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Provider Response and Follow-up to Parental Declination of HPV Vaccination

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Abstract

Objective.—Parents often decline HPV vaccination, but little is known about how healthcare providers should promote vaccination at a later visit for secondary acceptance. We examined the associations of two factors, providers' response to declination during the visit and follow-up after the visit, with secondary acceptance.

Methods.—We conducted a cross-sectional survey of US parents whose 9- to 17-year-old child had not yet completed the HPV vaccination series. Parents who declined HPV vaccination during an initial discussion with a provider ($n=447$) reported whether their provider engaged in any active response during the visit (e.g., giving information, trying to change their mind) or any follow-up after the visit (e.g., scheduling another visit). We conducted multivariable logistic regression to determine whether an active response or follow-up was associated with secondary acceptance of HPV vaccination.

Results.—Only about one-third of parents reported an active response during the visit (35%) or follow-up after the visit (39%) following HPV vaccination declination. Parents had higher odds of secondary acceptance of HPV vaccine if they received any provider follow-up after the visit

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Declaration of interests

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(43% vs. 20%, aOR:3.19; 95% CI:2.00:5.07). Receipt of an active provider response was not associated with secondary acceptance. More parents thought a provider should actively respond and follow-up (61% and 68% respectively), compared with those who received such a response (both $p < .01$).

Conclusions.—Providers' follow-up after the visit may be important for promoting secondary acceptance of HPV vaccination. Parents who decline HPV vaccination often prefer to receive an active response or follow-up from a provider.

Keywords

adolescent health; human papillomavirus infections/prevention & control; human papillomavirus vaccine; patient-provider communication

INTRODUCTION

HPV vaccination prevents the majority of HPV cancers [1], but vaccine uptake remains suboptimal [2]. One factor contributing to low uptake is parental refusal and intentional delay (or “declination”) of HPV vaccination, which ranges from 30% to 36% in national surveys of US parents [3, 4]. This level of declination is far higher than for other adolescent vaccines, such as tetanus, diphtheria, and acellular pertussis (~2%) or meningococcal vaccine (5%) [5]. Although research consistently demonstrates the importance of providers in initially recommending HPV vaccination [6-9], little is known about how providers can effectively encourage “secondary acceptance,” or HPV vaccination at a later visit, among those who initially decline.

Providers can encourage parents who initially decline vaccination for their child through actions such as responding to declination during the visit or following-up after the visit. Existing research suggests that additional action from a provider may be effective at increasing HPV vaccination at a later timepoint [10]. For example, one study found that parents had higher odds of secondary acceptance if they initially received a high-quality HPV vaccination recommendation and if they received follow-up counseling from a provider. However, only about half of parents who declined HPV vaccination (52%) reported receiving follow-up counseling [10]. Providers frequently report offering parents reassurances of safety, providing written information and asking questions to probe concerns [11]. To date, whether and how these specific actions are associated with parents' HPV vaccination perceptions and behavior is unknown.

The Increasing Vaccination Model offers a useful framework to understand how provider communication might increase secondary acceptance [12]. This model proposes that three general psychological principles motivate vaccination: 1) thoughts and feelings, such as risk appraisals and vaccine confidence; 2) social processes, such as social norms, altruism; and 3) direct behavior change, such as reminders and prompts, that leverage favorable intentions to vaccinate without changing thoughts and feelings. Provider response and follow-up to parental declination can address these psychological processes. For example, a provider could address thoughts and feelings by actively responding to parents' questions and concerns during the visit when parents decline HPV vaccination. Providers can also

follow-up after the visit with reminders that cue parents to action in ways that promote direct behavior change. Thus, a provider may be able to increase secondary acceptance through an active response during the visit or follow-up after the visit. The Increasing Vaccination Model suggests direct behavior change as the most effective mechanism by which to intervene to improve vaccine uptake, but whether that is true in the case of secondary acceptance has never been tested.

To better understand how providers can encourage secondary acceptance, this study sought to characterize how providers respond during the visit and follow-up after the visit to parental declination of HPV vaccination and to determine how a provider's actions upon parental declination are associated with secondary acceptance. We also sought to compare what parents reported receiving in terms of response and follow-up upon declination to what they wanted to receive. Understanding how providers can effectively communicate with parents who decline vaccination is critical to ensuring that providers deliver quality care and maintain rapport with parents.

METHODS

Data source and sample

We conducted an online, cross-sectional survey of U.S. parents of adolescents from November 2017 to January 2018. Study participants were members of an existing, national panel of non-institutionalized adults maintained by Gfk, a survey company [13]. The company constructed the panel from a probability-based sample of U.S. households using address-based sampling frames. Eligible respondents were parents of at least one 9- to 17-year-old child who either had not initiated the HPV vaccine series or had received only the first dose in the multidose series. We focused on parents of children who were not fully vaccinated because they are a high priority for vaccine promotion efforts. Parents with more than one eligible child answered survey items about the child with the most recent birthday.

The survey company emailed a random sample of 2,857 parents from the panel to participate in the survey. A total of 1,834 invited parents completed the online screener to confirm having an age-eligible child with 0-1 dose of HPV vaccine. Of these, 1,313 (72%) met eligibility criteria, provided informed consent, and completed some portion of the survey. We excluded 50 panelists who did not complete at least two-thirds of the survey, resulting in a final sample of 1,263 parents. The response rate was 61%, using American Association for Public Research Response Rate 4 calculation [14]. The analytic sample for this study consisted of 447 parents who reported refusing or delaying HPV vaccination during an initial discussion with their child's provider about HPV vaccine. The Institutional Review Board at the University of North Carolina at Chapel Hill approved the study protocol (IRB# 17-0451).

Measures

Secondary acceptance.—We measured the child's vaccination status at the time of the survey using the question, "How many shots of the HPV vaccine has [NAME] had?" If the

parent reported that the child had received 1 dose of HPV vaccine, we coded the parent as having achieved secondary acceptance.

Provider active response during the visit.—The survey asked about actions providers took after the parent initially declined HPV vaccination for their child. We coded parents as receiving an active provider response if they reported their provider did one or more of the following: “give more information,” “offer to talk about the HPV vaccine again at a later visit,” “try to change your mind,” or “ask you to sign a form confirming that you refuse to vaccinate.” Those who did not receive an active response from their provider were those who reported that their child’s provider instead did one or more of the following: “accept your decision,” “move on with the visit without much comment,” or “none of the above.”

Provider follow-up after the visit.—The survey measured whether a provider followed-up after the visit by: “scheduling another visit to talk about it again,” “bringing it up again at the next check-up,” or “sending a reminder (phone, text, email or mail).” A parent reporting any of these actions was coded as receiving provider follow-up and, if none of these behaviors were reported, coded as no provider follow-up.

Parents’ negative decisional affect.—The survey measured parents’ affect during the visit when the initial discussion occurred using a single item, “At that visit, how did you feel about your HPV vaccine decision?” Parents reported that they felt one or more of the following: worried, unsure, annoyed, uncomfortable, at ease, confident, relieved, optimistic, or none of these. We dichotomized parents who reported feeling any negative affect (e.g., annoyed, worried, uncomfortable, or unsure) versus only positive affect (at ease, confident, relieved, optimistic) or “none of these.”

Parents’ discomfort with the visit.—The survey measured parents’ discomfort with the visit using one item, “How did your conversation about the HPV vaccine affect that visit with [NAME]’s doctor or health care provider?” Responses consisted of a five-level scale from “much less comfortable” to “much more comfortable.”

Parents’ preferred provider response.—The survey measured parents’ perceptions of what action(s) provider should take during the visit when a parent decides not to get HPV vaccine. Response options were the same as for *provider response during the visit*.

Parents’ preferred provider follow-up.—The survey also included an item assessing parents’ perceptions of what action(s) a provider should take to follow-up after the visit when a parent decides not to get HPV vaccine. Response options were the same as for *provider followup after the visit*.

Provider recommendation.—Parents indicated whether the adolescent had received a recommendation for HPV vaccination from a provider (yes/no) when they had the initial discussion with the provider.

Adolescent and family characteristics.—Also included in the survey were items capturing the child’s age, sex at birth (male vs. female), and race/ethnicity (non-Hispanic

Black, non-Hispanic White, Hispanic, or non-Hispanic other race/multiple races). The survey company provided self-reported data on annual household income, parent's gender (male vs. female), and the education status of the parent completing the survey (high school or less versus some college or more).

Statistical Analysis

For each provider response and follow-up action, we reported the proportion of parents who received a response and follow-up action and the proportion who reported that a provider should engage in a specific response and follow-up action. We used chi-square tests to assess whether a greater proportion of parents reported that their provider should take an action versus did take the action.

We specified a multivariable logistic regression model examining secondary acceptance as the dependent variable and provider active response during the visit and provider follow-up after the visit as independent variables. The model included child and parent socio-demographic variables that have been found to correlate with HPV vaccine uptake in previous studies: child's sex at birth, child's age, parent's education, race/ethnicity, and annual household income in addition to provider recommendation for HPV vaccination [4, 15-18]. We also included negative decisional affect and discomfort with the visit as covariates.

Because most parents who received follow-up from a provider reported that the provider brought it up again at the next visit, we ran a sensitivity analysis in which we replaced provider follow-up with this action alone to determine if associations differed. The direction and significance of our findings remained the same, and therefore, we do not report further on this analysis. All analyses were conducted in SAS (version 9.4), and unweighted statistical tests were two-tailed with a critical α of 0.05.

RESULTS

Adolescent and parent characteristics

Most parents in our sample identified as non-Hispanic white (71%), non-Hispanic Black (10%), or Hispanic (11%) (Table 1). Most parents had an annual household income of over \$75,000 (61%) or between \$35,000 and \$74,999 (24%). About half had an education of college or more (47%). Our sample included parents from all four US Census regions.

Provider response during the visit

Approximately one-third of parents received any active response from their provider after declining HPV vaccination (35%; Table 2), but almost two-thirds indicated that a provider should take an active response (61%, $p < .01$, Figure 1). More parents reported that a provider should offer to talk about HPV vaccination at a later visit (34%) compared to those who reported their provider did offer (21%, $p < .01$). Similarly, more parents wanted providers to give more information (38% vs. 12%) or ask them to sign a form confirming refusal to vaccinate (8% vs. 1%, all $p < .01$) than those that reported that their provider did so. In

contrast, fewer parents wanted the child's provider to try to change their minds (3% vs. 8% , $p<.01$).

Provider follow-up after the visit

Over one-third of parents who declined HPV vaccination received follow-up from the provider after the visit (39%). Overall, more than two-thirds of parents (68%) reported that a provider should follow-up after the visit when parents decline HPV vaccination, significantly more than those who reported receiving such follow-up ($p<.01$). More parents indicated a provider should bring HPV vaccination up again at the next visit (58%) than those that reported their provider did so (34%, Figure 2). Similarly, more parents indicated that a provider should send a reminder (11% vs. 4%) or schedule another visit to talk about vaccination (8% vs. 4%, all $p<.01$) than did so.

Negative affect and discomfort with the visit

When asked about discomfort with the visit, only a minority of parents reported feeling somewhat less comfortable (9%) or much less comfortable (2%) after the visit. When asked how they felt about their decision, a minority of parents reported any negative decisional affect (38%) during the visit. Among those reporting negative decisional affect, parents most commonly reported feeling unsure (29%), followed by uncomfortable (12%), worried (9%), or annoyed (5%).

Correlates of secondary acceptance

Overall, 29% of parents who initially declined HPV vaccination reported later vaccinating their child. Parents had higher odds of secondary acceptance if they received followup from a provider (e.g., scheduling another visit, bringing it up again at the next visit), controlling for adolescent and parent characteristics (43% vs. 20%, aOR: 3.19; 95% CI: 2.00:5.07; Table 3). Receipt of an active response from a provider (e.g., offering to talk at a later visit, giving more information) and negative decisional affect were not associated with odds of secondary acceptance. Discomfort with a provider was associated with lower odds of secondary acceptance (aOR: 0.50; 95% CI: 0.34:0.72).

DISCUSSION

Using data from a national sample, we found that only about one-third of parents received an active response to HPV vaccination declination during their visit or follow-up after their visit. Follow-up after the visit was associated with secondary acceptance, although an active response from a provider was not. We also found more parents wanted an active provider response and follow-up compared to those that reported receiving one. Finally, relatively few parents reported experiencing discomfort during the visit or negative decisional affect.

Our study suggests that follow-up after the visit may be a crucial time for intervention to increase HPV vaccination coverage. Follow-up, which most often consisted of the provider discussing HPV vaccination at the next visit, was associated with secondary acceptance of HPV vaccination. This finding is consistent with an earlier study that found that follow-up counseling at a later visit was associated with increased odds of secondary acceptance

[10]. Aligned with the Increasing Vaccination Model [6], the provider follow-up actions we measured (i.e., bringing up vaccination at the next visit, scheduling another visit, or sending a reminder) may change behavior by cuing parents with existing favorable intentions to vaccinate. The additional follow-up may have re-emphasized the importance of vaccination while also respecting parents' wish for more time to make a decision.

Notably, we did not observe an increase in secondary acceptance with an active response during the visit. Some of the provider active responses may have been attempting to change parents' thoughts and feelings, which has shown less promise than attempts to directly intervene on behavior, such as sending reminders [12]. Providers may not be responding effectively enough to sufficiently change thoughts and feelings in a fashion that would lead to secondary acceptance. Providers often respond to parental requests to delay HPV vaccination in a manner that suggests vaccination is optional and not urgent [19] or that gives parents implicit permission to delay HPV vaccination [20]. Thus, providers who engage in an active response (e.g., giving more information, offering to talk at a later visit) may also be inadvertently using language that diminishes the vaccine's importance. Alternately, providers who are too assertive may unintentionally cause reactance, in which people act in opposition to health messages as a means of retaining control [21]. Several promising communication techniques to address vaccine hesitant parents exist, including motivational interviewing, although none have yet been evaluated in isolation from multicomponent HPV vaccination interventions [6, 22].

Our findings also suggest that parents who initially decline HPV vaccination would like for a provider to respond and follow-up more often than they actually do. A higher proportion of parents endorsed "giving more information" and "follow-up at the next visit" as actions a provider should take compared with the proportion of parents that reported their provider took those actions. These findings suggests that many parents are open and receptive to additional response and follow-up from providers when they initially decline HPV vaccination. The American Academy of Pediatrics (AAP) recommends that providers encountering parental declination should listen respectfully to parents to understand their concerns and engage in non-confrontational dialogue about vaccine safety and the risks and benefits of immunization [23]. The AAP also notes that providers can give more information or ask the parents to sign a waiver at the provider's discretion. Our study suggests that providers infrequently engage in these actions, and their association with secondary acceptance is yet to be fully understood. The low proportion of parents reporting that their provider engaged in active response and follow-up is striking, given that almost all pediatricians report encountering parents hesitant about vaccination [24].

Our study also examined the role of negative decisional affect and discomfort during the visit in parental declination. Few parents reported experiencing negative decisional affect or discomfort with the visit, and the most common response was feeling unsure, which could potentially indicate that parents were appropriately contemplating a provider's advice. Stronger negative decisional affect, such as feeling worried or annoyed, was less commonly reported. The infrequency of strong negative decisional affect and discomfort with the visit among parents should ease concerns that some providers have about the potential for

confrontational, timeconsuming conversations surrounding HPV vaccination due to parents' opposition [25, 26].

Our study points to several potentially fruitful areas for future research. Future studies should examine whether specific aspects of a provider's active response (e.g., specific messages) or follow-up are more successful than others at increasing secondary acceptance. In our sample, few parents received reminders or had an additional visit scheduled to talk about vaccination. Understanding whether these specific actions are effective follow-up provider actions would identify specific, actionable strategies that providers can use to increase secondary acceptance. Use of reminders for HPV vaccination have shown some, albeit inconsistent, promise at increasing HPV vaccination initiation and completion in clinical trials, suggesting that this approach may be a useful strategy for increasing secondary acceptance [27-29]. Future research could also examine whether concordance between a provider's response to HPV vaccination declination and a parents' preferred response could increase secondary acceptance.

Strengths of this study include a national sample and a focus on a novel and understudied aspect of HPV vaccination (parents' report of provider response to HPV vaccination declination). The major limitation of this study is its retrospective, cross-sectional design, which precludes assertions regarding causal inference. Although surveying parents on their affect and response to a patient-provider conversation separately from the conversation may not be possible, measuring whether change in the outcome came after the patient-provider conversation could strengthen the ability to make causal inferences. Additionally, the self-reported nature of HPV vaccination status and parents' decision during the first conversation is subject to recall bias. Depending on a child's age, the initial discussion could potentially have occurred several years prior to the survey, and parents may not accurately recall their initial decision as well as the emotions and comfort with the provider. Furthermore, parents who had a more recent discussion with their provider may not have had sufficient time to either receive provider follow-up or to vaccinate their child after initially declining. Likewise, although self-report of HPV vaccination initiation is fairly reliable [30], it is subject to error and recall bias. Use of an online survey panel may limit appropriateness of generalizing study findings to other populations (particularly less affluent populations). For the provider active response and provider follow-up variables, parents could have selected "none of these" if their provider engaged in another response or follow-up action that was not listed on the survey. For several negative decisional affect items (e.g., worry or fear), we do not know whether parents felt the negative affect concerning vaccination (e.g., worried about the harms of vaccination) or concerning the failure to vaccinate (e.g., worry about their child getting cancer). Finally, although this study focused on parents' perspectives, provider perspectives are also important to consider when assessing associations between provider actions and secondary acceptance.

Conclusions

HPV vaccination declination is a pressing public health problem. Our study underscores the urgent need to understand how providers can effectively communicate with parents who decline HPV vaccination. The majority of parents who decline do not receive an active

response from their provider during the visit or follow-up after the visit, although they are receptive to such actions and rarely report experiencing discomfort with the visit or negative decisional affect when receiving such actions. Follow-up at the next visit emerged as a particularly salient action that more providers could potentially incorporate into clinical care.

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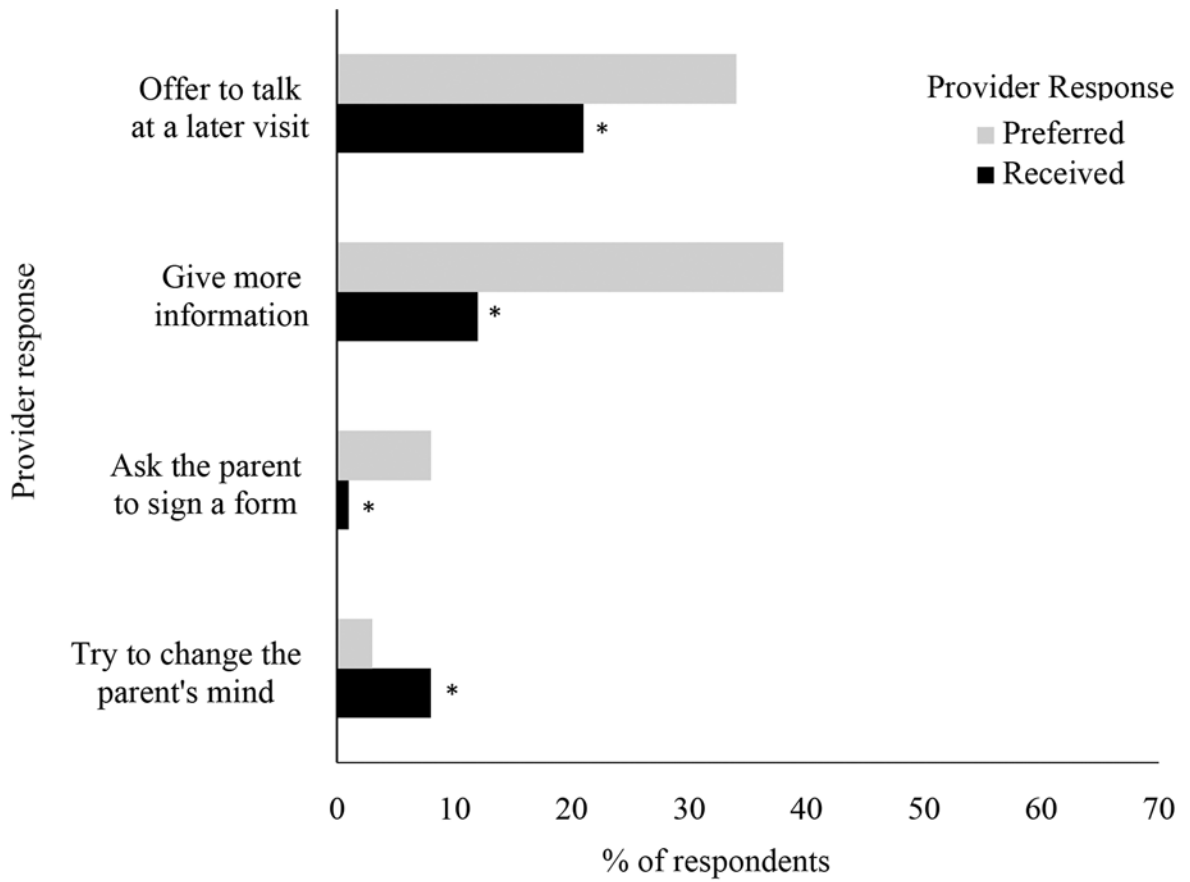


Figure 1. Parents' preferred provider response versus provider response received, * $p < 0.01$

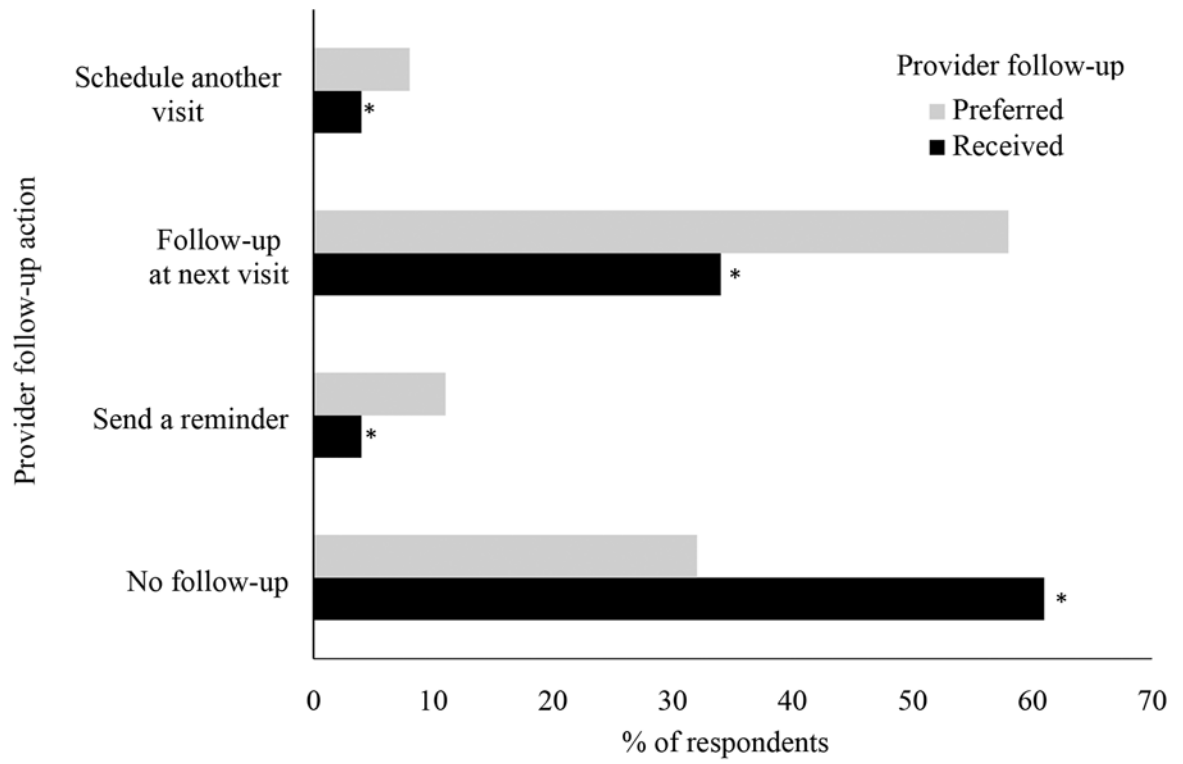


Figure 2. Parents' preferred provider follow-up versus provider follow-up received, * $p < 0.01$

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Table 1.Sample characteristics, United States, 2017 (*n*=447)

	<i>n</i>	(%)
Adolescent characteristics		
Sex at birth		
Male	218	(49)
Female	229	(51)
Age (years)		
9-10	74	(17)
11-12	116	(26)
13-14	105	(23)
15-17	152	(34)
HPV vaccination status		
0 doses	318	(71)
1 dose	129	(29)
Parent characteristics		
Gender		
Male	193	(43)
Female	254	(57)
Education		
Some college or less	238	(53)
College degree or more	209	(47)
Race/ethnicity ¹		
Non-Hispanic White	321	(71)
Non-Hispanic Black	43	(10)
Hispanic	49	(11)
Non-Hispanic other/multiple race	34	(8)
Household characteristics		
Annual income		
\$0-\$34,999	64	(14)
\$35,000-\$74,999	109	(24)
\$75,000	274	(61)
Region		
Northeast	70	(16)
Midwest	119	(27)
South	157	(35)
West	101	(22)

¹Race/ethnicity categories were mutually exclusive

Table 2.Visit characteristics, United States, 2017 (*n*=447)

	<i>n</i>	(%)
Provider response to declining HPV vaccine		
<i>Active Response</i>		
Offer to talk about the HPV vaccine again at a later visit	95	(21)
Give you more information	52	(12)
Try to change your mind	37	(8)
Ask you to sign a form confirming that you refuse to vaccinate	6	(1)
<i>No active response</i>		
Accept your decision	240	(54)
Move on with the visit without much comment	85	(19)
None of these	68	(15)
Effect on visit		
Much less comfortable	10	(2)
Somewhat less comfortable	40	(9)
Neither more nor less comfortable	350	(78)
Somewhat more comfortable	31	(7)
Much more comfortable	16	(4)
Decisional affect		
<i>Negative</i>		
Unsure	130	(29)
Uncomfortable	52	(12)
Worried	42	(9)
Annoyed	22	(5)
<i>Positive or other</i>		
Confident	131	(29)
At ease	98	(22)
Relieved	8	(2)
Optimistic	36	(8)
None of these	54	(12)
Provider follow-up		
Scheduling another visit to talk about it again	20	(4)
Bringing it up again at the next check-up	151	(34)
Sending a reminder (by phone, text, email, or mail)	16	(4)
None of these	273	(61)
Secondary acceptance of HPV vaccination		
Yes	129	(29)
No	318	(71)

Table 3.Associations of active provider response and provider follow-up with secondary acceptance (*n*=447)

	Secondary acceptance					
	n/N	(%)	OR	(95% CI)	aOR	(95% CI)
Active provider response						
No	81/291	(28)	1.00	--	1.00	--
Yes	48/156	(31)	1.15	(0.75:1.76)	0.97	(0.60:1.57)
Provider follow-up						
No	55/273	(20)	1.00	--	1.00	--
Yes	74/174	(43)	2.93	(1.92:4.47)**	3.00	(1.89:4.76)**
Discomfort with provider	--	--	0.55	(0.39:0.77)**	0.50	(0.34:0.72)**
Negative decisional affect						
No	79/276	(29)	1.00	--	1.00	--
Yes	50/171	(29)	1.03	(0.68:1.57)	1.09	(0.68:1.74)
Provider recommendation						
No	28/143	(20)	1.00	--	1.00	--
Yes	101/304	(33)	2.04	(1.27:3.30)*	2.24	(1.32:3.77)*
Child age	--	--	1.05	(0.97:1.14)	1.00	(0.91:1.09)
Child sex at birth						
Male	57/218	(26)	1.00	--	1.00	--
Female	72/229	(31)	1.30	(0.86:1.96)	1.10	(0.71:1.72)
Parent education						
Some college or less	73/238	(31)	1.00	--	1.00	--
College degree or more	56/209	(27)	0.83	(0.55:1.25)	0.72	(0.44:1.19)
Annual household income	--	--	1.02	(0.97:1.07)	1.04	(0.97:1.10)
Parent race/ethnicity						
Non-Hispanic white	84/321	(26)	1.00	--	1.00	--
Non-Hispanic Black	17/43	(40)	1.85	(0.95:3.57)	1.48	(0.71:6.26)
Hispanic	12/49	(25)	0.92	(0.46:1.84)	0.93	(0.77:1.12)
Non-Hispanic other/multiple race	16/34	(47)	2.51	(1.22:5.14)**	2.86	(1.31:6.26)*