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## Designing Messages to Motivate Parents to Get Their Preteenage Sons Vaccinated Against Human Papillomavirus

**Joan R. Cates[Lecturer],**

School of Journalism and Mass Communication, University of North Carolina, Chapel Hill

**Rebecca Ortiz[Doctoral student],**

School of Journalism and Mass Communication, University of North Carolina, Chapel Hill

**Autumn Shafer[Assistant professor],**

College of Mass Communications, Department of Public Relations, Texas Tech University, Lubbock, Texas

**LaHoma Smith Romocki[Country director],** and

U.S. Peace Corps, Cameroon

**Tamera Coyne-Beasley[Professor]**

North Carolina Child Health Research Network; associate director, Community Engagement, North Carolina TraCS Institute; and professor of pediatrics and internal medicine, Division of General Pediatrics and Adolescent Medicine, University of North Carolina, all in Chapel Hill

### Abstract

**CONTEXT**—Human papillomavirus (HPV) vaccine, licensed for use in 9–26-year-olds, is most effective when given before sexual activity begins. HPV causes genital warts, is associated with several cancers and disproportionately affects racial and ethnic minorities. Parents are typically unaware of male HPV vaccine; messages that might motivate them to get their preteenage sons vaccinated are unexplored.

**METHODS**—Messages promoting vaccination of preteenage boys were designed and tested in 2009 and 2010. Five focus groups were conducted with 29 black parents of 11–12-year-old boys, recruited through three churches and a middle school in North Carolina, and a racially diverse sample of 100 parents of 9–13-year-old boys in a university-based adolescent health clinic was interviewed. A constant comparison method was used to code transcripts and interpret themes. Chi-square and t tests or analyses of variance were used to assess differences in quantitative data.

**RESULTS**—Focus group parents knew little about HPV in males. Although concerned about safety and cost, parents supported vaccination for their sons. They wanted to see racial diversity and both parents in motivational materials. In interviews, 89% of parents reported never having heard of male HPV vaccine. The largest proportion said that a message stressing the prevalence and possible consequences of HPV infection was the most motivating (32%); the design favored by the largest proportion (43%) showed two parents.

**CONCLUSIONS**—Messages that may most motivate parents to get preteenage boys vaccinated against HPV focus on infection risk and include images of parents with their sons.

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Human papillomavirus (HPV) is the most common STD in the United States and infects approximately 50% of sexually active males and females.<sup>1</sup> The virus causes genital warts and is associated with cervical, vaginal, vulvar, anal, penile and oropharyngeal cancers.<sup>2–5</sup>

Compared with whites, racial and ethnic minorities, including blacks, Hispanics and American Indians, have a higher risk for STDs and HPV-related cancers, because they are more likely to engage in unsafe behaviors and to lack access to quality health care, among other factors.<sup>6,7</sup>

A vaccine against HPV was approved by the U.S. Food and Drug Administration (FDA) for both females (in 2006) and males (in 2009) aged 9–26 and is most effective when given before exposure to the virus.<sup>8</sup> HPV vaccine for females is licensed to protect against genital warts, cervical, vaginal, vulvar and anal cancers; the male vaccine is licensed to protect against genital warts and anal cancers.<sup>9</sup> The Advisory Committee on Immunization Practices (ACIP), part of the Centers for Disease Control and Prevention (CDC), recommends that routine HPV vaccination for both females and males aged 11–12 be included in the regular pediatric vaccine schedule.<sup>8,10</sup> In 2009, when HPV vaccine for males was first approved by the FDA, ACIP's recommendation was less emphatic and allowed males (and their parents) to decide, in collaboration with their health care professionals, whether they wanted to be immunized.<sup>8</sup> Under this permissive recommendation, the CDC estimates that as of 2010, less than 2% of U.S. males aged 13–17 had had at least one dose of HPV vaccine. By late 2011, new data on the vaccine's clinical efficacy in preventing anal cancers and estimates of lower-than-expected HPV vaccine uptake in females led ACIP to strengthen its recommendation by including routine vaccinations for boys aged 11–12 and catch-up vaccination in males aged 13–21.<sup>10</sup> Underutilization and low parental awareness of the vaccine result in missed opportunities to reduce HPV and associated cancers in males.<sup>11–13</sup>

The few U.S. studies on parental acceptance of HPV vaccine for boys have been mostly positive.<sup>11,14–18</sup> Nevertheless, HPV vaccine uptake among preteenage boys faces important challenges. For example, adolescent males are less likely than adolescent females to receive sexual information from their parents;<sup>12</sup> and they visit health care providers less frequently as they get older than do adolescent females who have reproductive health care needs.<sup>19</sup> In addition, providers are less likely to recommend HPV vaccine for preteenage patients than for teenagers because of parental refusal or reluctance to discuss sexual issues.<sup>14,20,21</sup> Finally, parents have low awareness that the vaccine is recommended for boys.<sup>8</sup> The HPV vaccine has been marketed primarily to prevent cervical cancer, rather than STDs.<sup>22</sup> And ACIP's recommendation in 2009 was based in part on the cost-effectiveness of vaccinating both genders mainly to prevent cervical cancer, rather than to improve males' sexual and reproductive health.<sup>12</sup> Thus, parents' acceptance of the vaccine for their sons varies according to whether they perceive it mainly as preventing cervical cancer in females or as preventing cancers and genital warts in both genders.<sup>14</sup>

To optimize HPV vaccination in preteenage males, communication strategies are needed to motivate parents and providers to have boys vaccinated. Parents need to learn about the vaccine, why it is important, where to get it and how to pay for it.<sup>11</sup> Therefore, providers need to be prepared and willing to discuss HPV vaccine with parents of preteenage boys.<sup>14</sup> This article presents qualitative and quantitative data on parents' knowledge and perceptions of HPV vaccine, and on the kinds of messages and images that best motivate parents to have their preteenage sons vaccinated.

## METHODS

We began by reviewing concepts from health behavior and message design theories. Next, we conducted two phases of focus groups with parents to identify their health beliefs about HPV infection in their sons and to solicit feedback on message designs and social marketing best practices; we revised initial message designs according to this feedback. Finally, we conducted intercept interviews with parents individually to document reactions to message

designs. We defined parents as mothers, fathers, grandparents and any other individuals who said they were responsible for boys' care. The institutional review board at the University of North Carolina at Chapel Hill approved the study.

### Theoretical Concepts

The focus group and intercept interview discussion guides drew from the health belief model,<sup>23</sup> which outlines factors that influence perceptions of risk associated with a disease. We first explored parents' perceptions of susceptibility to HPV; severity of STDs and HPV-related cancers; benefits of vaccination to prevent HPV-related disease; and possible barriers, including concerns about safety, efficacy, cost and access. To explore parents' ability to have their sons vaccinated (i.e., accessing or affording health care services), we asked questions about cues to action (external events that prompt a desire to make a health change) and self-efficacy (individuals' belief in their ability to make such change).<sup>24</sup> We used message design theories of gain framing<sup>25</sup> (highlighting positive outcomes of behavior compliance and thereby avoiding a consequence) and emotional relevance<sup>26</sup> (arousal leading to action) to ensure the our approach was persuasive enough to encourage HPV vaccination.<sup>27</sup> We designed and tested variations of both text and images to determine which combination seemed most relevant to parents.

After creating preliminary message designs, we included questions derived from social marketing principles that measured how parents perceived the value of having their sons vaccinated.<sup>28,29</sup> Questions covered the value of the recommended HPV vaccine, its price (in terms of cost, safety and efficacy), promotion (posters, brochures, doctors' recommendations, radio public service announcements) and where to get it (doctors' offices, pharmacies).

### Focus Groups

For the focus groups, we targeted black parents, since they are less aware of HPV or the HPV vaccine than are white parents,<sup>30</sup> and since blacks are at disproportionately higher risk for STDs and HPV-related cancers.<sup>6</sup> We focused on 11–12-year-old boys because HPV vaccine is believed to be most effective in this presumably sexually uninitiated age-group. We selected south central North Carolina because the region's rates of cervical cancer and STDs exceed those of the state overall.<sup>31,32</sup>

Participants were recruited through flyers and announcements at the focus group locations—three churches and a middle school in rural Sampson County. The county director of public health helped to identify potential sites for the focus groups and introduced us to key local leaders. The churches had black congregants, and the pastors announced the focus groups from the pulpit on Sundays and encouraged parents to attend. The middle school offered a program on parenting black youth one Saturday morning, and with endorsement from the principal, we recruited parents for a focus group after the program. Staff members who recruited participants were black. We conducted five focus groups with 29 parents from August 2009 to February 2010. Parents received a \$35 gift card for participating in the 90-minute discussion. Discussions were audiotaped and transcribed verbatim.

The first two focus groups, comprising 16 parents, met in a church on a Wednesday evening and Saturday morning, and primarily discussed health beliefs. For example, we asked about susceptibility to HPV (“Do you think boys are at risk for HPV infection?” “Any reasons for this?”) and severity of HPV infection (“Do you think parents see their sons at risk for genital area cancers, such as in their penis?”). We asked parents their thoughts on the benefits of HPV vaccine (“Do you think it is a good idea for an 11–12-year-old boy to get the HPV vaccine?”) and possible barriers to getting their sons vaccinated (“Do you know where to

go?” “How much does it cost?”). We asked whether fathers would be involved in their sons’ HPV vaccination decision (“Who in your family generally makes decisions about vaccinating your son?” “Is it generally the mother or the father?” “How would you say you go about making decisions about getting vaccines for your son?”). We also asked about trusted sources of information (“Who do you think fathers/mothers trust for information about the HPV vaccine?” “Any reasons for this?”). At the end of the focus groups, we asked participants to write down a message that they thought would persuade parents to get their sons vaccinated.

We analyzed transcripts from the first two focus groups for common themes related to the health belief model that could inform message development. From these themes, we drafted nine headline messages and developed accompanying images for posters. We asked the last three focus groups, comprising 13 parents, for feedback on these preliminary message design concepts (see box).

Each message was illustrated on a poster with a different image. Eight designs featured a preteenage boy; they varied by the race of people depicted (black only and black with other ethnicities), whether they showed one or both parents, whether they included other people (friends, future wife), setting (outdoors, church, retail) and color scheme (blue and green, brown and yellow, or black). One design featured only an influential figure (doctor, nurse, clergy) prominently advocating HPV vaccination.

We asked parents to interpret each poster design and message, describe what they liked or disliked and suggest ways to increase its effectiveness. We eliminated two messages that participants considered too wordy (“Know the facts ...” and “Six million people become newly infected ...”) and one that they deemed too repulsive (“Genital warts are painful and gross.”) We retained the remaining six messages as poster headlines, consolidated images into four designs and further refined 22 informational bullet points for the intercept interviews. The final poster designs featured at least one influential figure or institution in parents’ decision to have their sons vaccinated: a doctor, teenager, church or parent. All of the posters included images of people of different ethnicities, and were designed in various hues of blue and green, preferred colors from the focus groups.

### Intercept Interviews

To build on the focus group findings, we conducted intercept interviews with 100 parents of boys aged 9–13 at a university-based pediatric and adolescent health clinic. We recruited these parents as they brought children (not necessarily the son in question) to the clinic, which serves a racially and ethnically diverse population. We focused on the 9–13 age-group to include parents who may have been contemplating their sons’ HPV vaccination or whose sons were just outside the CDC’s target ages of 11–12. Research team members gave parents a flyer about the study as they checked in to the clinic; if eligible and interested, parents were asked for their consent to do the interview after their child’s appointment. Trained interviewers recorded responses to closed-ended and open-ended questions. Participants received a \$20 gift card for the 20-minute interview.

Before parents were shown headlines or poster designs, they were asked if they had heard of HPV vaccine for boys and how likely they were to have their sons vaccinated against HPV in the next 12 months. Interviewers next asked parents which headline, design and set of facts would most motivate them to seek HPV vaccine for their sons. The order of headlines, designs and facts was rotated with each participant. Questions covered two main domains: appearance and details (e.g., attention-getting, attractiveness, relevancy, reliability, acceptability); and cognitive processing and response (e.g., comprehension, how persuasive parents found the message, likely actions they would take after seeing it and information

needed to make a decision about vaccination). Interviewers also asked an open-ended question about what kinds of information parents wanted to see on the posters.

After parents answered questions about each headline, we asked them to specify which one they found most motivating. We then showed them the four poster designs, in random order, each with this chosen headline. We did this to focus their attention on the design while keeping the chosen headline constant. Each poster design included space at the bottom where additional facts about the vaccine, as determined by results from these interviews, would be placed later. For the interviews, the space was filled with the statement “This is where the facts will go.” We instructed parents to focus on the colors, design layout and photos, and not on this space. We concluded the interview with a written questionnaire asking parents to rate how motivating each of 22 factual statements about HPV infection and HPV vaccine would be in their decision to have their sons vaccinated; scores ranged from 1 (not very) to 7 (extremely). Demographic information was collected, including ages of parents and sons, as well as parents’ gender, race and ethnicity.

## Analyses

**Focus groups**—Using Atlas.ti and a constant comparative method, two of the authors independently created coding categories from one randomly selected focus group transcript.<sup>33</sup> Coding categories drew from the interview guide questions, the health belief model and social marketing principles. After coding one transcript, the authors compared their interpretations and refined coding categories. The same method continued for a second and third randomly selected transcript. The coders reached final agreement about the coding categories and created 47 codes with defined parameters and meanings. The same two coders then independently recoded all five focus group transcripts. Strong interrater reliability was attained: Agreement on the codes was 87–100%; Cohen’s kappa was more than 0.80 for 67% of the codes (mean, 0.83; range, 0.53–1.00).

**Intercept interviews**—Interviewers used audio recordings and notes to enter participants’ responses into an online database. From the entered responses, two of the authors created and refined a coding protocol derived from the interview guide questions and the health belief model. In each of three rounds of independent coding, approximately 10% of the codes disagreed. The two coders met after each round to compare and resolve discrepancies.<sup>34</sup> Once reliability was medium to strong (agreement on the codes was 92–99%; Cohen’s kappa was (0.66–0.95 and averaged 0.79), the two authors each coded half of the remaining sample.

Chi-square tests were used to assess differences among parents—by gender, race, age, sons’ age and likelihood of vaccination—according to the poster headlines and designs they found most motivating, actions they would take after viewing their favorite poster design and further information they wanted to see on the poster. We calculated mean scores for how motivating the 22 factual statements were, and used an independent sample t test or analysis of variance to compare the means across subgroups. Eleven participants had more than one son aged 9–13, and we randomly selected one about whom parents would answer questions. Statistical significance was assessed at  $p < .05$ .

## RESULTS

### Focus Groups

Of the 29 focus group participants, 76% were female and 67% were older than 40. We identified nine themes related to the health belief model and social marketing principles.

**Low awareness of HPV disease**—Nearly all parents in the focus groups were unaware that HPV could have serious consequences for boys. Parents were not sure if HPV infection would make their sons susceptible to anal or penile cancer. In one mother’s view, anticipating the risk of disease was easier when a family history existed and there were fewer unknowns. “In other diseases, you go by family history. . . . it’s like breast cancer.” Parents admitted that the possibility of cancer from HPV infection would get their attention more than the possibility of an STD. One father said, “We all know somebody who has had some form of cancer, and I don’t think people would publicize if they have genital warts. So I just think . . . when you hear cancer, it’s just more serious.”

**Low awareness of HPV vaccine**—Parents were surprised to hear about HPV vaccine for boys. One mother said, “I was like, ‘Really?’ ‘Cause I only heard girls. So I hadn’t heard boys, and so I was like, ‘Let me get some more information about this.’”

**Perceived susceptibility and severity**—Most parents were willing to consider their sons at risk for STDs if the sons were sexually active. One mother cautioned her son, “Just because this little girl says that she loves you and you’re her only boyfriend, you still need to protect yourself, because just like she is with you, she could be with someone else. So don’t take the chance.” Parents compared the risk of contracting STDs today with that in their own past. As one father said, “I tried to let him know and stress to him . . . that it’s not safe nowadays. Back in the day, if you got stung, you could go get a shot and you’d be all right. Now it’s more than that.” Some parents were more hesitant than others about getting their 11–12-year-old sons vaccinated and were willing to wait. One mother said that the vaccine might be good for sexually active boys, but not for others:

“I think it depends on the activity of the child. . . . I mean, you’ve got some kids out there that the parent knows or the family knows that this boy is just running around with a bunch of girls. And then you’ve got some boys who are not doing these things.”

**Benefits of HPV vaccine**—Once parents learned that the vaccine could prevent HPV infection, they were mostly positive about vaccination. One mother explained, “Because you don’t know what they’re going to be exploring, and you want them protected from, I mean, STDs, period.” Some parents readily answered that vaccination would not encourage early or greater sexual activity, but instead would offer some security. One mother summarized:

“... Even though you are trying to instill good values into your child... whenever they get to a certain age, they make their own decisions on what they want to do. You pray that they make the right decisions, but just in case they do make a wrong choice, here it is. . . . There is a security.”

Parents also supported preventing disease in future partners. When asked to suggest a motivating slogan to promote HPV vaccine for boys, one father proposed, “If you get them vaccinated at an early age, it can save their lives and their wives.”

**Barriers to HPV vaccine**—Parents worried that the three-shot series might cost too much and voiced reservations about side effects, long-term safety and effectiveness. One mother expressed her concerns:

“I don’t think all the nooks and crannies are out of it for the little girls that they’re giving it to. And now they want to give it to boys. That’s my first thought. And I’m thinking about being guinea pigs. . . . I wouldn’t sign for it and give it to my boy.”

They brought up experimentation with blacks who had been in the late stages of syphilis. Another mother elaborated:

“I’m thinking about the black people that were used as a guinea pig that died way years ago. . . . I don’t want to have my son take the HPV thing. But I’m trying to get all the information to make an intelligent decision.”

**Self-efficacy**—Parents expressed feelings of helplessness about their sons’ risk of HPV-related disease and their ability to take appropriate action. One father commented, “There will be many things in your son’s life that you can’t control. But you can control giving them the shot.”

Parents generally conceded that their sons eventually would reach manhood and make their own decisions about sexual activity and STD protection. One mother summed up parents’ feelings about taking action now:

“Protect now, while you can, because when he gets grown, he’s not going to be around. . . . You’re not going to be able to do nothing else. . . . You give them all the advice and the love you can now and protection. . . . When they’re grown, they’re on their own.”

**Preference for both parents in photos**—Most parents preferred posters that included photos of a mother and father with their son, to show joint childrearing. A mother explained:

“The mom is supposedly the one that nurtures the baby, but when he comes of age to the point where he’s transitioning to [being a]man, the father teaches him everything he knows coming into the next stage of his life. So I think that’s pretty good.”

However, photos that included only one parent also captured participants’ attention. Parents emphasized the influence that fathers can have on their preteenage sons, even if they do not share a household. One father liked a design that included a father image:

“I like the presence of the male, because they need to see males are needed. I know we’re talking about blacks, but across the board, males are needed. An 11- or 12-year-old needs that male influence, so I like the males, just the fact that you have the males there.”

A mother in the focus group also liked the image of a father and son: “I could see the love. You know, that they embrace. . . . And I see the son holding on to his father’s arms, that he sees as a protector, that he loves and he cherishes.”

Another mother considered the image of a mother and son: “It looks like she’s a single mother and struggling, . . . and she just wants to keep him safe. That’s the way it looks to me by the way she’s kissing him on the forehead. It’s just like he got big, and she’s proud. . . . She’s going to protect him, look out for him and just make sure he’s straight.”

**Preference for racial diversity in photos**—In addition to preferring images of both parents in campaign materials, focus group participants wanted multiracial and ethnic images; they were concerned that the image of a black father and son suggested that HPV occurred only among blacks. One mother asked, “Is this something that only happens in black boys? . . . Does it mean white people don’t get it?” A father added:

“Everybody needs to be aware. Black people are not just with black people. They’re with Hispanics. They’re with whites. You know little girls of all different kinds in school. . . . So [depicting only blacks] just sort of waters this down a little bit for me.”

**Sources they can trust**—Parents said that trustworthy sources and channels included personal doctors, friends and family members, churches and the Internet. Parents suggested places to hang posters where they would most likely be noticed. One mother suggested a doctor’s office:

“When you go to the doctor, first of all they have those little things on the wall, so you don’t have no choice but to sit there and read it. They give you at least 20 minutes before the doctor walks in, so you have time to read all the words on that.”

Another mother added, “And even in the church, like we’re doing today. I mean, it should start in the church!”

### Intercept Interviews

Of the 100 participants for the intercept interviews, 77% were female; 46% were black, 44% were white and 10% belonged to other racial groups. Nine percent had more than one son aged 9–13, and the mean age of all the sons in this age-group was 11 (standard deviation, 1.5). Sixty-nine percent of participants were mothers, 19% fathers, and 12% other relatives (e.g., grandparents or stepparents). The mean age of participants was 38.7 (standard deviation, 8.7).

Only 11% of parents had heard about the HPV vaccine for boys before the interview, and 6% indicated that their sons had received at least one dose. Sixty-one percent said they “definitely” or “probably” will get their sons vaccinated in the next 12 months; 16% said they “definitely” or “probably” will not, and 23% were unsure or did not know. (We asked this question before showing parents headlines or poster designs.)

**Headlines**—Parents’ preferences regarding the most and least motivating headlines varied widely (Figure 1). Thirty-two percent chose the risk-based headline “One in two people will get HPV, which can lead to genital warts and cancer” as the most motivating; 56% of these parents liked the information the headline gave them about HPV. Some said the headline made them want to learn more and take some action (26%), evoked fear (15%) or surprise (13%), or encouraged them to want to protect their sons (16%).

Certain headlines triggered similar reactions. Of the 17% of interviewed parents who chose “He’s growing up fast ...” and the 9% of interviewed parents who chose “Protect their lives and future wives,” 45% and 42%, respectively, said the headlines made them want to protect their sons. Some 22–26% of all interviewed parents said that all the headlines emphasized the importance of the vaccine and made them want to learn more. The headlines “There will be many things in your son’s life that you can’t control ...” and “Sooner or later your son is going to become sexually active” were truthful and direct, according to 32% and 38%, respectively, of parents who chose these headlines.

Parents generally regarded headlines that gave too little information or evoked little emotion as least motivating. Twenty-nine percent and 25%, respectively, of all parents interviewed judged “Protect their lives” and “Girls aren’t the only ones” as least motivating. Of the former, 21% felt the message lacked information, and 17% that it was not relevant to their sons. Of the parents who selected “Girls aren’t the only ones,” 46% found the headline informative, 20% said it lacked additional information and 9%, that it evoked no emotion. Headline preferences did not vary according to sons’ age or likelihood of vaccination, or parents’ age, gender, race or ethnicity.

**Designs**—Forty-three percent of participants said the design showing parents was the most motivating; 22% chose the design featuring a church, 21% the one with teenagers and 14% the design with a doctor (Figure 2). Of participants who chose the parents design, 69% liked



the photos of the parents and child together, and 24% said that these images persuaded them of the vaccine's importance. Forty-eight percent and 20% of participants who chose the parents design, respectively, said it elicited love and joy, more so than the other designs (11–19%). The church design evoked the greatest response (20%) for promoting protection as a benefit of the vaccine.

As for least motivating, 45% of participants chose the doctor design, and 31% the church design, neither of which was viewed as especially attention-getting (30% and 22% of each subgroup, respectively). The doctor design drew questions about the doctor's puzzled expression (not an intentional design feature). Finally, 31% of parents said that the teenager design made them worry about young males' potential sexual activity. Males were significantly more likely than females to select the parents design as most motivating (70% vs. 35%). However, no significant differences were found among other subgroups.

**Intended actions**—After seeing the poster they chose as most motivating, 47% of parents said they would talk to their sons' doctors about the vaccine, 33% said they would search for information online and 22% said they would make an appointment to get their sons vaccinated. Females were more likely than males to say they would talk to their sons' doctors about the vaccine (54% vs. 26%—Figure 3) and less likely to say they would search for information online (28% vs. 52%). Participants who indicated they definitely or probably would not get their sons vaccinated within the next 12 months, or who did not know, were more likely to say they would search for information online than were participants who indicated they probably or definitely would get their sons vaccinated (55% vs. 25%—not shown). The actions that parents said they would take did not differ significantly by sons' age or parents' characteristics.

**Information needed**—The top three responses to questions about what information parents would need before making a decision about the vaccine were safety and side effects (48%), the prevalence of HPV (25%) and the number of shots needed (19%). No significant differences by subgroup were found.

**Facts on the poster**—On a scale of 1–7, parents' mean opinions about how motivating the facts were ranged from 5.0 for a statement about possible side effects to 6.2 for a statement specifying that HPV affects both males and females (Table 1). Parents who were likely to pursue vaccination thought nine of the 22 facts were more motivating than did parents who were not likely to or did not know whether they would get their sons vaccinated within the next 12 months. Four of these nine facts were categorized as cues to action.

**Final poster**—The composite poster featured the most motivating headline (“One in two people will get HPV ...”), seven facts about HPV and three images of parents with their sons (Supporting Information available online).

## DISCUSSION

That parents of preteenage boys were not aware of an approved HPV vaccine for males is not surprising, since the vaccine has been heavily marketed to prevent cervical cancer rather than STDs.<sup>22</sup> After the FDA approved HPV vaccine for females in 2006, HPV and the vaccine quickly captured wide public attention through extensive advertising by the manufacturer and news coverage.<sup>22,30</sup> By contrast, HPV vaccine for males received little advertising or news coverage when it was licensed to prevent genital warts in October 2009 and, until late 2011, it was not recommended by ACIP for routine clinical practice with preteenage boys.<sup>8,35</sup> As a result, awareness of HPV vaccine for males is low.<sup>11,14</sup> However,

describing HPV vaccine for males as a means for preventing cancer rather than genital warts alone has helped to increase its acceptability by men.<sup>36</sup>

Our study explored what would motivate parents to get their preteenage sons vaccinated and the emotional relevance of different message designs. Participants responded most often to images of parents lovingly protecting their sons against HPV. Their choice is consistent with the gain framing theory that positive outcomes result from behavior compliance<sup>25</sup> and with the emotional relevance of positive parenting.<sup>26,27</sup> Parents of both genders were receptive to vaccination messages related to improving male sexual health.

Participants' responses to the posters also demonstrated that targeting campaign materials to a single racial group may be counterproductive, as that group may feel stigmatized. The National Cancer Institute makes this point in its guide for health communication campaigns.<sup>37</sup> Participants' desire for representation of multiple races in the photos also echoed findings from focus groups with black mothers about messages promoting HPV vaccine for preteenage girls.<sup>38</sup>

The preference for including both mothers and fathers in the photos, even though mothers usually make vaccine decisions, was consistent throughout this research. However, lack of enthusiasm for the poster featuring a doctor was unexpected, since a health care provider's recommendation is parents' most reported reason for pursuing HPV vaccination.<sup>39-42</sup> The test photo of a seemingly puzzled doctor may have contributed to this reaction. In future research, this reaction might be reassessed with a different photo.

Parents of preteenage boys may be ready to support HPV vaccination at an early age. The American Academy of Pediatrics set the practice standard by including HPV vaccine for males in its immunization schedule for 2011.<sup>43</sup> In October, 2011, ACIP considered new data about vaccine efficacy and cost effectiveness, burden of disease, and programmatic and equity issues to strengthen its recommendation of routine vaccination for 11-12-year-old boys and catch-up vaccination for males aged 13-21.<sup>8</sup> This recommendation will encourage practitioners to intervene before boys become sexually active, increase parents' awareness of the importance of early vaccination and help to prevent HPV-related disease in the future.<sup>44</sup>

### **Strengths and Limitations**

The strengths of this study are the systematic design and testing of HPV vaccine messages with parents of boys who are 11-12, the recommended age-group for maximum vaccine effectiveness. Feedback from both mothers and fathers helped to describe information-seeking patterns that might occur in a family's decision making.

Study limitations include use of a convenience sample of parents who may not be representative of the population. Parents already in a health care setting may be more likely to pursue vaccination than parents who do not access health care regularly. Future studies might compare responses from parents who are already accessing health care with those from parents who are not, to determine if differences exist. Also, future studies should include a revised image of a doctor, as the one we used seemed problematic.

### **CONCLUSION**

This research tested culturally relevant messages and designs created to persuade parents to get their preteenage boys vaccinated against HPV. The findings can be used to develop communication strategies that promote HPV vaccination at the ages when it is most

effective, and among racial and ethnic minorities who are disproportionately affected by HPV infection and related diseases.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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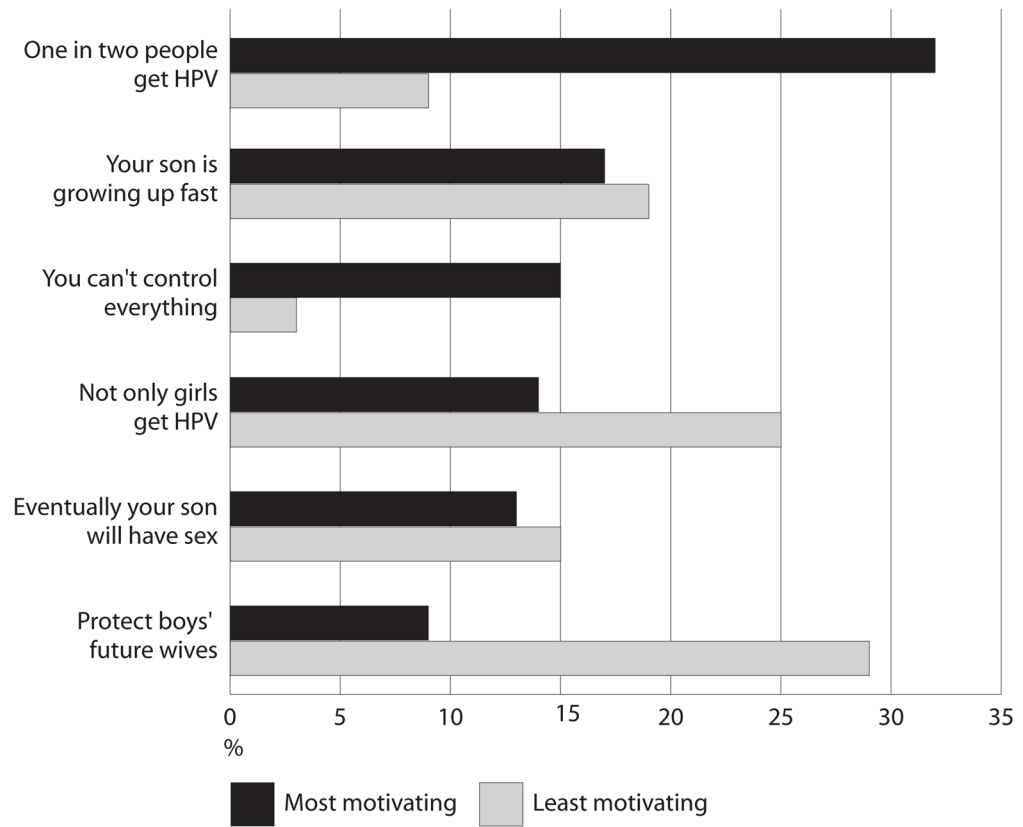
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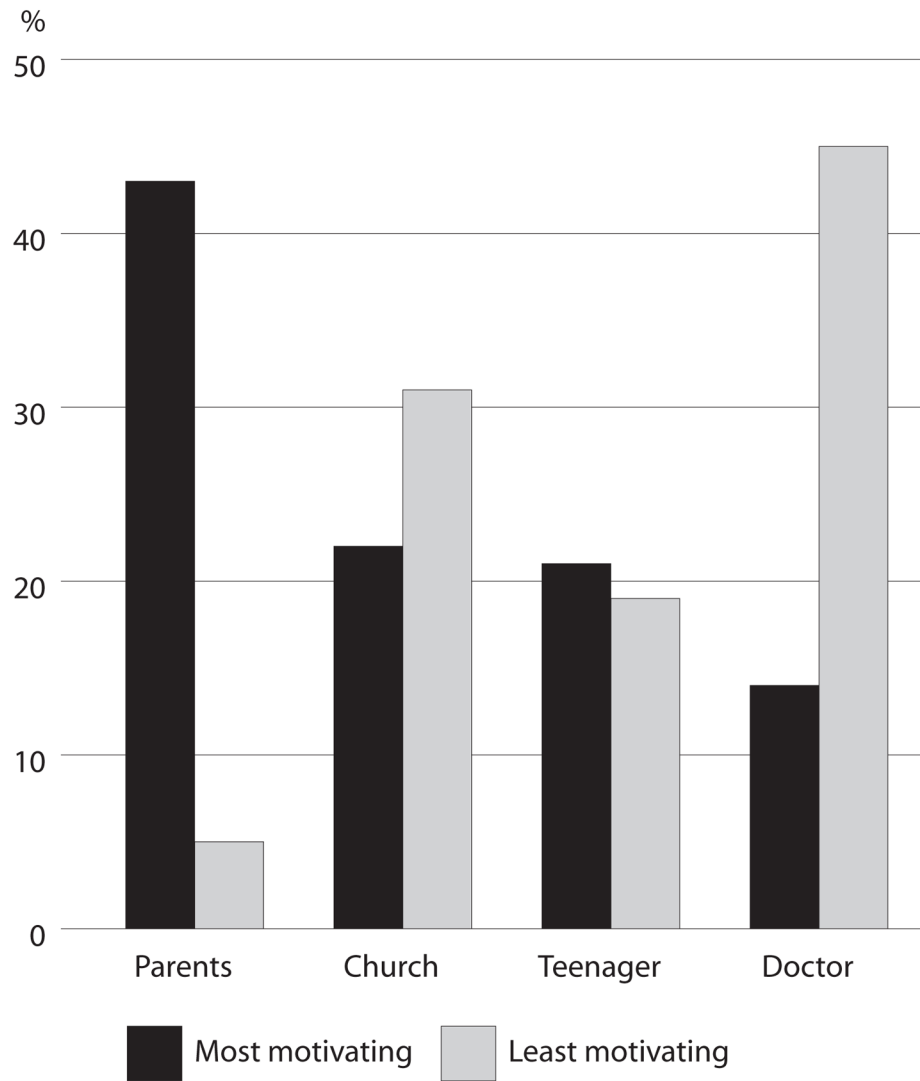
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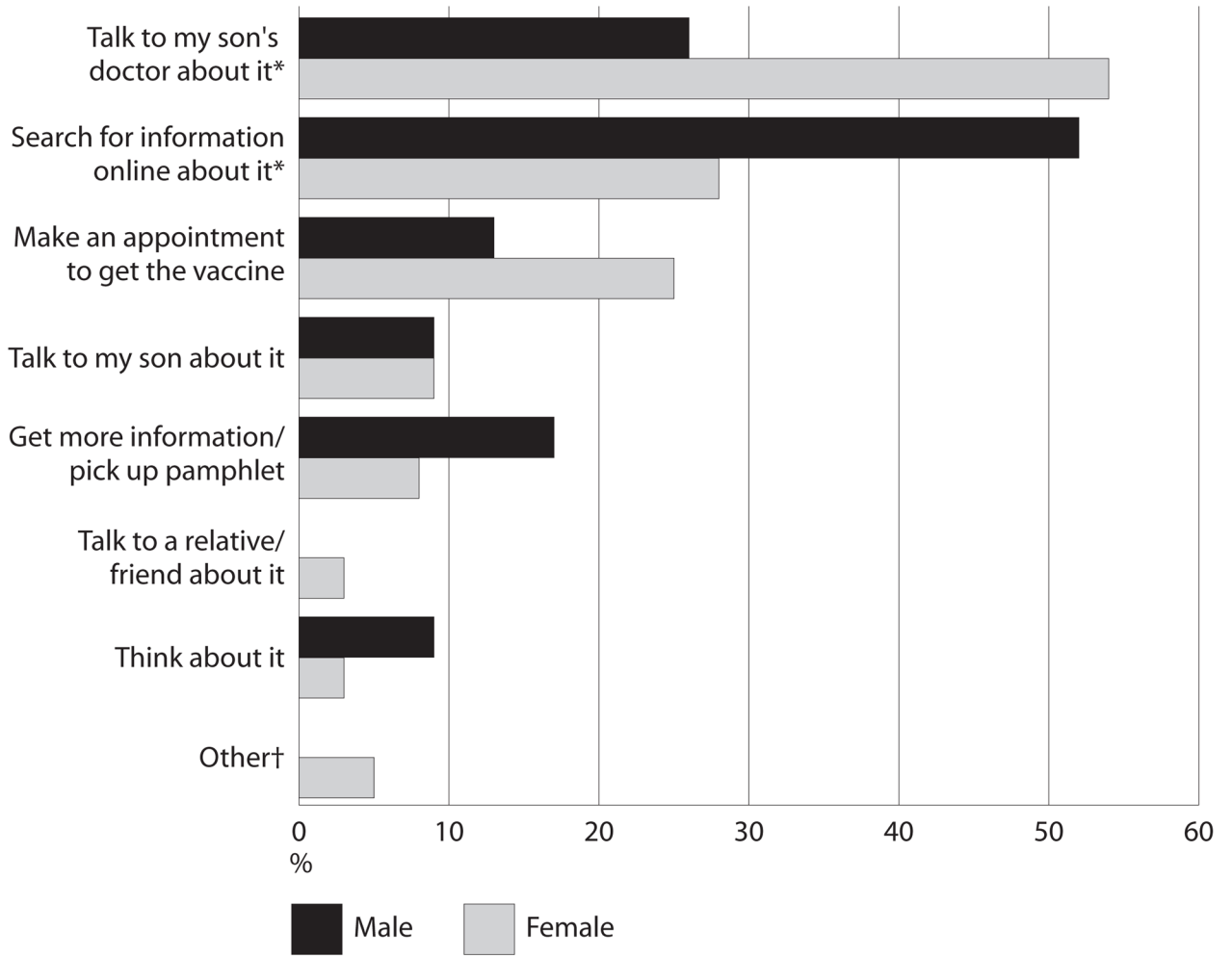
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**FIGURE 1. Percentage of parents who considered selected messages the most and the least motivating in the decision about whether to get their preteenage sons vaccinated against HPV**  
*Note:* For exact wording of messages, see box.



**FIGURE 2.** Percentage of parents who considered selected designs the most and the least motivating in the decision about whether to get their preteenage sons vaccinated against HPV



**FIGURE 3. Percentage of parents who would take selected actions while determining whether to get their preteenage sons vaccinated against HPV, after seeing the most motivating poster, by gender**

\*p<.05. †Other responses included “Advocate for the vaccine and about HPV,” “Hang up posters and speak on it,” “Say researchers are working on it” and “Spread the word.”



TABLE 1

Mean scores indicating the degree to which parents felt that selected facts about HPV motivated their decision about whether to get their preteenage sons vaccinated, by how likely they were to get them vaccinated

Fact	Total (N=94)	Likely (N=61)	Not likely/do not know (N=33)
<b>Susceptibility</b>			
HPV affects males and females, and it causes genital warts and penile, head, neck, cervical and anal cancers.	6.19 (1.48)	6.31 (1.27)	5.91 (1.79)
HPV is the most common STD in the United States and causes most genital warts.	6.16 (1.46)	6.42* (1.17)	5.55* (1.77)
HPV is the most common STD.	6.09 (1.42)	6.28* (1.20)	5.64* (1.69)
One in two people will get HPV.	5.83 (1.73)	5.85 (1.73)	5.58 (1.73)
<b>Severity</b>			
There is no cure for genital warts, which can be embarrassing and painful; the HPV vaccine is the only medical way to prevent them.	6.14 (1.51)	6.31* (1.32)	5.67* (1.74)
HPV can lead to penile, anal, head and neck cancers in males.	6.13 (1.61)	6.08 (1.67)	6.06 (1.54)
HPV can lead to genital warts and cancer.	6.04 (1.56)	6.22* (1.47)	5.55* (1.64)
HPV can lead to genital warts, which are spread through skin-to-skin contact.	5.89 (1.57)	6.00 (1.41)	5.48 (1.80)
<b>Benefit</b>			
Vaccinating boys against HPV is likely to result in fewer cases of cervical cancer in girls/women by preventing the spread of HPV.	6.06 (1.35)	6.07 (1.30)	5.97 (1.45)
The vaccine is nearly 90% effective in preventing the most common genital warts.	6.04 (1.37)	6.11 (1.18)	5.73 (1.64)
Vaccinating your son may save someone else's daughter from getting cervical cancer.	6.02 (1.50)	5.93 (1.57)	6.09 (1.38)
This vaccine is the first preventive therapy against genital warts; as a result, fewer men will need to undergo treatment for genital warts.	5.63 (1.69)	5.67 (1.62)	5.39 (1.84)
Some HPV disease can be prevented with a vaccine that is safe and works.	5.61 (1.70)	5.79 (1.48)	5.09 (1.97)
<b>Barrier</b>			
The vaccine is available at little to no cost through the Vaccines for Children program.	5.87 (1.62)	6.13* (1.37)	5.27* (1.89)
The vaccine is safe and has been tested on thousands of boys and men around the world.	5.85 (1.74)	6.03 (1.68)	5.48 (1.80)
Studies have shown no serious side effects. Common, mild side effects include pain where the shot was given, fever, headache and nausea.	5.46 (1.89)	5.44 (1.93)	5.30 (1.85)
<b>Cue to action</b>			
Boys should get the vaccine at an early age, before there is any chance of exposure to HPV.	5.97 (1.52)	6.28* (1.18)	5.27* (1.84)
Boys should get the vaccine at an early age, before they are sexually active.	5.94 (1.53)	6.21* (1.24)	5.24* (1.80)
The vaccine is approved and recommended for males aged 9–26.	5.93 (1.49)	6.05 (1.33)	5.52 (1.72)
Doctors recommend the vaccine for boys to protect against HPV disease.	5.90 (1.49)	6.11* (1.37)	5.30* (1.57)
The first dose of the vaccine can be given at the same time you get your son the combined tetanus, diphtheria and pertussis (Tdap) vaccine.	5.49 (1.85)	5.77* (1.63)	4.94* (2.14)

\* p<.05.

Notes: All scores were rated on a scale of 1–7, from “not very motivating” to “extremely motivating.” Six of the 100 interviewed parents did not complete the rating scale. Some statements have been edited for length; exact questionnaire wording is available from the authors on request. Figures in parentheses are standard deviations.

Messages about HPV vaccine developed from common themes that emerged in focus groups with parents of preteenage boys, North Carolina, 2009–2010

- He's growing up fast. You've protected him from the beginning. Don't stop now.
- Sooner or later your son is going to become sexually active. If you don't protect him now, he could be at risk for HPV and certain cancers later.
- Know the facts. HPV does not just affect girls. A new vaccine can protect your son against HPV and certain cancers.
- One in two people will get HPV, which can lead to genital warts and cancer. Learn the facts.
- Girls aren't the only ones affected by HPV.
- Six million people become newly infected with HPV each year.
- Protect their lives and future wives. [This was a direct quote from one participant.]
- There will be many things in your son's life that you can't control. But you can control whether he gets HPV.
- Genital warts are painful and gross.