The Toils, Trials, and Tribulations of Research on Childhood Vaccine Acceptance

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The severe acute respiratory syndrome coronavirus 2 pandemic has put into sharp perspective the paucity of our understanding of how to influence immunization behavior. If we must achieve herd immunity to halt this pandemic, how can that be accomplished? What could we do now to ensure almost universal acceptance of a vaccine determined by the US Food and Drug Administration to be safe and effective in preventing coronavirus disease? Furthermore, recent experience with measles in the United States has demonstrated that even the ready availability of an indisputably effective and demonstrably safe vaccine is no longer sufficient to prevent outbreaks. We need to figure out how to achieve and sustain vaccine acceptance by a high proportion of our population. The investment required to bring a new vaccine to licensure in the United States (estimated to cost ~$1 billion) 1 warrants a substantial commitment to funding research on how and when attitudes and beliefs about vaccines are formed and how best to communicate about vaccines to parents and the public to promote vaccine acceptance.

The good news is that this work is well on its way for childhood vaccines. There is a robust literature on parents’ vaccine attitudes and beliefs 2,3 as well as vaccine communication needs. 4 There are also increasing numbers of randomized trials that assess the effect of face-to-face communication interventions to inform or educate parents about childhood vaccination on childhood vaccination status. 5 Glanz et al, 6 in their well-conducted study published in this issue of Pediatrics, add to our understanding of the effect of one-way communication interventions on vaccine acceptance.

There are sensible reasons to study the effect of providing vaccine information to parents other than during an in-person clinical encounter or settings in which a dialogue is possible. These encounters are often constrained by time and competing demands. We need adjunctive communication strategies that occur before and after the clinical encounter if we are going to reach immunization goals.

The bad news is that, so far, studies in which researchers have assessed the effect of these adjunctive one-way communication strategies have produced mixed results. In some studies, the use of handouts or Web sites to convey vaccine information have improved vaccine acceptance. 7,8 In other studies, there has been no effect 9 or even an effect that was the opposite of what was intended. 10,11

It is therefore worth reflecting on potential reasons why the intervention of Glanz et al 6 of using a Web site to deliver vaccine messages tailored to parents’ values had no effect. One potential reason relates to the intervention itself: it is unclear what “dose” the study participants received. Did parents actually visit the Web site? If so, how often and for how long? And

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what content did they view? Perhaps the intervention failed because the Web site was only rarely visited or perused superficially by parents. In addition, referring parents to a Web site 4 times over 18 months constitutes a low-intensity, single-component intervention. Greater effectiveness might be achieved with a high-intensity, multicomponent intervention, such as more frequent exposure to the Web site or coupling the Web site with other components, such as a discussion with their child’s doctor.

Another potential reason relates to the study population: it may have been too broad. Because the intervention was designed to improve timely vaccination among those with vaccine hesitancy, the primary target population arguably is the vaccine-hesitant parent (VHP). For parents who were not hesitant, the intervention may simply have been superfluous because they did not need much persuading to vaccinate their child. Yet, nonhesitant parents composed the majority of the study population, perhaps blunting any intervention effect. Although the subgroup analyses stratified by hesitancy status is helpful, the unexpected finding that VHPs who received the Web site tailored to their vaccine beliefs and values had children who were less vaccinated than those in the untailored arm argues for subsequent studies that are powered to assess effects among VHPs.

Regardless, in this study, Glanz et al.\(^6\) raise some important questions. For instance, although parental values in the vaccine decision may be important, it is not clear how to intervene on those values. Could engaging with parents on their values in the context of vaccination, however gently, be akin to stirring a hornet’s nest? Or ought engagement on values only occur in face-to-face conversations rather than through a Web site or one-way educational handout? In addition, when and how are vaccination attitudes formed? The roots of vaccine hesitancy likely sprout long before the third trimester of pregnancy. Interventions intended to address vaccine hesitancy, promote understanding of the role of vaccination in individual and community health, and increase vaccine acceptance need to be designed not only for parents and pregnant mothers but also for college, high school, and middle school students.

We are reminded of a renowned influenza expert who wrote that “influenza...is not only a disease but for some of us a way of life. Once challenged...the investigator is chronically stricken and is doomed to a lifetime of servitude to its whims...unless rescued by the attainment of a high administrative position.”\(^12\) Vaccine hesitancy is developing a similar profile. We hope that these and other investigators persevere, that funding of research to understand vaccine attitudes and behaviors is increased, and that public health and clinician vaccine communications incorporate the emerging evidence of what works and what does not. Child and public health demand it.

**ABBREVIATION**

VHP: vaccine-hesitant parent

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