



## Short Communication

## “You're never really off time”: Healthcare providers' interpretations of optimal timing for HPV vaccination

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## ARTICLE INFO

## Article history:

24 December 2015

2 May 2016

16 May 2016

Available online 16 May 2016

## Keywords:

Human papillomavirus (HPV) vaccination

Patient-provider communication

## ABSTRACT

Healthcare providers have a strong influence on human papillomavirus (HPV) vaccination decisions, yet they often fail to recommend the vaccine to the 11- and 12-year-olds who are targeted by practice guidelines. We sought to understand how providers interpret and value age-based guidelines.

We conducted a secondary analysis of data from two qualitative studies of healthcare providers' HPV vaccination attitudes and practices. Participants were physicians, nurse practitioners, and physician assistants in Minnesota ( $n = 27$ ) and in Washington ( $n = 17$ ) interviewed in 2012 and 2014 respectively. Verbatim transcripts from each study were analyzed independently using content analysis, and collective findings were then jointly analyzed. The research team worked via consensus to derive codes and describe representative themes.

A high proportion of providers reported either a lack of concern about HPV vaccine completion, or concern beginning several years past the recommended target age. Many providers perceived a gradient of HPV vaccination timeliness ranging from age 12 to 26. Instead of age-based recommendations, providers timed recommendations based on perceptions of access to care and patient risk. They often offered “gentle” recommendations and deferred vaccination discussions as a tool to building trust with families.

Interventions aimed at helping providers deliver effective recommendations for timely HPV vaccination are needed. Our findings suggest that changing the norm of provider culture to one in which “catch-up” schedules are seen as a suboptimal way to achieve vaccine uptake may be an important goal.

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### 1. Introduction

Rates of HPV vaccine initiation and completion are well below national goals (Stokley et al., 2014). The Centers for Disease Control and Prevention's (CDC) recommended schedule is for routine HPV vaccination at ages 11 and 12, with catch-up vaccination up to age 26 for females and age 21 for males (Markowitz et al., 2014). A healthcare provider's recommendation is the strongest known predictor of initiation and completion the 3-dose HPV vaccine series (Dorell et al., 2012; Kessels et al., 2012; Reiter et al., 2013a). However, many adolescents do not receive a recommendation (Reiter et al., 2013b; Vadaparampil et al., 2011). Previous research suggests that providers may be hesitant to discuss HPV vaccination with parents of young adolescents and more often deliver recommendations to older adolescents than to those ages 11 to 12 (Vadaparampil et al., 2011; McRee et al., 2014) suggesting that

providers may not be interpreting guidelines as intended. We sought to understand how providers interpret and value age-based guidelines in their clinical practice, with attention to the timing of vaccination during the target age range for routine recommendation.

### 2. Material and methods

#### 2.1. Data

We used data from two qualitative studies of HPV vaccination attitudes and practices among clinicians who provide preventive care, including vaccinations, to adolescents.

Data for study 1 (Minnesota) were collected through semi-structured, in-depth, face-to-face interviews with health care providers ( $n = 27$ ) who saw adolescent patients in Minneapolis and St. Paul, MN between July and September 2012. We employed a purposive sampling strategy to ensure a diversity of perspectives based on clinician training, specialty, and clinic setting. We enrolled new participants and conducted interviews, meeting regularly to discuss findings, until we determined that interviews were no longer yielding new information

Abbreviation: HPV, human papillomavirus.

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(saturation) (Glaser and Al, 1967). The interview guide included two questions to explore providers' HPV vaccine recommendation practices for 11–14 year old patients: “How do you counsel patients and their parents about HPV vaccine?”. This item included a probe asking how strongly providers recommend the vaccine, and “How do you discuss the vaccine with a parent who might be hesitant to get their son or daughter vaccinated against HPV?” Participants received \$40 at the completion of the interview. Study protocols were approved by the Institutional Review Board at the University of Minnesota.

Data for study 2 (Washington) were collected during November and December 2014 through individual telephone interviews with a purposive sample of primary care physicians (n = 17) in Group Health Cooperative, a regional integrated care system in Washington State that serves almost 600,000 people. We conducted interviews and reviewed the transcripts to discuss findings until we reached saturation. To explore providers' perspectives on vaccination timeliness, we asked providers: “At what point do you worry that your patients won't complete the HPV vaccine series?” Physicians did not receive any compensation. The Group Health Research Institute Institutional Review Board determined that this study was not human subject research.

## 2.2. Analysis

The two datasets remained independent. Interviews from both studies were transcribed verbatim. Transcripts were analyzed using content analysis methods, searching for specific references to HPV vaccine recommendation practices and how the vaccination schedule age-based recommendations were being interpreted in clinician practice. In the Minnesota dataset, two investigators (ALM, MBG) analyzed all the interviews with a targeted search. In the Washington dataset, two investigators (NBH, LT) analyzed the answers to the “when do you worry” question and also the remainder of the interview text. We then jointly analyzed the collective findings from both datasets through a series of analysis meetings, working via consensus to put the relevant results into meaningful descriptive categories. We identified exemplar quotes from each dataset.

## 3. Results

We analyzed interviews from a total of 44 providers (Table 1). For the Minnesota study, we approached 38 providers and conducted interviews with 27 (71%). The sample included 17 physicians and 10 nurse practitioners or physician assistants. Eighty-one percent (81%) were female, about half (48%) reported a pediatric specialty, and the most common practice setting was public clinic or community health center (48%). About half (48%) of providers reported spending at least 10 h per week providing clinical care to male or female adolescent patients.

In the Washington study we approached 31 physicians and conducted interviews with 17 (55%). The sample was 65% female and three quarters (76%) pediatricians. The mean time since medical school graduation was 30 years. Providers reported seeing between 2 and 60 adolescents per week.

### 3.1. Providers described a gradient of on-time HPV vaccination ranging from age 12 to age 26

The overarching theme in both samples was a perceived age gradient, not just for allowable vaccination, but for timely vaccination. Providers in neither sample interpreted age 12 as a hard rule for on-time HPV vaccination. Rather, increasing age was commonly described as a gradually pressing prompt toward recommendation of the vaccine. In the Washington sample, the only sample in which the question was asked directly, 13 of 17 providers (76%) reported that they do not worry about HPV vaccine series completion by age 12. Of these, nine (53%) reported not worrying at all and 4 (24%) reported not worrying until age 16 or later. Age 16 was the earliest age at which providers

**Table 1**  
Participant characteristics, Minnesota (2012) and Washington (2015), USA.

	Minnesota sample (n = 27)		Washington sample (n = 17)	
	n	(%)	n	(%)
Sex				
Female	22	(81)	11	(65)
Male	5	(19)	6	(35)
Profession <sup>a</sup>				
MD	17	(63)	17	(100)
NP/PA	10	(37)	–	
Specialty				
Pediatrics	13	(48)	13	(76)
Family medicine	14	(52)	4	(24)
Practice affiliation <sup>b</sup>				
Public clinic/community health center	13	(48)	–	
Hospital/medical center	2	(7)	–	
Practice network/HMO	5	(19)	100	(100)
Private, independent practice	7	(26)	–	
			Minnesota sample (n = 27)	Washington sample (n = 17)
	mean	(range)	mean	(range)
No. years post-training <sup>c</sup>	7	(2–49)	30	(9–42)

<sup>a</sup> Only MDs were interviewed for the WA sample.

<sup>b</sup> All clinicians in the WA sample were part of a single practice network.

<sup>c</sup> Post residency/training for MN sample, post medical school graduation for WA sample.

reported feeling urgency to initiate or complete the series, and some reported not feeling urgency until patients' 20s (“you're supposed to be able to finish it anytime, I think”). In the Minnesota sample several providers referred to a similarly extended window in which their patients were eligible for HPV vaccine, suggesting a common perception that “you are never really off time” for the vaccine. Exemplar quotes are presented in Table 2.

### 3.2. Providers refined their recommendations based on their perceptions of patients' access to care and sexual risk

Instead of following a solely age-based recommendation, providers reported an individualized approach to timing their vaccine recommendations in which increasing age might be but one factor. Many providers reported either relaxed approach earlier in adolescence (“I know I'll see them again”) or a more urgent recommendation as their patients approach transition out of high school or pediatric care as they may be “less likely to get [all of the shots]” once in college. Further, several providers in both samples reflected on their judgments of individual patients' risk of sexual debut or of the sexual risk of their “patient population” more broadly, and a feeling that continued sexual naiveté justified delayed vaccination.

### 3.3. Providers perceived that a “gentler” recommendation honors parent preferences and builds long-term trust

As a logical progression from a perception of the “true” window for HPV vaccination extending to age 26, providers often reported deferring discussions or recommendations until subsequent visits, giving parents “permission to delay.” One provider reported “I would rather have them come in and have the discussion than not have them come in at all.” Several providers viewed the delay of HPV vaccine discussion as a way to build trust or “give control” to families with vaccine concerns, making the HPV vaccine decision one that extends over multiple visits. Some providers described wanting to avoid “a strong arm approach to vaccinating” and implied they would prefer to maintain a long-term, trusting relationship with families than potentially lose that relationship because of a disagreement about HPV vaccine.

**Table 2**  
Illustrative quotes, Minnesota (2012) and Washington (2015), USA.

Theme or subtheme	Illustrative quote (study source)
Providers described a gradient of on-time HPV vaccination ranging from age 12 to age 26.	[I worry about completion] Obviously when they start to get into their 20's and they're approaching the end of when it's recommended, although you're supposed to be able to finish it anytime, I think. (Washington)
	When you use the term "catch up", it's kind of interesting. With other vaccines, people get all kind of freaked out. They're like, "Oh, I'm behind. I need to catch up." But we don't use those terms for HPV. Nobody's ever behind. Nobody needs to "catch up" HPV vaccination. (Minnesota)
	[I start to worry] usually about 18. If we haven't gotten them in to get it all by the time they're 18, that's usually when I start worrying about that it's going to be really difficult, that's where there's fall off. (Washington)
	I delay pretty much everybody. To me it's not a problem. (Washington)
	You're never really off time for HPV vaccine. (Minnesota)
Providers refined their recommendations based on their perceptions of patients' access to care and sexual risk	I don't think I have [worried about completion] yet. I actually feel like most are eventually getting it. (Washington)
	[I worry] As they get ready to head off to college, it's just harder for them to - they're not around as much so they're less likely to get them all or to remember to do it during a winter break or something. (Washington)
	[When recommending HPV vaccine] I say [sic] it's easier to do it when they're here at home before they go away to school. (Minnesota)
	[I think the time is really "now" for HPV vaccination] before college. We usually talk about it. People come in 9th grade or 10th grade, their sports physical runs out and they need another one so I know I'll see them again. Some 21, 22 year olds [come in unvaccinated] so we still bring it up. (Minnesota)
	I would go into it a little more deeply and stress the need for the vaccine a little more if I knew the patient was sexually active. (Minnesota)
	I [worry] probably around 17 or 18, I start to say - or if they're sexually active, I'm like hey, there's still a 1 in 3 chance you could not have this. By around junior year of high school, I'm like c'mon, we gotta get this going before you leave high school. (Washington)
Providers perceived that a "gentler" recommendation honors parent preferences and builds long-term trust.	I'm not dealing with a patient population whose sexual debut is likely to be very early. If I was with a population where I was concerned that kids were having sex at age 12, I would be more aggressive. (Washington)
	And give them permission [to delay], I think they like that. You can say "I think this is a good idea." But then I also say something like "If you feel like you're not ready to do it today, that's okay and we'll continue to talk about it." (Minnesota)
	I let them know that I am here as a sounding board for them and help them sift through all that information. I do not take a strong arm approach to vaccinating...[a colleague] was particularly militant about vaccinating and I found that really turned off a lot of families, and I would rather have them come in and have the discussion than not have them come in at all because they're worried they're going to get raked over the coals. (Washington)
	I'm more flexible about "let's get this started sometime in the next couple years." Let the parent feel they have some control, which is I think what the whole issue is about with regard to vaccine hesitancy. (Washington)
	I don't pressure them. Let them make up their minds. (Minnesota)
	[I'll say] it's fine if they want to wait and talk about it more. We'll just bring it up at the next visit. (Minnesota)

#### 4. Discussion

In this secondary comparative analysis of qualitative data from healthcare providers in two samples, we found that a high proportion of providers reported either a lack of concern about HPV vaccine completion or concern beginning several years past the CDC's recommended target age. Our findings are consistent with other work suggesting that providers may find practice guidelines ambiguous. In one study, a third of physicians said guidelines were unclear, and this perception was associated with lower intention to recommend HPV vaccine to girls (Kulczycki et al., 2015). Another study found that 45% of providers found national or local guidelines for HPV vaccine are unclear (Bruno et al., 2014). The present exploratory study further extends the current literature with its focus on providers' attitudes about the timeliness of

series completion. This is particularly important as one-third of those who have received at least 1 dose of HPV vaccine do not complete the series (CDC, 2015).

Healthcare provider recommendation of HPV vaccine is the strongest, most consistent influence on parents' decisions about HPV vaccination for their adolescent children (Dorell et al., 2012; Kessels et al., 2012; Reiter et al., 2013b). Previous research highlights constructs important to a high-quality recommendation including: timeliness (recommending by age 11–12), consistency (avoiding a risk-based approach), urgency (same day immunization) and strength of endorsement (saying the vaccine is important) (Gilkey et al., 2015). The present study provides insights into providers' perceptions and practices related to these constructs. We found evidence for a notable lack of concern for "timeliness" in recommending the vaccine at target age.

This perspective offers a striking contrast to providers' perceptions of early childhood vaccinations, where the use of catch-up schedules are considered inferior to “on time” vaccination. Additional research is needed to develop messages that better communicate to providers the rationale behind and health benefits of “on time” HPV vaccination by age 12.

Optimal HPV vaccine recommendations should be universal at the targeted age, not risk-based, to complete vaccination before sexual debut (Dempsey, 2008). Providers in our study reported urgency about recommending HPV vaccination on suspected patient sexual activity, consistent with other research (Perkins et al., 2014; Gilkey and McRee, 2016a). However, we also found that providers may gradually increase the strength of their recommendations as their patients are aging out of pediatric care or at risk of inconsistently accessing health services as they transition out of high school. This concern about access to care is not without empirical basis, as young adults have lower levels of health service use than adolescents (Park et al., 2014). Future interventions should explore messaging that motivates providers to recommend HPV vaccination well before anticipated care transitions.

Some providers reported offering “gentler” recommendations by deferring or readily accepting delay. This is a reasonable position for a provider who sees age 26 as timely vaccination, but parents may prefer clear, unambiguous messages that HPV vaccination is important (Gilkey and McRee, 2016b). Research in early childhood vaccine hesitancy suggests that trust-based interventions may be insufficient to change parental vaccine attitudes (Henrikson et al., 2015a; Henrikson et al., 2015b) and that strong recommendations may be effective for improving vaccine coverage in the short term (Opel et al., 2016). Thus, softer or deferred HPV vaccine recommendations may actually undermine vaccine recommendations. Future interventions can explore the impact of different recommendation styles, HPV vaccination behavior, and long-term trust.

Strengths of this study include the use of analytic triangulation to compare findings across two independent samples of primary care providers; the high degree of convergence we found across geographic regions and practice settings increases the credibility and transferability of our findings. Limitations include the focused nature of our study, in which we searched for evidence around a construct – physicians' conceptualization of HPV vaccination timeliness. The sample size, while small, was consistent with the exploratory, qualitative nature of our study. These findings may not be generalizable to settings outside the U.S. or to all U.S. health care settings or providers. We acknowledge also that the multifactorial nature of provider communication style, parent preferences, and clinical policies are also important for understanding providers' ability to effectively deliver HPV vaccine recommendations.

## 5. Conclusion

Coverage of HPV vaccine continues to fall well below the national goal of 80% (U.S. Department of Health and Human Services, 2013). Our study identifies ways that providers deviate from practice guidelines, suggesting that few health care providers prioritized the goal of HPV vaccine series completion for patients by age 12. Further, many providers appear to interpret on-time completion as age 26, not as 11 to 12 with an accompanying catchup schedule as is recommended. It is logical, then, that they would only feel a sense of urgency as their patients approach their 20s, as suggested in this study. If confirmed with other work, future provider communication interventions could include stressing age of 11 to 12 for on-time HPV vaccine completion. Interventions that seek to change the cultural norm to one where “catch-up” schedules are seen as suboptimal may offer particular promise. Given the importance of the CDC-recommended vaccine schedules in the United States, the intent behind the recommendation should be clearly communicated and not left to individual interpretation.

## Transparency document

The Transparency document associated with this article can be found, in online version.

## Acknowledgments

Funding sources: This study was supported by Group Health Foundation, Seattle, Washington, with additional support provided through a career development award from the National Cancer Institute (K22 CA186979). The funders did not have role in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication.

Conflicts of interest: The authors have no conflicts to declare.

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