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Pediatric provider vaccine hesitancy: An under-recognized obstacle to immunizing children

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ABSTRACT

Objective: To describe vaccine attitudes among pediatric healthcare providers attending immunization conferences.
Study design: Attendees of 5 American Academy of Pediatrics (AAP)-sponsored vaccine conferences held between June and November 2013 anonymously completed a questionnaire assessing vaccine attitudes and practices prior to the opening of educational sessions. Pearson's chi-square tests and Fisher's exact tests were used to analyze associations between vaccine attitudes, vaccine practices and provider characteristics.
Results: 680 providers attending AAP-sponsored vaccine conferences were included. 661/666 (99%) enrolled providers state they routinely recommend standard pediatric vaccines, yet, 30 (5%) state that they do not routinely recommend influenza and/or human papillomavirus (HPV) vaccines. These providers expressed vaccine safety (87/680 (13%)) and efficacy (21/680 (31%)) concerns and stated belief in vaccine misperceptions: vaccine causes autism (34/668, 5%), multiple vaccines at a single visit reduces vaccine efficacy (43/680, 6%) or overwhelms the immune system (63/680, 9%), and administering HPV vaccine will increase the likelihood of unprotected adolescent sexual activity (29/680, 4%). Six percent of providers who do not routinely recommend all pediatric vaccines correctly identified themselves as vaccine hesitant.
Conclusion: Vaccine hesitancy is under-recognized among pediatric providers attending AAP-sponsored immunization conferences. Educational interventions tailored to address provider vaccine concerns are needed to improve provider vaccine confidence.

1. Introduction

Immunization programs are among the safest and most effective public health interventions known. In the United States, vaccination programs have been so effective that many vaccine preventable infections are now unfamiliar to both healthcare providers and parents [1]. Low levels of disease and reduced awareness of their severity and complications make it even more challenging to ensure pediatric vaccine completion. Interventions aimed at improving vaccine attitudes and/or vaccine delivery help to overcome this obstacle and increase pediatric vaccine uptake [2–6].

Vaccine attitudes range from total vaccine acceptance to complete vaccine rejection. Vaccine hesitancy can be strictly defined as an intent to skip or delay at least one of the vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) or other authoritative bodies [7,8]. Vaccine hesitant individuals, whether they are patients, parents, or healthcare providers, may accept some vaccines and refuse or delay others, although some remain unsure about doing so [9,10]. Many factors play into an individual's decision to accept or reject vaccinations, including past experiences with health services, family histories, confidence in science and medical authorities, and media influence [9]. Understanding these components in the decision-making process can lead to interventions to reduce vaccine hesitancy and improve vaccine uptake.

Previous studies evaluating vaccine hesitancy most commonly describe parental concerns regarding pediatric vaccine safety and offer suggestions for improved parent-provider interactions. It has

Abbreviations: AAP, American Academy of Pediatrics; HPV, human papillomavirus; MMR, measles mumps rubella.

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Table 1
Set of standard questions answered by enrolled participants.

Do you believe that standard immunizations are safe?
Which vaccines are you concerned about regarding safety?
Do you believe that standard immunizations are effective?
Which vaccines are you concerned about regarding efficacy?
Do you recommend all standard childhood vaccines to your patients?
Do you offer influenza vaccine to all eligible patients? Why or why not?
Do you offer HPV vaccine to all eligible patients? Why or why not?
Do you ask parents about their vaccine status?
Do you recommend that parents receive pertussis vaccine from their providers?
Do you recommend that parents receive influenza vaccine from their providers?
Do you see any serious vaccine related side effects in your patients? How often?
Do you believe that autism is a possible adverse effect of some vaccines?
Do you believe that febrile seizures is a possible adverse effect of some vaccines?
Do you believe that Guillain–Barre is a possible effect of some vaccines?
Do you believe that administering multiple vaccines at a single visit reduces the efficacy of vaccines?
Do you believe that administering multiple vaccines at a single visit overwhelms the infant's immune system?
Do you believe that administering HPV vaccine to adolescents will increase the likelihood of unprotected sexual activity in your patients?
Do you consider yourself to be vaccine hesitant?
Do you believe that anyone in your office is vaccine hesitant? Who?
How often do you encounter vaccine hesitant parents?
Which vaccines are parents concerned about?
What outside sources have influenced your vaccine hesitant parents?
Do you feel comfortable educating vaccine hesitant parents regarding vaccines?

been well described that medical providers are the most frequent source of vaccine information and that healthcare provider vaccine recommendation is one of the strongest factors associated with parental vaccine acceptance [11–13]. Healthcare provider vaccine attitudes have been shown to be an important determination of both their intention to recommend vaccine to their patients and vaccine uptake by their patients [14,15]. While health care providers are generally advocates of vaccinations, particularly pediatricians, some components of vaccine hesitancy in this group have also been described, particularly with regards to receiving influenza vaccine [14,16–18].

The American Academy of Pediatrics (AAP) issues policies and evidence-based guidelines for its members regarding current vaccine recommendations. Historically, the guidelines are nearly always in alignment with the ACIP recommendations. The objectives of this study are to describe vaccine attitudes among pediatric healthcare providers attending AAP-sponsored immunization conferences.

2. Materials and methods

The study team developed a one page, self-administered questionnaire regarding healthcare provider vaccine attitudes and practices (Table 1). The survey was pilot tested with a convenience sample to ensure clarity of questions and ease of administration. The questionnaire was distributed in person, by a study team member, to all health care providers attending the opening session of 5 different AAP-sponsored vaccine education conferences between June and November 2013 (Table 2). The attendees were asked to anonymously complete the questionnaire immediately, on-site. The completed surveys were collected prior to the beginning of the first educational session. There were no incentives offered for participation.

The first question on the survey determined eligibility by asking providers if they immunize children in their medical practice. Healthcare providers were excluded from the study if they responded "No" to this question. Demographic information, including provider role (nurse, mid-level provider, physician), and community served (suburban, rural, urban, mixed), were collected. Healthcare provider attitudes and practices were assessed regarding belief of vaccine safety and efficacy, routine recommendation of all standard pediatric vaccines, recommendation of parental vaccine updates, beliefs of vaccine adverse effects, and vaccine hesitancy in the practice. The study was determined to be exempt for review by the SUNY Upstate Medical University institutional review board (IRB 475628).

Statistical analysis: Pearson's chi-square tests of independence were used to test for associations between vaccine attitudes and practices and provider role, and community served. Fisher's exact tests were used when expected joint frequencies were five or fewer in 20% or more of contingency table cells. Statistical significance was set using a priori $\alpha = 0.05$. Specific comparisons of cell percentages subsequent to overall tests of association used Bonferroni adjustment to maintain a familywise type I error rate of 5%. All statistical analyses were carried out using IBM SPSS statistical software, version 23.

3. Results

3.1. Provider demographics

The study team distributed 903 surveys to pediatric healthcare providers at regional AAP-sponsored immunization conferences. Survey completion rate was 680/903 (75%) (Table 2). The healthcare surveyed providers were from New Jersey (147, 22%), New York (261, 39%), Ohio (11, 2%), and Pennsylvania (254, 38%) (Table 3). Studied healthcare providers served patients from rural (20%), suburban (31%), urban (27%), and mixed (21%) communities (Table 3).

3.2. Vaccine attitudes and practices of healthcare providers attending AAP-sponsored immunization meetings

Of the 666 healthcare providers attending AAP-sponsored meetings who answered the question, 661 (99%) state they routinely recommend all standard pediatric vaccinations, yet 30/661 (5%) go on to state that they do not routinely recommend influenza vaccine and/or human papillomavirus (HPV) vaccine to eligible patients. There was no difference between vaccine recommendation by healthcare provider role or by community served.

Table 2
Location of immunization conferences where surveys were distributed.

Conference	Location	Dates	Attendee	Sponsors	Surveys returned/distributed (%)
Vaccine Summit NY Chapter 1	NY, USA	June 2013	MD	AAP, NYSDOH[a]	48/48 (100)
Vaccine Summit NY Chapter 2/3	NY, USA	June 2013	MD	AAP, NYSDOH	97/100 (97)
Shot@Life	NY, USA	September 2013	MD	AAP	42/42 (100)
Vaccines for Children: The State of Immunizations	NJ, USA	September 2013	MD, RN, LPN[a]	AAP, NJDOH[a]	248/343 (72)
2013 Professional Immunization Seminar	PA, USA	November 2013	MD, RN	AAP, PADOH[a]	245/370 (66)
					680/903 (71)

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