



Parent and adolescent perspectives about adolescent vaccine delivery: Practical considerations for vaccine communication

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ABSTRACT

We surveyed parents of adolescents ($n=430$) and their adolescents ages 15–17 years ($n=208$) in 9 primary-care settings in Monroe County, NY to assess perceptions about adolescent vaccine delivery. Parents and adolescents most wanted to discuss vaccine side effects and the diseases prevented with the adolescents' provider. Those who perceived vaccines as very safe were more accepting of adolescent vaccines. Most participants agreed with vaccinating the teen during a mild illness and with providing multiple vaccines concomitantly. Participants most preferred medical, as opposed to other settings, for receipt of adolescent vaccines. For parents and adolescents who are wary of vaccination, strategies are needed to enhance communication about risks and benefits of vaccinations.

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1. Introduction

Between 2005 and 2009 there were six new recommendations for adolescent immunization, including new or changed recommendations for meningococcal, tetanus–diphtheria–acellular pertussis (Tdap), hepatitis A, human papillomavirus (HPV), varicella, and influenza vaccines. Much has been published about the implementation of the HPV vaccine recommendation [1–6] for adolescents due to the intricacies of introducing a vaccine to prevent a sexually transmitted infection, and because its multi-dose schedule obligates multiple visits [7–9]. It is unknown whether parents' perspectives of general vaccine delivery for adolescents are similar to their perceptions about HPV vaccine. In addition, several issues related to adolescent vaccine delivery remain unexplored, including (a) how best to communicate about vaccines with parents [10], (b) logistical issues to deliver vaccines in medical homes, and (c) the use of alternative venues for vaccine delivery [11].

Given an increase in vaccine-hesitancy nationwide in recent decades [12], the issue of vaccine communication has become increasingly important. Understanding what vaccine information parents of adolescents want is essential for providers, policymakers and professional societies to develop educational materials that effectively address parental concerns. In addition, understanding

the considerations that parents weigh when deciding whether or not to accept vaccine recommendations for their adolescents can give providers a framework for vaccine discussions.

Adolescents do not frequently make preventive office visits [13], and when they do, many issues compete for time during the visit [14]. Taking the time to discuss vaccines may be challenging. Understanding parents' and adolescents' attitudes about topics such as finding vaccine information, vaccine safety, and concomitant delivery can help providers plan strategies to help ensure acceptance, despite busy schedules.

One topic of increasing importance involves alternative settings for adolescent vaccinations, including schools, pharmacies, hospital emergency departments, teen clinics, and public health departments [11,12]. The need for an annual influenza vaccine, in addition to a 3-dose schedule for HPV vaccination for adolescents can significantly burden primary care practices [15–17], and highlight the potential importance of schools [18,19] and even pharmacies [20] as possible vaccination sites. While one study in Texas examined the acceptance of adolescent immunization at alternative sites [21], it remains unclear whether parents in other geographic regions would be willing to have their adolescents vaccinated in these alternative settings.

To address these questions, our objectives were to measure parent and adolescent perceptions about new adolescent vaccines, focusing on topics relevant to vaccine communication. We sought to better understand factors associated with vaccine acceptance, and assess their preferences for: specific topics to discuss with healthcare providers, timing, number of simultaneous vaccines,

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and site of care for vaccine delivery. Since as teens age, they make more autonomous decisions about their own healthcare [22], we assessed opinions of both parents and adolescents. Finally, since opinions may vary by primary care practice, race/ethnicity, and socio-economic factors [23–26], we assessed parents and teens from a wide spectrum of primary care practices in a major metropolitan area.

2. Materials and methods

2.1. Setting and sample

The study was approved by the Research Subjects Review Board at the University of Rochester. As reported elsewhere [27], we recruited subjects when adolescents presented for medical appointments at 9 primary care practices (5 urban, 4 suburban) in Monroe County, NY between March 2007 and April 2008. By design, we recruited a convenience sample of 430 parents of adolescents (50% with children 11–14 years of age, $n=213$; 50% with children 15–17 years of age, $n=217$), as well as older adolescent children (15–17 years, $n=208$) of these parents. We obtained informed consent from parents/guardians of adolescents 11–17 years old, and from their respective older adolescents when they arrived at the adolescents' primary care physician's office. Parents were stratified by adolescent age (equal number of parents with older and younger teens) and gender (with slight oversampling of parents of girls to examine issues of HPV vaccine delivery). Participants were eligible if they met the strata criteria for entry (by adolescent age, gender), were at the physician's office for the teen's own visit, were able to complete the survey in English (>95% of teens and parents), and the parent was present to give informed consent.

We performed telephone surveys with the parents and older adolescents within 6 weeks of the adolescent's healthcare visit to assess general issues related to adolescent vaccine delivery. Questions had been piloted previously with 23 parents and 9 teens for construct and content validity. Sixty-one individuals (9%) were dropped from the survey after 10 attempts to reach them, and additional participants were recruited in their place in the manner described above. Double data entry was used to avoid errors.

2.2. Measures

We measured parents' and their older adolescents' general vaccine perceptions, including (1) *vaccine communication/information*: general perception of vaccine safety and efficacy, how to know when a vaccine is needed, information source and information requested from the provider; (2) *logistical delivery issues*: age at which adolescents can decide on their own to receive a vaccine, vaccination timing (immunization administration at the beginning or end of the visit), the number of vaccines parents and adolescents are willing to have the adolescent receive in one visit, and whether they are willing to accept a vaccine during a mild illness, and (3) *preferred alternative venue for vaccination* (school, pharmacy, public health department, hospital emergency room, teen clinic, other).

Finally, we assessed all parents' and adolescents' willingness for the teen to receive a meningococcal conjugate, tetanus–diphtheria–acellular pertussis, human papillomavirus and annual influenza vaccine (has your adolescent received [Tdap, HPV, influenza] vaccine, and if offered [Tdap, HPV, influenza] vaccine, would you want your teen to get it), and measured demographic factors that were potentially associated with parental vaccine acceptance based on either prior studies of childhood vaccines [27–32] or studies of adolescent healthcare delivery [33–35]. Because HPV is a special situation that involves a vaccine to prevent a sexually transmitted disease, our exploration of issues surrounding that vaccine was

extensive, and details are reported separately, with source of information and acceptance rates shown here for comparison to other vaccines [27].

2.3. Statistical analyses

We performed chi-square tests to assess associations between parent and adolescent characteristics and vaccine receipt and acceptance, and conditional logistic regression to measure parent and adolescent factors independently associated with parental acceptance of Tdap, meningococcal and influenza vaccines. We also performed chi-square tests to measure associations between parent and adolescent attitudes and preferences for vaccine delivery, both with the entire parent sample, and with only the respective parents of adolescent participants; we achieved almost identical results, so results shown here include the entire sample of parents compared to older teens. Factors were entered into regression analyses if they were considered important *a priori* based on prior studies (adolescent's age, insurance, race/ethnicity, parental education, and home geographic location (urban/suburban)) or if significant in bivariate analyses at $p < 0.2$. After selecting our variables for the model, we found that geographic location of the home, race/ethnicity and parental education were collinear; thus, we excluded race/ethnicity and education from the final model. Only 1% of participants were uninsured, and were not included in the regression model due to small sample size. In addition, missing values were excluded from the analyses.

3. Results

3.1. Participants

Most parents accompanying the adolescents and 57% of adolescents were female (Table 1). About half of adolescents were suburban residents, white non-Hispanic, and two-thirds were privately insured. The demographics of the older adolescents were not significantly different from the characteristics of the entire parent sample.

3.2. Vaccine perceptions/information

Altogether, 85% of parents but only 71% of adolescents perceived vaccines as generally 'very effective' ($p < 0.01$, Table 2); 83% of parents and 69% of teens perceived vaccines to be 'very safe' ($p < 0.01$). Most commonly (77% of parents, 42% of teens), individuals learn that a vaccine is due when they are at the physician's office for a visit, and they look to their teen's doctor or a nurse for vaccine information (99% of parents, 93% of teens). Adolescents commonly obtain vaccine information from their parents (80%), but are often unaware of the need for vaccines (27%). Other common information sources include news media (TV, newspaper, magazines), friends or family, the teen's school, and less often, the Internet.

Most parents and many adolescents (81% and 50%, respectively) ask the physician for more information when they are offered a vaccine for the adolescent. The most common topics parents and adolescents want to discuss with the provider are potential vaccine side effects, and the disease the vaccine protects against.

3.3. Autonomy

Most parents and one-third of older adolescents (Table 2) would not feel comfortable with the adolescent making a decision on their own about whether or not to receive a vaccine, although almost half of older adolescents would feel 'somewhat' comfortable. The majority of parents (58%), and many older adolescents (37%) believe adolescents can make this decision at age 18, although more than

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