

Missed Opportunities for HPV Vaccination in Adolescent Girls: A Qualitative Study



WHAT'S KNOWN ON THIS SUBJECT: Rates of human papillomavirus (HPV) vaccination lag behind other adolescent vaccines. Research indicates that provider recommendation is the key to improving HPV vaccination rates and that most adolescents who are unvaccinated received other vaccines, indicating missed opportunities for HPV vaccination.



WHAT THIS STUDY ADDS: This study explores in-depth the content of provider–patient conversations that either create or prevent opportunities for HPV vaccination. Effective and ineffective conversations are presented with the goal of providing practical tools to improve communication regarding HPV vaccines.

abstract

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OBJECTIVE: The goal of this study was to identify the rationale by parents/guardians and providers for delaying or administering human papillomavirus (HPV) vaccination to girls.

METHODS: Qualitative interviews were conducted with parents/guardians accompanying their vaccine-eligible 11- to 17-year-old daughters to medical visits. Interviews were conducted in 1 public clinic and 3 private practice settings to ascertain why girls did or did not receive HPV vaccination. Questions probed vaccine decision-making from the point of view of parents/guardians and providers.

RESULTS: A total of 124 parents/guardians and 37 providers participated. The most common reasons parents reported for not vaccinating their daughters was the lack of a physician recommendation (44%). Both parents and providers believed that HPV vaccination provided important health benefits, but the timing of vaccination with relation to sexual activity was an important theme related to vaccine delay. Providers with lower self-reported vaccination rates delayed vaccine recommendations in girls perceived to be at low risk for sexual activity, and several parents reported that their providers suggested or supported delaying vaccination until their daughters were older. However, parents/guardians and providers agreed that predicting the timing of sexual debut was extremely difficult. In contrast, providers with high vaccination rates presented HPV vaccination as a routine vaccine with proven safety to prevent cancer, and parents responded positively to these messages.

CONCLUSIONS: Although most parents and providers believe that HPV vaccination is important, missed opportunities result from assumptions about the timing of vaccination relative to sexual activity. Routinely recommending HPV vaccination as cancer prevention to be coadministered with other vaccines at age 11 years can improve vaccination rates. *Pediatrics* 2014;134:e666–e674

AUTHORS: Rebecca B. Perkins, MD, MSc,^a Jack A. Clark, PhD,^{b,c} Gauri Apte, MB, BS, MPH,^c Jessica L. Vercruysse, MA,^a Justen J. Sumner, MD, MPH,^a Constance L. Wall-Haas, DNP, PPCNP-BC,^d Anna W. Rosenquist, MD,^e and Natalie Pierre-Joseph, MD, MPH^a

^a*Boston University School of Medicine, Boston, Massachusetts;* ^b*Edith Nourse Rogers Memorial Veterans Hospital–Bedford, Bedford, Massachusetts;* ^c*Boston University School of Public Health, Boston, Massachusetts;* ^d*Harvard Vanguard Medical Associates, Chelmsford, Massachusetts;* and ^e*Harvard Vanguard Medical Associates, Burlington, Massachusetts*

KEY WORDS

HPV vaccination, missed opportunities, parental attitudes, provider attitudes, qualitative methods

ABBREVIATION

HPV—human papillomavirus

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Address correspondence to Rebecca B. Perkins, MD, MSc, 85 E. Concord St, 6th Floor, Boston University School of Medicine, Boston, MA 02118. E-mail: rebecca.perkins@bmc.org

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Each year, 12 000 women are diagnosed with cervical cancer in the United States, and 4000 die of their disease.¹ Human papillomavirus (HPV) causes nearly all cervical cancer,² with genotypes 16 and 18 accounting for ~70% of cases.³ Currently available HPV vaccines^{4,5} prevent up to 98% of HPV type 16/18-related cervical dysplasia, and the quadrivalent vaccine also prevents vaginal, vulvar, and anal dysplasia as well as genital warts. Since the licensure of these vaccines, vaccine-type HPV prevalence (HPV types 6, 11, 16, and 18) has decreased by 56% among US 14- to 19-year-olds.⁶ Routine vaccination for boys and girls is recommended at 11 to 12 years of age. Catch-up vaccination is recommended through age 26 for girls but only through age 21 for boys with permissive recommendation through age 26.^{4,5} Vaccination is recommended early to minimize the likelihood of HPV exposure before vaccination; 48% of high school students nationwide are sexually experienced.⁷

However, the overall rates of initiating and completing the HPV vaccine series among US teen-aged girls are only 54% and 33%, respectively,⁸ and rates did not improve from 2011 to 2012. HPV vaccination is complicated because strong endorsement of its value by both parents and providers is accompanied by popular concerns about general vaccine safety and the propriety of administering a vaccine for a sexually transmitted disease.^{9,10} Provider recommendation is considered the most important factor in HPV vaccine uptake, but national data indicate that some parents believe that HPV vaccination is unnecessary even after speaking with providers, indicating communication gaps.¹¹ We conducted qualitative interviews with parents/guardians of vaccine-eligible girls of different backgrounds, races/ethnicities, and socioeconomic classes and their providers to determine why girls did or did not

initiate the HPV vaccine series from both parents'/guardians' and providers' points of view.

METHODS

Setting

The study was conducted between September 2012 and August 2013 in 1 inner-city public clinic and 3 private practices (1 urban, 2 suburban). The adolescent population served by the public clinic included 48% black, 26% Latino, 20% white, and 6% patients of other races; the private practices served 72% white, 12% black, 5% Latino, and 11% patients of other races. Seventy-five percent of patients at the public clinic had public insurance (eg, Medicaid) compared with 16% at the private clinics.

Participants

Parents and guardians accompanying their daughters aged 11 to 17 years to pediatric well-child visits or problem visits were eligible for inclusion. Trained research assistants reviewed practice schedules to identify eligible patients and approached their parents/guardians in the waiting areas to determine their interest in and availability to participate in 30-minute interviews either before or after scheduled visits; ~75% occurred after the medical visit. We sought a diverse sample of parents who self-identified as black (including African-American, Afro-Caribbean, Haitian, and African participants), white, Latino, or other. Parent/guardian interviews were performed in English, Spanish, and Haitian-Creole. Interviews were audio-recorded and transcribed verbatim. Non-English interviews were performed and transcribed by native speakers, then translated to English and back-translated to ensure accuracy. Parents/guardians received a \$20 gift card as compensation for their participation. Thirty-eight percent of those approached partici-

pated; most who declined cited time constraints.

Providers included pediatricians, adolescent medicine specialists, and nurse practitioners who provided primary care, including HPV vaccination at the public clinic and private practices. Providers were recruited through study physicians at each site; no compensation was provided. More than 80% of providers at private practices participated (20 of 23 primary care providers). Recruitment at the public clinic was terminated when additional interviews provided no new ideas (7 of 20 primary care providers).¹² We had previously interviewed 34 providers in public clinic settings, which allowed us to reach theoretical saturation more quickly in this group.^{13,14} Nurses responsible for administering vaccinations were also interviewed ($n = 7$). This study was approved by the institutional review boards of Boston University Medical Center and Harvard Vanguard Medical Associates.

Interviews and Data Analysis

Interviews were designed to elicit reasons why eligible girls did or did not receive HPV vaccination from the points of view of both parents/guardians and providers. Parents/guardians provided demographic information, daughter's vaccination status, perceptions related to parent-provider communication, and reasons for initiating or not initiating the HPV vaccine series. Provider interviews elicited attitudes toward HPV vaccination, common barriers encountered, and individual practice characteristics that facilitated or hindered vaccination. Each interview was coded separately by 3 to 6 researchers, and all codes were reviewed in a group to ensure coding consistency. Consistent with qualitative analysis, codes were generated from the data and revised after each coding session. Thematic analysis was performed after coding was completed.

Electronic Medical Record Review

Provider-verified electronic medical records were reviewed to confirm vaccination status in daughters of all participating parents/guardians. Documentation of HPV vaccination in the child's immunization record, a nursing note describing vaccine injection, or a pharmaceutical order for HPV vaccine was considered evidence of vaccination. No other medical information was reviewed.

RESULTS

Description of Participants

A total of 124 parents participated in interviews: 70 at the public clinic and 54 at the private practices. At the public clinic, 49% of respondents self-identified as black, 27% as Latino, and 18% as white; corresponding percentages were 12% black, 5% Latino, and 70% white at the private practices. Compared with the public clinic, more participants at the private practices were married, born in the United States, college graduates, had household incomes higher than \$60 000, and used private insurance (Table 1).

A total of 30 primary care providers (6 nurse practitioners, 24 physicians) and 7 nurses (registered nurse or licensed practical nurse) participated in the study (Table 2). Providers' individual estimates of their rates of girls initiating HPV vaccination ranged from 20% to 95%. The mean rate of provider-estimated HPV vaccine initiation was 67% at private practices compared with 80% at the public clinic. Electronic medical record review indicated that 54% of female subjects aged 11 to 21 years initiated HPV vaccination at private practices compared with 77% at the public clinic.

Reasons for Nonvaccination Described by Parents/Guardians

Fifty-three girls had not initiated HPV vaccination. The most common reason

TABLE 1 Demographic Characteristics of Parents/Guardians

Variable	Public Practice	Private Practice	P Value ^a
Total	67	57	
Age of parent/guardian, y			.06
Mean	42.7	45	
Range	26–65	29–65	
Age of daughter			.54
Mean	13.9	13.7	
Range	11–17	11–17	
Race n (%)			<.0001
White	12 (18)	40 (70)	
Black	33 (49)	6 (12)	
Hispanic	18 (27)	3 (5)	
Other	4 (6)	8 (13)	
Interviewee is			.87
Mother	54 (81)	48 (84)	
Father	9 (13)	7 (12)	
Guardian	4 (6)	2 (4)	
Interviewee gender			.85
Male	9 (13)	7 (12)	
Female	58 (87)	50 (88)	
Marital status			.0002
Married	27 (40)	38 (67)	
Single	20 (30)	4 (7)	
Divorced/widowed/separated	14 (21)	15 (26)	
Nonmarriage partners	6 (9)	0	
Country of origin			.002
United States	36 (54)	46 (81)	
Other	31 (46)	11 (19)	
Expressed a religious affiliation			.84
No	27 (40)	24 (42)	
Yes	40 (60)	33 (58)	
Education			.0009
Less than high school	13 (19)	4 (7)	
High school graduate	20 (30)	10 (17.5)	
Some college	16 (24)	9 (16)	
College graduate	16 (24)	24 (42)	
Postcollege	2 (3)	10 (17.5)	
Household income, \$			<.0001
<20 000	28 (42)	2 (4)	
21 000–40 000	19 (29)	6 (11)	
41 000–60 000	10 (15)	9 (16)	
61 000–100 000	6 (9)	15 (27)	
>100 000	2 (3)	24 (43)	
Insurance			<.0001
Public	50 (75)	8 (15)	
Private	17 (25)	47 (85)	

^a Analyzed according to *t* test, χ^2 test, or Fisher exact test.

for nonvaccination reported by parents/guardians was never being offered the vaccine (44%); many stated they would have accepted the vaccine if offered (Table 3). Girls who were not offered vaccination were younger than those who were offered vaccination but whose parents/guardians declined it (12 ± 1.3 years vs 13.5 ± 1.8 years; $P = .01$). Other demographic characteristics were similar, although the statistical power was

limited by small sample size. Another common parental perception was that HPV vaccination was optional, not recommended: "When [the doctor] said it to me it wasn't like, your daughter should have this, it was like this is an option. It's like, do you want tea or coffee." Other parents described a situation in which their provider indicated that HPV vaccination was unnecessary before sexual debut: "My older daughter, who will be 14

TABLE 2 Characteristics of Primary Care Providers (*n* = 30)

Variable	N (%) or Mean (Range)
Practice site	
Public	7 (23)
Private	23 (77)
Gender	
Male	8 (27)
Female	22 (73)
Training	
Physician	6 (28)
Nurse practitioner	24 (80)
Years in practice	15 (<1 to >30)
Providers' estimates of the proportion of their female patients who initiate HPV vaccination	
Public	80% (50%–95%)
Private	67% (20%–95%)
Providers' estimates of the proportion of parents who are aware of their children's sexual activity	35% (20%–60%)

in September, was offered the vaccine and I declined it just because I figured we still had some more time... [My doctor] asked me if I thought if she was sexually active and I said no and then she said that there was plenty of time." A few parents described situations in which providers discouraged vaccination: "[My daughter's doctor] says that he doesn't think there is a compelling reason to get it because he's not sure the benefits outweigh the risks at this point."

Reasons by parents/guardians for declining HPV vaccination included lacking information (21%), believing that their daughters were too young (13%), safety concerns (11%), believing that vaccination was unnecessary due to abstinence (5%), or concerns that vaccination could promote unsafe sexual practices (3%). Of 52 parents who had not initiated vaccination, however, only 3 stated that they would never accept it. The others described unmet educational needs related to vaccine safety and the rationale for early vaccination. One parent who had read about negative adverse effects on the Internet said she would accept vaccination if her physician said, "the side effects are so low, we've had no problems with it." Several parents did not understand the rationale for giving HPV vaccination in advance of sexual

debut: "I'm just thinking if it's passed sexually it doesn't seem necessary to put the drug in them that early if they're hopefully not sexually active at twelve or thirteen."

Providers' Practices Around Recommending HPV Vaccination

All providers we interviewed endorsed the importance of HPV vaccination and the expectation that it would provide benefits ranging from decreasing cancer rates to lowering health care costs. Although some providers described experience with sore arms or syncope, none had significant safety concerns. Self-described rates of HPV vaccination and the age at which vaccination was recommended varied dramatically according to provider and site, however. More providers at the private practices had reservations regarding vaccinating at age 11 years and coadministering HPV vaccines with other recommended immunizations than those at the public clinic. Providers at private practices also described more parental resistance to HPV vaccination. In both practices, however, some providers strongly recommended HPV vaccination while others did not, which was evident in the wide range of self-reported vaccination rates. As described by one nurse who administers

vaccinations for all providers at her practice: "There is one doctor we always give the HPV for, whereas most of the others we don't."

Providers at the public clinic preferred to administer all recommended shots at once, stating that many patients did not return annually for care. In contrast, private practitioners expected to see their patients each year and therefore placed less importance on achieving all vaccinations in a single visit. Several made statements such as: "I don't think most families are going to let these kids at this age have three shots at one time." Parents were also split: 60% of parents at private practices preferred 3 shots in 1 day, while 40% preferred separate appointments. Perhaps because private practitioners felt they would have an opportunity to vaccinate later, several developed a compromise position that involved introducing HPV vaccination at age 11 years but giving it later: "At 11 you usually get your tetanus update. You get your meningitis vaccine, and we start talking about your HPV vaccine."

Several providers described profiling their patients in terms of perceived risk of sexual activity to decide when to recommend HPV vaccination: "So I don't like to [present HPV vaccine to] 11 and 12 year olds... especially somebody who's low risk in terms of when they went into puberty and where they go to school and things like that." Profiling children according to perceived sexual risk sometimes led to de-prioritizing the HPV vaccine or using it as a "bargaining chip" to achieve other vaccinations, especially when interacting with vaccine-hesitant parents: "I'm trying to gain their trust... This is an eleven-year-old girl... she probably doesn't need [HPV] this year. If she got exposed to meningitis in her middle school, then I would feel a lot worse than if she is going to wait four years to probably start fooling around. So that's

TABLE 3 Summary of Barriers**Parents**

Parents are not offered vaccination

"I agree that I think the vaccine is a good idea so I would likely accept it if offered."—White father of 13-year-old, private practice

Parents perceive vaccine as optional or unnecessary at that time

"If we had said yes it would have been fine, if we had said no it would have been fine. Very optional."—White mother of 12-year-old, private practice

"[We didn't vaccinate because] she was kind of low risk... in terms of sexually activity, that sort of thing."—African-American mother of 14-year-old, public clinic

Parents perceive that their providers discouraged vaccination

"We changed doctors in this process and in fact I was rather distressed that [daughter's name]'s previous doctor recommended avoiding HPV vaccination for a couple of years which troubled me... this would have been when she was twelve, thirteen, maybe even fourteen... He just recommended waiting for more studies and I thought the evidence was pretty conclusive already... [We brought it up] multiple times and were fended off."—White mother of a 15-year-old, private practice

"I brought [HPV vaccination] up because I thought this was something that was being recommended and I had said, 'Do you feel that my daughter should get it?' And they felt, 'No, she doesn't really need to have it at this time.' And I didn't give it a second thought... I just kinda went with what the doctor said."—White mother of a 13-year-old, private practice

Parents want information about vaccine safety

"I would like to see studies about what the risk level is more accurately, I understand things on the Internet can be a little bit sensationalist, you know 'people did this and they died!' it's like yes, well people drive and they die too."—White mother of 13-year-old, private practice

"I'd rather have my child die of cervical cancer than her die of me giving her a vaccine."—White mother of 16-year-old, private practice

"I think it is important [to vaccinate] before they are sexually active. Like I said the more information I get in terms of the side effects will determine my ultimate decision."—African-American mother of 14-year-old, public clinic

Parents do not understand the reason to vaccinate at 11 to 12 years of age

"I thought that it didn't really make any difference as long as they had the three vaccines before their 20's."—White mother of 12-year-old, private practice

"It's like blaming a kid before they even get a chance to do anything."—African-American mother of 11-year-old, public clinic

Providers

Providers are reluctant to give multiple shots at 1 visit

"The 11 and 12 year olds I don't usually recommend it then just because they're getting other vaccines."—Pediatrician in private practice

"So, we're supposed to give it 11 but I tend to give it at 12 just because they're getting two other shots at 11 and if there's any real need to be giving it at 11 because they're sexually active then we have a much bigger problem than HPV."—Pediatrician in private practice

Providers introduce HPV vaccination at age 11 years but do not recommend it strongly

"At [the 11 year old] visit generally I anticipate that they're not going to do it and I talk to them about it."—Pediatrician in private practice

"I'd honestly say it's rare that I spend more than 20 seconds on it at 11... So few 11 year olds are physically mature to be sexually active that it's, I find it's almost sort of an awkward conversation."—Pediatrician in private practice

Providers recommend vaccination based on their estimation of sexual activity

"I rarely give it at 11 or 12. I most commonly give it in the like 8th, 8th to 10th grade range when sexual activity would put them at risk, rather than just an age. This is what I tell parents: it's very different than other vaccines because you can quantify your risk by what you're doing."—Pediatrician in private practice

"I don't think about that consciously, but when I think about it unconsciously when I see this skinny little upper middle class kid here, with parents, and they talk and they're barely doing anything, and I'd be shocked if they became sexually active at a really young age and to bring all this up with the parents have 20 other things they want to talk about, it seems low down on the list."—Pediatrician in private practice

Providers have limited experience with HPV disease and underestimate risk

"I don't get as scared of cervical cancer just because... the Pap test is another screening method. So the other things just feel more dramatic to me... and it's not like HPV is going to kill the boys."—Pediatrician in private practice

"It probably is more likely that they would die from meningococcal meningitis than die from cervical cancer."—Pediatrician in private practice

Providers perceive HPV as more emotionally charged than other vaccines

"If you have an 11-year-old boy and I'm supposed to talk about HPV, they're going to ask me why I'm recommending it, 'Well when your son grows up, you know, he, it'll prevent him from giving cervical cancer to his partner and it'll prevent them from getting penile warts.' This is a big discussion to have in front of a little 11-year-old, I don't even know what word they use for penis at 11."—Pediatrician in private practice

"Eleven feels really young. That being said, there's nothing to say it's not safe that young but I do, I kind of understand why parents want to wait a couple years. But I don't have... any specific safety concerns... I mean I'd probably do it [for my child]. Well I think I would almost do it more grade than age... So, I would say 7th and 8th grade. I think that's more appropriate."—Pediatrician in private practice

Both providers and parents know they are often unaware of timing of sexual debut

"It's probably only maybe 20% of the sexually active teens their parents know."—Pediatrician in private practice

"I feel like a lot of [teens], either say they're not doing anything or they're using condoms 100% of the time... but I've had a couple of pregnancies."—Nurse practitioner in private practice

"I know how kids are, you know? For what it's worth, I was sexually active from age 14 on and that was a long time ago."—White father of a 14-year-old, public clinic

"From what I understand the vaccine is safe, efficacious and I'd be a fool and also have amnesia to believe that high schoolers do not engage in unwise sexual practices at times."—White father of a 12-year-old, private practice

Delaying vaccination leads to nonvaccination

"A lot of teenagers don't think they need to come in because there are no real required shots after 11 and after 16 they feel kind of invincible."—Pediatrician in private practice

"That's an argument for doing it at 11 and 12 is that the child is more, the child's schedule is more under the parent's control at 11 and 12 than it is at 14, 15."—Pediatrician in private practice

when I'll usually bargain and I'll say, 'Well, why don't we do these two this year and then we'll do this one next year.'" Some providers also view HPV vaccination as more emotionally charged than other vaccines: "My friend who's an internist, she called me one day sort of out of despair. [Her daughter] got it, and her husband was aghast...I think unlike say a tetanus vaccine it has implications to the family; it's a bigger deal emotionally."

Parents' and Providers' Opinions on the Accuracy of Predicting Sexual Debut

Because HPV is transmitted sexually, and neither parents nor providers want children to be sexually active in their preteen or early teen years, providers often tacitly supported parents' belief that delaying HPV vaccination is a good idea: "When you get [HPV vaccination] is your choice. You should absolutely get it before your child is sexually active.... But do you have to get it today? No." When questioned directly about parents' and even providers' abilities to accurately gauge a child's risk for sex, however, all admitted that their abilities were limited. Two providers, one at a private practice and the other at the public hospital, emphasized that teenagers' behaviors were equally risky regardless of their race, cultural background, or socioeconomic status. The private practitioner noted only differences in "what the parents think they're doing... and probably the wealthier children are doing more because they can afford it.... drugs, or sex or whatever. The whole morass has changed and sex is just sex now....It would be like taking out a stick of gum and chewing it." When asked, providers universally stated that most parents were unaware of teenagers' sexual activity. Parents also understood their limitations, as expressed by this parent whose 12-year-old-daughter attended the private practice: "To pretend that

[sex] doesn't exist or that teenagers are not sexually active is to be putting one's head in the sand." One experienced adolescent provider at the public hospital summed up her experience: "A teenager should be seen as a teenager, it doesn't matter what background."

Delaying Leads to Nonvaccination

Most providers and parents who delayed vaccination at age 11 or 12 years did so with the intention that the child would receive the vaccine later. In many cases, however, vaccination never occurred. One parent of a 15-year-old stated that her daughter "was offered vaccination I think two years ago. And [the doctor] said that...we didn't have to do it right then and there, we had time. We can wait but it's better to do before she's sexually active." However, the vaccine was not brought up again, and the child remained unvaccinated. A senior pediatrician with decades of experience running immunization programs stated: "We know that if you don't get a vaccine the first time you mention it, the chances of getting kept up to date are considerably less over time."

Successful Approaches to Achieve Vaccination

Providers who reported that >80% of their patients receive HPV vaccination ($n = 10$) found that always recommending coadministration of HPV, tetanus, and meningococcal vaccines and emphasizing cancer prevention led to higher uptake. One pediatrician stated: "When I changed my practice based on recommendations from colleagues, we stopped making it a big debate and I just say that I recommend this vaccine because it's part of the routine schedule. I've just gotten a lot less push-back." In addition, parents trusted provider recommendations, often citing that recommendation as the primary or only reason they vaccinated

(Table 4). Providers also discussed the importance of the strength with which they recommend vaccination: "I think if you expect a yes, you'll get a yes, more often than not." One parent described the clear, strong message from her pediatrician at the private practice: "[My doctor explained that] the side effects are minimal to non-existent. It's not going to hurt her. It's going to help her." Providers also stated that preventing cancer was the primary motivator for most parents/guardians: "Cancer is a scary word and I think that's the driver for a lot of families." Parents agreed: "Just thinking in the long run, anything that would protect from any cancer down the road just seemed to make sense to me."

DISCUSSION

The literature to date indicates that strong provider recommendations are the key to uptake¹⁵ but also that providers prefer to recommend HPV vaccination to older rather than younger teens^{10,16,17} and that missed opportunities are the primary reasons for nonvaccination.¹⁸ However, the intricacies and nuance of how those missed opportunities occur among well-intentioned providers and parents who wish to protect adolescents from developing cancer as adults have been missing. We found more parental and provider hesitation regarding HPV vaccination at private practices compared with public clinics; however, most parents and providers expressed similar viewpoints regardless of their sociocultural backgrounds or places of work. Among our sample of vaccine-eligible girls, we found that delay (not refusal) most commonly caused nonvaccination, and that providers and parents are complicit in the reasons for delay. Although parents often began an argument for vaccine delay in terms of safety concerns, more probing questioning often uncovered a desire to

TABLE 4 Summary of Successful Techniques**Parents**

Parents want to prevent cancer

"It's important for her to get the HPV vaccine cause it can prevent cervical cancer. I just wanted my daughter to have every chance to not get HPV. And also to protect her from cervical cancer. She's still a virgin thank god! But if she ever did have sex with multiple partners, to be able to protect her from that."—African-American mother of 15-year-old, public clinic

"Just thinking in the long run, anything that would protect from any cancer down the road just seemed to make sense to me."—White mother of 14-year-old, private practice

Parents trust provider recommendations

"Because her doctor knows, just like I know. Because her doctor has been with her since she was born." —African-American mother of 16-year-old, public clinic

"I trust my doctor's advice and I also think there has been enough research to prove that the vaccine is effective so I felt that it was important to go ahead."—White mother of 15-year-old, private practice

Parents think benefits outweigh risks

"It's a harmless vaccine and could have life-saving qualities."—White parent of 15-year-old, public clinic

"Since I can't control everything I thought I'd rather have her protected"—Latino parent of 17-year-old, private practice

Parents want a strong recommendation

"I want someone to say to me 'you need to do this for your daughter, you're doing the right thing.' Because people are unsure and they're afraid and they don't want to make a decision that's going to hurt their child."—White mother of 12-year-old, private practice

Providers emphasize cancer prevention

"I also point out this is pretty much the only vaccine we have that prevents a kind of cancer. That's something that is a big deal."—Pediatrician in private practice

"My husband knew somebody who had mouth and throat cancer too... maybe if that person had the HPV vaccine it would have protected them."—Pediatrician in private practice

"I'll start a conversation by saying, 'In your experience with your health right now, you may be screened for cervical cancer by means of a Pap smear... because cervical cancer can obviously be something that can be life-threatening but if caught soon, it can be taken care of, and this is how your health is impacted by this virus right now. Well, children now have the option of getting this vaccine which is actually very effective at reducing the risk for contracting that same virus.'"—Pediatrician at the public clinic

Providers

Providers normalize the HPV vaccine/coadminister with other vaccines

"What I've been doing is saying to them, 'Okay, after the first push in the first two years of life when babies get vaccines at every visit, the next big push is at 4 and the next big push is at 11' and so that they're, they know this is when I'm going to be doing it. I think that's helpful... Most of the time I don't get questions. I give a little, tiny spiel about each of them so that they're all seen as kind of equal."—Pediatrician at public clinic

Providers give a strong recommendation

"In my experience, it's the confidence with which I make the recommendation that seems to be the most convincing because my patients know me, and so if I say,

'You need this,' they say, 'Okay, if you say I need it, I need it.'"—Pediatrician at public clinic

"Maybe [age 13–14 is] subconsciously where I flip the switch, and maybe I'm not doing a hard enough sell at 11."—Pediatrician at private practice

avoid broaching the subject of their daughters' sexuality; thus, concerns became intertwined and more difficult for providers to address. To avoid delicate conversations or intruding on parents' beliefs about adolescent sexuality, HPV vaccination becomes an issue of timing. However, although the probability of sexual debut increases with age, the behavior of each child is not only unknown¹⁹ but, as admitted by both parents and providers, is unpredictable and often underestimated.²⁰ Despite the best intentions of parents and providers, delays meant to be temporary often result in permanent failure to initiate vaccination, due to lack of returning for well-child visits, failure to revisit the issue, or continued reluctance to address teen sexuality. Thus, despite a general consensus between

parents and providers that vaccination is important, nearly one-half of all teen-aged girls remain unprotected. This fact is especially concerning because new evidence indicates that HPV vaccination is twice as effective before age 14 years compared with aged ≥ 15 years.²¹

Effective and simple ways to achieve vaccination, as described by providers whose vaccination rates exceed 80%, are normalizing the HPV vaccine, encouraging coadministration of HPV vaccine as recommended with the tetanus and meningococcal vaccines, focusing on cancer protection benefits, and emphasizing vaccine safety. Providers also spoke to the importance of a strong recommendation, or "expecting a yes," a sentiment that is supported by recent research demonstrating the importance of providers expressing a clear

opinion to parents that vaccines are beneficial and being directive in their recommendations for early childhood vaccinations.²²

Mothers are the primary decision-makers related to children's health care, and some providers have found that tying HPV vaccination to maternal cervical cancer screening is very powerful in terms of helping parents to understand why vaccination is recommended. Both parents and providers expressed that information in advance of the actual vaccine visit would be helpful. Such anticipatory guidance could be given as handouts at physicals before age 11 years, verbal reminders, or practice-wide informational mailings. These methods would expand the opportunity to reinforce the benefits and proven safety of coadministering

all recommended adolescent vaccines at the 11-year-old visit.

Because many pediatric providers have little experience with HPV-related diseases, they underestimate the consequences of HPV infection in their patients,²³ which in turn decreases their perceptions of vaccine benefits.¹⁴ Many lack information or feel uncomfortable addressing parents' concerns about topics such as vaccine safety and vaccination against a sexually transmitted disease.^{23–26} Mechanisms to improve vaccination rates include national initiatives, such as the Center for Disease Control and Prevention's "You are the Key to HPV Cancer Prevention" education campaign aimed at providers, and the President's Cancer Panel's call for HPV vaccination research as a national priority.^{24,27,28}

This study was qualitative and, as such, is subject to limitations including a small, nonrandom sample of participants and geographic constraints that

may limit generalizability to other areas of the United States. However, our sample represents urban and suburban families of varied cultural, linguistic, racial/ethnic, and socioeconomic backgrounds, as well as providers of varied ages, backgrounds, and experience practicing in different settings. In addition, our findings are consistent with those of other survey studies.²⁹ Provider estimates of vaccine initiation rates were self-reported, which can reduce accuracy. Electronic medical record data from participating clinics indicate that providers overestimated vaccine initiation rates by an average of 3% at the public clinic and by 13% at the private practices. In addition, this article addresses only vaccine initiation (completion of the series involves different issues).

CONCLUSIONS

Many missed opportunities for HPV vaccination occur not because parents and providers feel that vaccination is

unimportant but because both parties tacitly agree to delay vaccination until there is a perception that girls are at risk for sexual activity. Although in theory this option should still result in timely vaccination, determining the onset of sexual activity in practice is problematic, and many girls remain at risk for vaccine-preventable cancers. A commitment by providers to strongly recommend HPV as a cancer prevention vaccine, and to recommend coadministration with tetanus booster and meningococcal vaccines routinely at age 11 years,²⁸ has the potential to greatly decrease missed opportunities.

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