Addressing vaccine hesitancy

Clinical guidance for primary care physicians working with parents

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Abstract

Objective To provide primary care physicians with clinical guidance for addressing parental vaccine hesitancy.

Sources of information The PubMed database was searched for English-language articles published in the 10 years before January 1, 2018. Search terms included *vaccine hesitancy* or *confidence* or *acceptance, parents* or *children,* and *communication, counseling,* or *clinical practice*. References of identified articles were assessed for additional relevant articles. A separate gray literature search was conducted using Google to find best-practice guidelines from public health and health care organizations, knowledge translation materials for health care providers, and resources that could be used in discussions with parents about vaccines.

Main message Practical tips for addressing parental vaccine hesitancy in primary care include starting early, presenting vaccination as the default approach, building trust, being honest about side effects, providing reassurance on a robust vaccine safety system, focusing on protection of the child and community, telling stories, and addressing pain. Also provided are statements that providers could use in vaccination-related conversations; answers to commonly asked questions on benefits, safety, and immunologic aspects of vaccines; and links to a number of online resources for physicians and parents.

Conclusion Vaccine-hesitant parents who are on the fence far outnumber vaccine refusers; therefore, counseling this group might be more effective. Reasons behind vaccine hesitancy are complex and encompass more than just a knowledge deficit. As a trusted source of information on vaccines, family physicians play a key role in driving vaccine acceptance.

Editor's key points

- Vaccine hesitancy is a delay in acceptance or a refusal of vaccines despite the availability of vaccination services. Parental vaccine hesitancy is on the rise, and childhood vaccination coverage appears suboptimal for several vaccine-preventable diseases in Canada. The reasons behind it are complex.
- The authors suggest practitioners consider focusing counseling on vaccine-hesitant parents who underimmunize their children instead of on firm vaccine refusers who do not immunize their children at all.
- Although parents use the Internet to look for information on vaccination, physicians remain the most trusted information source. When discussing vaccination with hesitant parents, it is not enough to provide facts and numbers. The authors suggest telling stories, building trust with parents, addressing pain associated with vaccination, presenting vaccination as the default approach early on, focusing on the benefits of protection, and being honest about side effects when asked.

Vaccination is one of the most successful public health interventions.[1,2] It has led to the elimination and control of diseases that were once common in Canada.[1] Before vaccines, many Canadian children became severely ill or died from infectious diseases such as smallpox, polio, diphtheria, measles, and pertussis. Since the widespread use of vaccines, smallpox has been eradicated worldwide and endemic polio, measles, rubella, and congenital rubella syndrome have been eliminated in the Americas.[2,3]

Continued vigilance is required given recent outbreaks of vaccine-preventable diseases (VPDs) in Canada.[4] Sufficient herd immunity, which can be established by adequate vaccination rates, is required to prevent person-to-person transmission of infectious diseases.[5] Many recent outbreaks of measles, mumps, rubella, and pertussis have been linked to undervaccinated communities.[6] Adequate vaccine coverage is especially critical in the age of growing antimicrobial resistance and global travel.[7,8]

Parental concerns about vaccines are on the rise.[9] Recommendations from health care providers are important for vaccine acceptance; yet more than one-third of vaccine providers in Canada reported feeling uncomfortable counseling vaccine-hesitant patients.[6] Here we provide information on

parental vaccine hesitancy and practical clinical guidance for addressing it in the primary care setting.

Case description

A parent brings her child to a family medicine clinic for the 2-month well-child visit. The parent is unsure about having the infant vaccinated. She is worried about additives such as aluminum in vaccines. She has read stories on the Internet of children who were harmed by vaccines, including those on aluminum-related neurotoxicity. She does not consider herself "antivaccine" but has many questions.

Sources of information

We conducted key word searches that identified studies on parental vaccine hesitancy, with a focus on provider-patient communication. The PubMed database was searched for English-language articles published in the 10 years before January 1, 2018. Search terms included *vaccine hesitancy* or *confidence* or *acceptance, parents* or *children,* and *communication, counseling,* or *clinical practice*. References of identified articles were assessed for additional relevant articles. A separate gray literature search was conducted using Google to find best-practice guidelines from public health and health care organizations, knowledge translation materials for health care providers, and resources that could be used in discussions with parents about vaccines.

Main message

Childhood immunization rates in Canada. In Canada, childhood immunization rates are generally high, with only 1.5% of children having never received vaccines.[10] However, vaccine coverage remains below the target of 95% for many VPDs, including measles, mumps, rubella, varicella, diphtheria, pertussis, and tetanus.[11] Compared with other affluent countries, Canada was ranked 28th among 29 countries by a UNICEF pediatric vaccination metric, which measured vaccine uptake at 2 years of age.[12]

This is especially concerning given recent outbreaks of measles, mumps, and pertussis in Canada. There were 9 notable outbreaks of measles between 2005 and 2013, with the largest outbreak in the Americas since 2002 occurring in Quebec in 2012.[4] Owing to outbreaks in multiple locations across the country, there has been a 7-fold increase in the national incidence of pertussis in 2012.[13] In 2017, 4 provinces experienced outbreaks of mumps, with a higher number of cases reported starting in the fall of 2016.[14]

What is vaccine hesitancy and why is it important? The World Health Organization defines *vaccine hesitancy* as a "delay in acceptance or refusal of vaccines despite availability of vaccination services."[15] Most vaccine-hesitant parents are in the middle of a spectrum and underimmunize their children instead of not immunizing them at all.[16] According to a recent Canadian survey, although only 3% of parents refused all vaccines for their children (*vaccine refusers*), 19% consider themselves to be *vaccine hesitant*.[8] Vaccine-hesitant parents are a larger and more attentive group compared with vaccine refusers.[16,17]

Decision making around vaccination entails a complex mix of cultural, psychosocial, spiritual, political, and cognitive factors.[18] Reasons for vaccine hesitancy fit into 3 categories: lack of *confidence* (in effectiveness, safety, the system, or policy makers), *complacency* (perceived low risk of acquiring VPDs), and lack of *convenience* (in the availability, accessibility, and appeal of immunization services, including time, place, language, and cultural contexts).[19] According to recent Canadian surveys,[8] 70% of parents were concerned about potential side effects of vaccines and 38% believed that a vaccine could cause the disease that it was supposed to prevent. Canadian parents whose children were not immunized cited the lack of perceived necessity of vaccines (28%), concerns regarding vaccine safety (17%), and the perceived number of side effects (12%) as top reasons for not immunizing.[20] Another Canadian survey conducted on the measles-mumps-rubella vaccine in particular revealed that 14% of parents believed that it caused autism and another 14% were not sure.[21] Other commonly cited safety concerns include vaccine additives, long-term health problems, and overwhelming the immune system.[22]

What is the role of family physicians? Sixty-three percent of Canadian parents look for information about immunization on the Internet; of these, close to half perform a Google search.[20] This is concerning, as information about vaccination on websites and social networks is predominantly inaccurate or negative.[18] A large number of antivaccine websites exist that propagate a range of antivaccine messages.[23]

Fortunately, more than half of Canadian parents continue to receive information about vaccination from their physicians.[20] In addition, Canadian parents consider health care providers to be the most trusted information source about vaccination despite the increased use of Internet searches.[8] More than two-thirds of parents believe that physicians are the most reliable and trustworthy source of information on vaccination, while only 27% believe the Internet is the most reliable.[20] Parents who received information about vaccines from physicians were less likely to have vaccination concerns compared with those who received information from family and friends.[24] Therefore, family physicians can play an important role in counseling vaccine-hesitant parents and establishing vaccine confidence.

Discussing vaccination and encouraging vaccine-hesitant parents. Multiple approaches for communicating with parents about vaccination have

been recommended in the literature,[25-28] and different counseling strategies have been proposed.[8,29] However, these might be difficult to put into practice, and a Cochrane review reported insufficient evidence to recommend any specific face-to-face intervention.[30]

Practical, evidence-based counseling tips are provided below, in addition to concrete statements that can be used in conversations (**Table 1**),[25,31-33] answers to commonly asked questions (**Table 2**),[25,31,33-43] and online resources that provide up-to-date information (**Table 3**).[1,44-48]

Start early: Take advantage of prenatal appointments and the first few postnatal appointments.[39,49] A mixed-methods study showed that parents who delayed or refused vaccines were twice as likely to start thinking about vaccines before their children's births.[50] A randomized controlled trial showed that adherence to the immunization schedule improved with a single prenatal education session, and another showed benefit from stepwise education interventions prenatally, postnatally, and 1 month after birth.[51,52] At these appointments, parents can be provided with opportunities to ask questions and with credible take-home materials, websites, or tools.

Present vaccination as the default approach: The Centers for Disease Control and Prevention recommends a presumptive approach to discussions about vaccinations (**Table 1**)[25,31-33] and restating the recommendation after addressing parents' concerns.[31] A cross-sectional study found that parents were significantly more likely to resist vaccine recommendations if the provider used a participatory rather than a presumptive initiation format (odds ratio of 17.5, 95% CI 1.2 to 253.5) and that when providers pursued the original recommendations, almost half of initially resistant parents subsequently accepted the recommendations.[32] While a follow-up cross-sectional study showed that the presumptive initiation format had a lower-rated visit experience, it was still associated with higher parental vaccine acceptance at the end of the visit.[53]

*Be honest about side effects when asked, and reassure parents of a robust vaccine safety system (**Table 1**)[25,31-33,40,54]:* A 2014 systematic review showed that serious adverse events associated with vaccines are extremely rare.[55] Perceived risk might be lowered by acknowledging that vaccines might result in mild side effects and very rarely serious adverse events.[56] The Canadian vaccine safety system has 8 components, including an evidence-based approval process, manufacturer regulations, independent recommendations for vaccine use, and ongoing monitoring of adverse events.[44] It has been shown in a randomized controlled trial that providing general information on the adverse event reporting system might increase trust and vaccine acceptance among adults.[57] However, no similar study was found for childhood immunization.

Tell stories in addition to providing scientific facts[33,58]: According to a survey of primary care physicians in the United States, the most common communication practices deemed very effective for convincing sceptical parents were personal statements by physicians about what they would do for their own children and about their personal experiences with vaccine safety among their patients.[59] Stories and images highlighting the effects of VPDs improved attitudes toward vaccination according to a randomized controlled trial, especially for individuals who had lower confidence in vaccines.[60] However, another randomized controlled trial showed that dramatic narratives and images resulted in no significant change in intention to vaccinate and even decreased intention among those who had the least favourable perception.[61] However, this study tested Web-based messages only. Although more evidence is needed on the topic, storytelling, which has commonly been used by the antivaccine movement, has been proposed as a possible messaging technique to supplement evidence-based information.[62]

Build trust with parents: A recent review found that parental trust in a provider helps ensure vaccine compliance.[63] A qualitative study reported that a mother's trust is obtained when a provider spends time discussing vaccines, does not deride her concerns, is knowledgeable, and provides satisfactory answers.[64] Other qualitative studies identified respect, empathy, and tailored information as aspects of communication competence.[63]

Table 1. Sample statements for use by providers during vaccination-related conversations

APPROACH	SAMPLE STATEMENTS
Start the conversation on vaccination using a presumptive approach[31,32]	"Today we are going to give your child the recommended vaccines to keep the child healthy" "Your child needs 3 vaccines today" (instead of "What do you want to do about the shots?")
If parents are still unsure, continue the conversation on vaccination, address concerns, and make a strong recommendation[32]	"I strongly recommend your child receive these vaccines today" "These shots are very important for protecting your child from serious diseases"
Describe benefits of vaccines[33]	"Vaccines work. Serious diseases can occur if your child is not immunized"
Describe side effects[25,31]	"There is a risk with vaccines just as with everything we do in life, like driving a car or riding a bike" "The risk of anaphylaxis after vaccination is approximately 1 in a million, the same as the yearly risk of being struck by lightning"

Table 2. Answers to questions commonly asked by parents

QUESTION	SAMPLE ANSWER
Benefits of vaccines	
• "Can my child still get a disease even after being vaccinated?"[34,35]	"This is not very common. More than 95% to 99% of children develop immunity after vaccination, which further improves with boosters.[33] Vaccinated children often get milder symptoms even if they do get the disease"
• "Do we still need to give vaccines, as many of the diseases are no longer here?"[34]	"Your child might never need the protection offered by vaccines, but you do not want her or him to be lacking the protection needed in the event of an outbreak, which still happens in Canada for diseases such as measles, mumps, and whooping cough. Vaccination is similar to wearing a seat belt; you do not expect to be in a collision, but in the unlikely event that you are in one, you want to be protected. Even if right now your child is able to avoid infectious diseases as everyone around is vaccinated, what if she or he decide to work elsewhere in the world later in life?[31] Even if your child never travels internationally, others in your community travel and can bring back diseases"[36,37]
Safety of vaccines	
• "How do we know vaccines are safe?"[25,38]	"The safety of each vaccine is carefully checked before it is licensed and it is monitored on an ongoing basis after licensing. If a serious side effect is found, the vaccine is pulled from the market. I understand you might be concerned, but I truly believe that the risk of diseases is greater than any risk posed by vaccines"[39,40]
• "How do we know vaccines do not cause long-term health problems?"[34,40]	"Based on more than 50 years of experience with vaccines, it is not likely that vaccines cause unexpected long-term problems. Studies have found no relationship between vaccination and development of chronic diseases"[25]
• "Can my child get a disease from the vaccine itself?"[34,41]	"Inactivated or killed vaccines, which make up most vaccines, cannot give you the disease from the vaccine itself. Live vaccines contain viruses that are weakened, so occasionally you might get a mild case of disease (for example, a few spots of what look like chickenpox or measles). This is not harmful and actually means that the vaccine is working"
• "Aren't the ingredients in vaccines toxic?"[34]	"Some ingredients in vaccines might be toxic, but only at much higher doses. Remember, even water can be toxic at high enough doses. The ingredients in vaccines are there to keep them from getting contaminated by bacteria and to make them work better"
• "Why is aluminum in vaccines?"[38]	"Aluminum is used to boost the immune system.[34] It is commonly ingested from food, drinking water, and medicine. In fact, the amount of aluminum found in a vaccine is similar to the amount present in breast milk and infant formula"[38]
• "Why is formaldehyde in vaccines?"[38]	"Formaldehyde is used as a preservative. It is found naturally in foods.[42] In fact, more formaldehyde is present in a pear than in all the vaccines a child receives"[31]
• "Should I be concerned about mercury in vaccines?"[42]	"Thimerosal is a form of mercury different from naturally occurring mercury like what is found in fish and cannot build up in a person's body. Multiple studies have shown that thimerosal in vaccines is not harmful. It is no longer found in any routine childhood vaccines.[25] It is only used as a preservative in certain influenza vaccines to prevent contamination"
• "Doesn't the MMR vaccine cause autism?"[38,39,41]	"We all want answers to the cause of autism, including me. But study after study has shown that vaccines do not cause autism.[43] One study showed that the rates of autism were the same in groups of children who received the vaccine compared with those who did not receive the vaccine"
Immunity related	
• "Isn't vaccination unnatural?"[34]	"No, vaccines invite the immune system to produce its own protection, just like a natural infection would.[31] The difference is your child does not have to get sick first to develop these protective antibodies"
• "Isn't natural immunity better than vaccination?"[36,42]	"Although natural immunity might give better immunity than vaccines do, the risks are much higher. With natural infections, a child might develop complications such as permanent brain damage, deafness, blindness, and death. On the other hand, if your child is exposed to a disease after being vaccinated, he or she would already be armed and able to fight it off"[35]
• "Can't so many vaccines overwhelm my child's immune system?"[25,34,42]	"A child's immune system has to deal with thousands of germs on a daily basis starting at birth. Scientists estimate that babies can handle up to 10 000 shots at one time.[25] By stimulating the immune system to do what it is naturally meant to do, vaccines make your child's immune system better at fighting off these diseases"[38]

MMR—measles-mumps-rubella.

Address pain: Pain associated with vaccination is a concern for many parents and children.[9] Evidence-based clinical practice guidelines have been developed to reduce vaccination-associated pain (**Table 4**).[65]

Focus on protection for the child and community: Necessity of vaccines is the top concern from Canadian parents, and a study conducted in Quebec found that one of the strongest factors associated with parental vaccine hesitancy was the belief that VPDs were not serious.[66] A study conducted in the United States had similar findings.[67] To highlight the importance of individual protection, the use of motivational interviewing could be considered.[68] A recent Canadian randomized controlled trial showed that motivational interviewing on maternity wards increased the intention to vaccinate by 20% and the likelihood of complete vaccination status by 9%.[69] A systematic review concluded that there might be some parental willingness to vaccinate children for the benefit of others; however, its relative importance as a motivating tool is uncertain.[70]

Limitations of evidence. Vaccine hesitancy is an emerging area of research, and literature on ways to counsel vaccine-hesitant parents is currently limited.

Table 3. Selected resources on vaccination for health care providers and parents

SOURCE, YEAR LAST MODIFIED	RESOURCE	WEB ADDRESS*
For health care providers		
• Public Health Agency of Canada, 2018	*Canadian Immunization Guide*[1]	**www.canada.ca/en/public-health/services/canadian-immunization-guide.html**
• NACI, 2018	NACI recommendations, statements, and updates	**www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci.html**
• Canadian Paediatric Society, 2017	Canada's eight-component vaccine safety system: a primer for healthcare workers[44]	**www.cps.ca/en/documents/position/vaccine-safety-system**
• Canadian Medical Protective Association, 2017	Duties and responsibilities. Expectations of physicians in practice. How to address vaccine hesitancy and refusal by patients or their legal guardians[45]	**www.cmpa-acpm.ca/en/advice-publications/browse-articles/2017/how-to-address-vaccine-hesitancy-and-refusal-by-patients-or-their-legal-guardians**
• Immunization Action Coalition, 2018	Unprotected People Reports	**www.immunize.org/reports**
For parents		
• Public Health Agency of Canada, 2018	*A Parent's Guide to Vaccination*[46]	**www.canada.ca/content/dam/phac-aspc/documents/services/publications/healthy-living/parent-guide-vaccination/pgi-gpv-eng.pdf**
• Immunize Canada, 2017	CANImmunize app	**www.canimmunize.ca/en/home**
• Canadian Paediatric Society, 2016	Choosing not to vaccinate your child? Know your risks and responsibilities[47]	**www.caringforkids.cps.ca/uploads/handout_images/CFK_tearsheet-ENG(post).pdf**
• Canadian Paediatric Society, 2015	*Your Child's Best Shot. A Parent's Guide to Vaccination.* 4th ed[48]	**bookstore.cps.ca/stock/details/your-childs-best-shot-a-parents-guide-to-vaccination-4th-edition**

NACI—National Advisory Committee on Immunization.
*Links last accessed on January 24, 2019.

Table 4. Interventions to reduce the pain associated with vaccination

TYPE OF INTERVENTION	STRONGLY RECOMMENDED INTERVENTIONS
Procedural	For all children, no aspiration during intramuscular vaccine injections; inject the most painful vaccine last
Physical	For children aged ≤2 y, breastfeed during vaccine injections. For children aged ≤1 mo, encourage skin-to-skin contact
Positioning	For children aged ≤3 y, encourage holding during injections, and if holding is not used, encourage patting or rocking after injections. Encourage children >3 y to sit up during injections
Pharmacologic	For children aged ≤12 y, consider topical anesthetics before injections. For those aged ≤2 y, consider sucrose or glucose solutions before injections
Process	Educate parents of children of all ages about pain management for vaccine injection before or on the day of vaccination. For children aged ≤10 y, parents should be present during vaccine injections

Data from Taddio et al.[65]

Many research studies have qualitative designs, and some quantitative studies are observational in nature. Future studies should aim to supplement existing literature with larger and higher-quality quantitative studies on the specific types of counseling interventions identified in this article.

Case resolution

The physician carefully listens to the parent's concerns. She empathizes and is not dismissive or judgmental. She explains to the parent that additives are put into vaccines for specific reasons; aluminum is added to help the vaccine work better by boosting the immune system. She reassures the parent that aluminum is commonly found in the environment, and the very small amount in vaccines, which is similar to levels found in breast milk and infant formula, is not harmful. She reassures the parent about the robust vaccine safety system in Canada. She explains that because others in the community travel, many of the diseases that had disappeared in Canada have come back and made Canadian children very sick. She makes a strong recommendation that the child receive the vaccines today. The parent is still unsure, so the physician offers take-home resources and schedules another longer appointment in 2 weeks to answer any additional questions, with plans to vaccinate the child at that time.

Conclusion

Parental vaccine hesitancy is an important issue in Canada. Decision making around vaccination is complex. As the most trusted source of information on vaccination, physicians are uniquely positioned to sway parents from vaccine hesitancy to acceptance. Facts are not enough to change the views of vaccine-hesitant parents. Present vaccination as the default approach early on; be honest about side effects; maintain trust; focus on protection; and address pain. Be prepared to answer commonly asked questions and know where to find answers to unfamiliar questions. Provide credible resources to parents, especially if they ask.

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Contributors
Both authors contributed to the literature review and interpretation and to preparing the manuscript for submission.

Competing interests
None declared

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This article has been peer reviewed. *Can Fam Physician* 2019;65:175-81

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