DEVELOPING TRAININGS FOR UNC PEDIATRIC RESIDENTS ON ADDRESSING VACCINE-HESITANT FAMILIES

By,

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First Reader

Second Reader
INTRODUCTION

The anti-vaccine movement is currently in the forefront of the American media and on the minds of many who interact with and care for children on a daily basis. With the most recent outbreak in Disneyland, over 154 children across 17 states have been diagnosed with measles, a vaccine-preventable disease.\(^1\) Although 2014 reported the largest number of measles cases (644 cases\(^1\)) since it was reported ‘eradicated’ in the United States nearly fifteen years ago, previous outbreaks have not been uncommon.\(^2\) A study by Andrew Wakefield et al, published by the Lancet in 1998, which suggested a causal link between the MMR vaccine and autism, was a clear catalyst for the anti-vaccine movement.\(^3\) However, despite the facts that the scientific community never replicated these results and that the study was retracted from the Lancet in 2010, the anti-vaccine movement continues to grow with the number of parents delaying or refusing vaccinations increasing\(^4\) as well as those asking for alternative immunization schedules.\(^5\)

In the current literature on vaccine hesitancy/refusal, there is a large body of qualitative and quantitative data on the reasons for which parents choose not to vaccinate their children, including a large systematic review.\(^6\) The findings cite concern about the risk of adverse effects, concern that vaccinations are painful, distrust by those advocating for vaccines (including belief in conspiracy), belief that vaccination should not occur when a child has a minor illness, unpleasant staff or poor communication, and lack of awareness of current vaccination schedule as the core barriers to vaccination. In addition to vaccine-refusers, there is a growing proportion of the population who are deemed “vaccine hesitant”. These “vaccine-hesitant” parents have some doubts about vaccinations, leading them to question or skip some immunizations, stagger their delivery
or delay them outside of the recommended schedule. More than 10 percent of U.S. parents have skipped at least one vaccination, delayed a shot, or used an alternative immunization schedule according to studies, compared to only 1 to 3 percent of parents who object to all vaccinations.⁵

Despite our clear understanding of why parents choose not to vaccinate, we have yet to find interventions that work to change their minds.⁷ As more and more parents choose to skip vaccinations for their children, public health professionals and researchers have been looking at new ways to ease the concerns of parents who are hesitant. A recent randomized clinical trial published in Pediatrics showed that of four interventions using various messages designed to reduce vaccine misperceptions and increase vaccination rates for MMR, none increased parental intent to vaccinate a future child.⁸ This study emphasized the fact that simply educating parents about the safety and efficacy of vaccines doesn’t increase the likelihood that they will get children vaccinated.

Furthermore, there are many resources created by the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP) for providers and trainees in how to communicate with vaccine-hesitant parents, with little evidence that these strategies actually influence parental behavior.

Although our understanding from the literature is clear on the parental side of the anti-vaccine movement, less has been done on the side of providers or trainees. One study utilized direct observation of providers with families as a way to characterize the different types of immunization communication practices utilized among providers.⁹ The study identified six communication practices and several behavioral types among the providers and found direct observation to be a feasible way to provide insight into
provider-patient communication practices. Another study, which conducted provider focus groups in six cities, assessed reasons for which parents refused vaccines and how providers could improve their communication with families.  

Studies have also looked at the way in which physicians communicate about vaccines and how this affects vaccine uptake. A recent study that analyzed 111 discussions involving 16 providers and 9 practices found that when physicians took a more “presumptive” approach to communicating about vaccines, versus the traditional “participatory” model, parents were 17.5 times (95% confidence interval: 1.2–253.5) less likely to resist vaccination. Additionally, the study found that when providers pursued their original recommendations for vaccination, parents who initially resisted subsequently accepted 47% of the time. This study suggests that how providers initiate and pursue vaccinations is associated with parental vaccine acceptance.

This paper will outline a project that was developed to educate pediatric residents at UNC on addressing vaccine-hesitancy in their practice. The project was composed of five 40-minute lecture-based pre-clinic conference trainings. Assessment of the trainings will be discussed as well as future directions for the project.

**BACKGROUND ON THE PROJECT**

**Qualitative Study**

I conducted an IRB-approved study (#15-0342) titled “Assessing Attitudes and Perceptions of Pediatric Residents Towards Vaccine Hesitancy/Refusal: A Qualitative Study”. The study aimed to understand the perspectives of pediatric residents at UNC and Duke on the anti-vaccine movement and their perceived level of comfort and
preparedness in addressing vaccine-hesitant families. The paucity of literature on the trainee perspective served as the impetus for the study. The study included one-hour in-depth interviews guided by a semi-structured interview guide (Appendix A). In addition to the interviews, participants were asked to complete a survey that included demographic questions, vaccine-specific concerns of families, quantitative information on level of preparedness and comfort in addressing vaccine-hesitant families, as well as questions regarding the amount of formal training received on this topic (Appendix B).

After only four interviews with UNC residents (PGY1=2, PGY-2=2), there were many recurring themes, despite the small sample size. The first, and most important themes were those of ill preparedness and discomfort among the residents when communicating with vaccine hesitant families. Residents at UNC consistently stated having no formal training on the subject of vaccine-hesitancy and refusal. In addition, the outpatient clinic at UNC has a 100% vaccination policy, so residents rarely get the experience of talking with these families, and thus feel they will be underprepared for these conversations upon leaving residency into practices that do not exclude these families. Although not directly related to the current project, other themes included autonomy of parents vs. inherent rights of the child, mixed feelings on excluding vaccine-refusing families, demographic differences among vaccine hesitant parents, and a general feeling of futility among residents.

**Role of Providers**

Doctors are the most trusted communicators of information about vaccines and although parents seek information about vaccinations from many sources, they most
commonly seek that information from a physician. Furthermore, the ability to garner parents’ trust has been cited as the key to influencing their decision to vaccinate their children. Trust in a health care provider is associated with use and delivery of preventive services, whereas distrust in one’s health care provider has been shown as a perceived barrier to immunization. Additionally, trust in the advice of a child’s provider and feeling that it is easy to communicate with that provider have been found to be key factors associated with the parental belief that they had access to enough information to make a good decision about immunizing their child. Therefore, the importance of this relationship is key to addressing vaccine hesitancy.

In a study that compared families of different vaccination status, they found that parents whose decision to vaccinate was influenced by a provider were twice as likely to believe that vaccines were safe for children (9.5% vs. 4.7%; relative risk: 2.01; 95% CI: 1.47–2.74). Among children whose parents believed that vaccines were not safe, those whose parents’ decision to vaccinate was influenced by a health care provider had an estimated vaccination coverage rate that was significantly higher than among children whose parents’ decision was not influenced by a health care provider (74.4% vs. 50.3%; estimated difference: 24.1%; 95% CI: 9.3%–38.9%). Despite this knowledge, the way in which providers deliver this information, and the proper training they must receive in order to adequately convince families to vaccine, is not well understood.

A recent study- the only RCT on this topic- targeted physicians and other providers in an attempt to address vaccine hesitancy and increase provider confidence in communicating about vaccines. In the study, providers in the intervention group were given a 45-minute training on the “Ask, Acknowledge, Advise” communication strategy,
adapted to vaccine conversations. The study found that the intervention had no detectable effect on maternal vaccine hesitancy (adjusted odds ratio 1.22, 95% confidence interval 0.47-2.68). Additionally, at follow-up, physician self-efficacy in communicating with parents was not significantly different between intervention and control groups.\textsuperscript{19} However, an editorial following this study suggested that training of short duration without a practical component and feedback would not be expected to change physician behavior, and thus the approach may be effective if delivered differently.\textsuperscript{20}

There is an important gap in the current literature regarding interventions to address vaccine hesitancy.\textsuperscript{7} This is especially true of those targeting healthcare professionals, which underlays the importance of this current project. If the anti-vaccine movement continues its fevered course, it is important that current trainees receive adequate training on the subject of vaccine hesitancy. This training must include best communication strategies when addressing vaccine-hesitant parents and include effective tools for educating parents on their specific vaccine concerns.

**Goals for the Project**

- Develop an evidence-based curriculum for UNC pediatric residents on vaccine-hesitancy in the form of a 40-minute pre-clinic conference.
- Assess the success of the pre-clinic conference trainings.
- Engage with residents to determine which areas of vaccine-hesitancy they feel least prepared to address.
- Create a noon-conference curriculum for the UNC Pediatric Department including both lecture and role-playing components.
- Publish the results of the project in an academic journal.
PROJECT COMPONENTS

Pre-clinic Conference Trainings

From May 18th to May 22nd 2015, five 40-minute trainings were conducted for pediatric residents at UNC-Chapel Hill. The trainings took place in the resident workroom as part of the regular pre-clinic conference held before the afternoon outpatient clinic. The PowerPoint lecture (Appendix C) and subsequent discussions were created, delivered and facilitated by PGY-2 pediatric resident, Peyton Wilson and myself.

Training materials were composed based on current literature on the subject. The PowerPoint aimed to elucidate the vaccine-belief spectrum and define the key terms of vaccine-refusal and vaccine-hesitancy. In addition, the complexity around the decision-making process about vaccines, including the historic, political, socio-cultural context and the roles of media, health professionals and public health experts in this decision, was discussed. The presentation then addressed the resources available to parents making these decisions, and how oftentimes, the resources available are inflammatory, inaccurate and biased in nature.

The review of the literature included the main reasons why parents are choosing not to vaccinate and the common myths families provide as to reasons against vaccinations. Next, a review of the literature on interventions to address vaccine-hesitancy and refusal was presented. The limited availability of evidence on effective interventions was discussed and the limited knowledge of effective strategies health professionals can use to convince families to vaccinate their child. Finally, the presentation concluded with some tools residents can use to communicate effectively as well as strategies in which to approach these families, based primarily on resources from
the American Academy of Pediatrics and articles around best communication practices regarding vaccines.

**Discussion**

Following the PowerPoint presentation, a five to ten minute discussion was facilitated in order to gain further insight on the resident’s perspectives on this subject. A note taker was designated for each discussion session. Questions included the following:

1. How many times have you faced vaccine-hesitant families in the last 6 months?
2. What strategies have worked for you in the past?
3. Which of these concerns do you feel least comfortable addressing?
4. What should be included in a noon conference? Structure?

**Resource Sheet**

Each resident who participated in the pre-clinic conference was given a one-page resource sheet which listed a variety of resources for which residents could later refer for more detailed information on the vaccine-hesitancy literature and communication strategies for addressing vaccine hesitant families (Appendix D). This resource sheet was also uploaded on the pediatric resident server under the “Resources” page for later referral.

**Survey**

Each resident who participated in the pre-clinic conference was given a five-question survey (Appendix E). Residents were instructed to complete the first four questions prior to the training, reserving the last question for the end. For the first
question, asking residents to estimate the percentage of vaccine-hesitant parents in their practice, participants were told to include the influenza vaccine in their estimation.

**RESULTS**

**Participants**

In total, 30 pediatric residents attended the pre-clinic conference trainings, PGY-1 (n=8), PGY-2 (n=13), and PGY-3 (n=7).

**Survey Results**

There were a total of 30 surveys received following the pre-clinic conference trainings (response rate 100%). Residents reported that the vaccine-hesitancy in their practice was as follows: 0-10% (n=12), 11-15% (n=4), 16-20% (n=3), 21-25% (n=2), 26-30% (n=5), 31-35% (n=2), 36-40% (n=1) and >40% (n=1) (Figure 1).

![Reported % of Vaccine-Hesitant Parents in UNC Pediatric Resident Practices](image)

**Figure 1:** Reported Percent of Vaccine-Hesitant Parents in UNC Pediatric Resident Practices.
Asked to report the concern heard most often from parents in regards to vaccine, residents reported: safety concerns (n=12), immune-system overload (n=7), pain to the child (n=7), fear vaccines cause autism (n=2), vaccine’s causing illness (n=1) and conspiracy against the medical professional/pharmaceuticals (n=1). Other concerns that were written in by the residents included that the diseases were no longer around, that vaccines are ineffective, and the perceived superiority of ‘natural immunity’.

The resident’s average perceived level of preparedness in addressing vaccine-hesitant families was 6.1 on a scale of 1-10. The perceived level of comfort experienced by residents in addressing these families was 5.9 on a scale of 1-10. Finally, residents were asked to report their agreement with the statement “Based on today’s training, I feel more confident about addressing vaccine hesitancy” on a five-point Likert scale (0=Strongly disagree, 5=Strongly disagree). Results showed an average reported score of 4.1.

Discussion Results

Residents provided many suggestions during the facilitated discussion sessions. Many emphasized the need for formal training on the subject, making note of the fact that because the resident clinic at UNC requires all children to be 100% vaccinated, residents rarely have the opportunity to address families with major concerns regarding vaccines. This lack of experience leaves them feeling under prepared. The residents agreed that despite the fact that they rarely see parents who are completely vaccine resistant, they frequently experience vaccine hesitancy and refusal for the influenza vaccine- and have become more skilled in addressing flu-specific concerns. Additionally, many of the
residents made note that although vaccines are required at the UNC clinic, the providers will often make allowances for parents who wish to have alternative vaccine schedules or request vaccines be limited to 1-2 per visit.

In terms of the content for the fall noon-conference on the subject of vaccine-hesitancy, many of the residents felt the main concerns to be addressed were safety of vaccines, the concern of “immune system overload”, how to address parental distrust of the medical/pharmaceutical systems, contents of vaccines, and the concept that the vaccines cause illness.

Residents suggested the structure of the noon conference should include a combination of lecture addressing the major concerns families bring up in practice and a role-playing activity to provide residents the opportunity to succinctly and comfortably communicate these messages with families. A presentation previously given by an infectious disease physician at UNC on the topic of vaccines and “immune system overload” was suggested as a possible resource to use during the conference.

Additional topics of discussion included the way in which physicians and other health professionals must combat the anti-vaccine movement. Many residents discussed the importance of utilizing media appropriately, and specifically the anti to pro-vaccine movement currently increasing in impact.

**FUTURE DIRECTIONS**

**Noon Conference**

A dedicated noon-conference is scheduled for Thursday, November 19th 2015. A proposed curriculum is shown below. The one-hour noon conference will focus primarily on addressing the main concerns of families regarding vaccines including: vaccine safety,
immune system overload, and vaccine components. With expert insight from UNC physicians in the fields of infectious disease and primary care, myself and rising PGY-3 pediatric resident, Peyton Wilson, will briefly lecture on each of these main concerns. This segment of the conference will focus on the medical literature for each of these topics, the best resources for families, and the communication strategies for healthcare professionals when discussing these concerns with families.

Following these presentations, participants will be split into groups with a designated facilitator. Volunteers from each group will be asked to play the role of the “physician” and another group member (or standardized patient, if available) will play the role of the “parent”. In front of the small group, the pair will act out the scenario given to them on a card and it will be the job of the physician to address the parent’s specific concern regarding vaccines. Following this, the group will be asked to provide constructive feedback to the volunteer. There will be a total of four scenarios acted out and discussed within each group. After all the groups are done with the provided role-playing scenes, the entire group will be asked to report what went well and what could have been improved. Additionally, the audience will be asked to generate suggestions for content to include in future trainings on the subject of vaccine-hesitancy and refusal as well as communication and conflict-resolution strategies for addressing these families.

In order to assess the effectiveness of the curriculum, residents will be asked to complete a brief post-survey that will include questions about their perceived level of comfort and preparedness in addressing vaccine-hesitant families and the impact (if any) of the training on these factors. The survey will also ask residents to rate the effectiveness
of the components included in the noon conference and to provide suggestions for improvement to the curriculum.

**Proposed Curriculum for Noon Conference:**

- **12:05-12:25:**
  - Background on the topic of vaccine-hesitancy
  - Issues of legality/ethics
  - Safety issues: side-effects of various vaccines, current statistics on complications
  - Immune system overload: antigens
  - Components of vaccines: thimerosol, preservatives, stabilizers
  - If time permits: alternative vaccine schedules, concerns raised about the influenza vaccine

- **12:25-12:50:**
  - Facilitated role-playing with standardized patients acting as vaccine-hesitant parents with specific concerns on vaccines.

- **12:50-1pm:**
  - Discussion of “best practices” when addressing specific parental concerns
  - Discussion of further trainings (format/structure, timing/duration/frequency)

**Curricula Changes**

In addition to the noon conference, the goal of this project is to provide the foundation for a more comprehensive curriculum around the topic of addressing vaccine-hesitancy can be implemented within the UNC Pediatric residency program. These changes might include implementation of a dedicated, annual noon-conference on the subject of addressing vaccine-hesitancy in addition to two to three pre-clinic conferences spread out throughout the year. These conferences would be repeated annually so that residents would have repetition on the content.
Publication

A paper will be submitted for publication on the contents of the trainings and the results found. The paper will be submitted for review to *Pediatrics*, *Academic Pediatrics*, or *Journal of Graduate Medical Education*.

The qualitative study, which was the impetus for this project, is currently still in data collection. At present, nine in-depth interviews including residents from both UNC and Duke have been conducted. Interviews will continue until data saturation occurs. The results of this study will be submitted for publication following data analysis.

CONCLUSION

This project, although still in the early phases, could have implications for future training at UNC, and potentially in other residency programs. Residents’ level of discomfort and feeling of ill preparedness decreased following the pre-clinic conference trainings, suggesting that these were effective.

The negligible amount of training pediatric residents receive on the topic of vaccine-hesitancy places them in a position of feeling ill prepared to discuss the concerns of families regarding vaccines. The need for formal training on this subject is apparent, and was the goal of this particular project.


