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A National Survey about Human Papillomavirus Vaccination: What We Didn't Ask, but Physicians Wanted Us to Know

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Abstract

Study Objective—The current study presents findings from a qualitative examination of free text comments from a national survey of US physicians on human papillomavirus vaccine recommendation beliefs and practices. Qualitative analyses of free text physician responses may offer a more complete and physician-driven description of influences on human papillomavirus vaccine recommendation.

Design and Participants—In 2009, a survey assessing physicians' knowledge, attitudes, and human papillomavirus vaccination practices was conducted among a national sample of US physicians practicing Family Medicine, Pediatrics, or Obstetrics/Gynecology (response rate = 67.8%). Qualitative comments were analyzed using a Grounded Theory approach.

Results—Of 1008 completed surveys, 112 participants provided comments, which were organized into three primary HPV vaccine-related themes: (a) comments about cost of the vaccine, (b) comments about institutional policies and procedures, and (c) physicians' personal views and one secondary theme related to survey methodology: the parent study's use of an upfront cash incentive. Many comments pertained to issues that were queried in the closed-ended survey items; however, some comments provided insight into understudied areas (e.g., physician attitudes regarding survey methodology).

Conclusion—Physician respondents used the free text space to reemphasize issues that were most important to them and to offer insight about aspects of the vaccine and the survey process.

Keywords

human papillomavirus; vaccines; physician research

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Introduction

Human papillomavirus (HPV) is the most common sexually transmitted infection.¹ Young sexually active females are at greatest risk of HPV infection, with rates estimated to be at 40% among 14–19 year olds and almost 50% among 20–24 year olds.² Aside from the well-established implications for cervical cancer, HPV is also associated with oropharyngeal cancer.³ Clinical availability and uptake of HPV vaccination has great potential to reduce the incidence of HPV-associated cancers.

The Advisory Committee on Immunization Practices (ACIP) recommends routine HPV vaccination for females at age 11–12 years, with catch-up vaccination for females ages 13–26 years.^{4,5} Girls aged 9–10 years may be vaccinated at the provider's discretion. Although HPV vaccination uptake is influenced by knowledge, attitudes, perceived roles, and personal values,^{6–8} physician recommendation is consistently a strong predictor of vaccine uptake among parents on behalf of their minor daughters as well as older female patients.^{6,9,10} However, previous studies have documented variability in both physicians' intentions and actual recommendations of HPV vaccination.^{8,11,12} Physician recommendation practices may be influenced, in part, by personal knowledge, attitudes, and values.

Surveys can be an efficient and cost effective approach to gather information, particularly about behavioral practices such as physician recommendation of the HPV vaccine that may be influenced by knowledge, attitudes, and beliefs. Typically, survey instruments require participants to select from a set of predetermined fixed responses. Compared to the forced choice responses, the free text area of surveys allows attitudes and beliefs to emerge, affording additional insight into factors that may influence physician behavior (e.g., HPV vaccine recommendation).¹³

In 2009, a survey assessing physicians' knowledge, attitudes, and HPV vaccination practices was conducted among a national sample of US physicians (N=1008).¹⁴ At the conclusion of the survey, respondents were asked to provide additional written comments or suggestions. The purpose of the current study was to conduct a qualitative examination of free text provider comments from the survey.

Materials and Methods

The overall survey methods are described in detail elsewhere.¹⁴ In brief, after Institutional Review Board approval, surveys were mailed in April 2009 using a modified Dillman approach¹⁵ consisting of multiple mailings and reminders. The first mailing included an upfront \$25 cash incentive. The target sample included 818 Family Medicine physicians (FPs), 393 Pediatricians (Peds), and 327 Obstetricians/Gynecologists (OBGYNs), totaling 1538 physicians. Of those surveys, 33 were undeliverable, and 10 participants were identified as ineligible. Following informed consent (online or via paper copies), 1013 physicians completed the survey, including 500 FPs, 287 Peds, and 226 OBGYNs, for an overall response rate of 67.8%.

At the end of the survey, respondents were provided a free text space to offer any additional comments or suggestions. Comments were analyzed using a Grounded Theory approach with a combination of hand-coding methods, wherein the content was first organized into inductive categories. Similar themes were grouped together,¹⁶ and the research team identified sub-categories that emerged through several rounds of thematic validation.¹⁷ Two reviewers independently appraised the categories and assessed all comments to establish an inter-rater reliability of 95%.

Results

Of 1008 completed surveys, 112 participants provided comments, which were organized into three primary themes related to the HPV vaccine: (a) vaccine cost, (b) institutional policies and procedures, and (c) personal views of HPV vaccination. A secondary theme emerged related to the survey methodology employed in the parent study: the use of an upfront cash incentive. Themes and their associated sub-categories are presented in Table 1, and Table 2 provides sample quotes from each theme.

Cost as a Barrier

Physicians noted that cost was a barrier in providing the vaccine. The majority of physicians who responded did not advocate for lower costs of the actual vaccine, but rather the need for insurance to provide adequate reimbursement.

Government or Institutional Policies and Procedures

Physicians provided comments on government policies or institutional practices and procedures. Few physicians indicated that recommending HPV vaccine was part of their standard practice. Some indicated their practice setting had the HPV vaccine available; however, initiating discussions about the vaccine with parents had not been adopted into standard procedure due to time or lack of promotion on the part of the institution. A small proportion of physicians indicated government mandates and paperwork burden were barriers to providing the vaccine. Over half of these comments came from private practice OBGYNs. The majority of physicians indicated their practice was limited in scope and had traditionally relied on external resources to educate patients about and administer the vaccine.

Personal Views

Some physicians discussed their personal views of the vaccine in the free text comments. Themes that emerged regarding providers' personal attitudes included concerns about safety/efficacy; morality; receptiveness of parents; and interference of government and media. The majority of physicians who wrote comments regarding vaccine safety or efficacy concerns also indicated they were not in favor of administering or recommending the HPV vaccine to patients. However, a few physicians who cited safety concerns indicated they still recommend the vaccine in their practice.

Objections to the vaccine were cited by some physicians, with the strongest expressed by FPs. Objections included perceptions that the vaccine: (a) encourages girls to forego regular screenings, (b) is unnecessary for girls under the age of 13, and (c) promotes promiscuity. For these reasons, these physicians indicated they do not recommend the vaccine, and one physician suggested parents should teach abstinence in lieu of vaccination.

Physicians who indicated that parents' receptiveness was a barrier to vaccination either said they were in favor of the vaccine or did not indicate any personal favorability. No physician who said parents served as a barrier also said they were opposed to the vaccine. Physicians stated that many parents were in "denial" about the sexual activity of their daughters and felt the HPV vaccine was an "authorization" for this behavior.

There was some disagreement between physicians' attitudes regarding government and media reports of safety in relation to parental decision making. Some physicians supported mandating the HPV vaccine, believing it may alleviate the burden to "convince" parents of the vaccine's necessity, whereas others expressed vaccine safety concerns and supported

optional vaccination. Further, about half of the physicians who commented explained the media exacerbates the HPV vaccine controversy, fueling those in opposition.

Another personal view that emerged was overall support for the vaccine. In fact, a few physicians noted promotion of the HPV vaccine in men and women over the age of 26. Some physicians suggested that, over time, the vaccine would become less controversial and more accepted by the community.

Survey

Physicians also provided comments on the survey itself, with the majority commenting on the ease of completion. Others commented on the use of the upfront \$25 cash incentive placed in each survey envelope, where the majority said cash incentives were a successful technique to encourage survey completion. Some physicians noted they felt obligated to complete the survey with the included cash and otherwise may have discarded the survey. A small proportion did not approve of receiving a cash incentive.

Discussion

This qualitative analysis of comments offers some insight into physician concerns regarding the HPV vaccine and physician survey methodology. Obtaining physician participation in interview/survey research is often challenging. The current study yielded a 68% participation rate,¹⁴ of which about 11% of respondents also expressed their views by providing written comments. The percentage of physicians who provided comments is somewhat less than that of a survey conducted by Feldman and colleagues;¹⁸ this research yielded an overall physician response rate of 55%, of which about 25% left comments in free text spaces. The topic of managed care's impact on physician-patient relationships, quality of care, and ethical practices may have directly impacted more physicians or elicited stronger reactions than a study about HPV, prompting more comments. Physicians who provided free text comments were most likely to comment on aspects primarily related to HPV vaccine, including concerns about cost, institutional policies and procedures, and personal views regarding HPV vaccine, and, secondarily, on the survey methodology, i.e., the use of an upfront cash incentive.

Physicians deemed cost as a barrier substantial enough to mention in free text space despite four quantitative items constructed to tap these issues. The majority of physicians who noted cost as a barrier advocated for improved insurance reimbursement. These results are consistent with those of a previous study surveying a national sample of pediatricians, where 77% noted inadequate reimbursement and 51% proposed upfront practice costs posed barriers to vaccination.¹² Depending on practice or patient characteristics (e.g., practice size or patient insurance), cost may be more or less of a concern for physicians. For example, larger practices may be in a better position to cover upfront costs or leverage existing resources to manage costs.²⁰ Further, practices with a high percentage of patients who are either uninsured or covered by insurance plans with low reimbursement rates may be more likely to cite cost as a barrier to HPV vaccine recommendation and uptake. Ultimately, these factors as well as sufficient resources (e.g., facilities and staff) affect whether physicians follow practice guidelines.²⁰ Given this consequence and physician motivation to note cost as a barrier to vaccine uptake beyond quantitative responses, further consideration of cost is warranted.

Physician attitudes related to government and institutional barriers with regard to HPV vaccination are supported throughout the literature. Kahn and colleagues²¹ found that endorsement of professional organizations, such as the American Academy of Pediatrics (AAP) and the ACIP, was predictive of vaccine support among Peds. Additionally, this

study showed that Peds who practiced in institutions with established policies and procedures for HPV vaccines were more likely to report being confident in their vaccine recommendation.²¹ Similarly, Riedesel and colleagues¹¹ found that endorsements from colleagues and national organizations showed a greater intention to immunize against HPV. Historically, physicians have relied on state endorsements to support a variety of vaccines;^{6,22,23} however, ultimately the institution must integrate these endorsements into standard practice policies and procedures for widespread uptake.

The third HPV vaccine-related theme that emerged reflected physicians' personal views, which ranged from concerns about the vaccine's safety and efficacy to its overall acceptability. Several personal concerns noted by physicians in this study mirror previous results of close-ended surveys examining physicians' attitudes towards the HPV vaccine, particularly those regarding safety/efficacy, moral, and parental receptivity concerns.^{11,12,24-26} For example, Daley and colleagues¹² found that a high percentage of Peds were in favor of the vaccine, but had concerns about reimbursement, safety, and the vaccine's promotion of sexually risky behavior. Similarly, results from a study conducted by Kahn and colleagues²¹ indicated that Peds were most concerned with safety and efficacy of the vaccine, in addition to parent receptiveness. Here, individual interviews with Peds were conducted, and qualitative data analysis techniques were used. Although a variety of designs were used in these studies, similar results emerged.

A specific safety/efficacy concern frequently noted by physicians in this study relates to the timing of vaccination. Some physicians suggested the vaccine is unnecessary for girls younger than age 13, which could perhaps be related to physician-perceived challenges with recommending the vaccine to parents of younger girls. The ACIP recommends routine vaccination of girls aged 11-12 years for several reasons, including data on age of sexual debut, the likelihood of HPV infection within several years of sexual debut, and the established schedule for healthcare visits for other vaccines at age 11-12 years.⁴ At the other end of the age continuum, some physicians expressed a desire to promote HPV vaccination to women older than age 26. Currently, HPV vaccine is limited to ages 9 through 26 given its demonstrated safety and efficacy for those ages. Approval for other ages may be granted if studies show HPV vaccine is safe and effective.²⁷ Physicians' desire to vaccinate patients older than age 26 provides some evidence that pursuing safety and efficacy studies for these ages is warranted.

Interestingly, despite these safety/efficacy, moral, and parents' receptivity concerns, many physicians either advocated for or did not directly oppose administering the vaccine. In fact, one physician even advocated for a government mandate of the vaccine, suggesting that certain subgroups (e.g., Latino, African American) are more receptive to understanding the need and importance of the vaccine and that a government mandate may help eliminate barriers when working with less receptive groups. Moreover, several physicians commented on their overarching support for, including male vaccination and female vaccination for women over the age of 26, and need for widespread availability of the vaccine. Physicians with safety/efficacy concerns, however, were more in support of optional vaccination. In sum, many physicians in the current study advocate for or are willing to comply with HPV vaccination recommendations. Regarding outstanding controversy, however, almost half of the physicians suggested those in opposition are fueled by "bad press," which others believe will dissipate over time as safety/efficacy concerns are addressed and as the community becomes more aware of the health threats associated with HPV (e.g., cervical cancer, genital warts) and, therefore, accepting of the vaccine.

Several physicians stated personal views that may be construed as potential barriers to recommendation and uptake that have not been evidenced by prior survey techniques. For

instance, some physicians cited a concern that the vaccine encourages girls to forego regular screenings. To our knowledge, no studies have examined whether a reduction in frequency of Pap tests has occurred since the vaccine was licensed, nor whether this is a perceived barrier to HPV vaccination uptake. To that end, these comments highlight areas for future research.

It is important to note that physicians were afforded an opportunity in the survey to rate the degree to which the following were perceived as issues related to vaccination: vaccine safety/efficacy; parental concerns about adolescents assuming vaccination implies parental acceptance of premarital sex; personal and parental concerns that vaccinated adolescents will practice riskier sexual behaviors; and absence of mandates to require HPV vaccination for school attendance. Given that some physicians provided comments stating their personal viewpoints not only in the respective survey sections but also in the free text space suggests the perceived weight of these opinions.

In addition to these three primary themes related to the HPV vaccine, a secondary theme emerged: the use of an upfront cash incentive in the parent study from which these qualitative data were extracted. Previous research has supported the efficacy of using upfront cash incentives to increase survey response rates among physicians.¹⁹ In a systematic review of the impact of incentives on physician response rates, even \$1 incentives were associated with an increase in response rates.¹⁹ Results also indicated cash payments were more effective in increasing response rates than nonmonetary incentives, chances to win a cash prize, and donations to charity or an alma mater. Moreover, upfront incentives were more effective than promised incentives and, as noted by a physician in the current study, may also be preferable to non-immediate monetary incentives (e.g., a check). Despite the support for the use of upfront monetary incentives in increasing survey response rates, to our knowledge, no previous studies have evaluated physicians' reactions to this approach. Results from the current study suggest physicians' responses to the incentives generally were favorable.

While this study provides important information about physician's knowledge, attitudes, and beliefs related to HPV vaccination, findings should be considered in light of certain limitations. First, only 11% of survey respondents provided written comments in the survey. Thus, this group may represent those with stronger beliefs about HPV vaccination. However, it is also possible that those who commented were also those who have had the most experience with vaccination and may represent an important group to provide feedback on issues that may impact a larger group of physicians as HPV vaccination becomes more widely disseminated. Second, the purpose of the parent study was to quantitatively determine factors associated with recommendation of HPV vaccination among a national sample of US physicians. Thus, we did not design the study based on qualitative methods (e.g., mode of interview, purposive sampling) that may have made the findings from the written comments more robust. Caution should be heeded, therefore, when attempting to generalize this study's findings to other physician groups and practices. Future research is needed, and currently underway with data from our parent study, to assess relations between physician practice-type and HPV recommendation. Also underway is a study examining the correspondence between physician recommendation and administration of the HPV vaccine in a Medicaid population.

HPV vaccination has the potential to reduce cancer-related morbidity and mortality. Providers play a critical role in widespread dissemination of the vaccine. The findings from this study provide additional insight into factors associated with physician recommendation of HPV vaccination. Many of the physicians' comments regarding potential HPV vaccine recommendation and uptake have been supported by previous quantitative and qualitative

studies, supporting the external validity of this study. Several new areas of fruitful research emerged, however, such as ensuring routine screening for cervical cancer is not overlooked once females are vaccinated for HPV. Qualitative results from this study also highlight the relative effectiveness of providing upfront cash incentives for physician surveys and suggest key areas for provider-based interventions and public policy approaches to increasing HPV vaccination.

Acknowledgments

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Abbreviations

HPV	Human papillomavirus
ACIP	The Advisory Committee on Immunization Practices
FPs	Family Medicine physicians
Peds	Pediatricians
OBGYNs	Obstetricians/Gynecologists

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Table 1

Primary and Secondary Themes and Sub-Categories of Free Text Responses from Physicians

Theme	Sub-Category
Primary HPV Vaccine-Related Themes	
Cost	High cost of vaccine Inadequate insurance reimbursement
Institutional Policies and Procedures	Limited time with patients Lack of promotion within the institution Paperwork burden Limited scope of practice
Personal Views	Safety/Efficacy Moral Concerns Parents' Receptivity Government/Media Interference Overall Acceptability
Secondary Theme Related to Survey Methodology	
Survey	Ease of completing Cash incentives Desire for more specificity in questions

Table 2

Example Quotes by Theme

Qualitative Themes	Example Quotes
Cost as a Barrier	<p><i>"I think the most important issue about use of vaccine is the cost. If the government pays for it or make [sic] obligatory I can guarantee you will have more 80-90% immunized."</i></p> <p><i>"The only reason my self & my colleagues [sic] not able to offer HPV vaccine to our patients is lack of reimbursement."</i></p>
Government or Institutional Policies and Procedures	<p><i>"In MN, we immunize all children who are uninsured or underinsured, as they are covered by the state vaccine program."</i></p> <p><i>"There is not enough time to discuss this with every patient."</i></p> <p><i>"Most adolescent well-child care is done by our physician's assistants; plus, many adolescents don't come to the doctor anyway. I just forgot to offer HPV vaccination when I'm seeing these patients."</i></p> <p><i>"I offer Gardasil at physicals, but usually don't bring it up at all sick visits."</i></p> <p><i>"I simply have not incorporated HPV into my practice routine. It is one of many, many competing changes in medicine. I am not opposed to HPV vaccine."</i></p> <p><i>"The only way my patients can receive the HPV vaccine is if I submit paperwork to the vaccine manufacturer. This is tedious and is a real barrier to good care."</i></p> <p><i>"Many of my young adult patients already address HPV vaccine with their OBGYN, accounting for my lower % in that age group."</i></p> <p><i>"We refer children out for HPV as we don't do the Kids' Vaccine Program."</i></p> <p><i>"Many parents are hesitant to agree to HPV vaccination. It is very time consuming to discuss it w/ them & to convince them to get the vaccine."</i></p>
Personal Views	
Safety/Efficacy	<p><i>"HPV is the only vaccine that I have used that is out this long and still unsure if it's safety profile - the company & FDA were very slow in answering all the 'bad press' that is out there, leaving physicians to wonder. I do not give it to those not at high risk at this time."</i></p> <p><i>"The two big issues are safety (for parents) and timing of vaccination (for both). At this point, we do not know how long immunity will last (? > 5 yrs)."</i></p> <p><i>"HIGH CONCERNS OF SAFETY SALES PITCH WILL NOT CONVINCE ME OF SAFETY"</i></p>
Moral Concerns	<p><i>"I have a very high acceptance rate of HPV vaccine BUT not all 11-12 years olds. For my practice, 14 years old is appropriate & > 90% get the vaccine by 15."</i></p> <p><i>"I do not recommend the HPV vaccine at all. I do not believe it is safe - especially for pre-teen girls. It does not eliminate the need for cervical cancer screening but can lull teens into a false sense of security. Teaching children sexual abstinence - just like we preach refraining from drugs and alcohol - is the better and safer way."</i></p> <p><i>"There is no reason to vaccinate a frightened 9 y/o girl, and there is no reason for schools to mandate HPV vaccine administration."</i></p> <p><i>"It truly disturbs me the number of vaccines that we use in this country! Many third world countries have far less and fair much better!"</i></p> <p><i>"I have some moral issues with the vaccine. I do not believe it should be mandatory but optional"</i></p>
Parents' Receptivity	<p><i>"Parents are seeming [sic] to be in denial that their daughters may become sexually active before marriage, so many want to defer until child is older (16 yrs for some)."</i></p>

Qualitative Themes	Example Quotes
	<p><i>"I have a very high acceptance rate of HPV vaccine BUT not all 11/12 years old. Parents are reluctant. I think the push to vaccinate at 11 yrs old turns off a lot of parents in my community."</i></p> <p><i>"It is very awkward to discuss to a protective parent."</i></p> <p><i>"Biggest obstacle to giving HPV vaccination is parental concerns re: sexual activity "authorization" AND concern re: vaccine safety."</i></p>
Government/Media Interference	<p><i>"HPV is the only vaccine that I have used that is out this long and still unsure if it's safety profile - the company & FDA were very slow in answering all the 'bad press' that is out there, leaving physicians to wonder."</i></p> <p><i>"It would make it easier if it were mandated. Latino & African-American patients are easier to 'convince' that the vaccine is important & needed."</i></p>
Overall Acceptability	<p><i>"HPV immunization is important and in time it will become more accepted by community. With more community wariness of cervical cancer and genital warts, and when vaccination for males also become indicated [sic] then I think we will be much more successful vaccine."</i></p> <p><i>"I would like to see/hear more info about the HPV to be made available for practitioners and the general public."</i></p> <p><i>"Although I am a full time ER and don't provide vaccines other than tetanus/rabies/ and occasionally influenza I strongly support and recommend the HPV vaccines and my 16y/o (daughter) has received it - good luck!"</i></p> <p><i>"I am considered by patients and peers as an advocate of the HPV vaccine."</i></p>
Feedback on Survey	<p><i>"Great survey, well organized questions. Easy to follow."</i></p> <p><i>"The inclusion of moderate CASH encouraged me to complete. I would not have done for lesser."</i></p> <p><i>"Good marketing sending cash to complete the survey. I always rip up the checks. Felt like I had no choice when cash was sent, can't rip that up - smart."</i></p> <p><i>"I do not approve of you black mailing doctors by sending \$25 - with the survey. Questionable ethics."</i></p>