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Characterizing providers’ immunization communication practices during health supervision visits with vaccine-hesitant parents: A pilot study

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A B S T R A C T

Objective: To determine the feasibility of using direct observation of provider–parent immunization discussions and to characterize provider communication practices with vaccine-hesitant parents.

Methods: Over a 6 month period in 2010, we videotaped immunization discussions between pediatric providers and vaccine-hesitant parents during health supervision visits involving children 2–15 months old (N=24) in the Seattle area, Washington, USA. Videotapes were analyzed using the qualitative method of conversation analysis.

Results: We approached 96 parents seen by 9 different providers. Of those who were eligible (N=56), we enrolled 43% (N=24). Four videotaped visits were excluded from analysis for failure to obtain parental HIPAA authorization. Of the remaining 20 visits, there were ≥2 visits each that involved children aged 2, 4, 6, 9, 12, and 15 months, and all videotaped visits contained at least a brief immunization discussion. We identified 6 communication practices and several behavior types within each practice relevant to immunization: Practice 1, providers’ initiations of the topic of vaccination; Types: participatory or presumptive format; Practice 2, parents’ responses to providers’ topic initiations; Types: strong or weak acceptance or resistance; Practice 3, providers’ follow-ups to parent’s responses; Types: no, immediate, or delayed pursuit; Practice 4, parents’ vaccine-related questions or statements; Types: fact- or concern-based; Practice 5, providers’ explicit solicitations of parent’s questions/concerns; Types: designed to discourage or encourage discussion; and Practice 6, parents’ responses to providers’ solicitations of questions/concerns; Types: no question or fact- or concern-based inquiry.

Conclusion: Direct observation of immunization discussions in the primary care pediatric setting is feasible and yields insight into several provider–parent immunization communication practices that are worthy of further study to determine which are effective at improving parental acceptance of immunization.

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1. Introduction

There is accumulating evidence to suggest that the number of US parents who have delayed or refused some childhood vaccines is increasing [1,2] and that parents are regularly requesting to use alternative childhood immunization schedules [3–5]. Waning public trust and confidence in immunizations, however, is not confined to the US [6]. In Australia, for instance, the predominant reason for incomplete childhood immunizations is negative parental attitudes and beliefs towards immunizations [7]. In the United Kingdom, coverage rates for measles–mumps–rubella (MMR) vaccine are only now increasing after years of decline (and increases in the number of cases of measles) following the publication of the now discredited study by Andrew Wakefield and colleagues in 1998 [8], a study which evidence suggests played an important role in decreasing confidence in vaccines and trust in the medical profession [9–11]. Although there are several factors that influence parents’ decisions to accept or refuse childhood immunization [12], the most important may be their child’s health care provider [13–16]. Parents not only turn to their child’s provider for immunization information [17–19] but also change their minds about delaying or refusing a vaccine after consulting with providers [20]. Despite the importance of the child’s provider in parental decision-making
about immunization, there is no current standard clinical approach to communicating with vaccine-hesitant parents (VHPs). Some believe that “open communication” is essential, others take a “strong stance” towards VHPs, and still others are resigned to not being able to “convince parents about the value of certain vaccines.” This lack of a communication standard has resulted in divergent approaches to the care of VHPs: although the American Academy of Pediatrics’ (AAP) Committee on Bioethics’ recommends against discontinuing care with families who refuse or delay immunization [22], a recent US national survey found that nearly 30% of pediatricians reported that they would do so [23].

A chief reason for the lack of a communication standard with VHPs is that there are minimal data regarding how pediatricians communicate with VHPs about immunization. Consequently, there is little evidence base for problem-assessment and training. The few studies that do exist utilize non-ideal methods for capturing verbal and non-verbal aspects of provider–parent communication, such as self-report [4] and standardized patients [24,25], or use a more advantageous approach like direct observation [26] but are focused on the nurse–parent interaction and strategies for empowering parents [27]. To our knowledge, there are no studies involving direct observation of pediatricians’ immunization communication practices with parents. The objectives of this study were to determine the feasibility of using direct observation of provider–parent immunization discussions during a sample of pediatric primary care encounters and to begin to characterize provider communication practices with VHPs.

2. Materials and methods

2.1. Study participants

Health care providers were recruited from the Puget Sound Pediatric Research Network (PSPRN), a regional practice-based research network based in Seattle, WA. PSPRN includes over 50 pediatricians in primary care practices that are situated in varied areas (urban, suburban, and rural) and encompass different settings (private practices and an inner-city community clinic). Parents of children 2–15 months old being seen for a health supervision visit with a participating provider were approached if they were >18 years old and English-speaking. Pediatric health supervision visits in the US represent scheduled opportunities to provide preventive pediatric care—such as immunizations—and monitor for biomedical, developmental, and psychosocial issues in children from birth to young adulthood [28]. We assessed a parent’s vaccine hesitancy by asking him/her one question adapted from the Parent Attitudes about Childhood Vaccines survey [29]: “On a scale of 1–5, with 1 being not at all hesitant and 5 being very hesitant, how hesitant about childhood shots would you consider yourself to be?” We have previously established the validity of this question by showing that children whose parents gave a hesitant response were significantly more under-immunized [30]. To ensure a broad sample of parents with varying degrees of immunization concerns, we considered parents to be eligible if they demonstrated any hesitancy towards vaccines (with a score of 2 or higher). The health supervision visits involving children aged 2–15 months were chosen because multiple immunizations are recommended at most of these visits [31] and these recommended vaccines often prompt a parent to question, delay, or refuse their administration [20].

2.2. Enrollment

We invited 52 PSPRN providers to participate in the study through a descriptive email and presented the study in person to 3 PSPRN providers at a quarterly meeting. The study was described to providers as one aimed at understanding provider–parent communication about immunizations at health supervision visits. Non-responders were sent one additional email. For those providers who had further questions about the study in response to our descriptive email, we offered to discuss the study with them over the telephone or in their office. Providers received a $300 gift card for participating. Written informed consent was obtained from interested providers.

Parents were consecutively approached in the clinic waiting rooms of participating providers by one of us (CK) from February to July 2010. The study was described to parents as one aimed at understanding how doctors and parents communicate about immunizations at check-ups. With their approval, parents were then screened for eligibility. If the parent was eligible and agreed to participate, written informed consent from the parent was obtained. Participating parents received a $25 gift card. All study procedures were reviewed and approved by the Seattle Children’s Institutional Review Board (IRB).

2.3. Data collection

Each health supervision visit between a participating provider and an eligible parent who provided their written informed consent was videotaped using a video-recorder equipped with a wide-angle lens and positioned in a corner of the exam room near the ceiling. Although the entire well-child visit was recorded, each videotaped visit was edited to include only provider–parent discussions regarding immunization. This immunization discussion was then transcribed.

2.4. Data analysis

2.4.1. Feasibility

Our outcomes of interest regarding feasibility were: (1) How many pediatric providers would agree to participate in having their immunization discussions videotaped, (2) How many parents were eligible to participate, and (3) How many parents were willing to participate. In addition, we sought to understand any logistical challenges to in-office videotaping. Data were analyzed using descriptive statistics.

2.4.2. Qualitative analysis

We used the qualitative method of conversation analysis (CA) [32–34] to analyze transcripts (and associated videotapes) in order to characterize patterns of immunization communication that were relatively common across visits. CA focuses on the overall organization of an interaction to understand the significance of communication practices. Practices are particular communication behaviors or utterances that are used recurrently and that elicit a response that distinguishes them from other behaviors. A fundamental assumption of CA is that utterances (e.g., words, statements, or declarations) that comprise a conversation in an interaction are themselves social objects that implicitly convey or accomplish actions. Understanding the context within which these utterances or communication behaviors are made, such as their place within an organized sequential conversation, can provide insight into their social actions. For instance, when using CA in a previous study to examine videotaped pediatric encounters motivated by cold symptoms, we found that a parent’s declarative utterance of a candidate diagnosis when presenting the child’s symptoms to the physician (e.g., “He’s had a terrible sore throat, so I thought maybe it was
strep") has the effect of implicitly conveying a parent's expectation for antibiotics [35].

Two investigators (JR, JH) separately reviewed each videotape using CA to identify recurrent physician practices of communication regarding immunizations and patterns of parent response to those physician practices. They then met to discuss their analyses and develop a preliminary coding scheme. Given the role of the investigator in qualitative research, attention to self-assumptions, values, and biases is important [36]. Both investigators approached coding as sociologists with a pre-existing position that the structure of physician–patient communication is important to understanding and solving problems in health care. The coding scheme was further refined through additional discussions with two other investigators (DO, RMS). We designed our coding scheme around the fact that, at least in face-to-face conversation, medical decision-making is organized sequentially, with participants taking turns. As such, our coding scheme both respects and exposes the negotiated nature of medical decision-making.

3. Results

3.1. Feasibility

We recruited 9 providers (5 men, 4 women) from 6 different pediatric practices to yield a participation rate of 17%. Eight of the participating providers were pediatricians and 1 was a pediatric nurse practitioner. The participating providers’ practices included a university-based clinic, an inner-city community clinic, a private clinic in an urban setting, and 3 private, suburban clinics. In total, these practices serve a racially and economically diverse population.

Over a 5 month enrollment period, we approached 96 parents to determine their willingness and eligibility to participate. Of the parents who were eligible (N=56), we enrolled 43% (N=24). The remainder were either not interested (N=14, 25%) or could not be enrolled despite their interest and eligibility because the videotaping equipment was currently in use with another patient or the parent was not in the waiting room long enough to allow time to enroll them and obtain their consent (N=18, 32%).

The 24 videotaped visits involved 7 different providers from 5 pediatric practices. Four videotaped visits were excluded for failure to obtain a parent signature on the IRB-required Health Insurance Portability and Accountability Act (HIPAA) form. All of the remaining 20 videotaped visits contained at least a brief immunization discussion, included all 7 different providers, and included at least 2 health supervision visits involving children from each of the 6 desired age groups (2, 4, 6, 9, 12, and 15 months). The mean duration of immunization discussions between provider and parent was 325 s (5 min and 25 s), with a minimum length of time of 55 s and a maximum of 1338 s (22 min and 18 s).

3.2. Immunization communication practices coding scheme

We identified 6 communication practices regarding immunization from the 20 videotaped visits. We also identified behavior types within each characterized practice. These communication practices and behaviors are exemplified below and in Table 1.

3.2.1. Providers’ initiations of the topic of vaccination (practice 1)

The first aspect of our coding scheme focused on the moment when pediatric providers initiated the topic of having children vaccinated. Initiation of the topic was considered important because conversation-analytic research has demonstrated that the linguistic format used to introduce topics significantly affects the nature and extent of persons’ responses [37,38]. One general dimension of constraint, especially in the domain of medicine, involves the degree to which the linguistic format used by providers allows patients to participate in their medical care [39,40].

The videotaped encounters revealed that pediatric providers’ topic initiations could be categorized into two types of behavior: ‘participatory’ or presumptive. Participatory formats involved asking parents if they wanted to have their children vaccinated (e.g., pediatrician: Did you want to get some vaccines for her today or pediatrician: So what are we going to do about vaccines today?) or asking parents about their perspectives on vaccination (e.g., pediatrician: How do you feel about vaccination?). In each of these examples, the question format linguistically licenses and demands parents’ participation in the vaccination process in the form of making a decision or voicing an opinion. In contrast, presumptive formats involved asserting a position regarding vaccination (e.g., pediatrician: It’s time to start all those vaccines; We’re going to be doing two live vaccines today: the MMR and the chicken pox). Unlike the question format, the assertion format linguistically constrains parents’ participation because it merely licenses their acknowledgement of the assertion, thereby requiring them to actively resist the proposal as a precondition for starting a discussion.

3.2.2. Parents’ responses to providers’ topic initiations (practice 2)

In general, after pediatric providers initiate the topic of vaccination, parents have the right to speak next. In most cases, providers’ initiations of the topic of vaccination are produced and understood as being done in the service of having parents comply with vaccination. We found that, in response to providers’ topic initiations, parents’ used one of three types of behavior to indicate their next move: ‘strongly accepting,’ ‘weakly accepting,’ or ‘resisting’ vaccination. Parents who strongly accepted vaccination employed moves that explicitly agreed with or accepted it (e.g., pediatrician: Did you want to get some vaccines for her today? → parent: Yes; pediatrician: It’s time to start all those vaccines → parent: Yep). Parents who weakly accepted vaccination employed moves that implicitly agreed with or accepted it, such as merely acknowledging the provider’s talk (e.g., pediatrician: We’re going to be doing two live vaccines today, the MMR and the chicken pox → parent: Uh huh) [41]. Lastly, parents who resisted vaccination either did so strongly or weakly (e.g., pediatrician: So what are we going to do about vaccines today? → parent: You know I haven’t even had a chance to look at it). We differentiated between strong and weak acceptance because research suggests that weak acceptance can index tacit resistance [42,43].

3.2.3. Providers’ follow-ups to parent’s responses (practice 3)

After parents respond to providers’ topic initiations, providers have the right to speak next. In cases where parents either weakly accept or resist vaccination, we were interested in whether or not pediatric providers pursued stronger forms of acceptance—and thus adherence to vaccination—and how this occurred. We found that these follow-up behaviors had two types: ‘pursuing adherence’ (e.g., parent: You know I haven’t even had a chance to look at it → pediatrician: So where are we at—six months we could do Pentacel vaccine) or ‘not pursuing adherence’ (e.g., parent: I don’t want to do any → pediatrician: Okay that’s fine). These two behavior types in a coding scheme could also be applied to situations where parents strongly accept vaccination, but their interpretation would be different.

3.2.4. Parents’ vaccine-related questions (practice 4)

As part of vaccination conversations, parents sometimes ask vaccine-related questions. Parents’ questions can be reliably coded and question asking is a key communication behavior that indexes patients’ levels of participation, especially in medical decision-making. The videotaped encounters suggested that parents’ vaccine-related questions had two distinct types: those that
Table 1
Observed immunization communication practices.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Definition</th>
<th>Behavior type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers’ initiatives of the topic of vaccination</td>
<td>How the provider introduces the topic of immunizations with the parent</td>
<td>Participatory format</td>
<td>“Did you want to get some vaccines for her today?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presumptive format</td>
<td>“Um…we’re going to be doing two live vaccines today: the MMR and the chicken pox.”</td>
</tr>
<tr>
<td>Parents’ responses to providers’ topic initiations</td>
<td>How the parent replies to the provider’s introduction of the topic of immunizations</td>
<td>Strong acceptance</td>
<td>Provider: “Um, and then today is a 2 month check-up so it’s time to start all those vaccines.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weak acceptance</td>
<td>Provider: “Um, and is everybody healthy at home? The reason I ask that is because we’re going to be doing two live vaccines today…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resistance</td>
<td>Provider: “Uhhuh.”</td>
</tr>
<tr>
<td>Providers’ follow-ups to parent’s responses</td>
<td>Whether and how the provider obtains a response from the parent after introducing the topic of immunizations</td>
<td>No pursuit</td>
<td>Provider: “Um…we’re going to be doing two live vaccines today: the MMR and the chicken pox.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Immediate pursuit</td>
<td>Provider: “So what are we going to do about vaccines today?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delayed pursuit</td>
<td>Provider: “Come back whenever it’s convenient. If you want to do one today…”</td>
</tr>
<tr>
<td>Parents’ vaccine-related questions or statements</td>
<td>Whether and how the parent asks the provider questions about immunizations</td>
<td>Fact-based</td>
<td>“Which vaccines are there today?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concern-based</td>
<td>“The only thing I noticed is that like, he still has a pink – on one of these legs – he still has the bump from the last one. Is that normal like that?”</td>
</tr>
<tr>
<td>Providers’ explicit solicitations of parent’s questions/concerns</td>
<td>How the provider solicits parent questions/concerns about immunizations</td>
<td>Designed to encourage discussion of parent questions/concerns</td>
<td>“What questions do you guys have?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Designed to discourage discussion of parent questions/concerns</td>
<td>“So any questions about the shots?”</td>
</tr>
<tr>
<td>Parents’ responses to providers’ solicitations of questions/concerns</td>
<td>How the parent replies to the provider’s solicitation of questions/concerns about immunizations</td>
<td>No question or concern</td>
<td>Provider: “So, those are all the recommended ones.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fact-based inquiry</td>
<td>Provider: “Are we kosher with all of those?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concern-based inquiry</td>
<td>Provider: “Okay.”</td>
</tr>
</tbody>
</table>

Example:

**Parents’ initiations of the topic of vaccination**

Parent: “Rota-...”

Provider: “Rotateq.”

Parent: “Is there a possibility that she’ll have a little diarrhea?”
indexed parents’ concerns about vaccination and those that did not. An example of a concern-based question was: *Is there a possibility that she’ll have a little diarrhea?* An example of a non-concern-based question was: *Which vaccines are there today?* We included both behavior types in our coding scheme, as well as whether parents’ concerns were self-initiated or solicited by pediatric providers (see practice 5).

3.2.5. Providers’ explicit solicitations of parent’s questions/concerns (practice 5)

One component of patient-centered care is whether or not pediatricians explicitly solicit both parental questions about vaccination and their concerns, which are different issues. Apparent from the videotaped encounters was that pediatric providers employed solicitations as questions (e.g., pediatrician: *What questions do you guys have?*) or concerns (e.g., pediatrician: *So any concerns about the shots?*). Therefore, we included both in the coding scheme. This coding scheme will also enable further coding regarding whether or not these solicitations are linguistically formatted to either promote or discourage parents’ responses. For example, the negative-polarity item ‘any’ (e.g., pediatrician: *So any concerns about the shots?*) pre-figures a ‘no’-response and thus discourages parents’ participation [38].

3.2.6. Parents’ responses to providers’ solicitations of questions/concerns (practice 6)

We found that parents’ responses to pediatricians’ solicitations of questions/concerns had 3 distinct behavior types. Parents either declined to present a question/concern, produced a non-concern-based inquiry, or produced a concern-based inquiry (see Table 1). As such, we included each behavior type in our coding scheme.

4. Discussion

To our knowledge, this is the first study that demonstrates the use of direct observation of actual immunization discussions between VHPs and their child’s pediatrician to understand provider–parent communication about immunizations. Given the influential role pediatric providers play in parental immunization decision-making, investigations into how providers communicate with VHPs is an essential first step in eventually determining which communication practices are effective. Knowledge of effective immunization communication has the subsequent potential to improve a provider’s ability to increase parental acceptance of childhood immunizations.

Importantly, we found that videotaping immunization discussions at health supervision visits is feasible. Although our enrollment of potential pediatric providers was low, our target enrollment for this pilot study was 7–10 providers and this was easily reached using one reminder email and the incentive gift card. In addition, we were able to enroll about half of the parents we approached and found that only 25% of those who did not enroll were not interested in participating. This non-participation rate is similar to that seen in other primary care videotaping studies [44]. A substantial barrier to enrollment was having a single room in the providers’ offices dedicated to videotaping, which prevented further enrollment when it was in use with a participant or had to be used by non-participants when the providers’ schedules got busy. Frequent check-ins with the participating provider and his/her nursing staff increased awareness of this latter issue and improved our ability to enroll parents over time.

Our study also offers a preliminary characterization of provider–parent immunization communication practices. Using the coding scheme we have developed as part of larger follow-up studies, it will be possible to analyze parents’ and providers’ immunization communication behavior—such as parents’ moves of resistance, providers’ follow-up moves, and parents’ vaccine related questions—in a grounded, inductive fashion in order to develop common themes within each of these behaviors. We will also be able to use the coding scheme to calculate the frequencies with which the communication practices and types occur.

The 6 immunization communication practices that we identified, and the behavior types within each practice, have several interesting features. First, we observed providers using either a participatory or a presumptive format to initiate the topic of vaccination. While qualitative data suggest VHPs desire an open, trusting relationship with their child’s provider [45,46] and consensus recommendations promote a collaborative communication approach with VHPs [47–49]—both of which would lend support to a participatory format for initiating the topic of vaccines with a parent—it is apparent from our preliminary study that some providers choose to simply assert the child will be getting vaccines. This is neither surprising—other investigators, for instance, have found that pediatricians fear that a “discussion would open up a can of worms” [50]—nor is it necessarily problematic. Providers who have an established relationship with a parent may use their prior understanding of that parent’s desired communication style and vaccine attitudes to determine that a non-participatory initiation of the topic of vaccines at a particular visit is appropriate. In addition, a presumptive format may be appropriate as a starting point with parents since parents who accept vaccines constitute the majority and may not require the same level of participation in vaccine decision-making as VHPs. Nonetheless, identification of this presumptive format for initiating a vaccine discussion will be important in future studies for determining whether or not it is more, or equally as effective at improving parental acceptance as a more participatory style of communication.

A second interesting and related finding is how providers frame their query to parents regarding questions or concerns about immunizations. We observed providers using either solicitations framed to implicitly discourage discussion or to encourage discussion of parental immunization questions or concerns. Bryant et al. also found variation in how well physicians encouraged discussion in recorded encounters with standardized mothers who opposed immunization [24]. Prior studies and opinion would suggest that encouraging discussion is most effective. For instance, parents who perceive their pediatrician to understand their concerns are more likely to adhere to their pediatrician’s recommendations [51,52] and asking questions and offering information are associated with increased parental satisfaction with well-child care [53]. Furthermore, VHPs generally desire a provider who can offer concerned, nonjudgmental listening regarding immunizations [45,46] and framing a solicitation of parental immunization questions or concerns in a way that encourages discussion may convey the provider’s willingness to listen. Lastly, since communication involves both providing information and educating patients or parents, it may be helpful to assess the parents’ understanding by asking them to describe what they know in order to build upon that knowledge or correct any misinformation. Leask found that probing of a parent’s immunization concerns is in fact what many general practitioners do [25]. Despite this, whether or not a solicitation that encourages discussion is more effective than one that discourages discussion remains unstudied. A future study that links these observed behavior types to a child’s immunization status is needed.

There are limitations to this study. First, participants were told during the consent process that their immunization discussion was going to be videotaped. Therefore, it is possible that under normal, non-videotaped circumstances, provider interaction with VHPs involves different communication behaviors than those we identified. Indeed, we have previously detected a Hawthorne effect in an observational study of provider antibiotic-prescribing
behavior using an audiotaping methodology [54]. However, other studies have demonstrated that few parents and providers are influenced by the presence of the video camera [55,56]. A second limitation is that the coding scheme was developed using a small sample of providers and English-speaking parents from one geographic location. Therefore, saturation in our coding was not reached and the communication practices our scheme is meant to reflect may not be representative or generalizable. The number of parents exempting their child from required school-entry immunizations in Washington State because of religious or philosophical reasons is the highest in the US (5.7%) [57]; however, suggesting it is a good population in which to identify communication practices that are likely to work with VHPs. Nonetheless, these limitations suggest that further research is needed to validate our preliminary characterization of provider–parent communication about immunizations. Future observational studies that involve a larger, more diverse sample of provider and parents and employ strategies to minimize the Hawthorne effect are needed.

5. Conclusions

Direct observation of immunization discussions during primary care pediatric visits is feasible and yields insight into provider–parent communication practices. We identified 6 communication practices and behavior types within these practices that are worthy of further study in efforts to determine which behaviors are effective at improving parental acceptance of immunization. A larger, more diverse sample of visits is needed to further validate this characterization of provider–parent communication during well-child visits with vaccine-hesitant parents.

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