

College Women's HPV Vaccine Decision Narratives

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Abstract

Drawing on 38 in-depth qualitative interviews with college women and college health clinicians, we collected human papillomavirus (HPV) vaccine decision narratives to identify the implicit and explicit values underlying HPV vaccine decision making. Narratives of vaccine acceptance and resistance were identified. Vaccine acceptance narratives consisted of four themes: supportive family messages, explicit health care provider endorsement, peer descriptive norms reducing stigma of vaccination, and disease framing (e.g., cancer, HPV) shaping vaccine benefit perceptions. Vaccine resistance narratives consisted of five themes: skepticism of vaccine safety, invoking alternative prevention strategies, articulating stigmatizing HPV messages, overcoming self-efficacy barriers (e.g., cost, availability, time, and fear of parental disclosure), and delay strategies. Common to all decision narratives was that relationship status framed college women's perceptions of HPV susceptibility. Theoretical and practical implications for designing HPV vaccine messages aimed at college-aged women are discussed.

Keywords

communication; decision making; immunization; narrative inquiry; women's health; young adults

The purpose of this narrative exploratory study was to increase understanding of the meanings college women ascribe to human papillomavirus (HPV) vaccine messages they receive from family, peers, and health care providers. College women were interviewed (as were two college health clinicians) to share their storied accounts of HPV vaccine decision making, and for those not yet vaccinated to share what they believe influences their HPV vaccine attitudes and decisions.

When recounting experiences to others, humans impose narrative structures (Squire, 2009). An inquiry into the HPV vaccine decision narratives of college-aged women was premised on the idea that soliciting stories of how college women make sense of HPV-related experiences and the messages they receive from family, peer, and health professionals is a key way of coming to understand the assumptions held by this target population (Andrews, Squire, & Tamboukou, 2009; Larkey & Hecht, 2010; Riessman, 2008). Using narrative inquiry to examine the HPV vaccine decision stories of college women allowed us to identify the underlying assumptions their stories embodied (Riessman, 1993).

HPV, its Link With Cancer, and the New Vaccine

The HPV vaccine is the first of its kind to prevent both a sexually transmitted infection (STI) and indirectly, cancer.

The recognition that HPV infection is a necessary cause of cervical cancer ushered in a new prevention paradigm for cancer screening and HPV immunization (Franco et al., 2006). The subsequent introduction of the HPV vaccine to the public in June, 2006 left the health care community with little guidance on how to present the benefits of the vaccine. This situation presented a new challenge in health message design, because promotion of the vaccine raises questions inextricably linked to sexual health and cancer—both topics that are culturally sensitive and taboo. Because of this sensitivity, it is particularly important to understand the contexts in which messages around HPV vaccination arise, how messages are interpreted, and how they might be presented in more- and less-effective ways. The goal of this study was to better understand college women's HPV vaccine attitudes and beliefs with a lens focused on (a) the family, peer, and health care provider messages that college women report receiving about HPV, and (b) how college women interpret, respond to, and

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incorporate these messages to shape their own HPV vaccine attitudes and decisions. Such information is essential to designing effective HPV vaccine campaigns.

Theoretical Framework: Norms and Culture-Centric Narrative

Previous HPV vaccine literature has indicated the importance of normative messages shaping women's HPV vaccine attitudes (Kahn, 2005; Kahn, Rosenthal, Hamann, & Berstein, 2003; Ogilvie et al., 2007). Cialdini and Reno (1990) argued in their focus theory of norms that social norms affect human behavior and that social norms are best understood by exploring (and differentiating) (a) what is commonly done by important others in one's social network (i.e., descriptive norms), (b) what is commonly approved and disapproved by important others in one's social network (i.e., injunctive norms), and (c) how internalization of norms regulates behavior (i.e., personal norms). For a richer understanding of the HPV vaccine attitudes of college-aged women, eliciting the descriptive and injunctive normative messages that college women receive about HPV and eliciting personal norms around HPV warranted exploration. Literature on sexual health communication of emerging young adults confirms that family and peer messages are an important area of investigation for their influence on attitudes (Boone & Lefkowitz, 2004; Miller-Day, 2008a).

In addition to a normative lens, culture-centric narrative theory for health promotion (Larkey & Hecht, 2010) provides a useful framework for understanding the meanings that college women ascribe to the HPV vaccine messages they receive in daughter-parent as well as peer and health care provider communication. Thus, a narrative lens framed understanding how women ascribe meaning to HPV messages by listening to the ways in which women made sense of the family, peer, and health professional HPV vaccine messages they received. What women chose to include in their decision stories and how they ascribed meaning to messages and events revealed key assumptions that shaped their attitudes and behaviors. Moreover, a narrative framework (i.e., college women's storied vaccine decision accounts) shed light on the larger social and cultural framework within which college women operate.

Narrative Inquiry as Methodology

Narrative inquiry was employed in this study because this methodology is well suited to uncover the assumptions underlying HPV vaccine attitudes (Riessman, 1993). Using narrative inquiry, one attempts to understand how people think through events and what they implicitly assume (Riessman, 2008). This method of inquiry helps one

conceptualize human thought and behavior as based in stories, a transcultural mode of discourse through which people organize information and experiences of the world (White, 1981). In doing so, narrative inquiry lends three types of validity to health message design: experience, relevance, and cultural validity (Miller-Day, 2008b; Petronio, 2007). Experience validity is enhanced by accounting for the lived experiences of those being studied (Miller-Day, 2008b; Petronio). Relevance validity is accomplished when health messages are relevant to the intended audience's lives (Miller-Day, 2008b; Petronio). Finally, cultural validity is enhanced when translating research findings into practice and norms, routines, and values that are represented with accuracy and honesty (Miller-Day, 2008b; Petronio). Identifying narratives grounded in the dominant stories reported by college women provided the content for future vaccine messages that are more likely to be relevant to and resonate with college women (Hecht & Krieger, 2006; Hecht & Miller-Day, 2009).

College Women and HPV Vaccine Decision Making

Little is known about the types of messages college women receive regarding HPV vaccination and, as a result, which messages will engage women to reflect on whether they might benefit from vaccination. Reaching college-aged women during emerging adulthood, when transformations in identities, changes in social relationships, and independent living situations arise, can be challenging (Boone & Lefkowitz, 2004; Lefkowitz, Boone, & Shearer, 2004), but is particularly so with stigmatized topics such as HPV. College women are increasingly confronted with opportunities to engage in risk-taking behaviors, including sexual ones, at college. These students often delay or do not seek testing for sexually transmitted infections even if the services are readily available (Barth, Cook, Downs, Switzer, & Fischhoff, 2002). Additionally, women who might not be dating anyone or who might already be dating but in a monogamous relationship might be less inclined to listen to HPV vaccine messages. As a result of these social processes and pressures, previous research on the HPV vaccine attitudes of college women suggests the importance of examining normative messages (Brewer & Fazekas, 2007; Downs, Bruine de Bruin, & Fischhoff, 2008; Downs et al., 2004; Kahn, 2005; Kahn et al., 2003).

Peer and Family Norms Around HPV Vaccination

Developmental changes during the transition to college lead women to increasingly turn to or at least be exposed to normative cues regarding a variety of social behaviors.

College women often observe how their roommates, friends, and sexual partners act with respect to protective behaviors surrounding sexually transmitted infections (STIs), or lack thereof (Kahn, 2005; Rouner & Lindsey, 2006). These personal as well as peer descriptive and injunctive norms shape college women's HPV vaccine attitudes and practices by serving as validity cues (Allen et al., 2009; Kahn et al., 2003; Kahn et al., 2008; Ogilvie et al., 2007). Although peer norms are clearly important, many college women still turn to their parents when it comes to health matters, including vaccine recommendations (Allen et al.). Parents' HPV vaccine attitudes play an important role in vaccine adoption; however, prior studies examining this parental role were conducted with adolescent girls (Constantine & Jerman, 2007; Downs et al., 2008; Kahn, 2007). When it comes to vaccination, despite increasing independence during emerging adulthood, college-aged women might still rely heavily on family messages.

The Medical Expert Message Around HPV Vaccination

Many women visit their doctors before attending college because a physical examination and the measles, mumps, and rubella (MMR) vaccine are required for matriculation. Although a medical checkup might be required to enter college, college-aged women often move through young adulthood without preventive medical visits, given their transitory life stage. Even though the Federal Drug Administration recommends catch-up vaccinations for women up to age 26 (Markowitz et al., 2007), there are no practice guidelines on how health professionals should communicate to young adult women about the HPV vaccine. It is not clear what proportion of clinicians raise or explicitly recommend HPV vaccination to their college-aged patients.

Significance of the Study

There are several reasons a better understanding of college women's HPV vaccine decision processes is needed. A substantial proportion of college women (~60%) have not been vaccinated for HPV, and this fact undermines public health progress on women's health (Dunne et al., 2007). In stating this, we reveal our personal bias: the belief that it is in the interest of women's long-term health to adopt the HPV vaccine for protection against HPV, which has been linked as a necessary cause of cervical cancer, associated with head, neck, and anal cancers, and that chronic HPV infection increases the risk for premature birth in some women (Sjoberg & Eskild, 2009; Walboomers et al., 1999).

Informed decision making is the priority goal in vaccine education. Particularly around the topic of HPV, there remains room for improvement in how women are informed of the range of choices available to them to make truly informed decisions for the health of their bodies and their personal lives. There is a need to better understand college women's vaccine decision processes because college-aged women stand to significantly benefit from HPV prevention, and have thus far underutilized the vaccine.

The highest risk timeframe for HPV acquisition includes the college years, during ages 17 to 26 (Dunne et al., 2007). Public health efforts have surprisingly neglected college-aged women in this prevention effort, focusing largely on preadolescent girls. Additionally, if prevention researchers are to develop informative HPV vaccine campaigns, the decision processes of the intended audience need to be understood. The role of parent and sibling messages in college-aged women's HPV vaccine decisions has yet to be explored with a conscious effort toward avoiding messages that might inadvertently blame women for their choices. Research is needed to first describe the family, peer, and health care provider messages that college-aged women report receiving about the HPV vaccine.

Drawing on the relatively recent HPV literature and utilizing the theoretical frameworks of the focus theory of norms and culture-centric narrative theory for health promotion, we asked the following research questions to guide this exploratory study on HPV vaccine decision narratives: What assumptions underlie college-aged women's decisions to accept or resist the HPV vaccine? What meanings do college-aged women ascribe to the family, peer, and health care provider HPV vaccine messages they receive? What is college women's understanding of HPV susceptibility?

Methods

Recruitment Procedures

For this study, we recruited college women from speech courses at a large northeastern university in the United States. All procedures received prior approval from a university institutional review board. Students who were enrolled in a speech course were required to participate in a research study as part of their course learning objectives. The course is a requirement for all students attending the university. Students were assigned to the study by a research study coordinator after meeting eligibility criteria (women, age 18 to 26, responded "Yes" to having heard of the HPV vaccine). After receiving a list of eligible participants from the research study coordinator,

we contacted the 37 eligible students by email, inviting them to participate in an in-depth interview about the HPV vaccine, and to schedule a 40-minute in-person interview. Students were offered the alternative of critiquing a speech online to receive credit if they did not wish to participate in the study. One woman opted for the alternative assignment. Students received 2% course credit once they participated in the interview or completed the alternative assignment.

Students who participated were sampled across two dimensions: vaccinated/not yet vaccinated as well as sexually active/not currently sexually active. Interviewing women who fulfilled these criteria maximized capturing the possible range in ascribed meanings relevant to HPV vaccine attitudes. Because this study was designed to guide a future HPV vaccine campaign aimed at reaching the unvaccinated, a greater number of women were interviewed who were not yet vaccinated ($n = 22$). One third of women interviewed ($n = 14$) were previously vaccinated.

Two clinicians were interviewed to capture the medical perspective on HPV and the vaccine. These clinicians were sought out given their extensive experience working with college-aged women, their perspectives as women clinicians, and their views as advocates for women's health. We approached them and asked if they were willing to be interviewed to share their experiences of discussing vaccination with these patients. They both agreed to be interviewed, and appointments were scheduled to meet them in their offices at a convenient time for a 1-hour in-depth interview.

Sociodemographics

Interviews of 36 women enrolled in college were conducted from April 2 to May 25, 2008. The mean age of student participants was 20 ($SD = 1.4$). Half of the student participants were in their second year of college, 30% were in their junior year, 11% were in their senior year, and 8% were in their first year in college. Students represented a wide range of majors of study. Nearly 90% self-identified as White, whereas the minority self-identified as Asian American ($n = 3$) and African American ($n = 1$). One-fourth of the sample came from rural areas and three-fourths were raised in suburban neighborhoods. All but one participant reported having health insurance. Two participants were married. Both medical health experts were women and had nearly 30 years of experience working in women's and college health.

Sexual Activity and STI Protective Behaviors

Of the 36 students interviewed, slightly more than half ($n = 19$) were sexually active. Among the unvaccinated

group ($n = 22$), half were sexually active ($n = 11$). Of all those who were sexually active ($n = 19$), 8 participants reported using condoms every time during sexual intercourse, 6 participants reported using condoms more than half the time, 2 reported condom use less than half the time, and 3 participants reported never using condoms. Of the 36 women, 2 reported having been diagnosed with HPV.

Interview Procedures

The student interviews were conducted in private interview rooms at the university library. The medical health expert interviews were conducted in the clinicians' private offices. Interviews were audio-recorded. Prior to the interview, student participants completed a questionnaire asking whether they had heard of HPV, what their HPV vaccination status was, the extent of their HPV knowledge, current relationship status, use of STI protection (e.g., condom use), STI history, and sociodemographic information. Each interview began with an open-ended question that led participants to reflect on their HPV vaccination decision (if they answered "Yes" to the screening question), or asked participants to respond to a hypothetical scenario (if they answered "No" to the screening question), and proceeded in a relaxed, conversational style.

The interview (decision narrative or storied decision account) was comprised of a prepared set of topics, but within discussion of those topics participants were encouraged to talk about what they felt was most important and to frame this talk in ways that seemed most personally relevant. Vaccination decision narratives were solicited with a focus on identifying family, peer, and health care provider messages that college women received, and having college women reflect on how these messages shaped their HPV vaccine attitudes, beliefs, and vaccination decisions. The students were asked open-ended questions about how they would go about or went about deciding whether to vaccinate for HPV. If participants had not had the HPV vaccine, an alternative set of open-ended questions was asked (see Table 1)

Probing follow-up questions were used while listening to college women's storied accounts of vaccine decision making, with the first set of questions exploring health care provider messages: "Did your health care provider talk to you about the HPV vaccine?" "What did they say?" "What do you think about what they said?" These questions were followed by probes about family messages: "Have you talked with your parents about the HPV vaccine?" If yes, "What do they say?" and if no, "Why not?" These probes were followed by exploration of peer messages (if the subject had not already come up during the

Table 1. Sample Interview Questions

Vaccination Status	Sample Questions
Vaccinated	<p>Let's talk a little bit about your decision to get the HPV vaccine. Will you tell me about how that came about?</p> <p>How did you go about deciding? How did that come about?</p> <p>Did you talk with anyone before deciding?</p> <p>Did your health care provider talk to you about the vaccine?</p> <p>What do you think about what they said?</p>
Unvaccinated	<p>Let's say your health care provider mentioned something about the HPV vaccine to you. How do you think that conversation might go?</p> <p>Do you think you would talk to anyone before deciding to vaccinate?</p> <p>Who would that be, and please tell me what you might be thinking."</p>

interview; e.g., "Have your girlfriends, roommates, sisters gotten vaccinated?"). Peer messages not only from friends but also from dating partners were explored: "Have you and your boyfriend or partner ever discussed the HPV vaccine?" Finally, a set of questions explored college women's HPV vaccine attitudes in relation to their sexual activity. If participants identified as sexually active, this response was explored further with informants by asking, "So tell me a little bit about your relationship with X?" "Has the HPV vaccine ever come up in conversations?" Follow-up probes centered around what would make informants feel vulnerable to HPV acquisition: "What would make you feel vulnerable to acquiring HPV or other STIs?"¹

The in-depth interviews with college health clinicians were designed to capture the medical perspective on the range of issues that led college women to vaccinate or to not vaccinate for HPV, and to gather medical accounts of the effects of an HPV diagnosis. These interviews served as data triangulation; that is, involving participants in different roles to "cross-check" the findings (Denzin, 2006). The two clinicians interviewed were women, and explicitly advocated for women's health. One of the participants was the director of university health services. She demonstrated her commitment to women's health by employing a substantial number of women health professionals (six) at the university health center, who were devoted specifically to women's health. The health services had social structures in place that focused narrowly on women's health (e.g., a separate clinical division for women's health). In addition, the university health center's Web site contained a page devoted specifically to women's

health. Finally, the health care provider demonstrated her commitment to women's health by holding professional memberships in the American College Health Association and the Lesbian, Gay, and Bi-Sexual Support Network. Triangulating data sources increased the validity of the study findings by providing a more detailed and balanced picture of women considering vaccination and a clinician's perspective, and an opportunity to search for regularities in the research data across sources (O'Donoghue & Punch, 2003).

The two clinicians interviewed were asked to share their experiences of how the topic of HPV and vaccination arose in clinic settings, what primary concerns college women voiced, and what medical points clinicians deemed important to emphasize. A range of issues was probed, including the contexts in which the topic of HPV vaccine arose (STI testing, contraceptive counseling), who typically raised the issue (clinician or patient), what issues emerged as barriers (e.g., cost, fear of parental disclosure), and what issues emerged as supporting vaccination (e.g., preventing cancer, parental support, diagnosis of HPV). Clinicians also attested to the number of college women coming to the university health services for HPV infection and HPV vaccination.

Analytic Procedures

Data preparation. The data from all in-depth interviews were transcribed verbatim by the principal investigator (the first author). Pseudonyms were used in place of participant names, and any identifying information—including names of friends in stories—was removed to ensure participant confidentiality. Each informant was emailed a transcript of the interview for the purpose of confirming accuracy. Each of the 38 informants responded that she had reviewed the transcript and the content reflected her contributions accurately. Data management software was not used for this project; instead, transcribed interviews were numbered line by line in a word processing program. As the interviewer was the primary instrument of data collection, immersion in the data was conducted by repeatedly reviewing the audio-recordings (about five times) and reading the written transcripts (ten or more times each), and then by conducting a line-by-line analysis of the data.

The coding process was conducted in three phases to address each of the research questions. In the first phase of coding we sought to address the first research question using an inductive approach to identify emergent themes of acceptance of or resistance to the HPV vaccine. In the second coding phase we sought peer, family, and provider messages to address the second research question. Finally, in a third phase of coding, we analyzed each interview to

determine whether the decision narrative reflected acceptance of or resistance to HPV vaccination, which was the basis for the third research question.

Coding & constant comparison. Coding the interview data consisted of examining, comparing, conceptualizing, and categorizing the data. In the first stage of coding we set out to determine what assumptions underlay college women's decisions to accept or resist the HPV vaccine. Once the data were familiar, we began developing the inductive approach of conceptualizing categories via tagging, labeling, and constant comparison. Tagging refers to the process of selecting meaningful segments of the material that are relevant to the purpose of the study (Babiste, 2001). After tagging the data segments, the segment was provided with a label. Segment labels sometimes emerged from the text itself (e.g., "cancer prevention is worthwhile"). Once the meaningful segments of the data were tagged and labeled, all segments with similar characteristics were compared, contrasted, and organized into the same group or category. As noted by Strauss and Corbin (1998), this type of analysis allows for the interplay that takes place between the data and researcher, with the researcher actively reacting to and working with the data.

Unifying ideas were identified based on recurrent ideas and repeated phrases or key words expressed in the data. These were categorized into meaningful groups based on heightened consensus or agreement about an idea across participants and/or by the intensity with which the idea was expressed (e.g., emotional tone and intensity). Meaningful data segments, which constituted the units of analysis, ranged from single words to as many as five sentences. A second round of analysis was then performed to identify, tag, and sort the a priori domains of family, peer, and health care provider messages that college women reported receiving about the HPV vaccine. The messages were then also coded for their valence, specifically whether these messages were supportive of vaccination or discouraging or skeptical of vaccination.

In the final phase of coding, transcripts were coded for whether the informant's interview narrative as a whole reflected HPV vaccine acceptance or resistance. Criteria for coding each transcript as accepting of HPV vaccination included explicit mention of HPV vaccination intention, having already been vaccinated, explicit statements that vaccination made sense and was worthwhile, and acknowledgement that if the doctor recommended vaccination the participant would likely vaccinate (i.e., indicating intention). Vaccination resistance included explicit skepticism about HPV vaccination, explicit messages of nonintention to vaccinate, explicit messages that the vaccine was not necessary for prevention of HPV, explicit messages that the vaccine was appropriate for only certain individuals unlike the informant (e.g., those who were

promiscuous), or explicit messages about any type of barrier preventing vaccination (e.g., cost, lack of insurance, or parental disapproval).

Interrater agreement. Both authors conducted the data analysis, with the second author—a college-aged woman—lending her perspective to interpret the data and identify meaningful emerging themes. The second author's perspective strengthened validity of the findings through member checking. Thus, the purpose of including a second coder from within the intended audience was to negotiate the interpretation of emerging themes and to ensure that data interpretation reflected and resonated with college women's point of view. As a result, percent agreement (Cohen's Kappa Statistic; Cohen, 1960) was not the primary goal and was not computed during initial coding procedures.

The second coder was trained to first read all of the 38 transcripts and to reflect on her initial responses to the emerging themes. She was trained to be aware and reflective of her own biases (having been vaccinated) while reading the transcript. She was instructed to reflect on her own reactions while reading and interpreting the data. Throughout the initial round of coding, the two coders met to discuss and negotiate the interpretation of the emerging themes surrounding vaccine decision making for college women. Discussions were iterative and the second coder was instructed to verify that the data interpretation "rang true" from a college woman's point of view. In the second round of analysis, both researchers coded the transcripts using the a priori domains of family, peer, and provider messages (the themes under which these messages were labeled), personal norms, what college women believed influenced their vaccine decisions, and how college women responded to questions about HPV susceptibility. The two coders met several times to ensure consistent interpretation of the coding criteria.

For the final round of analysis, the data were interpreted for whether whole participant narratives (the interview was the unit of analysis) reflected vaccine acceptance and resistance. Coder discrepancies on two transcripts were discussed and resolved. In both narratives, participants did not oppose vaccination generally but denied being at risk for HPV, and therefore denied the need for the HPV vaccine. After discussion between the coders, one of the narratives was ultimately coded as accepting the vaccine because the participant conceded during the interview that if the doctor recommended vaccination she would probably comply. The other case was coded as resistant to vaccination because the participant expressed a nonintention to vaccinate. Final coder agreement of decision narratives of vaccine acceptance and resistance resulted in a Cohen's κ of 0.92.

Trustworthiness Criteria

Qualitative research should be based on research designs that demand a vigorous self-reflexivity (Lather, 1991). In other words, qualitative research designs should employ methods that can attest to the credibility or accuracy of the information obtained in the study (Miller-Day, 1998). Four techniques were employed in this study to establish data trustworthiness: credibility, confirmability, dependability, and transferability.

Credibility is an evaluation of whether the research findings represent a credible conceptual interpretation of the data drawn from the participants' original data (Lincoln & Guba, 1985). To enhance credibility, two strategies were employed. First, data sources were triangulated. This was done by interviewing college students and medical personnel to gain multiple perspectives and understand the factors relevant to HPV vaccine decision making. For example, the emergence of topics in the reports of both college health clinicians and college women emphasized key themes in the data interpretation process; this occurred in several instances (e.g., fear of discussing HPV vaccination with parents, and conceptualizations of self-risk for HPV being affected by current sexual relationship status). Second, a college-aged woman reviewed the interpretations of the data and provided feedback as to whether these interpretations rang true.

Confirmability is a measure of how well an inquiry's findings are supported by the data. Confirmability can be achieved by having (a) the verbatim transcripts of the in-depth interviews readily available upon request from the author, (b) the codebook detailing the themes and subcategories of the data interpretation process included in the transcript document, and (c) notes documenting the series of quotes and lines of transcript from the data with linked codes tracing themes directly to transcript lines (see Table 2).

The third technique that enhanced trustworthiness of the data interpretation process was dependability. Dependability is an assessment of the quality of the integrated processes of data collection, data analysis, and theory generation. Dependability suggests that the researcher can assure that the process was "logical, traceable, and documented" (Schwandt, 2001). This was confirmed through several means, including purposive sampling, theory guiding the research, and an audit trail. The data collection and interpretation processes were meticulously documented. Moreover, the original audio data (to evaluate tone), verbatim transcripts in which each transcript line was numbered, and documentation of subsequent coding of themes and subcategories (with themes and the original transcript having corresponding numbers) can be readily retrieved.

Finally, the last technique employed to enhance trustworthiness was addressing transferability of these findings. Transferability is the degree to which the findings of an inquiry can be applied or transferred beyond the bounds of the project. By providing thick descriptions of the procedures, sampling methods, and most importantly, the decision narratives of college-aged women, we have ensured that the results include valuable and practical information for other college health centers aiming to effectively reach college-aged populations. Claims were not extrapolated to other populations; however, enough information was provided to determine to whom the findings might also be applied. Transferability was also enhanced by providing the excerpts of the raw data within this article, with all data relevant to the project available upon request from the corresponding author.

Results

Vaccine Decision Narratives: Acceptance

Most of the women began their narratives from similar perspectives, articulating that HPV vaccination was commonsense and a worthwhile prevention measure. A majority of women who were interviewed (81%) were accepting of HPV vaccination. Vaccine acceptance was defined as explicit mention of HPV vaccination intent, having already been vaccinated, explicit statements that vaccination made sense and was worthwhile, and/or acknowledgement that if a health care provider recommended vaccination the participant would likely vaccinate (indicating intention).

Among the responses of those women who had not been vaccinated, a majority (73%) expressed attitudes accepting of HPV vaccination. Thus, within this sample, it appears that messages about the HPV vaccine had created a positive overall impression. When analyzing the acceptance narratives in more detail, assumptions underlying the decision themes that emerged included supportive family messages, explicit health care provider endorsement, descriptive peer norms reducing the stigma vaccination, and cancer prevention shaping the perceived benefits of HPV vaccination (i.e., disease framing).

Supportive family and provider messages: A form of self-efficacy. Supportive family messages were a salient theme in narratives of vaccine acceptance. Family support was expressed in various ways, including financial support ("My grandfather actually offered to pay for the vaccine"), parents making the appointment ("My mom wanted me to get it, and she made the appointment"), parental messages conveying that vaccination was a good idea (i.e., positive injunctive norms; "I talked with my dad about [HPV vaccination]. . . . He thought it was a good idea I get it"), and by parents sending their daughters vaccine information

Table 2. HPV Vaccine Decision Narratives Codebook

Theme	Code	Subcategory
Vaccine Acceptance	Supportive family messages	Financial: "My grandfather offered to pay." Logistical: "My mother made the appointment." Informational: "My mother sent me an article about HPV." Injunctive norms: "My father said it was a good idea." "If my mom wouldn't have supported it, I would not have gotten vaccinated." Having visited an HCP
	Explicit health care provider endorsement messages	Explicit endorsement: "When my doctor pushed the vaccine it made me realize it was important. He said, 'You really need to get this.' He enforced the importance of getting it." "When my doctor recommends the vaccine, then I'll get it."
	Descriptive peer messages	Descriptive norms: "All my nursing friends have had the vaccine." "My friends have gotten it. It seems pretty normal to me. Routine."
	Normalizing vaccination	"All 3 girls in my dorm room—they've all gotten the vaccine." "I'm in a sorority but everyone's gotten it even though it hurts."
	Disease framing shapes vaccine benefit perceptions (cancer, HPV, warts)	Cancer prevention: "If the vaccine can prevent cancer, I'll get it."
Vaccine Resistance	Skepticism about vaccine safety	Mistrust of vaccines New vaccine: "There haven't been long-term studies done. That's the part everyone is nervous about." Metaphors about mistrust of new products Infertility fears
	Overcoming self-efficacy barriers	Cost Availability Time Fear of parental disclosure
	Invoking alternative prevention strategies	Being smart Using condoms "My mom said to just not be stupid about sex. If I'm smart about sex I don't need to get vaccinated. I feel like there are other less serious ways of preventing HPV." "I can use a condom"
	Delay-and-avoid decision strategy Stigmatizing messages	"Since you can get vaccinated up to age 26, I have 5 more years to think about it." "I really feel like HPV only affects people who don't make smart decisions." "If you got HPV it means you weren't smart about who you were sleeping with." "Only sluts get HPV." "At some point someone had poor judgment." "People who have STDs are careless and dirty."

("My mom sent me an article on HPV vaccination, saying I should check it out"). These family messages explicitly reinforced the importance and validity of HPV vaccination and in some cases were instrumental to actual vaccination.

Among the vaccinated, parental messages were reported as the impetus to actual vaccination. A college woman asked to describe what led her to vaccinate replied that the main reason she vaccinated was because of her parents' support: "It's been easy for my roommates and I to set up getting the HPV vaccine because our parents are behind it." College women also attributed their vaccine

decisions to having open lines of communication with their parents on topics such as sex ("Most of the information we get is from our moms and parents, and she [a roommate] wouldn't be okay with talking about sex with her parents"). Sibling messages (i.e., descriptive norms) were also reported as an impetus to vaccinate ("That my sister got it and she's okay influenced me the most").

In addition to family messages, explicit health care provider messages also emerged as important for motivating women who had plans to vaccinate to actually vaccinate. Participants' decision narratives that indicated vaccine acceptance included discussion with health care

providers who explicitly encouraged and recommended HPV vaccination (“When my doctor recommends it, then I’ll get vaccinated”). These messages appeared to be influential to college women because the women perceived health care professionals as being trustworthy and the most knowledgeable about HPV. Power differentials in doctor–patient relationships became evident here, given the blind trust that women placed in their respective doctor’s opinions and recommendations (or lack thereof). Some college women reported their vaccine decision being most influenced by the opinions and recommendations of a medical expert, and that they would not trust or listen to family messages about the HPV vaccine. One informant recalled, “If the doctor told me, I would be more likely to listen,” whereas another woman recalled that “[i]f the vaccine is recommended by a doctor, it could put more trust in the vaccine.” In one case it was not the explicit message from the doctor but rather the doctor’s implicit message in support of the vaccine, by the doctor stating that she was having her own daughter vaccinated. The informant reported that when her physician told her this, it made an indelible impression: “My gynecologist told me about it [HPV vaccine]. The one thing I remember her saying was that she was going to have her daughter do it. That was really compelling.”

Descriptive peer norms reducing the stigma of vaccination. College women reported that they typically did not talk with their peers about HPV vaccination, and if they did, it was primarily to ask if the injection (“shot”) hurt. These women said that peer messages had little influence on their own HPV and HPV vaccine attitudes and decisions. However, this perception must be tempered by the fact that women who had been vaccinated or favored vaccination reported that their friends had been vaccinated, whereas the contrary held true for college women who were skeptical of vaccination. College women whose decision narratives reflected vaccine acceptance reported having peers who had been vaccinated (“I’m in a sorority, but everyone’s gotten it even though it hurts”). Knowing that many peers had vaccinated appeared to normalize HPV vaccination. These descriptive peer norms stand in contrast to narratives about vaccine resistance in which peer messages included statements such as, “None of my friends have gotten it.” It might be that these peer messages were “leaked” or indirectly communicated, establishing a descriptive norm supporting vaccine attitudes that reflected the “becoming-friends-with-similar-others” phenomenon.

Disease framing shaped vaccine benefit perceptions. Motivation to vaccinate was framed by the desire for protection against cervical cancer, with little or no mention of protection against HPV (“When I heard what the shot can help prevent—cervical cancer—I wanted to get it”). Thus,

the vaccine was described as a cancer vaccine and not as an HPV- or genital-warts-protection vaccine for these women. Cancer prevention set the tone and justification for vaccinating.

Vaccine Decision Narratives: Resistance

Despite favorable attitudes toward vaccination, a substantial number of college women had not been vaccinated. Vaccine resistance was defined as including explicit skepticism about HPV vaccination, explicit messages of nonintention to vaccinate, explicit messages that the vaccine was not necessary for prevention, explicit messages that the vaccine was appropriate for only certain individuals (e.g., those who were promiscuous), or explicit messages about any type of barrier preventing vaccination (e.g., cost, lack of insurance, or parental disapproval). Few women (19%) were vaccine resistant, and one of these women reported receiving the first shot as a result of pressure at the doctor’s office. As one would expect, most of the resistance was among college women not vaccinated, with 27% of them reporting resistance. These vaccine-resistance narratives reflected skepticism regarding vaccine safety, the attitude that alternative prevention strategies were sufficient, stigmatizing messages toward those with HPV, overcoming self-efficacy barriers (e.g., cost, availability, time, fear of parental disclosure), and finally, delay strategies.

Skepticism regarding vaccine safety. The dominant story that emerged in resistance narratives was concern about vaccine safety. Resistance narratives opened with the vaccine’s newness casting doubt on claims about its safety (“I was against the vaccine because it was so new. A lot of times they come up with new vaccines and drugs and then ten years down the line they find out terrible things they cause”). One woman stated, “There haven’t been any long-term studies done. That’s the part where everyone’s getting nervous about it.” Metaphors were even invoked in relation to avoiding a new vaccine (“They say never buy a new car when it first comes out because you don’t know the issues that come along with it. That’s why I don’t want to get the vaccine”). These safety concerns were legitimized by citing previous occurrences in which medications had been released to the public, initially touted as wonder drugs, and then pulled off the market at a later time because of adverse side effects. Some resistance narratives referenced the suggestion that the vaccine could affect reproductive health, in particular fertility (“You don’t know how it could affect pregnancies in the future”). This was particularly ironic given the fact that chronic HPV infection (in the unvaccinated) can lead to an increased risk for premature birth because the cervix muscles are weakened as a result of exposure to

the HPV virus (Sjoberg & Eskild, 2009). Among women with resistance narratives, the HPV vaccine was perceived to be risky and was subsequently rejected. In these same resistance narratives the women invoked alternative prevention strategies in lieu of vaccination.

Alternative prevention strategies allowed women to maintain their position as supportive of prevention but deny vaccination as the necessary step in achieving prevention. This perception emerged in daughter–parent communication:

My mother said to just not be stupid about sex. . . . I'm not an idiot about who I sleep with. I really feel like HPV only affects people who don't make smart decisions. If there are condoms out there today, use a condom. . . . I feel like there are other ways to prevent HPV . . . less serious ways than getting the vaccine.

Several women's narratives echoed the idea that using condoms was perceived as a sufficient preventive measure against HPV: "I feel like condoms will protect me." "I think if you take precautions . . . I don't think it's necessary to get the HPV vaccine." Messages that only promiscuous women are at risk for HPV stigmatized women's sexual behavior.

Stigmatizing messages. A salient story among resistance narratives was that if a woman is in a committed relationship and she uses protection, the HPV vaccine is not necessary. In their decision narratives, a recurring theme among the women was the belief that only women who were promiscuous, careless, or not "smart about sex" were at risk for HPV ("The stereotype that only sluts get HPV"). These stigmatizing peer messages were reportedly reinforced by parental messages ("My dad said if you have one partner and you're in a committed relationship and you know you're telling the truth all the time, then it's not necessary to get the HPV vaccine"). Along similar lines, a college woman reported her mother as saying, "If you're not stupid about sex, you don't need the vaccine." College women interpreted these messages as meaning that only women who were reckless in their sexual behavior needed the HPV vaccine. These stigmatizing messages were a recurring theme in peer messages among vaccine resistance narratives ("I guess if women have multiple partners they should consider the vaccine"). Finally, according to this resistance narrative, once a woman was sexually active, it was too late to benefit from vaccination. College women believed, and in some cases their doctors told them, that it was too late to benefit from the vaccine because of their age and because they were already sexually active.

Overcoming self-efficacy barriers. In addition to this false belief that "it is too late," there were several self-efficacy barriers to vaccination, even though some college women's attitudes were supportive of HPV vaccination. These barriers included vaccine cost, lack of time, lack of awareness that the vaccine was available on campus, and for some, fear of having to discuss vaccination—and sex—with their parents. Vaccine cost was a serious obstacle for many women ("If it had been less expensive I would have gotten it right away"). Additionally, most women were unaware that the HPV vaccine was available on campus: "I know my friend wanted to get it, but she thought she would have to go home, which is kind of far. It was kind of a hassle." They also commented on their busy lives as well as moving around a lot as preventing them from getting vaccinated ("I would have gotten it . . . it's just getting three shots across nine months is a hassle, and I've been moving around a lot in the last couple of years"). These messages showed that vaccine intention was there for many, but that practical, logistical barriers needed to be overcome to vaccinate. For some women, however, fear of discussing vaccination (and consequently, inevitably, sex) with parents was the primary barrier to vaccinate.

In several narratives women referred to being too afraid to talk to their parents about the HPV vaccine. They were afraid that bills related to vaccination would be sent home, only to result in parents questioning their daughters about sexual activity ("My dad, if he found out that I was going to get it . . . he'd ask, 'Is she having sex now?'"). Thus, this form of low self-efficacy was a family communication barrier to vaccination. In response, some women invoked a delay strategy, electing to avoid a vaccination decision altogether. Some women simply avoided a vaccination decision by delaying it. One woman denied being at risk for HPV, and said, "Since you can vaccinate up to age 26, I have five more years to consider it."

In summary, decision narratives on vaccination resistance reflected concerns about vaccine safety, beliefs in the sufficiency of alternative prevention strategies, stigmatizing messages about women who acquire HPV, overcoming self-efficacy barriers, and delay strategies. Decision narratives reflecting vaccine acceptance highlighted the importance of supportive family messages in vaccination adoption, the role of explicit health care provider messages endorsing vaccination, descriptive peer norms reducing the stigma of vaccination, and disease framing (cancer) shaping vaccine benefit perceptions. Common across all decision narratives was the perception that personal HPV vulnerability was determined by relationship status, which is connected to research question three: What is college women's understanding of HPV susceptibility?

Relationship Status Frames College Women's HPV Susceptibility Perceptions

College women related HPV susceptibility primarily to relationship status. When asked about HPV susceptibility, their responses were framed by messages about monogamy, promiscuity, not being currently sexually active, or being married. In other words, risk perception was determined according to sexual activity status and more specifically, by relationship status (i.e., those who were sexually active but in a committed relationship did not see themselves at risk). Responses reflected the false belief, in many cases, that monogamy was protective ("I don't feel personally vulnerable because I am in a committed relationship where we are only seeing each other"). This type of response was common.

Other messages showed that vaccination was only considered when events occurred, such as breaking up, which then prompted consideration of the vaccine: "I wasn't going to get it, but I broke up with my boyfriend. That's when I had my first shot." As illustrated by these messages, women acknowledged the potential for HPV vulnerability because of having multiple partners, or after breaking up with their partner. Participants never acknowledged the possibility of serial monogamy as a transmission mode. Married women saw no need to be vaccinated, and for them, vaccination was interpreted as a signal of mistrust of their partners. A relational understanding of HPV susceptibility cut across narratives of vaccine acceptance and resistance.

Discussion

The goal of this study was to characterize the meanings that college-aged women ascribed to family, health care provider, and peer HPV vaccine messages and how college women's interpretation of these messages impacted their HPV vaccine decision making. The narratives collected provided insight into how college women go about vaccine decision making. Many college women were norm-oriented in their decision styles and based decisions on the attitudes of family and health care provider messages, while having only superficial HPV knowledge.

Decision narratives revealed that college-aged women relied on family messages to make HPV vaccine decisions despite their age and being away from home. Although these findings echo those reported in the vaccine literature regarding 9- to 12-year-old girls—that parental vaccine attitude play a key role in determining vaccine adoption (Constantine & Jerman, 2007; Ogilvie et al., 2007)—the results are somewhat surprising given previous research reporting that college women talk about sex-related topics

with close friends at college more than with mothers (Lefkowitz & Espinosa-Hernandez, 2007). Discussion around HPV vaccine adoption appears to fall under the purview of family or health talk, which might be explained by prior vaccination decisions made with family rather than friends. In addition, the high cost of vaccination might cause college women to turn to parents for financial support, necessitating a health discussion.

Clinician Messages Make a Difference

Whether women had recently seen a clinician seemed to matter, and whether the clinician explicitly recommended HPV vaccination appeared important in moving college women to actually vaccinate. The importance of health care providers explicitly recommending the HPV vaccine has been discussed in the prevention literature as a critical programmatic consideration (Caskey, Lindau, & Alexander, 2009). Some clinicians in the current study appeared to not discuss the HPV vaccine because of cost and time concerns. This issue is concerning, and should be examined in more depth in future research efforts (Keating et al., 2008; Zimet, Kahn, & Shew, 2008). Ensuring that young adult women visit health care providers before they attend college, and integrating HPV vaccine discussion during these visits in clinical practice, has yet to become routine (Rodewald & Orenstein, 2009). College women reported in some cases that their health care provider did not raise the issue of HPV vaccination, said that the HPV vaccine was not necessary, or said it was too late for them to benefit. These types of health care provider messages were associated with vaccination inhibition.

The importance of health care providers actively supporting informed HPV vaccine patient-provider discussions cannot be overstated. In fact, this finding is corroborated by a recent independent report also stating the critical importance of explicit health care provider discussion among 18- to 26 year olds (Rosenthal et al., 2010). Health care providers play an important role in public health efforts, ensuring informed consent around HPV vaccination. Not clearly explaining what HPV is, its benefits, and explicitly recommending the HPV vaccine significantly undermines prevention efforts. Recent reports in the literature align with some narrated experiences in this study's sample in which college women report physicians simply not mentioning the HPV vaccine or downplaying it. Clinicians having thoughtful discussions with women during clinical visits, providing them with a full range of choices, is critical to women making informed choices. Women's uncertainty about the HPV vaccine is understandable if not expected, given the mixed messages they are exposed to, and given that even clinicians sometimes

provide young adult women with incorrect information. Clinicians need to do a better job of clearly explaining the facts about and benefits of the HPV vaccine. Clinicians also need to avoid inadvertently blaming women should they choose not to vaccinate, and rather focus on providing women with the full range of possible choices, allowing them to make informed decisions about what is best for them given their current circumstances. Informed decision making should guide the emphasis in clinicians' discussion and advice about HPV vaccination.

Overcoming Self-Efficacy Barriers

Although a majority of participants expressed favorable HPV vaccine attitudes, there remained logistical and family communication barriers as major deterrents to HPV vaccination. Although logistical barriers were common to vaccination (Chapman & Coups, 1999; Telford & Rogers, 2003), family communication barriers present a social barrier unique to HPV vaccination. Self-efficacy barriers related to HPV vaccination are thus more complex. Family communication barriers differ qualitatively in college women compared to those reported among 9- to 12 year olds. Concerning preadolescent and adolescent vaccination, the focus of family communication has been on parents and their fears that vaccination will promote promiscuity (Kahn et al., 2008). With college women, family communication barriers arose around the women's reluctance to discuss HPV vaccination with their parents. Family communication, in addition to logistical barriers, posed significant challenges to increasing HPV vaccine adoption among college women. Clinicians can provide communication strategies to college-aged women for discussing the vaccine with their parents, e.g., to discuss vaccination as a universal recommendation promoted by the university rather than a personal request.

Peer Messages, Stigma, and Perceptions of HPV Susceptibility

Peer messages were stigmatizing with respect to beliefs about who was vulnerable to acquiring HPV. In part, this stemmed from perceptions that HPV susceptibility was determined by relationship status, with those reporting involvement in a monogamous relationship or no relationship thinking they were unlikely to be vulnerable to HPV. Although those who are sexually inactive might not be at immediate risk for HPV, individuals in monogamous relationships are at risk for acquiring HPV. Serial monogamy is considered to be an important mechanism of HPV transmission (Burchell, Winder, de Sanjose, & Franco, 2006). Among college-aged women, HPV susceptibility was thought to be reserved for the promiscuous

and those with poor judgment, which is a myth that needs to be corrected.

Cancer Prevention as the Dominant Vaccine Narrative

Decision narratives revealed the power of disease framing. The benefits of HPV vaccination were primarily framed as worthwhile because of cancer prevention, with HPV absent from discussions. This framing choice is well justified given that the investment in developing a cancer vaccine is worthwhile, whereas investing in a genital warts vaccine (a nonfatal condition) is not. Conversely, cancer messages used to introduce the HPV vaccine have the potential to mislead the public. The first and foremost prevention goal of the HPV vaccine is the prevention of HPV. The only concrete evidence to date is that the HPV vaccine has reduced HPV-related morbidity (Smith, Melendy, Rana, & Pimenta, 2008). Whether HPV vaccination will reduce cervical cancer mortality has yet to be shown. As a result, it is premature to promote the vaccine as a means of cancer prevention.

College Women's Decision Making

Culture-centric narrative theory guided the development of interview protocols asking college women to explain how they go about or went about their decision to vaccinate. Collecting decision narratives was critical to gaining insight into women's experiences and how these experiences shaped their decisions (Hecht & Krieger, 2006; Larkey & Hecht, 2010; McCoyd, 2008). Although people might not be able to explain why they behave in a certain way, they can help us understand their interpretation of events and their reasoning processes (Macdonald, Rigillo, & Brassard, 2010; Stevens & Hildebrandt, 2009). Responses indicated that family and health care provider messages provided vaccine decision-relevant knowledge for college women. Contrary to predictors of HPV vaccine acceptability reported in the literature (Brewer & Fazekas, 2007), perceived severity of HPV and perceived vaccine efficacy did not emerge as relevant to HPV vaccine decisions in the women's narratives.

Focus theory of norms provided the groundwork for understanding how college women interpret the messages they receive in their environment. College women's decision making was shaped primarily by the injunctive norms of parents and health care providers; however, mixed messages and the absence of an explicit recommendation by health professionals to get the HPV vaccine were interpreted by college women as meaning that the vaccine was not necessary. Most college women were exposed to multiple HPV vaccine messages, which either

reinforced or cast doubt on the benefits of vaccination. Narrative accounts of HPV vaccine decision making shaped and reflected broader cultural narratives about vaccine mistrust. Vaccine campaigns need to include messages that reassure the public of vaccine safety and that vaccination is necessary, while minimizing perceptions of vaccine risk. Vaccination is still perceived by many as a considerable risk that is not worth taking.

Limitations

One limitation of this study was that the student sample was not ethnically diverse. Future research exploring cultural beliefs around HPV vaccination will be important to more effectively reach subgroups of at-risk women. Cervical cancer rates are highest in the United States among Hispanic women, followed by African American, Vietnamese American, and Appalachian women (National Cancer Institute, 2007). Moreover, reports in the literature have found that cervical cancer prevention messages disseminated thus far to Mexican immigrant women were not perceived as effective by the target population, and as a result an important opportunity to effectively communicate cervical cancer prevention messages was missed (Hunter, 2005; Lofters, Glazier, Agha, Creatore, & Moineddin, 2007).

Another limitation of the current study was the lack of men's perspectives about HPV. Men's attitudes about the HPV vaccine are equally important to understand, because they are carriers of HPV and can also have symptoms. Men's perspectives are especially important in light of the Food and Drug Administration recommending the HPV vaccine in men as of September 17, 2009 (Young, 2009). Cervical cancer prevention messages are unlikely to prompt men to vaccinate. Vaccine messages will need to be reframed as prevention against HPV with respect to genital warts, and head and neck, anal, and penile cancers.

Implications for Designing HPV Vaccine Messages

Currently there is no established health campaign strategy for communicating about the HPV vaccine with college-aged women (Sherris et al., 2006). The results of this study provide insight into the need to educate women about the range of choices surrounding HPV. The onus is on clinicians as well as pharmaceutical companies not only to communicate more about the choices involved for women, but to clearly explain the safety and benefits of HPV vaccination to women while exercising extra caution in the way messages are delivered to avoid the potential for blaming women should they choose not to vaccinate. HPV vaccination campaign

messages targeting college-aged women should include (a) the fact that college-aged women can benefit from HPV vaccination; (b) steps women can take to protect their sexual health; (c) information about HPV not being only a woman's issue, but affecting both sexes; (d) clear indicators that not only promiscuous women are at risk for HPV acquisition; and (e) communication strategies to discuss the vaccine with their parents. Efforts to reach men with an HPV vaccine message are in progress, and this is a step in the right direction to avoid blaming women or leading women to falsely believe that HPV is solely a woman's issue.

Findings from this study show that despite being older, college women turned to parents' injunctive vaccine norms for guidance when making HPV vaccine decisions. This finding has also been found in a larger, statewide study conducted in Minnesota (Caskey et al., 2009). Providing college women with communication strategies to discuss the HPV vaccine with their parents in less face-threatening ways and correcting misinformation should be priorities in HPV vaccine messages. For example, when college women discuss the HPV vaccine with their parents, they can avoid vaccine messages being interpreted as a personal request to initiate sex by discussing the HPV vaccine as a universal recommendation for all women and men.

Several themes emerged as part of college women's HPV vaccine decision narratives that have implications for designing prevention interventions and for health care practitioners communicating about the vaccine. Findings could be understood around four themes: that relationship status frames relevance of HPV to women, that vaccine accessibility is an important factor among vaccine-accepting college women, that exploring family HPV vaccine norms might prove useful when practitioners discuss the vaccine with college women, and finally, that dispelling myths about HPV transmission will be necessary to prompt reflective thinking about whether or not HPV vaccination is the right personal decision.

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1. The complete interview guide is available upon request from the corresponding author.

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