the salience of this issue in this population.

Public health messages about HPV vaccination do exist that portray STI and cancer risks in a balanced manner,<sup>24</sup> but these may not always be presented in practice. Previous research has shown that provider discomfort discussing STIs or sexuality with parents or adolescent patients is a significant barrier to recommending HPV vaccination.<sup>25,26</sup> This may be

especially true for younger adolescents. However, parents in this sample also supported STI framing even for adolescents as young as 11 or 12 years, as many discussed being aware of the young ages of sexual activity and not being aware when sexual activity begins. Another study reported that parents were often not aware of their child's sexual activity, with nearly half (47%) of mothers inaccurately reporting that their adolescent was not sexually experienced.<sup>27</sup> Therefore, waiting until a parent thinks a child is sexually active to vaccinate could result in missed opportunities for prevention if recommendations are delayed.

Our findings suggest that health care providers can play an important role in promoting HPV vaccination through tailored recommendations and directed discussions with parents. Two recent review articles on barriers to HPV vaccination highlighted the importance of health care provider recommendations.<sup>28,29</sup> Increasing providers' comfort level with discussing these aspects of HPV (sexual transmission and genital warts) could further help to increase the usefulness of STI prevention messages. The results of this study indicate that most parents in this population would be receptive to these messages and that therefore, providers should not be reluctant to have these discussions.

This study has limitations. Our results pertain to low-income, urban, predominantly minority parents, and we did not seek to represent a broader population, such as middle- or upper-income families. Important sociodemographic differences in rates of HPV vaccination have been reported that may, in part, be influenced by attitudes towards vaccination, but the findings are not always consistent nor clearly understood.<sup>30</sup> In particular, this population may be uniquely appreciative of STI prevention messages for HPV vaccination because of the higher rates of STI and teenage pregnancy experienced in their communities. Second, only parents' perspectives and beliefs were elicited and not those of the adolescents themselves, some of whom may be involved in decision-making about whether to receive HPV vaccination. Third, our sample size did not permit detailed stratification of results by demographic characteristics.

## Conclusions

Given the current suboptimal rates of HPV vaccination among adolescents in the US, increasing coverage should be an important national public health priority. The potential for HPV vaccines to prevent several types of cancer is remarkable and recognised, but the sexually transmissible nature of HPV and other consequences of HPV infection (e. g. genital warts) may be underappreciated. Increasing awareness of these factors may help to promote greater uptake of these safe and effective vaccines, and providers should not be reluctant to raise the topic with parents of adolescents.

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**Table 1****Sample characteristics**

Unless indicated otherwise, data show the number of subject in each group, with percentages in parentheses

<b>Parents (<i>n</i> = 38)</b>	
Sex	
Female	31 (82%)
Male	7 (18%)
Ethnicity	
Black	18 (47%)
Hispanic	13 (34%)
Mixed ethnicity	4 (11%)
White	3 (8%)
Relationship to child	
Parent	33 (87%)
Grandparent	4 (11%)
Step-parent	1 (3%)
Age range (years)	31–63
<b>Children (<i>n</i> = 61)</b>	
Sex	
Female	28 (46%)
Male	33 (54%)
Age (years)	
10–13	20 (33%)
14–18	41 (67%)