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Understanding How Different Recruitment Strategies Impact Parent Engagement With an iPad-Based Intervention to Provide Personalized Information About Adolescent Vaccines



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ABSTRACT

Purpose: Inadequate provider time for addressing parents’ questions and concerns about adolescent vaccines is a barrier to vaccine utilization. We sought to determine how different recruitment strategies impact the degree of engagement with an intervention that provided this information via an iPad placed in a clinical setting.

Methods: We provided to three pediatric practices in the Denver area the “Teen VaxScene” web site that generates individually customized information for parents about adolescent vaccines. Three recruitment strategies were assessed for their impact on parental use of the intervention as follows: passive recruitment using posters to advertise a “kiosk” version of the intervention; posters plus a \$10 incentive for using the kiosk; and posters plus a \$10 incentive plus decoupling the iPad from the kiosks to enable “roving.” We assessed the engagement with the intervention at multiple levels including log in, consent, and completion of a baseline survey and viewing individually tailored web pages. Surveys were used to assess barriers to using the intervention.

Results: During the 14-month study period, 693 people had contact with the iPad, 199 consented, and 48 completed the survey to enable creation of tailored content; and 42 used the tailored site. Five times as many parents ($n = 40$) consented to participation during the 2 months when the intervention was “roving” than during the 10-month “passive” recruitment period. Engagement with the tailored material was low, with most users viewing only the “table of contents” pages. Utilizers and nonutilizers of the intervention had similar demographic characteristics.

Conclusions: Enabling the iPad to “rove” in the clinic greatly increased the proportion of parents consenting to use the intervention. However, meaningful engagement with the material was low. Further research is needed to understand the most effective and time efficient ways to provide vaccine-related educational information to parents of adolescents.

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IMPLICATIONS AND CONTRIBUTION

We found that few parents used an in-clinic, iPad-based intervention on adolescent vaccination, and even among those who did use the intervention, the depth of engagement was minimal. Further study is needed to determine better ways to efficiently and effectively provide information to parents about recommended adolescent vaccines.

Conflicts of Interest: A.F.D. serves on advisory boards for Merck and Pfizer. A.F.D. wrote the first draft of the article. No grant, honorarium or other form of payment was received for this article. All other authors have no conflicts of interest to declare.

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Four vaccines are recommended routinely for adolescents aged 11–17 years—tetanus, diphtheria, and acellular pertussis (Tdap); meningococcal (MCV4); human papillomavirus (HPV); and influenza (Flu) vaccines [1]. *Healthy People 2020* has set a goal coverage level of $\geq 80\%$ for these vaccines [2], yet as of 2013, only Tdap vaccine had reached this coverage level with 86.0% of 13- to 17-year-olds estimated to have received at least one dose [3]. Utilization levels for the other three vaccines were lower, ranging from 13.9% for completion of the three-dose HPV vaccine series among adolescent males, to 77.8% coverage for MCV4. For the full public health benefits of adolescent vaccination to be realized, utilization levels for most adolescent-targeted vaccines need to be increased substantially [4,5].

Parents' concerns about the necessity and safety of adolescent vaccines have been recognized as a major barrier to high levels of adolescent vaccination, particularly for the HPV and Flu vaccines [6–8]. Parents' questions about vaccines are highly variable [9] and often cannot be adequately addressed during a typical clinical encounter because of time constraints [10–13]. In response, providers and several medical groups have identified a need for tools that provide information about vaccines to parents in an efficient manner but ideally also in a way that can address each parent's *specific* beliefs and concerns [13–18].

Automated approaches that “tailor” messages to each individual parent are one potential mechanism for providing such information [19,20]. A strong advantage of such systems is that they can be delivered outside the parent–provider interaction, for example, via home computers or in-clinic waiting rooms. Although clearly not a substitute for a conversation with the provider, previous work has demonstrated that providing tailored messages to parents and patients about vaccines can increase their willingness to vaccinate [18–21]. In addition, a large body of literature has demonstrated the efficacy of web-based tailored messaging approaches to improve compliance with a number of other preventive health behaviors [22,23].

Our group has developed a web-based intervention called “Teen VaxScene” that is designed to provide individually tailored information about Tdap, MCV4, Flu, and HPV vaccines to parents of adolescents. Ongoing studies are underway to determine the impact of this intervention on actual vaccine uptake. However, an important interim question is to determine the most effective manner in which the parents engage with such information. The aims of this study, therefore, were to (1) examine the degree to which parents engaged with the Teen VaxScene web site intervention when delivered on an iPad in a sample of general pediatric practice offices with diverse patient populations and (2) how this engagement differed depending on different recruitment strategies used and on parent characteristics. We hypothesized that in such an environment, a large proportion of parents of adolescents visiting the clinic would be interested in using the web-based intervention to access information about adolescent vaccines, and that utilization of the intervention would be associated with specific demographics as these have been shown in other studies to be associated with differential use of technology-based health information [24–27].

Methods

Intervention development

We created an interactive web site called “Teen VaxScene” that creates individually customized information about

adolescent-targeted vaccines for parents of adolescents. Teen VaxScene provides general information about vaccines and specific information about the vaccines MCV, Flu, HPV, and Tdap. To use the intervention, parent participants have to create a password-protected user account that includes their e-mail address, consent to the study and take a short “baseline survey.” This survey, which takes ~ 7 minutes to complete, collects demographic and health information about the parent participants and their adolescents, and information about parent attitudes about vaccination in general, and about each of the four adolescent-targeted vaccines specifically. The user is then directed to a series of web pages that are individually customized for each participant using a “tailoring engine” [28] which generates the web page content using baseline survey responses. Customization includes tailoring of photographs to match the parents' stated race and gender, preferential positioning of information about vaccines *not* received ahead of those reported as received, reference to demographic characteristics such as the adolescent's first name, age, and gender throughout the text of the web pages and using reflective statements to reiterate the parent's stated opinions (i.e., “Based on your answers, it sounds like you are worried HPV vaccination might cause your daughter to think it is OK to have sex.”) Screen shots depicting the web site, a further description of the methods behind its development, and examples of how information is tailored, are available online as [Supplementary Materials](#).

After viewing the tailored content, parents are encouraged by the web site to complete a short “postintervention survey” on the iPad web site (i.e., “tap here when you are finished”). This survey assesses the immediate impact of the materials on parents' attitudes about adolescent vaccination. After this, parents are invited to sign up for an additional “follow-up survey” administered via postal mail that assesses the stability of parental attitudes about vaccines over a 2- to 3-month period. Because the focus of this article is on parent *engagement* with the intervention, including using the iPad, consenting, starting and completing the baseline survey, and viewing tailored web pages, data on parental attitudes about vaccines (from the baseline survey) and how attitudes may have changed in response to the intervention (from the postintervention and follow-up surveys) are presented elsewhere (article in preparation).

Study population

Parents were recruited from July, 2012 to August, 2013 from one of the three pediatric practices in the greater Denver metro area serving a predominantly urban population. Practices A and B had patient populations that were primarily privately insured. In contrast, nearly half (45%) of the patients seen in Practice C were insured by Medicaid. None of the clinics had adolescent-specific waiting rooms. Caucasian was the predominant race of adolescent patients at all three clinical sites. Prestudy calculations suggested that by combining the three study sites, more than 5,000 adolescent visits would occur during the study period. We calculated that we would need at least 390 users of the web site to be able to detect 10% or greater difference in vaccination status or other categorical outcomes between adolescents whose parents did and did not view the tailored material. All study activities were approved by the Colorado Multiple Institution Review Board affiliated with the University of Colorado Denver.

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