

Parent HPV vaccine perspectives and the likelihood of HPV vaccination of adolescent males

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Keywords: adolescent, human papillomavirus, male, parents, vaccine

Abbreviations: ACIP, Advisory Committee on Immunization Practices; HPV, human papillomavirus; NIS, National Immunization Survey; US, United States

In 2013, approximately one-third of US adolescent males age 13–17 y had received ≥ 1 doses of HPV vaccines and only 14% had received ≥ 3 doses. This study used a nationally representative, online survey to explore experiences and attitudes related to HPV vaccination among parents with adolescent sons. Analyses compared the perspective of parents who do not intend to initiate HPV vaccine for ≥ 1 adolescent son to that of parents who are likely to initiate or continue HPV vaccination. Of 809 parents of sons age 11–17 years, half were classified as Unlikely to Initiate HPV vaccination and 39% as Likely to Vaccinate. A higher proportion of the Likely to Vaccinate group felt their son's doctor was knowledgeable about HPV vaccine, did a good job explaining its purpose, and spent more time discussing HPV vaccine; in contrast, over half of the Unlikely to Initiate group had never discussed HPV vaccine with their child's doctor. The majority of parents in both groups showed favorable attitudes to adolescent vaccination in general, with lower levels of support for HPV vaccine-specific statements. Physician-parent communication around HPV vaccine for adolescent males should build on positive attitude toward vaccines in general, while addressing parents' HPV vaccine-specific concerns.

Introduction

The US Advisory Committee on Immunization Practices (ACIP) issued a permissive recommendation for human papillomavirus (HPV) vaccination for males age 9–26 y in 2009 and recommended routine vaccination for adolescent males starting in 2011.^{1,2} Based on 2013 National Immunization Survey (NIS)-Teen data, HPV vaccine initiation and completion rates are low among adolescent males age 13–17 years, with estimated HPV vaccine coverage of 35% for ≥ 1 doses and 14% for ≥ 3 doses.³ To increase HPV vaccination rates in adolescent males, it is important to understand parents' reasons for not vaccinating their sons. The available research, which focuses mainly on reasons for not initiating HPV vaccine, has found that the most common reasons are lack of awareness about HPV vaccination for males, lack of a health care provider recommendation, and a belief that HPV vaccine is not needed for males.^{3–6} In addition, parents' concerns related to HPV vaccination have been shown to differ for sons compared to daughters, with parents more likely to report lack of a provider recommendation and lack of awareness as reasons for not vaccinating their sons compared to their daughters.⁶ Other research has shown that parents' beliefs about the general benefits of vaccines and perceived benefits of HPV vaccine were associated with initiation of HPV vaccine for their

sons,⁷ and that positive attitudes toward HPV vaccine among parents were the strongest predictor of HPV vaccine initiation and completion.⁸

Given the importance of a provider recommendation and awareness of HPV vaccine for males, one objective of this study was to explore in more depth parents' experiences with discussing HPV vaccine with physicians. In addition, we sought to explore attitudes related to HPV vaccination among parents with adolescent sons, with a focus on comparing the perspective of parents who do not intend to initiate HPV vaccine to that of parents who are likely to initiate or continue HPV vaccination. These comparison groups were defined to provide a more nuanced understanding of differences in parents' experiences and attitudes by expanding beyond a simple dichotomous categorization of HPV vaccine initiation or completion.

Methods

We conducted a nationally representative, cross-sectional survey of parents of children aged 9–17 y to explore their experiences with and perspectives on HPV vaccination. The 22-question survey, conducted using the online KnowledgePanel® (GfK Custom Research, LLC), was fielded in October 2012. The study

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Submitted: 04/27/2015; Revised: 06/23/2015; Accepted: 07/12/2015
<http://dx.doi.org/10.1080/21645515.2015.1073426>

was approved by the University of Michigan Medical School Institutional Review Board.

Sample

KnowledgePanel[®] is a probability-based panel that is representative of the US population.⁹ The design for KnowledgePanel[®] recruitment begins as an equal probability sample with several enhancements to improve efficiency, such as oversampling in census blocks with high-density minority communities. KnowledgePanel[®] members have been selected using address-based probability sampling and cover approximately 97% of US households. Non-Internet households are given a web-enabled computer and free Internet service, which represents the incentive they receive for being a panel member. Members with their own computer and internet access earn points in proportion to their regular participation in surveys that can be redeemed for cash, gift cards, or merchandise. GfK develops demographic profiles for each panel member, and sends periodic emails inviting them to participate in surveys, using unique log-in information to access surveys online.

The invitation for this survey was targeted to 3,177 panel members identified in GfK profile data as being a parent of one or more children age 9–17 y and had a completion rate of 57% (1,799/3,177). Among the 1,799 survey respondents, 1,653 reported being a parent of at least one adolescent age 9–17 y (92% eligibility rate).

Survey items

The survey included a mix of parent-level and child-level questions (i.e., questions that parents answered for each of their children age 9–17 years). The parent-level questions used for this analysis were:

- Agreement with 3 statements related to conversations with a child's doctor or other healthcare provider related to HPV vaccine (strongly agree, agree, disagree, strongly disagree, N/A-never discussed HPV vaccine); and
- Agreement with 5 statements reflecting attitudes regarding vaccination (strongly agree, agree, disagree, strongly disagree).

The child-level questions used in this analysis include:

- Age, gender, and number of HPV vaccine doses received (0, 1, 2, or 3 doses);
- For each child who had not received any HPV vaccine doses, whether the child will receive the first HPV vaccine dose in the next 12 months (definitely, probably, probably not, definitely not); and
- For each child who had received 1–2 HPV vaccine doses, whether the child will receive additional doses in the next 12 months (definitely, probably, probably not, definitely not).

Data analyses

Analyses were conducted at the parent level and included parents with ≥ 1 son aged 11–17 y to represent the age group recommended for HPV vaccination. (Although vaccination can

begin as early as age 9 years, the target age for HPV vaccine initiation is 11–12 y). Among the 1,653 respondents who reported being a parent of ≥ 1 adolescent age 9–17 years, 815 (49%) reported being a parent of ≥ 1 son age 11–17 y [Results for daughters are reported elsewhere.]

For parents with complete child-level data on HPV vaccine receipt and intent for all of their sons age 11–17 years, 4 parent-level groups were constructed:

- *Unlikely to Initiate*: Parents with any son age 11–17 y who had not received any HPV vaccine doses and would “probably not” or “definitely not” receive their first dose in next 12 months.
- *Likely to Vaccinate*: Parents who did not meet the criteria for the first group and had any son age 11–17 y who either had (1) received 1–2 HPV vaccine doses and would “probably” or “definitely” receive additional doses in next 12 months, or (2) had not received any HPV vaccine doses and would “probably” or “definitely” receive their first dose in next 12 months.
- *Unlikely to Complete*: Parents who did not meet the criteria for the first 2 groups and had ≥ 1 son age 11–17 y who had received 1–2 HPV vaccine doses and would “probably not” or “definitely not” receive additional doses in next 12 months.
- *Completers*: Parents for whom all of their sons age 11–17 y had received 3 doses.

Analyses focused on comparing the perspective of parents who do not intend to initiate HPV vaccine for ≥ 1 adolescent son (the Unlikely to Initiate group) with that of parents who are likely to initiate or continue HPV vaccination (the Likely to Vaccinate group), due to small numbers in the Completers and Unlikely to Complete groups.

GfK provided de-identified data and Census-based post-stratification weights used to match the US population distribution on respondent gender, age, race/ethnicity, education, and Census region. Frequency distributions and bivariate analyses were generated using SAS[®] version 9.3 (SAS Institute, Cary, NC). Unweighted frequencies and weighted proportions are presented. Bivariate analyses using chi-square tests explored differences between the Likely to Vaccinate and Unlikely to Initiate groups by parent demographics, agreement with 3 statements regarding HPV vaccine-related conversations with healthcare providers, and agreement with 5 statements reflecting vaccination attitudes. Within-group bivariate analyses explored whether agreement with each of the 5 statements reflecting vaccination attitudes varied by agreement with 2 of the 3 statements regarding HPV vaccine-related conversations with healthcare providers.

Results

Of 815 parents of sons age 11–17 years, 809 parents provided complete data on HPV vaccine receipt and intent for all of their sons age 11–17 y ($n = 955$ sons). Half of these parents were classified as Unlikely to Initiate ($n = 416$, 51%), 39% as Likely to

Vaccinate (n = 318), 3% as Unlikely to Complete (n = 22), and 7% as Completers (n = 53). The remainder of the analyses focused on the Unlikely to Initiate and Likely to Vaccinate groups. Parent demographics for these 2 groups, shown in Table 1, differed significantly by race/ethnicity, education attainment, and household income.

Conversations with Doctors Regarding HPV Vaccine

A higher proportion of parents in the Likely to Vaccinate group felt their son's doctor was knowledgeable about HPV vaccine and did a good job explaining its purpose (Table 2). More than twice as many in the Likely to Vaccinate group than the Unlikely to Initiate group agreed that the doctor spent more time discussing HPV vaccine. Over half of the Unlikely to Initiate group reported that they had never discussed HPV vaccine with their child's doctor.

Vaccination Attitudes

The majority of the Unlikely to Initiate group and almost all parents in the Likely to Vaccinate group support adolescent vaccination in general (Table 3), while agreement was less common for the HPV vaccine-specific statements for both groups. The proportion of respondents who supported each of the 5

Table 2. Conversations with child's doctor regarding HPV vaccine by HPV vaccine status of adolescent Sons^a

	Unlikely to Initiate (N=416) % (weighted)	Likely to Vaccinate (N=318)	
		% (weighted)	p-value
My child's doctor did a good job explaining what HPV vaccine protects against			
Strongly agree/Agree	34	59	<.0001
Disagree/Strongly disagree	8	10	
N/A-never discussed HPV vaccine	58	31	
My child's doctor knows as much about HPV vaccine as other vaccines			
Strongly agree/Agree	40	56	.0001
Disagree/Strongly disagree	7	11	
N/A-never discussed HPV vaccine	53	33	
My child's doctor and I have spent more time talking about HPV vaccine than other vaccines			
Strongly agree/Agree	13	32	<.0001
Disagree/Strongly disagree	32	35	
N/A-never discussed HPV vaccine	55	33	

^aGroups based on HPV vaccine status of male children age 11–17 years; see Methods section for full definition. The Likely to Vaccinate group includes those likely to initiate HPV vaccination and those who have initiated HPV vaccination who are likely to receive additional doses.

Table 1. Parent demographics by HPV vaccine status of adolescent Sons^a

	Unlikely to Initiate (N=416) % (weighted)	Likely to Vaccinate (N=318)	
		% (weighted)	p-value
Age (years)			
24–44 years	58	64	.17
≥ 45 years	42	36	
Gender			
Female	54	55	.79
Male	46	45	
Race/Ethnicity			
White, non-Hispanic	72	46	<.0001
Black, non-Hispanic	9	16	
Hispanic	15	32	
Other	4	6	
Education			
Less than high school	9	22	.004
High school degree	28	26	
Some college	27	26	
Bachelor's degree or higher	36	26	
Household Income			
< \$40,000	19	43	<.0001
\$40,000–\$74,999	33	21	
≥ \$75,000	48	36	
Number of Male Children Aged 11–17 Years			
1	80	86	.08
2 or more	20	14	

^aGroups based on HPV vaccine status of male children age 11–17 years; see Methods section for full definition. The Likely to Vaccinate group includes those likely to initiate HPV vaccination and those who have initiated HPV vaccination who are likely to receive additional doses.

statements differed significantly between the Likely to Vaccinate and the Unlikely to Initiate groups.

In bivariate analyses of vaccination attitudes by parent perspectives on their conversations with providers about HPV vaccine, no differences were found within the Likely to Vaccinate group. Within the Unlikely to Initiate group, only one comparison reached statistical significance. A higher proportion of parents who agreed that their child's doctor knows as much about HPV vaccine as other vaccines believed that HPV vaccine is effective in preventing genital warts compared to those who disagreed that their child's doctor knows as much about HPV vaccine as other vaccines or did not discuss HPV vaccine (71% vs. 53% and 51%, respectively, $p < .01$).

Discussion

A year after HPV vaccine was recommended for routine vaccination of adolescent males,¹ the majority of parents in this survey were unlikely to initiate HPV vaccine for their sons age 11–17 y. Over half of these parents had not discussed HPV vaccine with their child's doctor, nor had a third of parents who intended to vaccinate. This finding, together with recent NIS-Teen data showing that the majority of parents have not received a physician recommendation to vaccinate their adolescent son and that their most common reason for not vaccinating was lack of a physician recommendation,³ reinforces the need to increase physician communication with parents of adolescent males regarding HPV vaccine.

Table 3. Vaccination attitudes by HPV vaccine status of adolescent Sons^a

	Proportion that Agree / Strongly Agree (<i>weighted</i> %)		p-value
	Unlikely to Initiate (N=416)	Likely to Vaccinate (N=318)	
In general, getting vaccines is a good way to protect adolescents from disease	69	94	<.0001
It is important to prevent males from transmitting HPV infection to females after they become sexually active	66	89	<.0001
It is important for children to be vaccinated against a sexually transmitted disease like HPV before they begin having sex	53	86	<.0001
HPV vaccine is effective in preventing genital warts	59	82	<.0001
It is important for males to receive HPV vaccine in order to protect females against cervical cancer	50	84	<.0001

^aGroups based on HPV vaccine status of male children age 11–17 years; see Methods section for full definition. The Likely to Vaccinate group includes those likely to initiate HPV vaccination and those who have initiated HPV vaccination who are likely to receive additional doses.

Our findings also support the need to improve the quality of physician-parent communication regarding HPV vaccine. Physicians should take advantage of the increasing number of tools available to educate themselves and their patients about HPV vaccine.¹⁰ About 2-thirds of parents unlikely to initiate HPV vaccine for their adolescent sons did express support for adolescent vaccination in general, but lower levels of support for HPV vaccine. A focus of physician communication with these parents should be to build on this positive attitude toward vaccines in general, while addressing parents' HPV vaccine-specific concerns.

In this study we defined 4 groups of parents based on a combination of HPV vaccine receipt and HPV vaccine intention to provide a more nuanced picture of differences in parent perspectives. For example, in a dichotomous categorization scheme based on HPV vaccine initiation, parents who had initiated HPV vaccine would include both those intending to seek additional doses and those not intending to receive more doses. One of the most pressing questions is how to move parents along spectrum from being unlikely to initiate HPV vaccine to completing the HPV vaccine series. In our analyses we compared those unlikely to initiate HPV vaccine to those likely to initiate or continue HPV vaccination. While attitudes and discussions with physicians were more positive among those likely to vaccinate, those positive leanings must continue to be reinforced to keep their sons progressing to series completion.

We found demographic differences between parents unlikely to initiate HPV vaccine for their sons and those likely to vaccinate, with a higher proportion of parents in the unlikely to initiate group who are White and had higher levels of education and income. Similar trends have been seen in other studies.^{6,11,12}

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Limitations

Although parent-reported HPV vaccine receipt by adolescents was not verified and was slightly higher compared to national, provider-verified rates for 2012,³ adult recall has been shown to reasonably approximate provider-reported HPV vaccine rates.¹³ We cannot tell from the data collected whether parental report of not discussing HPV vaccine with a child's doctor was due to missed opportunities during a doctor visit or to not having been to the doctor.

Conclusion

Findings from this nationally representative study of parents of adolescent sons further support the impetus to increase and improve physician-parent communication regarding HPV vaccination of adolescent males.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

Funding

This work is a product of a Prevention Research Center and was supported by the Centers for Disease Control and Prevention through Cooperative Agreement #5-U48-DP-001901. The findings and conclusions are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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