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Parental views on pediatric vaccination: the impact of competing advocacy coalitions

Kumanan Wilson, Meredith Barakat, Sunita Vohra, Paul Ritvo and Heather Boon

The debate on pediatric vaccination policy has been characterized by the presence of two distinct coalitions: those in favor of current vaccination policies and those expressing concern about these policies. The target of these coalitions is the vaccination decision of parents. To determine their influence, we conducted four focus groups in Toronto, Canada examining parental decision-making concerning pediatric vaccination. Our focus groups consisted of both fathers and mothers and parents who fully vaccinated and those who did not. Using the Advocacy Coalition Framework as an analytic guide, we identified several themes that provided insights into how effective the two coalitions have been in conveying their viewpoints. In general, we identified a variety of levels of belief systems existing amongst parents concerned about vaccination, some more amenable to change than others. We found that the choice to not vaccinate was largely a result of concerns about safety and, to a lesser extent, about lack of effectiveness. These parental views reflected the ability of the coalition concerned about vaccination to challenge parents' trust in traditional public health sources of information. In contrast, the parental decision to vaccinate was due to recognizing the importance of preventing disease and also a consequence of not questioning recommendations from public health and physicians and feeling pressured to because of school policies. Importantly, parents who fully vaccinate appear to have weaker belief systems that are potentially susceptible to change. While current policies appear to be effective in encouraging vaccination, if trust in public health falters, many who currently support vaccination may reevaluate their position. More research needs to be conducted to identify approaches to communicate the risks and benefits of vaccination to parents.

1. Introduction

The formulation of pediatric vaccination policy presents challenges to policymakers centered on the delicate balance that must be struck between the rights of parents to make decisions on behalf of their children and the rights of the public to be protected from disease (Verweij and Dawson, 2004). Largely because these policies can directly impact on the health of individual children or populations of children as a whole, discussions concerning pediatric vaccination policy have become particularly intense. Recently, owing to concerns about the safety of vaccines

and policies that advocate their use, several countries have experienced “anti-vaccination” movements that have contributed to vaccine rejection. Concerns about the safety of the polio vaccine, and a belief that it may be part of a sterilization campaign, have contributed to declining vaccination rates in Nigeria (Kapp, 2004). In the UK, concerns have emerged about the safety of the measles, mumps and rubella (MMR) vaccine and its links to autism, resulting in declining rates of vaccination (Jansen et al., 2003; Murch et al., 2004; Wakefield et al., 1998). In the US, concerns about thimerosal, a mercury preservative in vaccines, and its potential links to autism have undermined some members of the public’s confidence in vaccine programs (Safeminds, 2006). These vaccine rejection movements have in turn been implicated in the reemergence of vaccine preventable diseases (Heymann and Aylward, 2004; Murch et al., 2004).

When considering the various policy options concerning pediatric vaccination, two divergent viewpoints can be found: those who advocate the need for public vaccination programs and those who express concerns about these programs. Those who support vaccination argue that vaccination, after clean water, is the most effective public health intervention for reducing morbidity and mortality in the population and that vaccinations have been demonstrated to be predominantly safe (Bedford and Elliman, 2000). Those concerned about vaccines have argued the potential for harm, and in some instances, they argue there is a lack of clear evidence for benefit (Plotkin, 2001). The interaction between these two viewpoints could be characterized as a debate. This debate influences both the views of the public on this matter, and ultimately the direction of vaccination policy—whether the policies err more on the side of individual choice or protection of the public.

In order to better understand the current debate concerning pediatric vaccination, we have been conducting a multi-stage analysis of Canadian policy. This analysis has consisted of several linked projects and has been guided by the Advocacy Coalition Framework developed by Paul Sabatier (Jenkins-Smith and Sabatier, 1994; Sabatier, 1987, 1998). According to this framework, individuals concerned about a policy problem aggregate into a policy subsystem. Within this subsystem, they divide into advocacy coalitions defined by shared goals and beliefs. Advocacy coalitions then engage in a process of debate in an attempt to influence policy development. The advocacy coalitions in this debate would consist of those who argue for vaccinations and those who express concerns about them.

In this study, we specifically examine the perspectives of the parents who are the targets of the advocacy coalitions. To understand how the vaccination debate is evolving, it is essential to understand their perspective. Previous qualitative studies have focused on the views of those who have not fully vaccinated and have identified several barriers (Harrington et al., 2000; Lannon et al., 1995; McCormick et al., 1997; Mills et al., 2005; Sporton and Francis, 2001; Tarrant and Gregory, 2001). These include concerns about harm, lack of benefit, a general distrust in public health and issues related to access. In this study, we specifically examine and compare the viewpoints of those who have a spectrum of beliefs about vaccinations including those who have chosen to vaccinate, those who have vaccinated but struggled with the decisions and those who have not vaccinated. Using the advocacy coalition as a guide, we discuss the findings of four focus groups and make observations about the characteristics and evolution of the pediatric vaccination debate.

2. Methods

In March 2004, we conducted four focus groups examining parents’ perceptions towards childhood vaccination. We obtained informed consent from all participants prior to their participation in the focus group.

Recruitment

Focus group participants were recruited through advertisements in both mainstream and alternative local newspapers as well as through direct postings in downtown areas (e.g. health food stores, coffee shops). We sought to obtain a broad spectrum of viewpoints from parents, including the viewpoints of those in favor of and against vaccination and the views of both mothers and fathers. Through telephone screening, we ensured that participants had children, and determined to which focus group the participant should be delegated.

Advertisements were posted for approximately one week. In total, 130 individuals responded, the majority of whom would have fallen in the “fully vaccinated” category. Once enrollment was completed in the other three groups (not vaccinated, partially vaccinated and fathers), advertisements were not resubmitted to newspapers and were removed from stores. Our final sample consisted of the following: mothers who did not fully vaccinate their children ($N = 10$); fathers who did not fully vaccinate their children ($N = 6$); parents who had their children fully vaccinated, but struggled with the decision to vaccinate ($N = 8$); and parents who had their children fully vaccinated and who were concerned with parents who did not vaccinate their children ($N = 9$).

Conduct of focus groups

A researcher with extensive experience conducting focus groups mediated each group using semi-structured questions (Heather Boon and Natasha Katchan—both affiliated with the University of Toronto). The subject matter explored included whether or not parents had vaccinated their children and what factors had influenced their decision. Questions were also directed towards parents’ understanding of harms and benefits associated with vaccination and which sources of information parents relied upon to inform their decision-making process. Lastly, we requested parents to provide us with some recommendations for vaccination policy. Participants were encouraged to discuss their concerns openly, to bring forth issues that were important to them, and to speak out if they disagreed with any comments. Each focus group lasted approximately 2 hours.

This study primarily focused on the current recommended vaccinations, which at the time of the study, include MMR, diphtheria–tetanus–pertussis (DTaP), polio and *Hemophilus influenzae* type B (HiB). However, concerns that arose around other vaccines (varicella, pneumococcus, influenza and meningococcus) were considered in our analysis if they were brought forth during the focus group sessions.

Analysis

Each focus group was recorded and subsequently transcribed verbatim. Basic content analysis was used to develop coding categories based on the information arising from the focus groups (Berg, 1995; Morse and Field, 1995). General coding categories were agreed upon by two independent research analysts, ensuring inter-coder reliability. Themes were developed based on parents’ beliefs regarding childhood vaccination and factors influencing decision-making. All beliefs were compared and contrasted within and between each of the four focus groups. We refer to the two groups who fully vaccinated as “parents who fully vaccinated” and the mothers and fathers who did not fully vaccinate as “parents who did not fully vaccinate their children.” NVivo 2.0 was used to facilitate the analysis. We also conducted an analysis of the findings of the focus group based on the Advocacy Coalition Framework.

3. Results

Vaccination decision

Decision to not vaccinate

From our analysis, the two main factors that led many parents to a decision to not vaccinate their child were concerns about the safety of vaccines and confidence in vaccine efficacy. Concerns about the safety or potential harm of vaccines were mentioned frequently among all focus groups, although only twice by parents who fully vaccinated their children and were concerned about those who did not vaccinate. The primary safety concern was the possibility of adverse reactions associated with vaccination such as neurodevelopmental disorders, hypersensitivity concerns, and illness resulting from vaccination. Representative statements include:

For our son, he actually developed autism shortly thereafter he had his 12 month, and there were slight symptoms before, but we feel that it actually accelerated some of the symptoms, and he is now in a severe stage ... lately in the newspapers they're saying that there's no link, but it just so happens on a lot of them who have had certain vaccines, shortly thereafter their child has regressed and develops this type of thing ... so that's where my concern is. (Mothers who did not fully vaccinate their children)

Concerns pertaining to vaccine components such as mercury were the second major safety issue:

It's hard to believe that they put mercury as a preservative into a vaccination when we all know that mercury is poisonous, and why would you put it into a 2 month old child, I don't understand that. (Mothers who did not fully vaccinate their children)

Lastly, concerns over introducing a "germ" into the body, and decreasing natural immunity were also mentioned by a number of focus group participants:

How this came to my attention is like, I had vaccinated when they were first born ... and then I had a conversation with my girlfriend about when they give them the shots that's like putting the germ in their body and somehow that didn't sound right to me ... (Mothers who did not fully vaccinate their children)

In addition to concerns about safety, questions regarding the efficacy of vaccines were brought forth by each focus group although there were differences in viewpoints between the groups. Of the two groups of parents who did not fully vaccinate their children, the strongest concerns were voiced by the fathers, some of whom believed that there was a lack of credible research studies proving the effectiveness of vaccines. Of the two groups of parents who fully vaccinated, parents who struggled with their decision had the strongest concerns regarding efficacy. They believed that vaccines are ineffective because children get sick even if they vaccinate:

It really doesn't make a big difference because kids get sick regardless. If they have their shots, everybody gets measles, in day care, chicken pox and everything. (Parents who had their children fully vaccinated, but struggled with the decision to vaccinate)

Decision to vaccinate

Our analysis identified three primary reasons why parents *do vaccinate* their children. The first reason is to prevent disease in their children. However, many parents vaccinate because they are "supposed to," and because they feel pressured to do so.

Disease prevention was mentioned mostly by parents who fully vaccinated their children:

Participant: ... from being vaccinated as a child you know the importance of vaccines.

FG Leader: And what in your opinion is the importance of that?

Participant: To prevent disease and to build up a child's immune system.

(Parents who had their children fully vaccinated)

However, parents who fully vaccinated their children, but struggled with the decision, mentioned disease prevention alongside a number of safety and efficacy concerns, and were concerned about the risk to benefit ratio of vaccines. A few parents who *did not fully vaccinate* acknowledged disease prevention as a reason to vaccinate, but because many of these parents questioned the efficacy of vaccination programs and had concerns with safety, most did not believe in vaccination for disease prevention.

Many parents in our study stated they vaccinate their children because it is routine. Most parents who fully vaccinate their children did not question the idea of vaccination:

I just more or less did with my children what ... I'm the youngest of five, so I knew I was vaccinated, ... so, we just bring the child every 2 months for a needle, and that's what I did. I would never think of not having it done. (Parents who had their children fully vaccinated)

The idea of vaccinating because your doctor recommends it was cited as a reason to vaccinate more times by parents *who did not fully vaccinate* their children than by *parents who fully vaccinated* their children. Interestingly, numerous parents who did not fully vaccinate their children believe that many parents who do fully vaccinate their children do so without thinking through the process, "there's no research, there's no cognition that it's something they should even think about" (Mothers who did not fully vaccinate their children).

Pressure to vaccinate was mentioned twice as many times by parents who fully vaccinated their children but who struggled with the decision, than by parents who did not fully vaccinate their children. Pressure was not considered a factor in the decision-making process for those parents whose children were fully vaccinated. Comments such as the following reveal the pressure to vaccinate that some parents feel:

She's [the doctor's] very insistent on us doing them ... she won't listen to me, so I get my husband to call her, and I'm like we're not getting them done, that's the bottom line, don't try to coax us into doing anything anymore ... it's a bit difficult because I know when we go in on the 8th for his next 2 month check up, they're just going to do the whole ... telling us he's going to die if we don't get them done, he's going to get sick, this and that, I'm not looking forward to it actually. (Mothers who did not fully vaccinate their children)

Pressure to vaccinate was felt not only from medical professionals, but also from the school system. Pressure from school was, in particular, a leading factor in parents who fully vaccinated but struggled with their decision to vaccinate. "We're forced to have the kids vaccinated, because if we don't, they could be suspended or not be accepted in school!" (Parents who had their children fully vaccinated).

Parents who did not vaccinate also felt pressure by the school system, with mothers belonging to this group expressing much more concern than fathers. Mothers who did not fully vaccinate their children also felt pressure by what they stated were "fear mongering tactics" used by physicians,

He was talking to me, trying to convince me to get my son vaccinated, and he said there was another couple and they didn't want to get their son vaccinated, and the husband really didn't want to get the son vaccinated, but the wife really did, well this three year old child got measles very badly, was rushed to the hospital very ill, and in fact, as a result, is now deaf and is brain damaged, and clearly the marriage is over, and so on ... and that is fear mongering, it really is. (Mothers who did not fully vaccinate their children)

Factors influencing decision

Information

A wide variety of information sources were used by parents when deciding whether or not to vaccinate their child. In summary, parents from all groups relied upon their health care provider for information. However, the health care providers varied, being primarily allopathic physicians and nurses for those who fully vaccinated their children, or alternative medical practitioners for those who did not fully vaccinate their children. All groups sought the opinions of friends, family, or other parents for additional vaccine-related information. Parents who fully vaccinated their children and were concerned about those who did not vaccinate tended to rely on their health care provider for information and did not explore issues or literature regarding vaccine-related concerns. Conversely, the group who struggled with their decision was aware of concerns surrounding vaccination and used a variety of resources compared to the other focus groups. This group also most frequently mentioned the use of the Internet as an information source. Parents who did not fully vaccinate relied upon alternative medical magazines for additional information.

A lack of access to information was noted in all focus groups. Although each group brought up the issue at least three times, participants who fully vaccinated their children but struggled with their decision mentioned it most frequently. Parents also struggled with determining which information was reliable. For example, while the Internet provides a considerable amount of information parents are unable to determine which information is credible:

But that information again, it's making us dig for that information that's hard to find, and then you do get it, there's no corroborating studies and it's hard to access that, I don't know, is that an urban legend or is it valid, how can I make my decision without all the information? (Mothers who did not fully vaccinate their children)

Trust

The level of trust, or distrust, in vaccine-related information affects parents' decisions to vaccinate their child or not and was discussed frequently among the focus groups. Health care providers of some form, including both conventional providers and alternative medical providers, were trusted by all focus groups. However, only parents in groups that fully vaccinated their children trusted physicians. Parents who did not fully vaccinate their children, particularly mothers, trusted their complementary and alternative medicine provider, but not physicians. Distrust in physicians was mentioned at least once in each focus group. The highest level of distrust was held by fathers who did not fully vaccinate their children. A number of participants mentioned the lack of information and discussion around vaccine-related concerns as a reason for distrust of physicians.

However, the main concern of both focus groups who did not fully vaccinate their children is the influence that pharmaceutical companies have on physicians which makes some parents feel that physicians are an untrustworthy source of information for parents who are questioning the value of immunization:

unfortunately the doctors end up looking bad because they're turning [in]to advertising ... mouthpieces for the pharmaceutical industry and that makes me not trust them. (Fathers who did not fully vaccinate their children)

All groups noted distrust in pharmaceutical companies. Fathers who did not fully vaccinate their children expressed the strongest distrust of all of the focus groups. The main concern with pharmaceutical companies is that their goal is financial gain:

And again with these pharmaceutical companies, Zoloft, Pfizer, everything else like that, it's coming down to the dollar bill. (Fathers who did not fully vaccinate their children)

Such concerns were pervasive when discussing the topic of pharmaceutical distrust during the focus groups. One group began with questions regarding potential conflicts of interest between pharmaceutical companies and this study. Even a few parents who fully vaccinated their children and were concerned about those who did not vaccinate, distrusted pharmaceutical companies.

Aside from health care providers and pharmaceutical companies, the government was also a focus of discussions on trust. Parents who fully vaccinated their children were the only group that trusted pharmaceutical companies and they were also the only group that trusted the government. Conversely, all other focus groups mentioned their distrust in government at least once. Fathers who did not fully vaccinate their children again held the strongest feelings of distrust, mentioning government distrust several times during their focus group.

Recommendations to policymakers

Participants provided recommendations that they felt would help to make the decision-making process easier for them. The majority of their recommendations revolved around information and communication.

All groups desired more balanced information on vaccines. Parents felt that the information currently provided to them is one sided, covering only the benefits of vaccines, but not any potential harms. Owing to this, a number of parents are relying on information sources other than their health care provider, and are unable to distinguish between reliable and unreliable information. One mother recommended the following:

More information from the doctors. Or being told; here, make an informed decision, there's two sides of it, read up, make your own decision, come back and see me. (Mothers who did not fully vaccinate their children)

So if I need more information, then it should be provided. So I make the best decision. It's like purchasing a vehicle or any other service interaction. (Parents who had their children fully vaccinated)

Changes in communication were also recommended, but were addressed differently across the focus groups. Respect and clearer communication were both important issues for parents, particularly for those who fully vaccinated their children but struggled with the decision:

They don't explain to us, they're not really clear, because they talk in doctor form and you don't understand what they're saying. You don't want to look stupid by keep asking them, like yeah, okay, what does this mean? You know. (Parents who had their children fully vaccinated)

Lastly, all groups, except for parents who fully vaccinated their children and were concerned about those who did not vaccinate, wanted to be provided with alternatives to vaccination.

Suggestions ranged from recommending alternative medicine practices, to researching homeopathic vaccination or other natural products, to having the option of vaccinating with single-dose vaccines in order to avoid concerns over preservatives. One parent summed up their desire to have a choice in the following statement:

I think if parents were given a choice, I think that stigma of not vaccinating your kids would go away. Because all parents know, or most parents know that they have to get their kids vaccinated. But if there's a choice, now if you decide not to get your child vaccinated, you're not going to be ostracized. (Mothers who did not fully vaccinate their children)

4. Advocacy Coalition Framework analysis

The Advocacy Coalition Framework

The Advocacy Coalition Framework is an established policy analysis model that has been found to be effective in describing policy development in a variety of fields (Jenkins-Smith and Sabatier, 1994; Sabatier, 1987). The content of our analysis integrates well in this framework and its use provides an opportunity to understand how the vaccination debate may continue to evolve. According to the Advocacy Coalition Framework, decision-making concerning policy issues occurs within a policy subsystem consisting of all individuals concerned about the particular issue. Within this subsystem individuals divide into competing advocacy coalitions based on their shared belief systems. The model specifically describes three levels of belief systems that individuals possess: deep core, policy core and surface beliefs. Deep core beliefs are the most strongly held, and are fundamental views on how the world ought to be. These are analogous to religious beliefs or ideologies and are consequently very difficult to change. Surface beliefs are fundamental understandings of technical information and are potentially changed by the provision of new technical information. Policy core beliefs exist somewhere between deep core beliefs and surface beliefs. This form of belief is consistent within a policy question but does not necessarily extend to other policy areas. Within the policy subsystem, the advocacy coalitions attempt to achieve policy objectives using a variety of strategies. The overall structure of the policy debate is influenced by stable factors, such as constitution rules, and more changeable parameters, such as the economy or changes in the incidence of disease (Jenkins-Smith and Sabatier, 1994; Sabatier, 1998).

Advocacy Coalition Framework based analysis of focus groups

Our focus group analysis permits us to make some inferences as to the components of the Advocacy Coalition Framework. Parents' responses suggest that the pro-vaccination advocacy coalitions most influencing their decision-making include public health officials, the majority of conventional health care providers, school administration and pharmaceutical companies. On the basis of the sources of information they cite as raising concerns about vaccination, we can infer that this advocacy coalition consists of some alternative medicine providers and parent groups centered around certain diseases that have been attributed to vaccines. Fundamentally, the objective of the advocacy coalitions appears to be to sway both formal policy and the views of parents. While the coalition supporting vaccination has the advantage in determining policy, those who argue against vaccination direct their efforts at the public and specifically parents who are considering vaccinations. The objective of

this strategy is to influence the decisions of these parents and then mobilize enough support from the parents to ultimately influence policy. Those who support vaccination are countering these efforts by maintaining parents' and the public's confidence in vaccination.

Our analysis suggests that the advocacy coalitions have used different strategies to achieve their objectives. Those supporting vaccination appear to be conveying their message about the benefit and safety of vaccines through conventional sources, such as medical journals, health care providers and public health institutions. Those concerned about vaccination have utilized alternative media such as the Internet, alternative medicine magazines and some alternative medical providers (Ernst, 2002; Leask and Chapman, 1998; Wolfe et al., 2002). They have communicated the potential harms of vaccines—specifically the risk of autism from MMR and vaccines containing the preservative thimerosal.

Our study also identifies the existence of different levels of belief systems amongst parents, some more resistant to change than others. Those who are not supportive of vaccination appear to hold deep core beliefs that will be highly resistant to change (Wolfe and Sharp, 2000). These include their views of the role and validity of alternative medicine and their fundamental skepticism of conventional medicine as well as the role of pharmaceutical industries in the policy process. Policy core beliefs include the belief of many of the parents in our focus groups of the right of parents to choose to have their child vaccinated or not vaccinated. Surface beliefs identified in our study include the understanding of technical information related to the safety and benefit of the vaccines themselves, as well as the risk and severity of the disease being vaccinated against.

5. Discussion

Concerns about vaccination have existed since the development of the first vaccine for smallpox (Wolfe and Sharp, 2002). Often, these concerns appear to be irrational to policy-makers and public health officials who argue that there is overwhelming evidence supporting the risk–benefit profile of pediatric vaccination programs (Bedford and Elliman, 2000). Nevertheless, the persistence of these concerns and the reemergence of vaccine rejection suggest the need for a closer examination of the fundamental components of anti-vaccination movements. Our study has provided some insights into these movements by describing how parents are making decisions pertaining to pediatric vaccination. We found that decisions are based on balancing information regarding the risks and benefits of vaccines. However, the level of information desired differs between parents and trust in the source of information and recommendations played a critical role in parents' ultimate decisions.

There are some important limitations of our study that may have influenced our findings. Our study was a convenient sample and may not be generalizable to all Canadian parents or beyond. Our study was inherently biased towards the positions of those concerned about vaccination. Three of the groups we sampled had views that were not fully supportive of vaccination. The group that most strongly supported vaccination had the largest number of potential candidates which is not surprising since the majority of the population is vaccinated. However, the opinions expressed in this group were not as strongly held as in the other groups. The primary reason for this is that vaccination is an accepted practice and to decide not to vaccinate, or to go against the traditional views about the benefits of vaccination, appears to require a parent to have a strongly held belief.

The vaccination controversy is well suited to be analyzed using the Advocacy Coalition Framework because the debate involves clearly defined advocacy coalitions. The results of

this study provide some insights into the success of the advocacy coalitions by describing the viewpoints of their primary target audience—parents. We noted that the advocacy coalition concerned about vaccination has managed to raise concern amongst some parents about the efficacy, and in particular, the safety of some of these vaccines. They have also managed to challenge the level of trust these parents have in the information provided to them by public health. In particular, concerns about pharmaceutical involvement in vaccination policy were expressed by several parents, and especially amongst fathers. Those supporting vaccination, in contrast, have been able to develop parental trust in recommendations made by their physicians, which is often not questioned. School policies also appear to be an effective tool to encourage vaccination. While these policies allow the possibility of exemption for religious, philosophical or medical reasons, many parents assume it is mandatory and that there is no alternative to vaccinating their child if they want them to attend school. These policies may convince ambivalent parents to vaccinate their children, although at the cost of being perceived as coercive.

An important component of the Advocacy Coalition Framework is its classification system of belief systems. Gaining an appreciation of this stratum of belief systems held by parents provides insights into the effectiveness of the various strategies used by those supporting and those concerned about vaccination. For example, public health initiatives that directly confront deep core beliefs may not be successful since this can create cognitive dissonance amongst the recipients of the information and lead them to become more entrenched in their existing belief system (Lord et al., 1979; Wilson et al., 2005). This is supported by a previous study related to this project which identified that presenting strong pro-vaccination information to a population that has concerns about vaccination reinforced anti-vaccination views amongst some. Interestingly, both parents who vaccinated and did not vaccinate shared the policy core belief of the right of parents to choose. Thus, policy strategies that advocate mandatory vaccination may create backlash even amongst parents who are, at present, cautiously supportive of vaccination. Targeting surface beliefs, which are generally more amenable to change, may provide an opportunity for public health to increase support for vaccination. Some parents in our focus groups identified that they would be willing to receive vaccinations for diseases perceived as being “serious.” Public health, therefore, could embark upon a strategy of realistically communicating the potential seriousness of all of the conditions being vaccinated against. Similarly, they should recognize that support for all vaccines might be partially undermined by the addition of new vaccines for conditions the public perceives as not as severe. Furthermore, the receptiveness of parents to information from public health will be influenced by other levels of belief that influence their trust in this source.

Perhaps most importantly, for public health, is that parents who vaccinated and did not struggle with the decision seem to have more weakly held beliefs and were open to ideas about the risks of vaccination and the need for choice. Their decisions to vaccinate seem to be more based on a general acceptance and trust of the information provided to them by public health and a lack of awareness that there was an option to not vaccinate. While at present, they continue to support the decision to vaccinate, we observed that as the focus group progressed and vaccination risks were increasingly discussed, some parents became less convinced in their original positions. Therefore, it appears possible that if new information arises that challenges these parents’ trust in public health institutions, their confidence in vaccinating their children may also be challenged. A clear example of this has already occurred, as in the UK, health officials have linked the lack of acceptance of the MMR vaccine to the failure of public health to adequately manage the BSE (bovine spongiform encephalopathy) outbreak (Ward, 2002). Such examples of the ability of perceived failures in risk management to influence public confidence in related sectors have been previously described in the risk perception literature (Slovic, 1987).

Our study provides some insights into how the current vaccination debate will unfold. Public health officials' current strategy of not drawing attention to vaccine controversies and of relying upon school policies should continue to be effective. However, this approach may become less feasible as the public becomes more concerned about the potential adverse effects of pharmaceutical products and increasingly distrustful of pharmaceutical companies and government agencies. Public health will likely have to consider alternative strategies centered on communication targeted to the belief system of the recipients. These approaches are likely to be most effective if directed at establishing and maintaining confidence in vaccination programs. Our study also identified that the health care provider–parent is a key interface and the nature of the interactions in this environment will have an important impact on the public's continued acceptance of vaccines. Communication between health care providers and parents, at present, is prone to becoming confrontational with some evidence emerging that providers are leveraging the willingness to care for a child as a strategy to increase vaccination rates. This strategy may ultimately fail because it will likely feed into deep core beliefs of distrust of health care providers' intentions. Alternatively, if health care providers address surface beliefs by providing balanced information, including potential vaccine-related risks, while emphasizing the overall favorable risk–benefit profile of vaccines, the long-term confidence in vaccination may be more likely to be supported. However, these are preliminary observations and more research needs to be conducted to identify approaches to which most parents would be receptive.

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