Canadian Guidance on Addressing Vaccine Hesitancy to Help Foster Vaccine Demand and Acceptance

Full Report

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Building Resilient Pro-Vaccine Communities

Building the capacity to improve vaccine acceptance and uptake

The Canadian Vaccination Evidence Resource and Exchange Centre (CANVax) is an online database of curated resources to support immunization program planning and promotional activities to improve vaccine acceptance and uptake in Canada. As an online resource centre, CANVax aims to increase access to evidence-based products, resources, and tools to inform public health professionals in immunization program planning and promotion.

CANVax has been developed by the Canadian Public Health Association. Production of CANVax has been made possible through funding from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the view of the Public Health Agency of Canada.

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PREFACE

This document was adapted from the **Western Pacific Regional Guidance on Addressing Vaccine Hesitancy to Help Foster Vaccine Demand** document, drafted in 2017 in response to the recommendation at the meeting of the Technical Advisory Group (TAG) on Immunization and Vaccine-Preventable Diseases in the Western Pacific Region (WPR), in July 2016.

Purpose and Specific Objectives of the Guidance as per WPR

The main purpose of the regional guideline on vaccine hesitancy is to help Member States to:

1. Identify the extent of vaccine hesitancy in the country.
2. Identify vaccine-hesitant population subgroups.
3. Diagnose the demand- and supply-side immunization barriers and enablers.
4. Design evidence-informed strategies to address hesitancy appropriate for the subgroup setting, context and vaccine.
5. Receive and provide support for regional coordination to successfully address vaccine hesitancy in the country.

The initial WPR draft, including the two Aide Memoires, was written by Noni E MacDonald, Dalhousie University, Halifax Canada, with input from Eve Dubé, Institut national de santé publique du Québec, Québec, Canada, Lisa Menning and Melanie Marti, Immunization, Vaccines and Biologicals, World Health Organization (WHO), Geneva, Switzerland and Sarah Long, Dalhousie University.

Canadian Guidance

The WPR document was then re-crafted by Noni E MacDonald and Eve Dubé to address the Canadian context, and sections were updated.

Each section has been written to integrate with the other sections but also to be able to stand alone. The main emphasis is on the diagnosis of hesitancy and focuses on interventions that can increase vaccine uptake at the program and individual levels.

Table of Contents

Section 1. Vaccine Hesitancy and Vaccine Demand: Definitions and Determinants

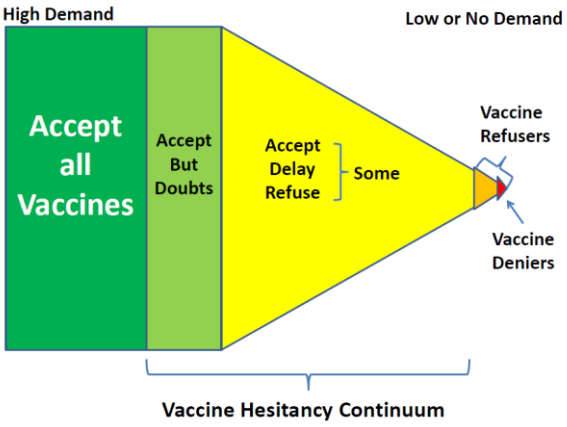
World Health Organization Definition of Vaccine Hesitancy and its Determinants

While vaccine acceptance is the norm in the vast majority of populations globally, a minority hesitates to accept some or all vaccines recommended in their country's immunization program schedule. The Strategic Advisory Group of Experts (SAGE) on Immunization of the World Health Organization defined vaccine hesitancy in 2014[1] (see box) and Figure 1.1.

SAGE retained the term 'vaccine' rather than 'vaccination' hesitancy – although the latter more correctly implies the broader range of immunization concerns – as vaccine hesitancy is the more commonly used term.[2]

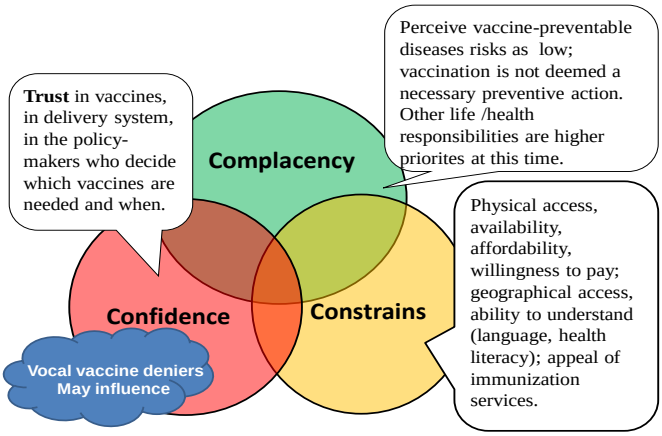
> ***SAGE Definition of Vaccine Hesitancy:***
> *Vaccine hesitancy is the delay in acceptance or refusal of vaccination despite availability of vaccination services. SAGE also notes that "vaccine hesitancy is complex and context specific, varying across time, place and vaccines." It is influenced by factors such as complacency, constraints and confidence. (2014)*

Figure 1.1 Vaccine Hesitancy Continuum



While there are a number of models for grouping the determinants of vaccine hesitancy, SAGE selected the "3 Cs" model that highlights complacency, constraints and confidence (Figure 1.2) to include in the definition.

Figure 1.2 Vaccine Hesitancy 3Cs Determinant Model



This 3Cs model emphasizes the complexity of factors influencing hesitancy. Within a subgroup or an individual, more than one determinant may influence the decision to hesitate in accepting a specific vaccine at a given time.

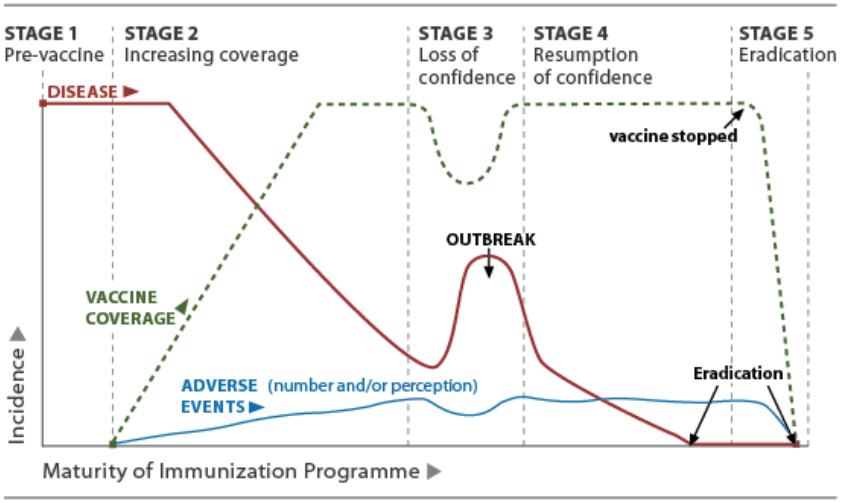
The SAGE Working Group Vaccine Hesitancy also proposed a more comprehensive Matrix of Determinants (see Table 1.1).[1,3]

Table 1.1 SAGE Working Group on Vaccine Hesitancy Matrix of Determinants

CONTEXTUAL INFLUENCES Influences arising due to historic, socio-cultural, environmental, health system/institutional, economic or political factors	**a.** Communication and media environment **b.** Influential leaders, immunization program gatekeepers and anti- or pro-vaccination lobbies. **c.** Historical influences **d.** Religion/culture/ gender/socio-economic **e.** Politics/policies **f.** Geographic barriers **g.** Perception of the pharmaceutical industry
INDIVIDUAL AND GROUP INFLUENCES Influences arising from personal perception of the vaccine or influences of the social/peer environment	a. Personal, family and/or community members' experience with vaccination, including pain b. Beliefs, attitudes about health and prevention c. Knowledge/awareness d. Health system and providers-trust and personal experience. e. Risk/benefit (perceived, heuristic) f. Immunisation as a social norm vs. not needed/harmful
VACCINE/ VACCINATION–SPECIFIC ISSUES Directly related to vaccine or vaccination	a. Risk/ Benefit (epidemiological and scientific evidence) b. Introduction of a new vaccine or new formulation or a new recommendation for an existing vaccine c. Mode of administration d. Design of vaccination program/Mode of delivery (e.g., routine program or mass vaccination campaign) e. Reliability and/or source of supply of vaccine and/or vaccination equipment f. Vaccination schedule g. Costs h. The strength of the recommendation and/or knowledge base and/or attitude of healthcare professionals

The lived experience of the population with respect to specific vaccine-preventable diseases also varies and changes over time, as illustrated in Figure 1.3. This figure highlights that confidence, complacency or constraints determinants may be more or less prominent at the same time.[4]

Figure 1.3 Variation in Vaccine Coverage over Time as Polio Vaccine is Introduced



After in 2014 when the 3Cs and Matrix of Determinants Vaccine Hesitancy models were presented, a 2016 model proposed by Thomson and colleagues centered on the 5As: Access, Affordability, Awareness, Acceptance and Activation (Table 1.2).[5] This encompasses components of both hesitancy and demand (see Demand, below).

Table 1.2 Determinants of Vaccine Uptake

Root Causes	Definition
Access	Ability of individuals to be reached by or to reach recommended vaccines
Affordability	Ability of individuals to afford vaccination both in terms of financial and nonfinancial costs (time)
Awareness	Degree to which individuals have knowledge of the need for and availability of recommended vaccines
Acceptance	Degree to which individuals accept, question or refuse vaccination
Activation	Degree to which individuals are nudged towards vaccination uptake

A 2016 consultation study of Canadian experts and health professionals concerning the definition, scope, and causes of vaccine hesitancy in Canada revealed that the majority saw confidence as the main issue.[6] The Canadian proposed definition therefore emphasizes this aspect: "*Vaccine hesitancy in Canada has been defined as the reluctance to receive recommended vaccination because of concerns and doubts about vaccines that may or may not lead to delayed vaccination or refusal of one, many or all vaccines."*[7] However, complacency and constraints are also known factors causing hesitancy in Canada.

Definition of Vaccine Demand and its Determinants

The Global Vaccine Action Plan (GVAP) Strategic Objective 2 (SO2) differs from the other Strategic Objectives as it does not focus on the supply-side of immunization programs, but on public demand for vaccines and immunization services. Demand, as expressed in SO2, encompasses more than hesitancy and is defined in terms of behaviours rather than attitudes, using verbs like ***seeking*** (individual behaviour), ***supporting*** (expressing a social norm), and ***advocating*** (organizing action to claim rights and influence decision makers). The definition is supplemented with accompanying statements that emphasize the responsibility of programs to promote and sustain vaccination demand, as well as the recognition of the variability in manifestations and determinants of demand according to context. [8]

SAGE Decade of Vaccines Working Group Definition of Vaccine Demand

> *Demand is the actions of individuals and communities to seek, support, and/or advocate for vaccines and immunization services. Demand is dynamic and varies by context, vaccine, immunization services provided, time, and place. Demand is fostered by governments, immunization program managers, public and private sector providers, local leadership, and civil society organizations hearing and acting on the voices of individuals and communities. (2017)*

KEY POINTS

- Vaccine hesitancy is complex and context specific, varying across time, place and vaccines.
- Vaccine hesitancy is influenced by factors such as complacency, constraints and confidence, and falls in the middle of the spectrum between strong vaccine demand and acceptance, and vaccine refusal and anti-vaccination.

References

1. SAGE Working Group World Health Organization. Report of the SAGE Working Group on Vaccine hesitancy November 2014. Available from: http://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf.

2. MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Vaccine Hesitancy: Defintion, scope and determinants. Vaccine. 2015; 33: p. 4161-4.

3. Marti M, de Cola M, MacDonald NE, Dumolard L, Duclos P. Assessments of global drivers of vaccine hesitancy in 2014-Looking beyond safety concerns. PLoS one. 2017 March 1; 12(3): p. e0172310.

4. World Health Organization. WHO Vaccine Safety e learning course. Module 1: Introduction to Vaccine safety. Available from: http://vaccine-safety-training.org/vaccine-safety-in-immunization-programmes.html.

5. Thomson A, Robinson K, Vallée-Tourangeau G. The 5As: A practical taxonomy for the determinants of vaccine uptake. Vaccine. 2016; 34(8): p. 1018-24.

6. Dubé E, Gagnon D, Ouakki M, Bettinger JA, Guay M, Halperin S, et al. Understanding Vaccine Hesitancy in Canada: Results of a Consultation Study by the Canadian Immunization Research Network. PLoS one. 2016; 11(6): p. e0156118.

7. Dubé E, Bettinger JA, Fisher WA, Naus M, Mahmud SM, Hilderman T. Vaccine acceptance, hesitancy and refusal in Canada: Challenges and potential approaches. Can Comm Dis Rep. 2016; 42(12): p. 246-5.

8. Hickler B, MacDonald NE, Senouci K, Schuh HB, and the informal Working Group on Vaccine Demand (iWGVD) for the Strategic Advisory Group of Experts on immunization (SAGE). Efforts to monitor Global progress on individual and community demand for immunization: Development of definitions and indicators for the Global Vaccine Action Plan Strategic Objective 2. Vaccine. 2017; 35(28): p. 3515-3519.

Section 2. Vaccine Hesitancy Globally and in Canada

Global Perspective on Vaccine Hesitancy: Data from WHO UNICEF Joint Reporting Form

In 2013, the Strategic Advisory Group of Experts (SAGE) on Immunization's Working Group on Vaccine Hesitancy developed two indicators that were incorporated into the WHO UNICEF Joint Reporting Form (JRF) for the first time in 2014[1] with the first reported data available in 2015.[2]

The two indicators were:

Indicator 1: Reasons for vaccine hesitancy.

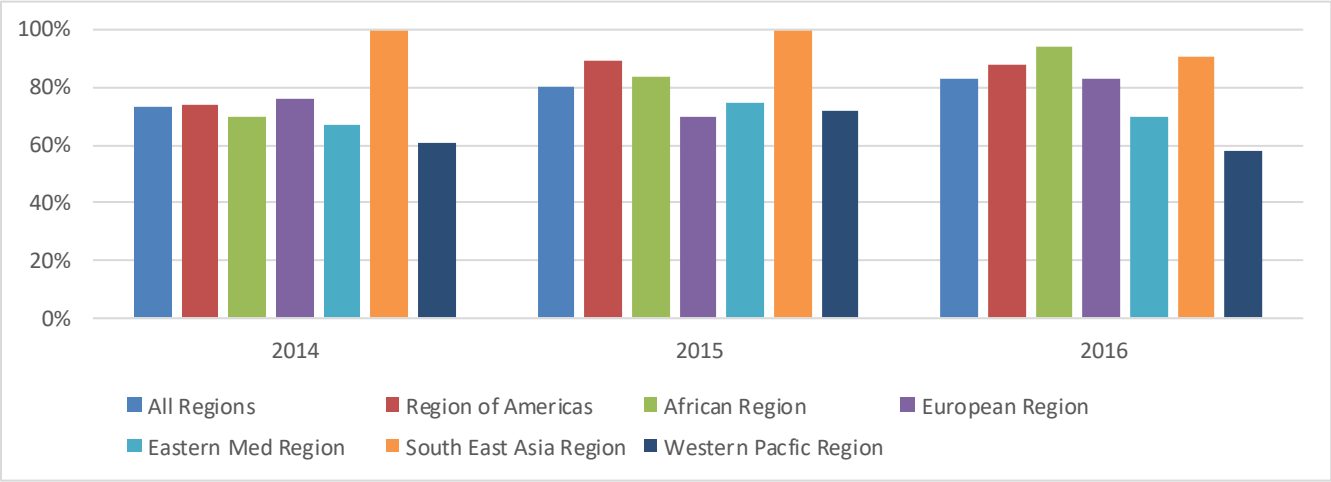
- Question 1: What are the top three reasons for not accepting vaccines according to the national schedule?
- Question 2: Is this response based on or supported by some type of assessment, or is it an opinion based on your knowledge and expertise?

Indicator 2: Percentage of countries that have assessed the level of hesitancy in vaccination at the national or subnational level.

- Question 1: Has there been some assessment (or measurement) of the level of confidence in vaccination at the national or subnational level in the past (<5 years)?
- Question 2: If yes, please specify the type and year, and provide assessment title(s) and reference(s) to any publication/report.

The response rate to these JRF indicators increased over the years, from 2014 to 2016 (see Figure 2.1). With respect to the Region of the Americas (Pan American Health Organization), there was an increase from 70% of countries responding in 2014 (i.e. reported in 2015 JRF) to nearly 90% in 2015. Canada did not respond to this indicator in 2015, but did in 2016 and 2017.

Figure 2.1 JRF Vaccine Hesitancy Response Rate



In 2017, a review of the three years of responses to these indicators in the annual JRF (i.e. for the years 2014, 2015, 2016 reports – available in 2015, 2016, 2017) revealed that hesitancy was common, and was reported in >90% of countries.[3,4]

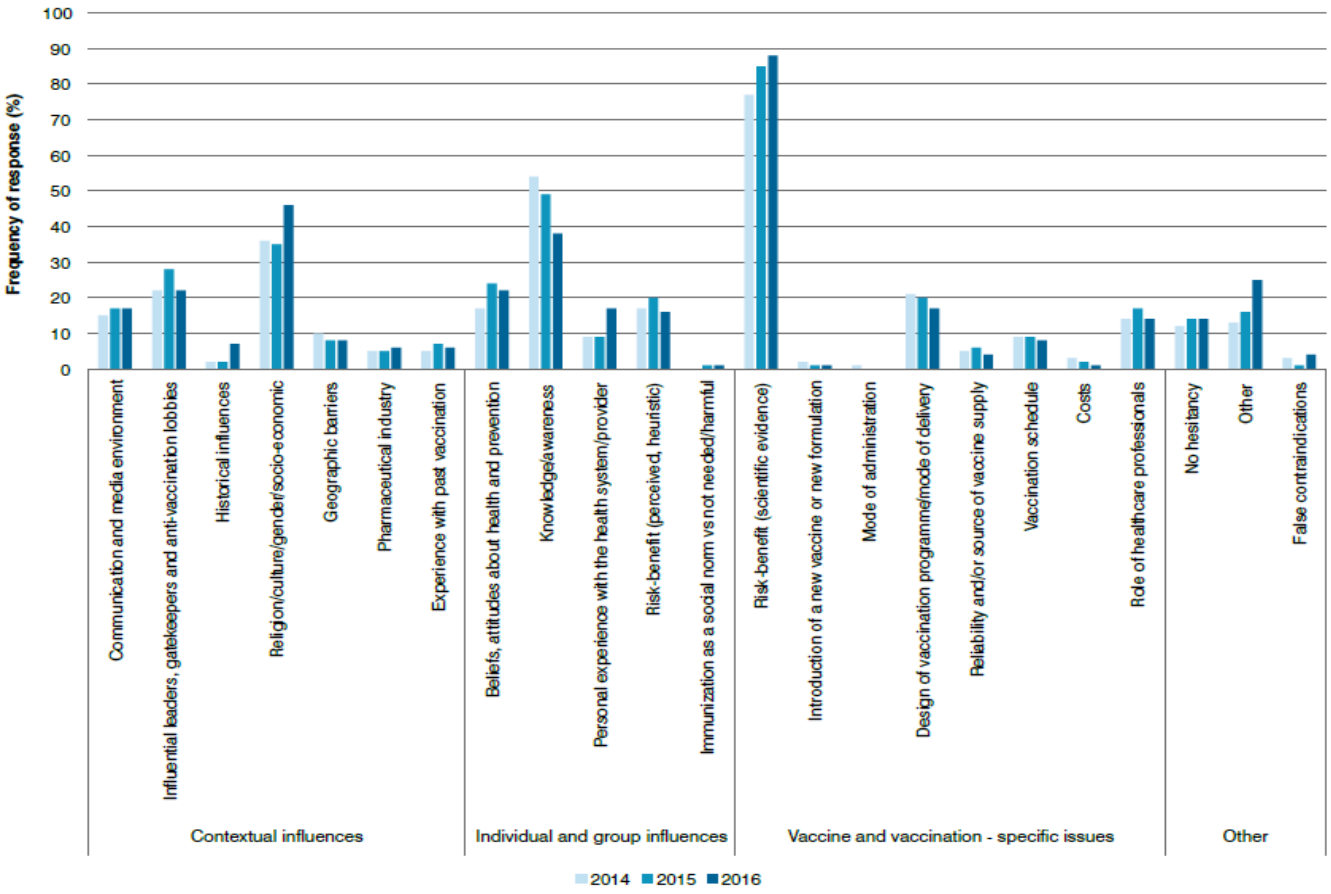
Using the WHO SAGE Working Group on Vaccine Hesitancy Matrix of Determinants (see Section 1 – Vaccine Hesitancy and Vaccine Demand: Table 1.1) to categorize the reasons for vaccine hesitancy reported by the countries, the top three most frequently cited determinants globally were consistent across the three years, although their ranking and frequency changed.[3,4]

These three determinants were:

a. *Risk–benefit (scientific evidence perception);*
b. *Lack of knowledge and awareness of vaccination and its importance*;
c. *Religion, culture, gender and socioeconomic issues, in particular religious reasons*.

Overall, the reasons cited for hesitancy across the three years covered 20 of 23 WHO Determinants Matrix categories.[4] However, even the most frequently cited category, *risk-benefit (scientific evidence, e.g. vaccine safety concerns),* accounted for less than one quarter of all reasons cited.[4] The reasons varied by country income level, by WHO region over time, and within a country. Of note: in high-income countries, e.g., like Canada, risk–benefit (scientific evidence) remained the most commonly cited reason over the three years, with relative consistency of 28%, 31% and 29% in 2014, 2015 and 2016 respectively[4] – see Figure 2.2.

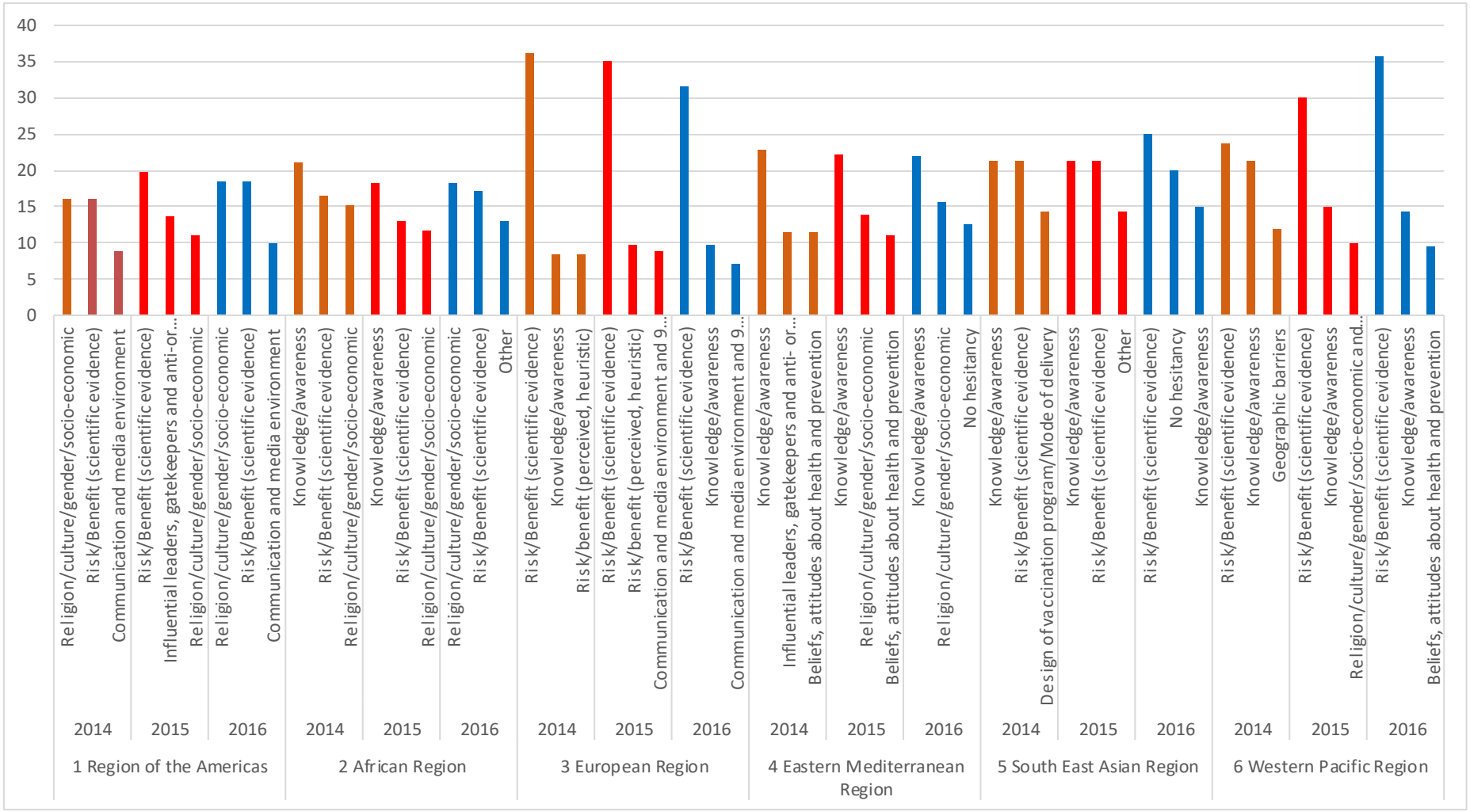
Figure 2.2 Top 3 Reasons Reported Across the Globe for Hesitancy in 2014, 2015, and 2016[3]



Pan American Health Organization Perspective

The top three reasons reported in the Americas differed somewhat from the other five WHO regions (see Figure 2.3). In all regions there was a shift in reasons over the three years, but this was the most pronounced in the AFRO region.

Figure 2.3 Top 3 Reasons Reported by WHO Regions for 2014, 2015, and 2016[3]



Canadian Perspective

Data from WHO UNICEF Joint Reporting Form

Canada reported on vaccine hesitancy in the 2016 and 2017 JRF reports, but did not report in 2014. The top three reasons cited by Canada for 2015 and 2016 are shown in Table 2.1. The 2016 reasons cited were reported based upon an assessment of the Canadian National Immunization Coverage Survey 2013 data.

Table 2.1 Top 3 Reasons Cited for Vaccine Hesitancy by Canada for the Years 2015 and 2016 in the JRF Reports

2015	2016
1. Fears about safety and effectiveness	1. Vaccine safety concerns
2. Complacency and questions related to relevance of vaccination	2. Philosophical or religious reasons
3. Fear of needles/ pain	3. Perceptions of too many vaccines

Fear of needles is both interesting and not surprising, given that Canada is a leader in recognizing that pain during immunization is a significant concern for parents and for children.[5] Taddio found that needle fear is common, reported by 24% of parents and 63% of children, and that needle fear was a major reason for immunization non-compliance for 7% of parents and 8% of children. In the JRF reports, needle fear was rarely reported in the top three reasons (only in three other countries), but this may reflect low detection and poor recognition.

Hesitancy studies in Canada

Surveys of parents have shown that hesitancy is an issue in Canada. For at least the past decade, 10 to 15% of parents have been reluctant to have their children receive vaccines; a far cry from the 1950s, when parents anxious about polio often waited in line for hours to ensure their children were immunized. Hesitancy is not just an issue for parents with young children. Parents may also be hesitant about HPV vaccine for their adolescent children and some adolescents themselves are hesitant. Hesitancy is also a problem for adult and senior vaccine acceptance. For example, for health care workers in Canada, while they accept screening for immunization and/or immunity as a condition of service for work in a hospital or health care facility, requirements for annual influenza immunization have proven to be much more contentious.[6] Many are hesitant about annual influenza immunization.

Recent surveys of parents of young children in Canada suggest that, while vaccine acceptance is high – well over 80% – even amongst parents willing to have their children immunized, there are some who are hesitant and have concerns. One third of Canadian parents were sceptically cautious about vaccine safety, were not convinced by the science of herd immunity and considered themselves to be vaccine-hesitant.[7-11] Common concerns included confidence issues such as fear of adverse events and harms, lack of trust, difficulty in accessing vaccines, and the belief that mandatory vaccines may be being pushed by the pharmaceutical industry. Pain concerns were often not been probed for, and were therefore not cited.

KEY POINTS

Globally

- Vaccine hesitancy has been reported in almost all countries globally.
- The most common reported reasons were risk-benefit (epidemiological and scientific evidence), lack of knowledge/awareness, and beliefs and attitudes.
- These reasons varied by income level, WHO region, by country and over time.

In Canada

- Vaccine hesitancy is well recognized across the country.
- The most common reasons fall into the confidence determinant category, but access, complacency and concerns about pain are also important.

References

1. SAGE Working Group World Health Organization. Report of the SAGE Working Group on Vaccine hesitancy November 2014. Available from: http://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf.

2. Marti M, de Cola M, MacDonald NE, Dumolard L, Duclos P. Assessments of global drivers of vaccine hesitancy in 2014-Looking beyond safety concerns. PLoS one. 2017 March 1; 12(3): p. e0172310.

3. World Health Organization. Global Vaccine Action Plan Secretariat. Global Vaccine Action Plan Secretariat Annual Report 2017. 2017. Available from: http://www.who.int/immunization/sage/meetings/2017/october/3_GVAP_SecReport2017.pdf.

4. Lane S, MacDonald NE, Marti M, Dumolard L. Vaccine hesitancy around the globe: a three year assessment of data from the annual WHO/UNICEF Joint Reporting Form. Vaccine. 2018 (in press).

5. Taddio A, Ipp M, Thivakaran S, Jamal A, Parikh C, Smart S, et al. Survey of the prevalence of immunization non-compliance due to needle fears in children and adults. Vaccine. 2012; 30(32): p. 4807–12.

6. Gruben V, Siemieniuk RA, McGeer A. Health care workers, mandatory influenza vaccination policies and the law. CMAJ. 2014; 186(14): p. 1076-80.

7. Dubé E, Gagnon D, Ouakki M. Attitudes et croyances des parents québécois sur la vaccination - Enquête sur la couverture vaccinale des enfants de 1 an et 2 ans au Québec en 2014, 2016. Quebec; 2016.

8. Dubé E, Gagnon D, Zhou Z, Deceuninck G. Parental Vaccine Hesitancy in Quebec (Canada). PLoS Curr. 2016 Mar 7; p. 8.

9. Dubé E, Gagnon D, Ouakki M, Bettinger JA, Witteman HO, MacDonald S, et al. Measuring vaccine acceptance among Canadian parents: A survey of the Canadian Immunization Research Network. Vaccine. 2018; 36(4): p. 545-552.

10. Shapiro GK, Tatar O, Dubé E, Amsel R, Knauper B, Naz A, et al. The vaccine hesitancy scale: Psychometric properties and validation. Vaccine. 2018; 36(5): p. 660-667.

11. Greenberg J, Dubé E, Driedger M. Vaccine Hesitancy: In Search of the Risk Communication Comfort Zone. PLoS Curr. 2017 Mar 3; p. 9.

Section 3. Strategies to Detect Vaccine Hesitancy

Resistance to vaccination is as old as vaccination itself – people have been reluctant to accept vaccination since Edward Jenner first scraped cowpox blisters and inoculated people in the early 1800s. However, even in the time of Jenner, concern about vaccines was not uniform across a country, or within one area, or between ethnic groups within a country. Assessing whether hesitancy is present in a population to any significant degree and differentiating hesitancy from other reasons why children/adults are unvaccinated or under-vaccinated is essential for the selection of interventions needed to address lower-than-expected vaccine uptake.

Canada has been fortunate not to see the sharp and steep dips in vaccine acceptance for a specific vaccine that have been seen in several other high-income countries when vaccine scares have garnered much attention. However, periodic anti-HPV media stories have undermined efforts to build strong trust in the HPV vaccine. HPV vaccine acceptance rates are not uniformly over 90% across Canada. In Denmark, concerns about HPV vaccine safety fuelled by major media coverage led to a sudden sharp and prolonged decrease in HPV acceptance: from 90% acceptance to under 40% (Denmark campaign rebuilds confidence in HPV vaccination).[1] The rise in concerns increased the pressure to suspend the HPV vaccine. Any decision to suspend a vaccine program because of a cluster of serious AEFI, even if these are deaths, is rarely indicated as problems with the vaccine manufacturing are exceedingly rare and death due to vaccine itself almost never occurs (estimated rate of fatal anaphylaxis: 1 in 10,000,000).[2] A program error (e.g., Syria 2014, where there was an error in diluent used to prepare MR vaccine),[3] anxiety-related stress reaction clusters[4] or coincidental events are far more likely to be the cause in such clusters – not the vaccine itself.

Detection of Hesitancy – Non-Crisis Setting

Monitoring a Population for the Presence of Hesitancy

Knowing that vaccine acceptance is not reaching program targets suggests vaccine hesitancy may be present in a country or sub group within the country. However, supply-side issues may also contribute to lower-than-desired rates, not just hesitancy. As noted in a national survey in Canada by Dubé and colleagues, parents who had experienced vaccine access problems were less likely to be strongly positive about intending to vaccinate their child in the future.[5] Given that acceptance of vaccination is an outcome behaviour that results from a complex decision-making process that can be potentially influenced by a wide range of factors (see Section 1 – Vaccine Hesitancy and Vaccine Demand: Table 1.2), lower-than-expected uptake rates among any subgroup in any regions in Canada need to be thoughtfully assessed and addressed. Access problems (i.e. constraints) as well as complacency – not just confidence issues – must be considered.

Step 1: Determine if hesitancy is present, to what degree, where and whom

Different strategies are possible to assess hesitancy across a country, such as periodic surveys, systematic ongoing clinic/hospital/practice surveys, selected subgroup, surveys, etc. The Report of the SAGE Working Group on Vaccine Hesitancy provides potential survey questions[6] (see Section 5B: Table 2 pages 28-30), some of which have been validated in the field[7-8] including in Canada, albeit only in English and in French.[9] These cover a range of areas set out in three tables including contextual influences, individual and group Influences, and vaccine- and vaccination-specific issues.[6] The questions that cover the topics in the Vaccine Hesitancy Matrix are also used to classify the responses to the vaccine hesitancy indicator questions in the JRF survey reports from 2014 onwards, and cover the areas of confidence, complacency and constraints in the 3Cs model as well.[6]

When using these questions, two points must be kept in mind:

1. This is not an exhaustive list; a province or territory may have other questions that are pertinent to their context and /or culture.
2. If all questions in the tables were included, the survey would be so lengthy that completion rates would be jeopardized.

Hence, the provinces and territories need to see these questions as a menu, from which pertinent questions relevant to their needs – the context, the vaccine(s) in question, the age group in question and the population being surveyed – are selected. Region- or subgroup-specific questions can then be added. Final questions must respect the local language(s) and the comprehension level of the target audience.

Step 2: Mapping and Tracking Vaccine Hesitancy Survey Findings

Given that many factors can contribute to lower-than-expected vaccine acceptance including hesitancy, immunization programs need to assess – not guess – whether hesitancy is present, establish where higher rates of hesitancy are occurring, and then determine the reasons for hesitancy. Mapping survey findings with the coverage rates across a population can help pinpoint where pockets of hesitancy are more prevalent. However, in reviewing these data, one must have an open mind, as a hesitant group may not be geographically located but may be tied by factors such as social networks, religious links, ethnic backgrounds, etc. Mapping the reasons for hesitancy can also show diversity and similarities of hesitancy concerns across a population.

Quality vaccine coverage data must be available in order for mapping to be helpful. This is not simple in Canada, as coverage is estimated from regular surveys,[10] and not from an immunization registry data, as these registries do not exist across the country. These vaccine uptake surveys are done by Statistics Canada but only in English and French,[11-12] and hence may over- or underestimate uptake rates due to missing pockets of the population who cannot, or choose not to, participate.

Timely identification of clusters of unimmunized individuals may only be possible in some regions when an outbreak occurs. Vaccine hesitancy surveys may help highlight these risk clusters in advance, but since many surveys involve relatively small samples sizes, underimmunized pockets may not be detected. A 2012 Ontario review of vaccine exemptions for school entry clearly illustrates the hesitancy diversity across the province both in time and locales.[13] While this study was not able to determine the factors underlying the choice of opting out of the school immunization program, it did show that opting out was not uniform even within a sub-region of the province. Vaccine hesitancy surveys can determine the underlying reason(s). Tracking changes in survey responses over time can help detect shifts in hesitancy factors and show whether strategies for addressing hesitancy have been effective or need to evolve because concerns have shifted.

Sharing vaccine hesitancy survey instruments, findings and experiences within Canada could help to validate the instruments, and encourage provinces and territories to develop survey instruments to fit their needs.

The WHO Regional Office of Europe's document Tailoring Immunization Programmes emphasizes these points in Section 4 – Recognize and Diagnose Underlying Factors in Refusal or Delay in Vaccine Acceptance.

Monitoring for the Presence of Hesitancy at the Individual Level

At the frontline, in clinics and practices, the most promising tool to measure vaccine hesitancy at the individual level is the Parent Attitudes about Childhood Vaccines survey developed by Opel et al. in the United States.[14] The 15-item survey instrument, which can be completed in less than 5 minutes, measures the level of vaccine hesitancy among parents of infants and predicts their vaccination decision at 2 months. Four domains linked to vaccine hesitancy – vaccination behaviour, beliefs about vaccine safety and efficacy, attitudes about vaccine mandates and exemptions, and trust – are included (see Table 3.1).

Table 3.1 Parent Attitudes about Childhood Vaccines Questions[14]

Parent Attitudes about Childhood Vaccines Survey Item		
1	Have you ever delayed having your child get a shot for reasons other than illness or allergy?	Yes /No /Don't Know
2	Have you ever decided not to have your child get a shot for reasons other than illness or allergy?	
3	How sure are you that following the recommended shot schedule is a good idea for your child?	0-10 scale
4	Children get more shots than are good for them.	Strongly agree-strongly disagree
5	I believe that many of the illnesses that shots prevent are severe.	
6	It is better for my child to develop immunity by getting sick than to get a shot.	
7	It is better for children to get fewer vaccines at the same time	
8	How concerned are you that your child might have a serious side effect from a shot?	Not at all concerned – very concerned
9	How concerned are you that a shot might not prevent the disease?	
10	How concerned are you that any one of the childhood shots might not be safe?	
11	If you had another infant today, would you want him/her to get all the recommended shots?	Yes /No /Don't Know
12	Overall, how hesitant about childhood shots would you consider yourself to be?	Not at all hesitant – very hesitant
13	I trust the information I receive about shots.	Strongly agree-strongly disagree
14	I am able to openly discuss my concerns about shots with my child's doctor.	
15	All things considered, how much do you trust your child's doctor?	0-10 scale

This tool has been shown to be a reliable in the US in identifying vaccine-hesitant parents and in predicting under-immunization by two years of age. However, the evidence is mixed on the tool's value in other age groups, such as adolescents. How well the tool would work in different populations in Canada is unknown, but the tool has been distributed to investigators, clinicians, and public health experts in 7 countries, including Canada, as well as Malaysia, Philippines, Singapore, India, the United Kingdom, and Croatia. The tool did prove reliable when tested in the Malaysian capital among parents attending paediatric or antenatal clinics at a major teaching hospital.[15] Given that Malaysia is a modestly ethnically diverse country, this may increase the interest for use in clinics and offices in Canada. A shorter version of the tool, 5 items, has also been developed.[16]

Another more recent tool, the Vaccination Confidence Scale, measures three factors (benefits of vaccination, harms of vaccination, and trust in health care providers), and shows promise for identifying parents at risk of refusing adolescent vaccines[17] (see Table 3.2).

Table 3.2 Gilkey et al. Vaccine Confidence Scale for Adolescent Vaccine Acceptance[17]

Benefits	Harms	Trust
• Vaccines are necessary to protect the health of teenagers • Vaccines do a good job in preventing the diseases they are intended to prevent • Vaccines are safe • If you do not vaccinate your teenager, he/she may get a disease such as meningitis and cause other teens or adults to get the disease also	• Teenagers receive too many vaccines • If I vaccinate my teenager, he/she may have serious side effects	• In general, medical professionals in charge of vaccinations have my teenager's best interests at heart • I have a good relationship with my teenager's health provider

Gaps in Vaccine Hesitancy Survey Tools

In Canada, while Shapiro and colleagues have shown the SAGE Vaccine Hesitancy Survey tool to be valid, this was only for French- or English-speaking populations.[9] More work is needed to validate this tool in more diverse segments of the population. It would also be helpful to learn which questions work better in which settings to identify hesitancy factors. As these tools to assess hesitancy at the individual level in practice settings have predominately been used in the US, how well they work in clinics and offices across Canada to detect hesitancy needs to be determined.

A major gap in hesitancy survey tools is a lack of well-tested assessment tools for detecting and assessing hesitancy in adults, including pregnant women and seniors.

The most commonly used approach to assess vaccine hesitancy in Canada and elsewhere is population-based surveys, but given the complexity of vaccine hesitancy, other approaches can be useful (e.g., qualitative methods such as interviews or focus groups) in having a more in-depth understanding of the issues, surveys or interviews with healthcare providers to obtain their opinion on vaccine hesitancy challenges, and social media and traditional media monitoring of vaccine-related concerns (see Section 8 – Strategies to support Vaccination Demand and Grow Resiliency). More work is needed in this area.

KEY POINTS

- Determining if and where vaccine hesitancy is occurring in a population is important for immunization program decisions.
- At the program level, population surveys, mapping of vaccine uptake and other tools can help detect areas of hesitancy.
- At the individual level, the most frequently used tool is the Parent Attitudes about Childhood Vaccines, a survey developed in the United States.

References

1. World Health Organization Regional Office for Europe. Denmark campaign rebuilds confidence in HPV vaccination. [Online]. 2018. Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/sexually-transmitted-infections/news/news/2018/3/denmark-campaign-rebuilds-confidence-in-hpv-vaccination.

2. Gold MS, Balakrishnan MR, Amarasinghe A, MacDonald NE. An appraoch to death as an adverse event following immunization. Vaccine. 2016; 34: p. 212-217.

3. World Health Organization. Statement regarding interim findings of WHO assessment of deaths of children in Idleb Governorate, Syria. [Online]. 2014. Available from: https://www.who.int/mediacentre/news/statements/2014/interim-findings-idleb-syria/en/.

4. Loharikar AR, Suragh TA, MacDonald NE, Balakrishnan MR, Benes O, Lamprianou S, et al. Anxiety-related adverse events following immunization (AEFI): A systematic review of published clusters of illness. Vaccine. 2018; 36(2): p. 299-305.

5. Dubé E, Gagnon D, Ouakki M, Bettinger JA, Witteman HO, MacDonald S, et al. Measuring vaccine acceptance among Canadian parents: A survey of the Canadian Immunization Research Network. Vaccine. 2018; 36(4): p. 545-552.

6. SAGE Working Group World Health Organization. Report of the SAGE Working Group on Vaccine hesitancy November 2014. Available from: http://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf.

7. Larson HJ, Jarrett C, Schulz WS, Chaudhuri M, Zhou Y, Dubé E, et al. Measuring Vaccine Hesitancy: The Development of a Survey Tool. Vaccine. 2015; 35: p. 4165-75.

8. Marti M, de Cola M, MacDonald NE, Dumolard L, Duclos P. Assessments of global drivers of vaccine hesitancy in 2014-Looking beyond safety concerns. PLoS one. 2017 March 1; 12(3): p. e0172310.

9. Shapiro GK, Tatar O, Dubé E, Amsel R, Knauper B, Naz A, et al. The vaccine hesitancy scale: Psychometric properties and validation. Vaccine. 2018; 36(5): p. 660-667.

10. Public Health Agency of Canada. Immunization coverage and registries. [Online]. 2019. Available from: https://www.canada.ca/en/public-health/services/immunization-coverage-registries.html.

11. Statistics Canada. Childhood National Immunization Coverage Survey (CNICS). [Online]. 2019. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5185&Item_Id=57220.

12. Statistics Canada. Childhood National Immunization Coverage Survey (CNICS). [Online]. 2017. Available from: https://www.statcan.gc.ca/eng/survey/household/5185.

13. Wilson SE, Seo CY, Lim GH, Fediurek J, Crowcroft NS, Deeks SL. Trends in medical and nonmedical immunization exemptions to measles-containing vaccine in Ontario: an annual cross-sectional assessment of students from school years 2002/03 to 2012/13. CMAJ. 2012; 184(1): p. E70-6.

14. Opel DJ, Taylor JA, Mangione-Smith R, Solomon C, Zhao C, Catz S, et al. Validity and Reliability of a Survey to Identify Vaccine-Hesitant Parents. Vaccine. 2011; 29: p. 6598-605.

15. Azizi FSM, Kew Y, Moy FM. Vaccine hesitancy among parents in a multi-ethnic country. Malaysia Vaccine. 2017; 35: p. 2955-2961.

16. Oladejo O, Allen K, Amin A, Frew PM, Bednarczyk RA, Omer S. Comparative analysis of the Parent Attitudes about Childhood Vaccines (PACV) short scale and the five categories of vaccine acceptance identified by Gust et al. Vaccine. 2016; 34(41): p. 4964-8.

17. Gilkey M, Reiter PL, Magnus BE, McRee AL, Dempsey AF, Brewer NT. Validation of the Vaccination Confidence Scale: A Brief Measure to Identify Parents at Risk for Refusing Adolescent Vaccines. Acad Pediatr. 2016; 16(1): p. 42-49.

Section 4. Recognize and Diagnose Underlying Factors in Refusal or Delay in Vaccine Acceptance: The Guide to Tailoring Immunization Programmes TIP

Hesitancy is not uniform across a population. Analysis of vaccine uptake data from a province or territory may be able to detect subgroups with lower-than-expected coverage rates, given available vaccination services.[1] Targeting these fence-sitters is an important component in addressing hesitancy to improve vaccine acceptance rates. Hesitant subgroups may be linked by a variety of factors, including geography, culture, socioeconomic and/or other factors, especially behavioural factors and determinants categorized by complacency, confidence and/or constraints.

Guide to Tailoring Immunization Programmes (TIP)

The Guide to Tailoring Immunization Programmes (TIP), an evidence- and theory-based behavioural insight framework issued in 2013 by the WHO Regional Office of Europe, provides tools to recognize, diagnose and address vaccine hesitancy and delays in vaccine acceptance.[2-3] TIP was developed in response to concerns about low vaccine uptake and hesitancy raised by countries in the EUR region. TIP is not a communication tool, but rather a diagnostic guide to define and diagnose behaviour-related hesitancy determinants and propose appropriate interventions. The TIP Guide includes proven methodologies and tools to:

1. Identify and prioritize populations susceptible **to vaccine-preventable diseases**.
2. Diagnose the demand- and supply-side barriers **to vaccination and motivators for increasing vaccine acceptance** and then,
3. Design an evidence-informed response to support vaccination.

Rather than selecting several intervention strategies and then rolling them out across a country, TIP focuses on segmentation of the population to determine the subgroup(s) at risk, followed by a diagnosis of the relevant barriers and enablers of vaccine uptake in the subgroup(s), and then selecting interventions tailored to the findings, context and available resources for each subgroup. TIP has been used in a number of countries in Europe to determine and address low vaccine coverage problems. For example, in Sweden (Addressing inequities in immunization: TIP implementation in Sweden), the TIP process was used to find the barriers and motivating factors for the MMR vaccination in communities with low coverage.[4]

TIP Example in Sweden – low MMR coverage

Three groups were identified:

1. The anthroposophic community located south of Stockholm
2. The Somali community in northern Stockholm
3. Undocumented migrants in Gothenburg and Stockholm

An interdisciplinary project group was formed that had broad knowledge on vaccines, epidemiology, health communication, research methods and local service provision. After a situation analysis was conducted and the research statement was defined, three qualitative sub-studies were conducted based on in-depth interviews with parents and children, health clinic staff, health professionals and other informants. The results were then formatted according to the TIP model. A two-day workshop followed, where the results of the formative research results were discussed and strategic priorities identified. Four initiatives were designed to address barriers and to support vaccine motivators.

This example shows the complexity of the TIP process, and the time and breadth of skills needed. One key element is the engagement with the affected community to assess barriers and motivational factors. The TIP process has also been applied to assess how health care workers' uptake of seasonal influenza vaccine can be improved, leading to a specific document on this topic for immunization program managers.

In 2016, an external review of TIP implementation in Bulgaria, Lithuania, Sweden, and the United Kingdom was carried out.[5] Four strengths of TIP were commonly noted, including the value of the social science approach, the strength of interdisciplinary work, the growth in the immunization program's ability to listen and learn, and to understand community as well as individual perspectives. There is a strong demand in Europe for this type of research to help program managers address subgroups with low vaccine uptake rates. The review did note that more work is needed to design and implement interventions based upon the TIP findings, focusing on principles of enhanced local ownership, integration of diagnosis and intervention design, follow-up meetings, advocacy, and incentives for decision makers to implement the needed changes. The complexity of the program, the resources, and expertise needed to execute this well were noted.

Simplified TIP

While TIP has been successful in the European Region and was adjusted to fit South Africa, it has become evident that a more simplified version, one that is less arduous and time consuming, less reliant on external consultants and specific expertise, is needed. This is being developed at WHO headquarters. Key elements of success from TIP that will be focused on are engaging with the underimmunized communities to listen and learn about the barriers, and gain a better understanding of the motivators for accepting immunization. Extrapolating from the patient setting (see Section 5.9 – Use effective discussion techniques to introduce immunization and to address concerns) – it is asking the question "W*hat would it take to move you to a yes?"* at the community/subgroup level, and then listening carefully to the answers and probing further to ensure fulsome understanding of the barriers and motivators, that makes the difference. In many instances it is not one factor, but a combination of circumstances, beliefs, misunderstandings, misinformation, and lack of trust that have led to low uptake. Carefully listening is the key to adjusting the program to address the barriers and supporting motivation to accept immunization.

KEY POINTS

- Since hesitancy is not uniform across a population, immunization programs must detect subgroups where there is a problem.
- The WHO EURO Guide to Tailoring Immunization Programmes (2013) is a helpful tool.[2] Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/publications/2013/guide-to-tailoring-immunization-programme.
- Critical elements of TIP are to probe gently, and listen carefully to learn about concerns, barriers and motivators.

References

1. Wilson SE, Seo CY, Lim GH, Fediurek J, Crowcroft NS, Deeks SL. Trends in medical and nonmedical immunization exemptions to measles-containing vaccine in Ontario: an annual cross-sectional assessment of students from school years 2002/03 to 2012/13. CMAJ. 2012; 184(1): p. E70-6.

2. World Health Organization Regional Offfice for Europe. The Guide to Tailoring Immunization Programmes. 2013. Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/publications/2013/guide-to-tailoring-immunization-programme.

3. Butler R, MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Diagnosing the determinants of vaccine hesitancy in specific subgroups: The Guide to Tailoring Immunization Programmes (TIP). Vaccine. 2015; 33: p. 4176–4179.

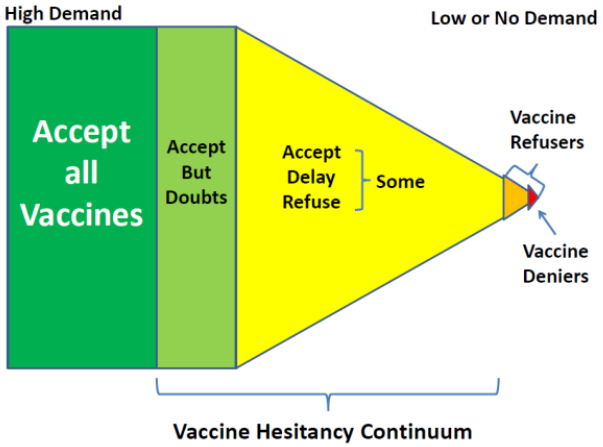
4. World Health Organization Regional Office for Europe. Addressing inequities in immunization: TIP implementation in Sweden. [Online]. Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/activities/tailoring-immunization-programmes-to-reach-underserved-groups-the-tip-approach/tip-country-projects/tip-implementation-in-sweden.

5. Dubé E, Leask J, Wolff B, Hickler B, Balaban V, Hosein E, et al. The WHO Tailoring Immunization Programmes (TIP) approach: Review of implementation to date. Vaccine. 2018; 36(11): p. 1509-1515.

Section 5. Strategies to Address Hesitancy and Help Foster Demand

Vaccination decisions are complex. Hence it is not surprising that there is no single strategy that has been shown to be effective in addressing vaccine hesitancy in all circumstances. Many studies have focused on vaccine uptake and/or refusal in order to evaluate interventions aimed at enhancing vaccine acceptance. These studies have not captured whether the interventions changed doubts about acceptance – as the vaccine-hesitants are an important part of the population along the continuum of hesitancy (see Figure 5.1).

Figure 5.1 Vaccine Hesitancy Continuum



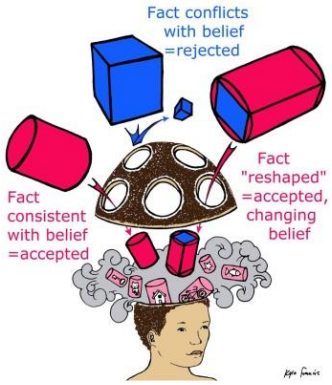
Some immunization programs have approached hesitancy as a "knowledge deficit" problem and responded with facts about vaccines and vaccine-preventable diseases. This has not worked well, as vaccine hesitancy is more complex. Facts alone rarely change behaviour, nor do they adequately address barriers and concerns, motivate the hesitant to accept vaccines and/or generate active demand for routine vaccines. Furthermore, in considering fostering of demand, even effective programs that lead to increased acceptance of vaccines (i.e. that overcome some hesitancy) may not generate demand for vaccines and immunization services. As noted in Section 1 (Vaccine Hesitancy and Vaccine Demand), a low level of hesitancy does not mean there is a demand – fostering demand goes beyond taking steps to address hesitancy.[1]

In thinking about addressing hesitancy, an understanding of risk perception is important.

Risk perceptions are *intuitive, automatic and unconscious,* and *much influenced by beliefs*. If a fact agrees with the belief, than it is heard well; if not, it does not even register (see Figure 5.2). For misinformation to be corrected, the correct fact must be "reshaped" and packaged so it can be heard.[2]

Emotions influence how people make decisions and how numerical information is heard. Anecdotes are powerful. Many social, cultural, demographic and socio-psychological factors also influence perceptions and decisions.[3] Furthermore, individuals only collect as much information as is needed to reach a decision in the given context; we are "cognitive misers."[4]

Figure 5.2 Beliefs, Risk Perception and Decisions



- We are strongly influenced by ***what we think others around us are doing or expecting us to do***.
- We see ***causation in coincidences***.
- We see ***what we believe, rather than believing what we see.***
- We ***prefer stories and anecdotes*** to data and evidence.
- We are becoming ***increasingly hyper-vigilant to risk for children.***

A growing concern in the past decade and a half is that social media has now become a strong and extensive platform for strident anti-vaccine groups to promulgate their views and shape negative beliefs amongst the public.[5-7]

Addressing Hesitancy

At the program level, Leask and colleagues, from Australia,[8] have proposed five major tasks to tackle vaccine hesitancy:

- greater government investment in the strategic direction, capacity building, research and evaluation of hesitancy in order to meaningfully address vaccine hesitancy;
- the importance of monitoring trends in the prevalence of vaccine hesitancy;
- community engagement and dialogue through local opinion leaders or peer groups;
- providers utilizing effective communication strategies with patents about immunization; and
- health care provider education.

While no one strategy can address all hesitancy – as it is a complex problem – there are evidence-based practical interventions that can lead to improved vaccine acceptance. Outlined below are six immunization program level strategies and six individual health care worker- /patient-level strategies (see Tables 5.1 and 5.2). In considering these strategies, immunization program managers and health care professionals must bear in mind that multi-pronged approaches are more effective in improving uptake than single-strategy approaches[9-10] and the work on TIP[11] emphasizes the importance of tailoring strategies to fit the needs of the targeted subgroups (see Section 4 – Recognize and Diagnose Underlying Factors in Refusal or Delay in Vaccine Acceptance).

Addressing Hesitancy: At the Immunization Program Level

Six program level strategies to improve vaccine uptake and thus address hesitancy and in part nurture demand for vaccine and immunization services are summarized in Table 5.1, and expanded upon in subsections 5.1 to 5.6 below.

Table 5.1 Strategies to Increase Vaccine Uptake/Acceptance: at the Immunization Program Level
(For frontline health care worker/patient-level strategies see Table 5.2)

1. **Foster trust**

2. **Ensure best immunization practices by health care workers**

3. **Utilize evidence-based strategies known to increase uptake**
   a. Engage community leaders, religious or other influential leaders to promote vaccination in the community.
   b. Reduce constraints and improve access to vaccination.
   c. Employ reminder and follow-up.
   d. Consider mandating vaccinations/sanctions for non-vaccination and financial incentives.
   e. Use multiple interventions.

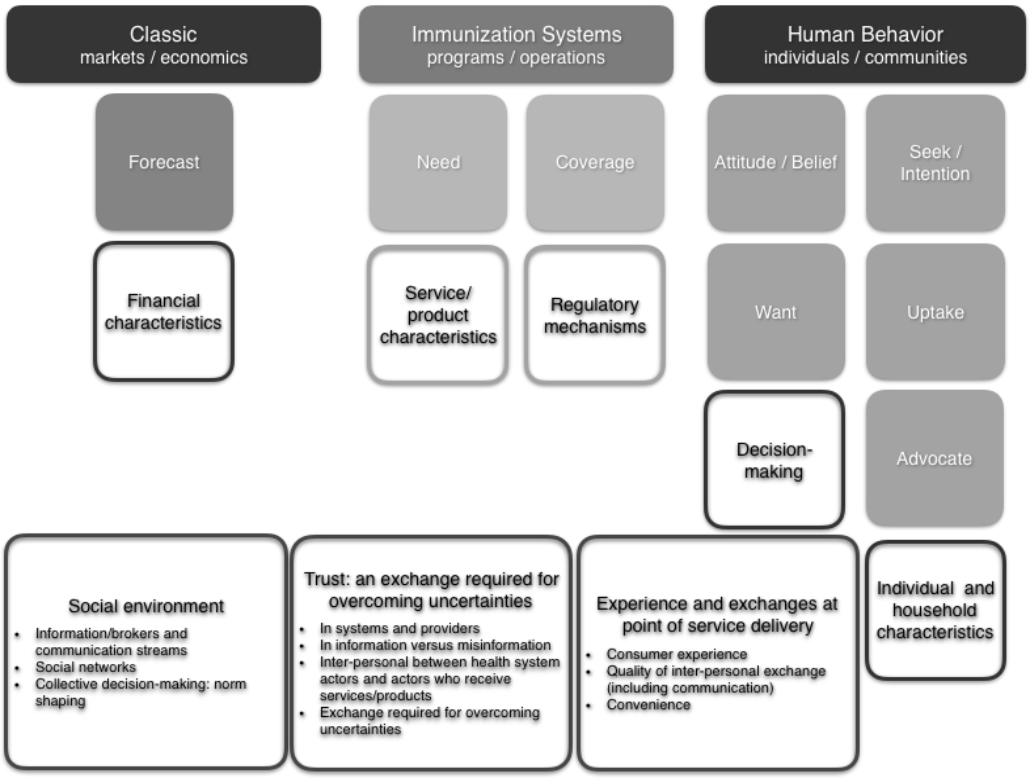
4. **Develop effective communication plans**

5. **Educate children, youth, and adults on the importance of immunization for health**

6. **Work collaboratively within the country and across regions**

As noted, none of these should be done in isolation. Furthermore, the components of demand must be considered in thinking through the most appropriate strategies for a given situation (see Figure 5.3). The components under human behaviour are especially relevant in selecting intervention strategies to address hesitancy, improve vaccine acceptance and generate demand.[1]

Figure 5.3 Three Major Categories for the Use of the Term "Demand" in Immunization Literature

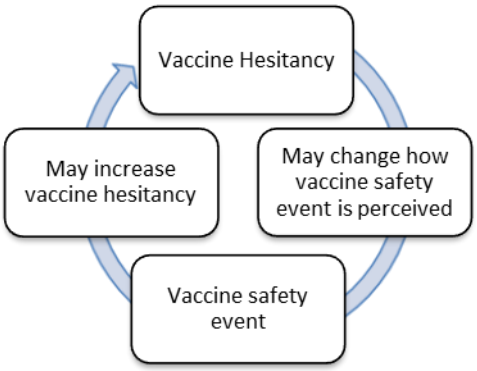


5.1 Foster trust

As discussed in Section 1, in the definition of vaccine hesitancy, ***confidence*** in vaccines – in the delivery system, in the policy-makers who decide which vaccines for whom and when – is one of the 3C's categories of determinants.[12] Nurturing trust in vaccines, in the health system and in the immunization program are important areas for immunization programs to focus on to minimize the development of hesitancy, to address those who are hesitant, and, to develop and foster demand for vaccines and immunization services.

Many elements can undermine trust, and these can vary across epidemiologic conditions, specific vaccines and cultural and sociopolitical settings.[13] The importance of trust and confidence globally was reinforced from the JRF (Joint Reporting Form) findings as noted in Section 2 (Vaccine Hesitancy Globally and in Canada).[14] In fostering trust, there is a significant link between vaccine hesitancy and the perception of vaccine safety events[15] (see Figure 5.4).

Figure 5.4 Interrelationship between Vaccine Hesitancy and Safety Events



The WHO Regional Office in Europe released a guidance document on vaccination and trust in 2017.[15] The Guide emphasizes the following four areas.

WHO Europe Vaccination and Trust Guide[15]

Ongoing work to build and maintain confidence in vaccines and vaccination:

1. Establish a coordination mechanism – A communication working group should be established to help plan communication on a routine basis and be ready for a crisis.

Routine:

- Work together as a group to ensure strong routine communication/aligned messaging.
- Share information regularly, via emails and face-to-face meetings.

Crisis:

- Agree on who will be involved in coordinating communications in the case of a crisis, the roles and responsibilities, and how information will be coordinated and shared in a crisis.
- Share information regularly, via emails and/or face-to-face meetings.

2. Strengthen the organization – In building and maintaining trust in vaccination, there is a need to develop, implement, share communication strategies and plans widely, and train staff.

- Develop communication and crisis communication plans.
- Ensure senior management engagement and approval of plans.
- Prepare holding statements for use in a crisis.
- Train spokespersons and establish relations with the media.
- Train frontline health workers in vaccination safety and interpersonal communication.

3. Build relations – Good stakeholder relations are critical to building and maintaining trust.

- Engage stakeholders in disseminating information and developing communication plans.
- Form strategic relationships with stakeholders with access to the organization's priority target groups.
- Work with the media to gain their trust and increase their knowledge of immunization.
- Be visible to increase public knowledge of immunization and trust in your spokespersons.

4. Build population resilience – To ensure public trust in vaccines and health authorities, and build resilience to vaccine safety scares, ongoing communications need to be implemented in order to build awareness, and knowledge of risks and benefits of immunization against vaccine-preventable diseases.

- Conduct research to gain a deeper understanding of key population groups and to test communication products and messages.
- Monitor public opinion on immunization (e.g., through social media monitoring or feedback from frontline health workers).
- Ensure information for key target groups and job aids for health workers is based on insights gained from the previous step on research and monitoring.
- There are many components that must be attended to in growing and maintaining trust. A crisis can destabilize trust by affecting risk perception.

When a crisis occurs or an event has the potential to escalate into a crisis, the WHO Europe Vaccination and Trust Guide outlines the following key steps to consider.

WHO Europe Vaccination and Trust Guide[15]

Four immediate steps when responding to an event/crisis that may erode trust:

1. Gather the inner circle of the team together – Establish a coordination and working group (if not already established). Engage relevant partners across institutions, e.g., ministries of health, education and social affairs; regulatory authorities; centres for disease control, health promotion, communication, press and emergency response; vaccine experts; and professional associations. Have an agreement on how members will continue to coordinate, communicate and share information within the group. Establish agreements on roles and responsibilities.

2. Understand the problem – Obtain as much information as possible about the event(s) that took place. Analyze the situation: what is the potential level of impact on trust in vaccines and the immunization program? Shape your communication responses according to your conclusions.

Bear in mind – Not all events that may potentially erode confidence in vaccines and vaccination require a communication response. Not responding may impair trust in vaccines and health authorities. Over-communicating may cause unnecessary public concern. Carefully consider your communication strategy.

3. Liaise with key stakeholders (critical in a crisis) – Consult your list of key stakeholders. Liaise with stakeholders to benefit from the support of advocates. Share information with stakeholders to avoid confusion and distrust, and to avoid any negative interference from adversaries.

Many voices with same/similar messages to yours during a crisis from stakeholders held in high esteem in the community help support trust.

4. Communicate externally – Decide whether the event warrants an external communication and plan your response based on your analysis of the event. Revisit your crisis communication plan and prepare a plan for external communication. Communicate broadly and to selected target groups; communicate often using consistent messages through many channels. Communicate where there are uncertainties and what you are doing to reduce them.

Remember – the right response may limit the negative consequences of the crisis or even prevent the situation from escalating into a crisis. Honest and open communication is crucial for maintaining and building trust.

The WHO Regional Office in Europe developed an online library - Vaccination and trust library,[16] offering 17 helpful tools (see below). These are potentially useful to provinces and territories, although some may need to be adapted for culture and context differences:

1. Vaccination and trust (2017)
http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/2017/vaccination-and-trust-2017

2. The questions journalists always ask in a crisis (2017)
http://www.euro.who.int/__data/assets/pdf_file/0017/333134/VSS-journalists-questions.PDF

3. Four immediate steps when responding to an event that may erode trust (2017)
http://www.euro.who.int/__data/assets/pdf_file/0018/333135/VSS-4-steps-trust.PDF

4. Four critical elements in the ongoing work to build and maintain confidence (2017)
http://www.euro.who.int/__data/assets/pdf_file/0019/333136/VSS-4-elements-confidence.pdf

5. How to prepare a press release (2017)
http://www.euro.who.int/__data/assets/pdf_file/0020/333137/VSS-press-release.pdf

6. Strategies used by journalists during an interview or press conference (2017)
http://www.euro.who.int/__data/assets/pdf_file/0003/333138/VSS-journalists-strategies.pdf

7. Tips for spokespersons (2017)
http://www.euro.who.int/__data/assets/pdf_file/0004/333139/VSS-tips-spokepersons.pdf

8. Crisis communications plan template (2017)
http://www.euro.who.int/__data/assets/pdf_file/0014/333140/VSS-crisis-comms-plan.pdf

9. How to ensure a context-specific response to events that may erode trust (2017)
http://www.euro.who.int/__data/assets/pdf_file/0009/337473/02_WHO_VaccineSafety_SupportDoc_AnalysingEvents_Proof7.pdf

10. Checklist for preparedness Are you prepared for an event that may erode public trust in immunization? (2017)
http://www.euro.who.int/__data/assets/pdf_file/0010/337474/02_WHO_VaccineSafety_SupportDoc_ChecklistForPreparedness_FINAL.pdf

11. Safety events: planning the immediate media response
http://www.euro.who.int/__data/assets/pdf_file/0004/337486/02_WHO_VaccineSafety_SupportDoc_MediaResponse_Proof11.pdf

12. How to prepare a message map (2017)
http://www.euro.who.int/__data/assets/pdf_file/0007/337489/02_WHO_VaccineSafety_SupportDoc_MessageMap_FINAL.pdf

13. New vaccine introduction checklist for planning communication and advocacy (2017)
http://www.euro.who.int/__data/assets/pdf_file/0008/337490/02_WHO_VaccineSafety_SupportDoc_NewVaccIntro_Proof8.pdf

14. Key principles for presenting data (2017)
http://www.euro.who.int/__data/assets/pdf_file/0010/337492/02_WHO_VaccineSafety_SupportDoc_PresentingData_Proof5.pdf

15. How to monitor public opinion (2017)
http://www.euro.who.int/__data/assets/pdf_file/0011/337493/02_WHO_VaccineSafety_SupportDoc_PublicOpinion_Proof4.pdf

16. Stakeholder management (2017)
http://www.euro.who.int/__data/assets/pdf_file/0004/337495/02_WHO_VaccineSafety_SupportDoc_StakeholderManagement_Proof8-3.pdf

17. Template Terms of Reference for a vaccine communication working group (2017)
http://www.euro.who.int/__data/assets/pdf_file/0005/337496/02_WHO_VaccineSafety_SupportDoc_TOR_Proo

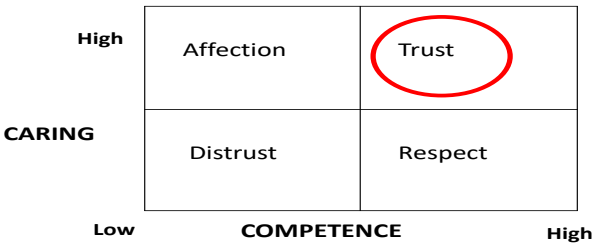
f7.pdf

5.2 Ensure best immunization practices by health care workers

Health care providers play an important role in patient/parental decision-making about accepting vaccines regardless of the income settings (see Section 5.7).[17-19] However, health care workers themselves may be vaccine-hesitant, and can negatively impact vaccine acceptance with their comments and demeanor.[20-21] Hesitancy may not be as insignificant amongst health care workers as many might assume. For example, among pediatricians attending an American Academy of Pediatrics meeting, 5% did not routinely recommend the influenza vaccine or the HPV vaccine,[22] and hesitancy is even more common among French family physicians in France.[23] Health care workers need to be well versed about vaccines, non-hesitant themselves, and are knowledgeable about best immunization practices. To date, there is no quick fix for addressing vaccine hesitancy amongst health care workers.

Knowledge about vaccines and about vaccine hesitancy can better prepare health care workers to address parental and patient vaccine and vaccine program concerns. Demonstrating competency is an important component in building trust between the health care worker and the parent/patient.[24] While correct and transparent information for parents and patients plays a key role in parental/patient decisions on whether to have their children or themselves vaccinated, the information must be delivered in a caring manner to increase the likelihood of it being heard (see Figure 5.5).

Figure 5.5 Trust = Caring + Confidence



For example, if parental concerns about multiple injections for infants are not addressed with both competence (good injection technique, using evidence that supports multiple injections at the same visit, acknowledgment of and taking steps to mitigate pain during immunization) as well as with compassion (presenting a caring persona), parental trust in the immunization program can be undermined. Knowledge about best immunization practices can also help minimize vaccine program errors by frontline workers that can lead to serious adverse events, which can contribute to hesitancy, as noted above (see Section 5.1).

For an optimal outcome, patients and parents need to hear – *from all* health care professionals and workers, not just those in immunization – consistent and accurate information on vaccine-preventable disease risks, vaccine safety and benefits, given in a respectful, positive manner.

Ensuring that undergraduate health care professional training programs pay sufficient attention to immunization so that graduates are well prepared and knowledgeable about vaccines, vaccine-preventable diseases, and best immunization practices (including communication strategies) may help to decrease vaccine hesitancy among health care workers. For health care workers already in practice, regular updates with emphasis on the value and importance of vaccination and on dispelling misinformation may also help. In some countries, regular immunization competency testing is part of health care professional requirements for practice. For these to be of value, there must be regular updates to the competency standards based on evidence.

5.3. Utilize evidence-based strategies known to increase vaccine uptake

There are a number of evidence-based strategies known to increase vaccine uptake.[9]

- Targeting subgroups that are under-immunized (see Section 4)
- Increasing knowledge about vaccines and vaccination programs (see Section 5.4 below)
- Engaging community leaders, religious or other influential leaders to promote vaccination in the community (see below)
- Improving convenience and access to vaccination (see below)

- Employing reminders and following-up (see below)
- Mandating vaccinations/sanctions for non-vaccination and financial incentives (see below)
- Multi-pronged strategies, not single intervention strategies – given the complexity of hesitancy

Engaging religious and community leaders:
While religious concerns were not among the top three reasons for hesitancy amongst the 18 WPR countries who answered the hesitancy questions in the 2014 Joint Reporting Form survey, this was the top reason in three of the countries (Cook Islands, Fiji, Malaysia, Vanuatu). A review of major religions of world by Grabenstein in 2013,[25] revealed that the religious doctrines of all but the Christian Scientists support vaccination.

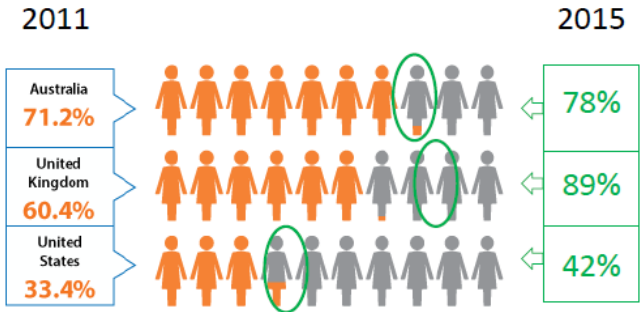
Hinduism **Buddhism** **Jainism** **Christianity** **Judaism** **Islam**	All support: • caring for others, • having a duty to the community (family, neighbours, each other) • preserving life • support vaccination

Anthroposophy was not included in this review, as it is not a formal "religion." However, a recent commentary on the interpretation of anthroposophical doctrines indicates that "*vaccination will not be harmful if, subsequent to vaccination, a person receives a spiritual education*."[26] There are some Christian Science followers who, while they do not accept other medical interventions, will accept immunization.[27]

The Grabenstein review provides evidence on how to form alliances with local religious leaders to discuss encouragement of vaccine acceptance amongst their adherents. For example, many imams and other Islamic leaders have issued clear statements and fatwas describing how immunization is consistent with Islamic principles. Halal concerns are not supported by Islamic religious leaders or by the Islamic Organization for Medical Sciences. UNICEF has a number of helpful resources that provide guidance on partnering with religious communities in support of children for immunization,[28] including a document on building trust in immunization with religious leaders and groups.[29]

Improving convenience and access to vaccination:
Ease of access to immunization services is a major factor in acceptance. Both the 3C's and the 5A's models for determinants emphasize constraints and access (see Section 1). School-based HPV vaccine programs in the United Kingdom and Australia have been much more successful than office-based programs in the United States (see Figure 5.6). Ease of access matters.[30]

Figure 5.6 HPV Full-Dose Coverage among Girls in High-income Countries: 2011 vs 2015



Ease of access also matters in Canada. Distance is not always the impediment. Parents who had difficulties accessing immunization for their child were less likely to have a strong intention to come forward for the next immunization.[31] For adults, the delivery of influenza vaccine in non-traditional sites such as pharmacies –not just public health clinics

or physicians' offices – appears to improve uptake.[32] Hence, care must be taken by immunization programs to examine if there are barriers to access such as clinic hours, locations, etc. and then develop strategies to maximize the ease of access.

Employing reminders and following-up:
Along with addressing constraints, employing reminders and follow-ups has been shown in high-, middle- and low-income countries to be a useful tool to increase vaccine uptake.[33] The reminders used have included letters, phone calls and text messages, and have involved infant, adolescent and adult vaccines. See below for comments on how to frame text message reminders to maximize their impact.

Mandating vaccinations / sanctions for non-vaccination and financial incentives:
Mandatory immunization is controversial in many countries. Legal and ethical issues around mandates have also raised concerns.[34] A systematic review of the effect of mandates on immunization uptake revealed that these usually led to increased short-term and long-term uptake in the group to whom the mandate applied.[35] Many of these studies examined school-entry mandates for immunization, and most were in high-income countries. There are a few studies in countries that already have high rates of uptake. Due to concerns about recent vaccine-preventable disease outbreaks, especially measles, in 2017, Italy passed legislation making it mandatory for children aged 0 to 16 years and for unaccompanied foreign minors to receive vaccines recommended by the immunization program. Proof of immunization must be shown for enrolling children in kindergartens and schools, otherwise the parents must pay a fine.[36] France, which has one of the highest rates of vaccine hesitancy in Europe and a significant problem with vaccine-preventable diseases, expanded the number of vaccines covered in their mandatory law.[37] Parents had argued therefore they should not be required to accept the multivalent infant vaccine for their children. The court ruled in their favour. The problem was that there was no source of trivalent vaccine with low side effects similar to those in the multivalent vaccines. The manufacturer said that it would take years to design a new vaccine that would conform to today's standards. The French Public Health Authority held a "citizen consultation," a new type of institutional device grounded in the ideal of democracy and public participation in political decision-making. The law was broadened to add eight more vaccines. Time will tell if this will work or backfire. Mandatory immunization has backfired in the past in both in the United States and in the United Kingdom (where legislation led to huge protests that brought a government down).[38] Given the history of lack of support for immunization among French family physicians,[23] there are concerns especially with how easily and widely concerns and misinformation can be shared on social media.[6-7] Mandates also appear to work better for some vaccines than for others.[39]

If trust in the government and/or in the system is low, mandates need to be approached with caution, as they may backfire, resulting in decreased trust and increased anger.[38, 40]

In Canada, Ontario and New Brunswick have had mandatory laws for school entry for many years; Manitoba also has mandatory laws for school entry, but only for measles vaccination. Of note: in the past decade, the vaccine uptake rates in these provinces with mandatory requirements (albeit with limited application) did not differ from provinces without the requirements.

Both Ontario and Manitoba are moving/have moved to strengthen their laws. In Ontario, until recently, there was no significant penalty and philosophical/personal exemptions were relatively easy to obtain. This has changed. The process for non-medical exemptions is now more cumbersome. Parents must complete a Statement of Conscience or Religious Belief form that then must be signed by a commissioner for taking affidavits in Ontario. Parents must now also participate in an education session that covers basic information about immunization, vaccine safety, immunization and community health and the immunization law in Ontario.[41] Experiences from United States suggests that these steps may increase acceptance.[42]

Financial incentives to improve uptake have been used in different ways. The impact of incentives for health care workers, either financial or in the form of increased learning opportunities have been mixed. In the United Kingdom, educational and financial incentives in general practice increased uptake,[43] but a randomized cluster trial in US

pediatric practices did not see an effect.[44] The culture and context may matter. Parental financial incentives have also had mixed effect; there is insufficient evidence to conclude if these interventions are universally effective.[45] In Australia, the parental incentives No Jab, No Pay – no child benefit legislation, and No Jab No Play – no daycare attendance legislation, appear to have been more successful both in the views of health practitioners and the public.[46] In contrast to mandates, which may be seen as punishments, parental incentives reward positive behaviour and could help build trust.

Multi-pronged strategies:
While a review of the literature has shown that a multi-pronged approach is more effective than single strategies,[9] there are still very few multi-pronged strategies that have utilized known effective strategies concurrently, and of which have been tested. Using an ecological model, influenza immunization rates for long-term care facility workers and families were substantially increased.[47] This multi-component program included policy development, kick-off events, educational programs, goal-setting worksheets, incentives, a vaccination tracking roster, and facility-wide communication about vaccine uptake among the facility's health care workers. While it is not clear which element was the critical element, this intervention emphasizes that changing behaviour (i.e. increasing vaccine acceptance) is complex. The important 'nudge' component for one health care worker to accept vaccines was likely not the same for others. Interestingly, communicating back to the health care workers on the tracking of uptake can draw attention to the acceptance of influenza vaccine as the social norm. This is a known factor influencing decision-making.[48] Another successful program in the US examined a quality improvement exercise that bundled evidence-based and practice-based interventions to improve HPV acceptance in pediatric residents' continuity practice. The intervention included clinic reminders to families, coaching and communication skills training for the residents, as well as performance feedback and tracking of outcomes.[49]

5.4 Develop effective communication plans

As noted above in Section 5.1 on Trust, communication is a key element in addressing hesitancy and in improving vaccine uptake.

Hesitancy is never simply a "knowledge-deficit" gap; facts alone are not convincing and do not change behaviour. There is growing evidence that communication can be an effective tool to improve vaccine acceptance, if utilized in a carefully planned and integrated fashion. While there is no agreement on how best to use communication to respond to vaccine hesitancy, there are some key elements to be considered in devising and implementing a communication plan, including[50] :

- be proactive, not just reactive
- understand that communication is a two-way process – listening is important (what are the concerns in the target group?)
- knowledge, while important, is not enough to change behaviour
- target the message to fit the subgroup, and pre-test it locally to ensure that it works as intended
- know that a wide range of communication tools are available, and then use the ones that will reach the target audience in the most effective way to promote vaccine uptake.
- carry out an evaluation to ascertain if the target audience was reached and if change occurred, and if not, reshape the communication program targeted at this subgroup

When done well, this can lead to improved vaccine acceptance in groups who were previously hesitant as shown in the targeted program in Freemantle, Western Australia.[51] This "I immunize" campaign was multi-pronged and designed explicitly to appeal to the local values of a subgroup of well-educated parents who shared interests in social justice, parenting and alternative lifestyles. The campaign employed a number of social marketing principles. Having an immunization program look through the social marketing lens can stimulate new thinking. What is "your brand"? How is it perceived? The 4 "P's" of social marketing: *product, price, place and promotion*, are then used to create, communicate and deliver value to the targeted group. These principles have been used for marketing of a number of vaccines with good success in different settings.[52]

A 2015 systematic review of new media concluded that, while there is great potential for improving vaccine uptake with new media programs, there is as yet still little data to conclude how effective and cost-effective new media strategies are in practice.[53] Traditional media and government websites should not be forgotten, as many parents/patients still rely on them for their immunization information.[54]

An example of a newer media tool that provides tailored information is "ReadyVax,"[55] a smartphone app that presents trustworthy, evidence-based vaccine information in four different areas: vaccines, diseases, answers to common questions, and resources, designed for the target audiences of healthcare providers, pharmacists, parents and patients. Although the app was designed in America and based on US government and professional society materials, and given that it is still a relatively new app, users have already come from over 100 countries, though not in large numbers yet. Given the plethora of smartphones across Canada, such tools may prove to be helpful, especially if adapted to include Canadian recommendations.

Target and tailor the message; amount and type of information matters:
Messages must be tailored to fit the population targeted – one size does not fit all – see note above about "I immunize" campaign in Australia.[51] When partisans see messages that disagree with their beliefs as unfavourably slanted content, they may become even more polarized in their beliefs.[56] Too much information, for example on adverse event cases, can confuse and overwhelm people, and increase hesitancy. Tailoring and testing the message is key. Thus, messages need to be tailored and tested in advance to ensure that they fit the intended target audience.

Emphasize scientific consensus; inoculate against misinformation:
Research has shown that perceived scientific consensus plays a critical role in belief about science. For childhood vaccines, emphasizing the medical/scientific consensus on the need for, and the benefits and safety of, vaccines can reduce concerns about childhood immunizations.[57] For climate change, there is evidence that the public can be successfully pre-emptively inoculated against the impact of misinformation[58]; it is likely that similar effects could occur with immunization information as inoculation against misinformation, and this might help increase resistance to anti-vaccine messages. In addressing vocal vaccine deniers in public, "inoculation" tactics are suggested (see Section 7 – Monitoring and Evaluation of Programs Addressing Vaccine Hesitancy). Correction of anti-vaccine misinformation and highlighting the tactics being used, all done in a non-combative manner, can help to shape the beliefs of the listening audience.

5.5 Shape beliefs

Given the impact of beliefs about vaccines on decisions and risk perceptions (noted above), attention needs to be given to when and how beliefs can be shaped. Immunization program planners need to rethink when, what and how to give people information. Historically, in most countries, children have not been systematically educated in schools about vaccines, leaving parents and adults with doubts about vaccines and immunization programs. Shaping children's and adolescents' beliefs about the importance and value of vaccines, the risks of vaccine-preventable diseases, and the benefit and safety of vaccines is a key opportunity. Both Canada (in the Province of Ontario) and Denmark are taking steps to weave vaccines and immunization into the primary- and secondary- school curricula. Such programs may also lead to changes in parental vaccine beliefs and decisions indirectly through sharing of school lessons.

The "I Boost Immunity" website – https://iboostimmunity.com/, developed by the Public Health Association of British Columbia, Canada, has recently pilot tested a version of their quizzes for use in schools.[59] Correctly answering five questions about vaccines and immunization on this website leads to a dose of vaccine being donated to UNICEF. The school trial was a big success, students' high interest in vaccines and immunization when presented in an engaging fashion appealing to this age group.

The BBC has developed an online program to help school students learn to differentiate fake news from real news.[60] In a similar vein, the Cambridge University research team who demonstrated that the public can be inoculated against misinformation have developed a "Bad News" game that they hope will 'vaccinate' the public against fake news.[61] Evaluation of both interventions is pending but the techniques should be of interest to those developing school curricula.

5.6 Work collaboratively – develop partnerships

Given the complexity of addressing vaccine hesitancy, there is value in the immunization program collaborating with a wide range of partners. Quality partnerships can save time and resources and add to the voices emphasizing the importance of vaccines. Given that the public is more drawn towards, and accepting of, information and sources of information that share their worldview,[62] having a consensus on immunization amongst many partners interacting with the public can help shape people's worldview and nudge people towards acceptance of vaccines. Having many voices also enhance the credibility of health worker's vaccine messages.

In Canada, this is more complicated, given that immunization programs are the responsibility of the provinces and territories. In some instances, national messages from national partners may add needed critical credibility to local messages. Partners that can help in addressing hesitancy might include community and religious leaders (see above), civil society organizations, academia, health care professional organizations and societies, global agencies, non-governmental organizations and even the private sector. Partnership with manufacturers, however, needs to be approached with caution, as this may be perceived by the public as a conflict of interest and lend support to "conspiracy "concerns raised by anti-vaccine supporters (see Section 8 – Strategies to support Vaccination Demand and Grow Resiliency).

Addressing Hesitancy: At the Health Care Worker/Individual Patient Level

As noted above, few multi-pronged strategies that directly address the many determinants along the continuum of vaccine hesitancy have been examined. However, there are strategies at the health care worker/individual patient level known to be effective in increasing uptake. Six are listed in Table 5.2. As with program level strategies, multi-component strategies are more effective than single-component strategies.

Table 5.2 Strategies to Increase Vaccine Uptake/Acceptance: at the Frontline Health Care Worker /Individual Patient Level

(For program-level strategies, see Table 5.1)

7. **Key role health care worker in parental/patient vaccine acceptance decisions**
8. **Vaccine Refusers: Do not dismiss from practice; ensure refusers know their responsibilities if choose not to immunize**
9. **Use effective discussion techniques to introduce immunization and to address concerns**
10. **Use effective information exchange strategies – language, numbers, stories, framing, nudge, jargon and gist**
11. **Reinforce role community immunity/protection**
12. **Mitigate pain at immunization**

5.7 Key role of health care worker in parental/patient vaccine acceptance decisions

Given the important role health care workers play in vaccine acceptance by their patients (noted above), not only must do they have to be knowledgeable about vaccines, vaccine-preventable diseases and immunization best practices, but they must be able to present the information in a compassionate manner (see Section 5.1 – Trust above). Having a health care worker provide information or assurances to parents is one of the main reasons why parents who had planned to delay or refuse a vaccine for their child change their mind.[18, 63] Speaking up for vaccines counts. Furthermore, parents who receive vaccine information from a physician have fewer concerns than those informed by friends, family, or from books and the internet.[64]

To be competent, the health care worker needs to be able to answer queries and concerns raised by parents, adolescents, adults and seniors. Useful resources can be found at many evidence-based sites, such as the Canadian Immunization Guide, Canadian Paediatric Society (CPS), and Immunize Canada.

The World Health Organization Vaccine Safety Net Portal presents evidence-based sites that meet the criteria set by the Global Advisory Committee on Vaccine Safety for having credible vaccine and immunization information.[65] The three sites listed above have been approved by the Vaccine Safety Net (VSN). Some of the websites listed on the VSN are directed at health care workers, while others are for parents. For example, the Caring for Kids (CPS) site is listed, and is directed to parents. Caring for Kids and BC Centre for Disease Control (BCCDC)'s Immunization Communication Tool for Immunizers,[66] may be especially helpful to health care workers trying to explain more complex concepts, as the resources from these two sites use language parents are more likely to understand. These websites are regularly updated. The ReadyVax app[55] described above uses data from several of these approved sites for quick access on a smart phone.

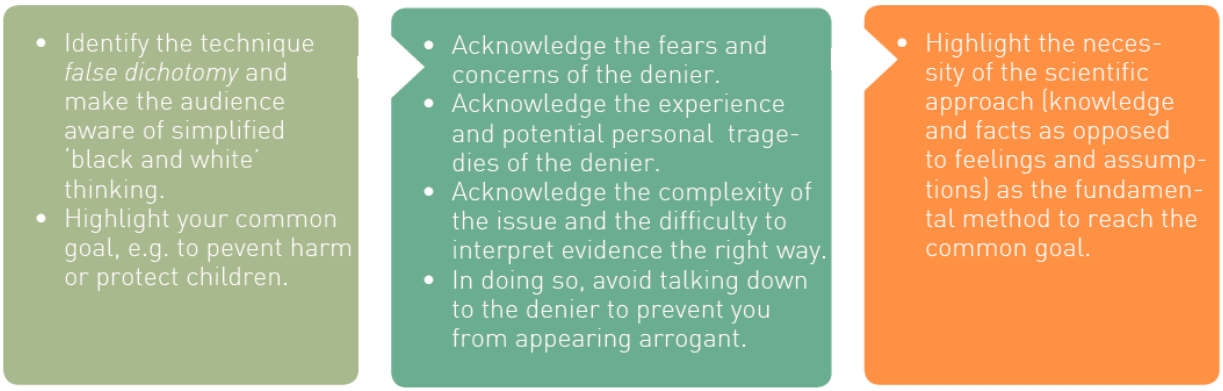
5.8 Vaccine Refusers: Do not dismiss from practice; ensure refusers know their responsibilities if they choose not to immunize

While health care workers who are strong vaccine advocates may be able to tolerate when people in their practice who refuse immunization are blamed and shamed and/or dismissed from the practice, this is unlikely to change peoples' decisions,[67] and may have legal and ethical implications.[68-69]

Strident, hard-core vaccine deniers make up much less than 1% of most populations, they seldom attend immunization clinics, and may even eschew all traditional medical care. It is very difficult to shift them to vaccine acceptance. In contrast, most refusers are neither especially vocal nor hard-core. Often, these vaccine-refusing parents/patients unconsciously does not see making a decision on immunization as easier than making one, and do not comprehend that not accepting vaccine(s) is, in fact, a decision. While it can be very frustrating to deal with them in a clinic or in a practice, it is important for the health care worker to remember that building trust – demonstrating both competency and caring – is needed here. At the very least, the health care worker should try to have the patient/parent return for further discussions. The health care worker should never guess why the patient/parent is refusing but may be able to elicit important underlying vaccine and immunization concerns and get a dialogue going by asking, "*What would it take to move you to a yes to accept vaccines?"* Answers to this open-ended question can be a starting point for motivational interviewing (see below).

Having a "debate" with refusers (or deniers) is not helpful and may only serve to further entrench the parent's/patient's negative vaccine views, as the refuser is unlikely to "hear" the health care worker's arguments (see above, Figure 5.2 Beliefs, Risk Perception and Decisions). In working with these groups of patients/parents, health care workers should listen carefully to the arguments being put forward, then consider using the "embracing" technique (see Figure 5.7 and World Health Organization Regional Office for Europe's "Best practice guidance: How to respond to vocal vaccine deniers in public" - Chapter 6[70]). Also, see Section 6 on addressing vocal vaccine deniers in public.

Figure 5.7 The Embracing Technique for working with science/evidence deniers[70]
See reference for more details



A fairly common category of refuser are parents and patients who rely on complementary and alternative medicine (CAM) keep to themselves, and see themselves as experts in "making a rational decision" not to immunize.[71] CAM is seen as not poisoned by avarice, not done for profit, and based upon experience and history; in contrast, science is seen as arrogant, rigid, and impersonal with a big profit motive coming from the pharmaceutical industry. It is imperative when working with CAM followers to avoid getting into a debate, refrain from "talking down," and not to belittle these beliefs. Motivational interviewing may be a helpful approach (see below). Keeping the door open for future conversation is key.

Of note, the Canadian Medical Protective Association has a 2017 document on "How to address vaccine hesitancy and refusal by patients or their legal guardians"[72] that emphasizes not dismissing, as well as documenting the refusal.

Beyond trying to ascertain the reasons for refusing vaccines, these patients/parents need to be informed about the risks and responsibilities that come with this choice. The Canadian Paediatric Society has adapted the WHO Europe Region fact sheet for parents who refuse vaccines for their children that cover this topic – "When parents choose not to vaccinate: Risks and responsibilities."[73]

Reviewing these points may also open opportunities for further discussions. If the option is available, referral to a local vaccine expert experienced in working with refusers to move them to a yes may also be helpful. Leaving the door open for future discussion keeps the possibility of immunization an option for the future.

5.9 Use effective discussion techniques to introduce immunization and to address concerns

Talking to parents and patients who are hesitant about vaccines can be emotional for both the individual and the health care worker when their immunization views are not in sync.[74]

Health care workers need to be careful:

- Introduce immunization in a ***presumptive*** not a participatory manner (see box).
- Do not ***over-estimate*** parental/patient vaccine hesitancy concerns.
- Follow presumptive introduction with participatory discussion – see ***motivational interviewing*** below.
- Be ***truthful***. Vaccination does have risks – but there are risks in everyday life, getting out of bed in the morning, walking to school, etc.
- ***Beware of debunking myths,*** as restating the myth may reinforce it and the patient/parental negative vaccine belief may become more polarized.
- Obtain informed consent – see below.

How immunization is introduced at the clinic or practice visit makes a difference. *Presumptive* rather than participatory initiation of vaccine recommendations is more effective in garnering vaccine acceptance if the parent/patient is hesitant.[75] This may be because the unspoken message from the health care worker with the presumptive approach is endorsement of immunization; while the participatory approach leaves it open for conjecture by the parent/patient on whether the health care worker does or does not support immunization.

Presumptive: *"Ben is due for his shots today."*

Participatory: *"What would you like to do about shots?"*

The presumptive introduction is best followed by participatory discussion,[76] "What are the concerns?"

Motivational interviewing for hesitant parents/patients is a helpful technique for finding out and exploring concerns.[77] This technique is client-centred, semi-directive, a shift from talking to the parent/patient to working with the parent/patient**.** The patient/parent's own motivations to vaccinate are solicited. Excessive persuasion and adversarial stances are avoided or minimized,[78] and the process can be woven into a routine visit, i.e., an effective use of a short amount of time.

This dialogue might follow this path:

- *Open ended question – What do you think about vaccines?*
- *Affirmation: I understand…*
- *Reflective listening: You are concerned by…*
- *Summarize: Let me summarize…*

Further discussion then ensues as a plan to move forward is developed. Such tailored dialogue will not take much time and is seen as affirming and valuing by the patient/parent. For some, this may lead to a change from hesitant to accepting of the vaccination being offered. Others may be open to a follow up visit.

For ***informed consent***, the known risks of vaccination need to be described as well as the risks of the vaccine-preventable diseases. Minor adverse reactions to vaccines need to be distinguished from severe reactions. The importance of how this is done in terms of language and other components is briefly discussed below.

5.10 Use effective information exchange strategies – language, numbers, stories, framing, nudge, jargon and gist

Beyond the presumptive introduction of vaccination and motivational interviewing, a number of other factors impact on what parents/patients "hear and understand." As noted by Parrish-Sprowl *"Well-conceived messages, delivered poorly, may not have as much impact as poorly constructed messages delivered well."*[79]

Use clear language:

- ***Avoid jargon.*** Parents and patients can get confused when technical and medical jargons are used. For example, some parents and patients are put off by the term "herd immunity," as they do not see themselves or members of their family as "cows or goats." Community protection may better convey the concept.

- ***Avoid being overly technically precise.*** Epidemiology studies can never prove that an adverse event could never happen. One cannot prove the null hypothesis, i.e., prove that there is no relation. Better to simplify than over qualify such comments.[80]

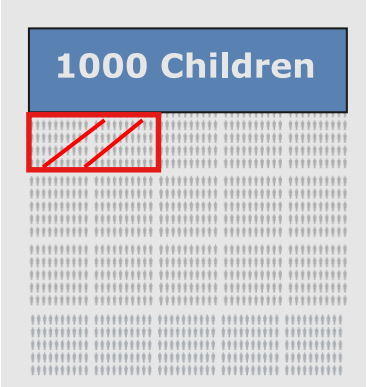
- ***Fit the level of language and content to the patient/parent.*** For example – terms like "rare" and "common" when discussing the complications of vaccine-preventable diseases or an adverse event following immunization may not be understood by parents or patients. What does rare mean? What is common? Patients and parents may have a concept very different from the technical definition of rare in immunization – 1/1000 to 1/10,000. Hence, using such words may confuse or mislead.

- ***Use common denominators when comparing rates of events.*** Many members of the general public are not quick to translate denominators so that rates can be compared. For example, measles encephalitis occurs in approximately 1/1000 cases of measles, and post-MMR vaccine encephalitis have occurs in 1/1,000,000. Many people cannot immediately assess that the latter is 1000 times less likely.

- ***Explain single event probability.*** Some people assume that the probability of complication occurs on a spectrum of mild to extreme forms of complication. Many do not understand the concept of "all" or "none" concept. The meaning of a single event probability of a complication can be explained by the following analogies. One wins the lottery or one does not. It is raining or it is not. One is pregnant or is not. Ten percent of those who develop tetanus die despite the best intensive care.

- ***Visual depictions can help.***

Figure 5.8 - 10% of Children with Tetanus Dies despite the Best Intensive Care



The website "information is beautiful"[81] has a helpful visual depiction of doses of HPV vaccine given in the United States as of 2011 (>35,000,000) with the rate of side effects: 18,727; rate of serious side effects: 1498; people said to have died within 1 year of HPV immunization: 68; deaths confirmed by a doctor: 32; and the number of deaths due to HPV vaccine: 0.

How vaccine-preventable disease data is presented in an outbreak can also influence how the information is perceived. For example, "heat" maps of diseases are better understood than dot maps.[82]

- ***Present absolute numbers not relative risk.*** The majority of the general public and even many health care workers do not understand relative risk. Furthermore as noted above in Figure 5.2 (Beliefs, Risk Perception and Decisions), emotions influence how numerical information is heard. Saying one child in 10 will die if they get tetanus is likely to be heard more readily than saying that 10% will die.

- ***Frame the message.*** In general, the public are more anxious about negatives; i.e. loss frames are more concerning than gain frames.[83] Framing affects vaccination acceptance, although this can be modified by pre-existent patient characteristics, perceived risk, or situational factors. In general, it is more effective to say a vaccine such as HPV is 99.9% safe, than to say that the HPV vaccine has less than 0.1% side effects. Similarly, saying "*If you decide not to be immunized against flu, you may increase your chances of getting the flu and being sick"* is more effective than saying *"if you receive flu vaccine you are less likely to get sick."*

  Framing also has effects at the population level. For example, Australia and Sweden have similar routine immunization rates. However, during the 2009 H1N1 pandemic, the uptake of influenza immunisation was 60% in Sweden and 18% in Australia. The key message about the H1N1 vaccine was predominately positively framed in Sweden and negatively in Australia.[84]

  How clinic reminder messages are framed can also influence acceptance decisions. For example, texting that "*HPV can infect your daughter and seriously harm her health. You can protect her by getting her vaccinated. Call the clinic at…"* is more effective than "*Your daughter can get HPV and seriously harm her health. The HPV vaccine can protect her. Call the clinic at…*"[85]

- ***Stories can be powerful.*** Stories exploit our cognitive shortcuts to shape beliefs and decision-making. This is why anecdotes and stories are such a common part of anti-vaccine strategies. Telling stories, especially if they are the health care workers' own experience with a vaccine-preventable disease case – while not effective on its own – can help the vaccination information being presented to be heard.[86]

- ***Nudge.*** Beyond the health care worker recommending vaccine, which can nudge a patient/parent to accept vaccine (see above), parents /patients maybe nudged by how conversation is presented, using presumptive language, as noted above. Similarly, sometimes by noting that the majority of parents are accepting the routine vaccines because they want their child to be as safe as possible can nudge a parent.[87] However, beware of planting fear, as this can backfire. Be careful not to plant concerns that were not there before.

- ***Gist.*** Health care workers can help their message to be heard and remembered by summing up, i.e., emphasizing the bottom line or gist of their message with scripted gist phrases such as:
    - *And the reason that's important is…*
    - *What that means to you is…*
    - *So the thing to remember is…*
    - *The bottom line – what I tell patients is…*

Summarizing helps patients/parents consolidate what they have heard and make it more memorable.[88] Children less than five years old remember verbatim; older children, adolescent and adults remember the gist. So it is very important to summarize.

Table 5.3 Summary of Communication Advice for Health Care Workers

• Remember importance of your recommendation and example	• Beware of debunking myths as this may increase belief in the myth	• Have your own vaccination story
• Present vaccination as the default position, i.e., presumptive	• Use facts sparingly – too many can confuse – remember the gist	• Motivational interviewing can help
• Use clear language, avoid jargon and overly technical discussions	• Be careful with fear –may make patients/parents more anxious about vaccines	• Frame your message
• Address one concern but listen first; if addressing multiple concerns, explore underlying beliefs	• Pictorial presentation of numbers may help, as can disease heat maps	• Build trust, use the nudge technique

5.11 Reinforce role community immunity/protection

Care must be taken if the concept of community immunity and protection is raised. As noted above, the term "herd immunity" is a medical jargon. Some people may be upset to be described in these terms, as the word "herd" is more commonly used to describe groups of cows. Explaining community protection to parents/patients may be helpful for those who want to "freeload," i.e., rely on others to be immunized instead of having themselves or their children immunized. However, this is a complex concept that is often incompletely understood by parents/patients.[87-88] Many think that community protection is possible for all vaccine-preventable diseases and do not know that for tetanus, community protection is not possible – only the individuals who are immunized are protected.

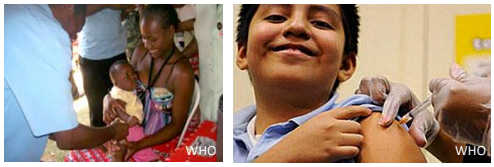
Reinforcing the added value of community protection with many vaccines can be helpful, but not at the expense of noting the value to the individual patient of their own protection through immunization.

5.12 Mitigate pain at immunization

Fear of pain on immunization is common among children, adolescents and adults.[89] The fear can make patients and parents anxious and hesitant about immunization.

What *does* vaccination really look like?

What could vaccination look like?



If used evidence based strategies to mitigate pain at time of vaccination

Parents and patients are keen to learn how to decrease pain on immunization Evidence-based strategies – physical, psychological and pharmacological – are available to address pain on immunization across the age range from infants to adults are available[89] and have been endorsed by SAGE,[90] see Table 5.4.

Table 5.4 Evidence-based Strategies to Decrease Pain on Immunization

GLOBALLY – ALL AGES	
Recommended	**NOT Recommended**
• No aspiration • Administer vaccines in order of increasing painfulness • Proper positioning • Use of neutral words; avoiding language that increases anxiety and/or promotes distrust	<u>Effective but not practical</u> • Topical anaesthetic <u>Unknown effectiveness:</u> • Changing the needle • Looking at vs. away from needle • Organizational aspects of the setting: privacy, environment <u>Ineffective:</u> • Manual tactile stimulation <u>Ineffective with potential harms:</u> • Oral analgesics • Warming the vaccine
INFANTS	
Recommended	**NOT Recommended**
• Caregiver presence <u>Conditional recommendations:</u> • Breastfeeding • Administration of sweet solutions if breastfeeding not acceptable during the vaccination session or shortly before (including rotavirus vaccine)	<u>Effective but not practical:</u> • Pacifiers and finger/thumb sucking • Simultaneous injections <u>Equivocal effectiveness and impractical:</u> • Distraction <u>Ineffective:</u> • Vapocoolants
CHILDREN	
Recommended	**NOT Recommended**
• Caregiver presence <u>Conditional recommendations:</u> Distraction (e.g. Music)	<u>Ineffective:</u> • <u>Vapocoolants</u>

ADOLESCENTS AND ADULTS	
Recommended	**NOT Recommended**
Conditional recommendations: • Distraction (no evidence of effectiveness in adolescents) e.g. Breathing interventions (cough, breath-hold)	Equivocal effectiveness and not practical: • Vapocoolants (no evidence of effectiveness in adolescents) Ineffective: • Visual distraction • Music distraction

These recommended steps to mitigate pain at the time of vaccination are generally effective, feasible, not costly, and culturally acceptable. WHO emphasizes the importance of:

- Ensuring the health care personnel carrying out vaccination remain calm, collaborative, well-informed and avoid using language that increases anxiety and promotes distrust;
- Ensuring proper positioning of the vaccine recipient according to age. For example, infants and young children should be held by the caregiver, and older children and adults should sit upright;
- When multiple vaccines are injected sequentially in the same session, they should be administered in order of increasing painfulness.

KEY POINTS

In addressing hesitancy, multiple strategies work better than single strategies, and these interventions need to be tailored to fit the subgroup at the immunization program level (1-6) and the patient/parent at the health care worker level (7-12).

Immunization Program Level

1. Foster trust	2. Ensure best immunization practices by health care workers
3. Utilize evidence-based strategies known to increase uptake a. engage community leaders, religious or other influential leaders to promote vaccination in the community. b. reduce constraints and improve access to vaccination; c. employ reminder and follow-up; d. consider mandate vaccinations/sanctions for non-vaccination, financial incentives	4. Develop effective communication plans 5. Educate children, youth, adults on the importance immunization for health 6. Work collaboratively within country and across the region

Health Care Worker Level (Patient/Parent)	
7. Key role health care worker in parental/patient vaccine acceptance decisions	8. Vaccine Refusers: Do not dismiss from practice; ensure refusers know their responsibilities if choose not to immunize
9. Use effective discussion techniques to introduce immunization and to address concerns	10. Use effective information exchange strategies – language, numbers, stories, framing, nudge, jargon and gist
11. Reinforce role community immunity/protection	12. Mitigate pain at immunization

References

1. Hickler B, MacDonald NE, Senouci K, Schuh HB, the informal Working Group on Vaccine Demand (iWGVD) for the Strategic Advisory Group of Experts on immunization (SAGE). Efforts to monitor Global progress on individual and community demand for immunization: Development of definitions and indicators for the Global Vaccine Action Plan Strategic Objective 2. Vaccine. 2017; 35(28): p. 3515-3519.

2. MacDonald NE, Smith J, Appleton M. Risk perception, risk management and safety assessment: what can governments do to increase public confidence in their vaccine system? Biologicals. 2012; 40(5): p. 384-388.

3. Dubé E, MacDonald NE. Managing the risks of vaccine hesitancy and refusals. Lancet Infect Dis. 2016; 16(5): p. 518-9.

4. Esterman M, Poole V, Liu G, DeGutis J. Modulating Reward Induces Differential Neurocognitive Approaches to Sustained Attention. Cereb Cortex. 2016; 27(8): p. 4022-4032.

5. Nan X, Madden K. HPV Vaccine Information in the Blogosphere: How Positive and Negative Blogs Influence Vaccine-Related Risk Perceptions, Attitudes, and Behavioral Intentions. Health Communication. 2012; 27(8): p. 829-836.

6. Bauch CT, Galvani AP. Social Factors in Epidemiology. Science. 2013 Oct 4; 342: p. 47-49.

7. Vosoughi S, Roy D, Aral S. The spread of true and false news online. Science. 2018 March 9; 359: p. 1146–1151.

8. Leask J, Willaby HW, Kaufman J. The Big Picture in Addressing Vaccine Hesitancy. Hum Vaccin Immunother. 2014; 10: p. 2600-2.

9. Dubé E, Gagnon D, MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Strategies intended to address vaccine hesitancy: Review of published reviews. Vaccine. 2015; 33(34): p. 4191-4203.

10. Jarrett C, Wilson R, O'Leary M, Eckersberger E, Larson HJ, SAGE Working Group on Vaccine Hesitancy. Strategies for addressing vaccine hesitancy - A systematic review. Vaccine. 2015; 33(34): p. 4180-90.

11. World Health Organization Regional Offfice for Europe. The Guide to Tailoring Immunization Programmes. [Online]. 2013. Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/publications/2013/guide-to-tailoring-immunization-programmes.

12. MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Vaccine Hesitancy: Defintion, scope and determinants. Vaccine. 2015; 33: p. 4161-4.

13. Osawa S, Slack ML. Public trust and vaccine acceptance--international perspectives. Hum Vaccin Immunother. 2013; 9: p. 1774-8.

14. Lane S, MacDonald NE, Marti M, Dumolard L. Vaccine hesitancy around the globe: a three year assessment of data from the annual WHO/UNICEF Joint Reporting Form. Vaccine. 2018 (in press).

15. World Health Organization Regional Office for Europe. Vaccination and Trust. How concerns arise and the role of communication and the role of communications in mitigating crises. [Online]. 2017. Available from: http://www.euro.who.int/__data/assets/pdf_file/0004/329647/Vaccines-and-trust.PDF.

16. World Health Organization Regional Office for Europe. Vaccination and trust library. [Online]. 2017. Available from: http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/vaccination-and-trust-library.

17. Ansari AM, Khan Z, Khan IM. Reducing resistance against polio drops. JRSH. 2007; 127: p. 276-9.

18. Favin M, Steinglass R, Fields R, Banerjee K, Sawhney M. Why children are not vaccinated: a review of the grey literature. International Health. 2012; 4: p. 229-238.

19. Dawson R, Lemmon K, Trivedi NJ, Hansen S. Improving human papilloma virus vaccination rates throughout military treatment facilities. Vaccine. 2018; 36(11): p. 1361-1367.

20. Herzog R, Álvarez-Pasquin MJ, Díaz C, Del Barrio JL, Estrada JM, Gil Á. Are healthcare workers' intentions to vaccinate related to their knowledge, beliefs and attitudes? A systematic review. BMC Public Health. 2013 Feb 19; 13: p. 154.

21. Rutten LJ, St Sauver JL, Beebe TJ, Wilson PM, Jacobson DJ, Fan C, et al. Clinician knowledge, clinician barriers, and perceived parental barriers regarding human papillomavirus vaccination: Association with initiation and completion rates. Vaccine. 2017; 35(1): p. 164-16.

22. Suryadevara M, Handel A, Bonville CA, Cibula DA, Domachowske JB. Pediatric provider vaccine hesitancy: An under-recognized obstacle to immunizing children. Vaccine. 2015; 33(48): p. 6629-34.

23. Verger P, Fressard L, Collange F, Gautier A, Jestin C, Launay O, et al. Vaccine Hesitancy Among General Practitioners and Its Determinants During Controversies: A National Cross-sectional Survey in France. EBioMedicine. 2015; 2(8): p. 891-7.

24. Macdonald NE, Finley J. Working with vaccine-hesitant parents. Paediatrics & Child Health. 2013; 18(5): p. 265-7.

25. Grabenstein JD. What the world's religions teach, applied to vaccines and immune globulins. Vaccine. 2013; 31(16): p. 2011-23.

26. Ernst E. Are anthroposophy-enthusiasts for or against vaccinations? [Online]. 2019. Available from: https://edzardernst.com/2019/04/are-anthroposophy-enthusiasts-for-or-against-vaccinations/.

27. Health 4 Thinkers. Christian Scientists and public health. [Online]. 2017. Available from: https://www.health4thinkers.com/4663/christian-scientists-and-public-health/.

28. UNICEF. Resources on Partnering with Religious communities. [Online]. 2016. Available from: https://www.unicef.org/about/partnerships/index_60543.html.

29. UNICEF. Building Trust in Immunization: Partnering with Religious Leaders and Groups. [Online]. 2004. Available from: https://www.unicef.org/immunization/index_20944.html.

30. The President's Cancer Panel. Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer. [Online]. 2014. Available from: https://deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/Part4.htm.

31. Dubé E, Gagnon D, Ouakki M, Bettinger JA, Witteman HO, MacDonald S, et al. Measuring vaccine acceptance among Canadian parents: A survey of the Canadian Immunization Research Network. Vaccine. 2018; 36(4): p. 545-552.

32. Kim N, Mountain TP. Role of non-traditional locations for seasonal flu vaccination: Empirical evidence and evaluation. Vaccine. 2017; 35: p. 2943-2948.

33. Harvey H, Reissland N, Mason J. Parental reminder, recall and educational interventions to improve early childhood immunisation uptake: A systematic review and meta-analysis. Vaccine. 2015; 33(25): p. 2862-80.

34. Clarke S, Giubilini A, Walker MJ. Conscientious objection to vaccination. Bioethics. 2017; 31: p. 155-161.

35. Lee C, Robinson JL. Systematic review of the effect of immunization mandates on uptake of routine childhood immunizations. Journal of Infection. 2016; 72: p. 659e-666e.

36. Ricciardi W, Boccia S, Siliquini R. Moving towards compulsory vaccination: the Italian experience. Eur J Public Health. 2018 Feb 1; 28(1): p. 2-3.

37. Ward JK, Colgrove J, Verger P. Why France is making eight new vaccines mandatory. Vaccine. 2018; 36: p. 1801-03.

38. Salmon DA, MacIntyre CR, Omer SB. Making mandatory vaccination truly compulsory: well intentioned but ill conceived. Lancet Infect Dis. 2015; 15(8): p. 872-3.

39. Moss JL, Reiter PL, Truong YK, Rimer BK, Brewer NT. School Entry Requirements and Coverage of Nontargeted Adolescent Vaccines. Pediatrics. 2016; 138(6): p. e20161414.

40. Betsch C, Bohm R. Detrimental effects of introducing partial compulsory vaccination: experimental evidence. Eur J Public Health. 2016; 26(3): p. 378-81.

41. Government of Ontario. Vaccines for children at school. [Online]. 2019. Available from: https://www.ontario.ca/page/vaccines-children-school.

42. Omer SB, Allen K, Chang DH, Guterman LB, Bednarczyk RA, Jordan A, et al. Exemptions From Mandatory Immunization After Legally Mandated Parental Counseling. Pediatrics. 2018; 141(1): p. e20172364.

43. Hull SA, Tissier J, Moser K, Derrett CJ, Carter YH, Eldridge S. Lessons from the London Initiative Zone Educational Incentives funding: associations between practice characteristics, funding, and courses undertaken. Br J Gen Pract. 2000; 50(452): p. 183-7.

44. Fu LY, Zook K, Gingold JA, Gillespie CW, Briccetti C, Cora-Bramble D, et al. Strategies for Improving Vaccine Delivery: A Cluster-Randomized Trial. Pediatrics. 2016; 137(6): p. e20154603.

45. Wigham S, Ternent L, Bryant A, Robalino S, Sniehotta FF, Adams J. Parental financial incentives for increasing preschool vaccination uptake: systematic review. Pediatrics. 2014. 2014; 134(4): p. e1117-28.

46. BMJ Opinion. Financial incentives for childhood immunisation in Australia. [Online]. 2015. Available from: https://blogs.bmj.com/bmj/2015/05/07/financial-incentives-for-childhood-immunisation-in-australia/.

47. Ofstead CL, Amelang MR, Wetzler HP, Tan L. Moving the needle on nursing staff influenza vaccination in long-term care: Results of an evidence-based intervention. Vaccine. 2017; 35(18): p. 2390-2395.

48. Allison MA, Reyes M, Young P, Calame L, Sheng X, Weng HY, et al. Parental attitudes about influenza immunization and school-based immunization for school-aged children. Pediatr Infect Dis J. 2010; 29(8): p. 751-5.

49. Rand CM, Schaffer SJ, Dhepyasuwan N, Blumkin A, Albertin C, Serwint JR, et al. Provider Communication, Prompts, and Feedback to Improve HPV Vaccination Rates in Resident Clinics. Pediatrics. 2018 Mar 14;: p. e20170498.

50. Goldstein S, MacDonald NE, Guirguis S, SAGE Working Group on Vaccine Hesitancy. Health communication and vaccine hesitancy. Vaccine. 2015; 33(34): p. 4212-14.

51. Attwell K, Freeman M. I Immunise: An evaluation of a values-based campaign to change attitudes and beliefs. Vaccine. 2015; 33: p. 6235–6240.

52. Nowak GJ, Gellin BG, MacDonald NE, Butler R, the SAGE Working Group on Vaccine Hesitancy. Addressing vaccine hesitancy: The potential value of commercial and social marketing principles and practices. Vaccine 2015;33: 4204-4211. Vaccine. 2015; 33: p. 4204-4211.

53. Odone A, Ferrari A, Spagnoli F, Visciarelli S, Shefer A, Pasquarella C, et al. Effectiveness of interventions that apply new media to improve vaccine uptake and vaccine coverage. Hum Vaccin Immunother. 2015; 11(1): p. 72-82.

54. Greenberg J, Dubé E, Driedger M. Vaccine Hesitancy: In Search of the Risk Communication Comfort Zone. PLoS Curr. 2017 Mar 3;: p. 9.

55. Bednarczyk RA, Frew PM, Salmon DA, Whitney E, Omer SB. ReadyVax: A new mobile vaccine information app. Hum Vac & Immuno. 2017; 13: p. 1149-1154.

56. Nyhan B, Reifler J, Richey S, Freed GL. Effective messages in vaccine promotion: a randomized trial. Pediatrics. 2014; 133(4): p. e835-42.

57. van der Linden SL, Clarke CE, Maibach EW. Highlighting consensus among medical scientists increases public support for vaccines: evidence from a randomized experiment. BMC Public Health. 2015 Dec 2; 15: p. 1207.

58. van der Linden S, Maibach E, Cook J, Leiserowitz A, Lewandowsky S. Inoculating against misinformation. Science. 2017 Dec 1; 358(6367): p. 1141-1142.

59. I Boost Immunity. Tag: School. [Online]. Available from: https://iboostimmunity.com/topics/school.

60. BBC. BBC iReporter Get Ready to Make The Headlines. [Online]. Available from: https://www.bbc.co.uk/news/resources/idt-8760dd58-84f9-4c98-ade2-590562670096.

61. DROG. Bad News. [Online]. Available from: https://getbadnews.com/#intro.

62. Kahan DM, Jenkins-Smith H, Braman D. Cultural cognition of scientific consensus. J Risk Res. 2011; 14(2): p. 147-174.

63. Gust DA, Darling N, Kennedy A, Schwartz B. Parents with doubts about vaccines: which vaccines and reasons why. Pediatrics. 2008; 122(4): p. 718-25.

64. Wheeler M, Buttenheim AM. Parental vaccine concerns, information source, and choice of alternative immunization schedules. Hum Vaccin Immunother. 2013; 9(8): p. 1782-9.

65. World Health Organization. Vaccine Safety Net. [Online]. 2019. Available from: https://www.who.int/vaccine_safety/initiative/communication/network/vaccine_safety_websites/en/.

66. Immunize BC. Immunization Communication Tool for Immunizers. [Online]. 2013. Available from: https://immunizebc.ca/sites/default/files/docs/ict_final.pdf.

67. Witteman HO. Addressing Vaccine Hesitancy With Values. Pediatrics. 2015; 136(2): p. 215-217.

68. Halperin B, Melnychuk R, Downie J, MacDonald NE. When is it permissible to dismiss a family who refuses vaccines? Legal, ethical and public health perspectives. Paediatr Child Health. 2007; 12(10): p. 843-845.

69. MacDonald NE, Harmon S, Dubé E, Taylor B, Steenbeek A, Crowcroft N, et al. Is physician dismissal of vaccine refusers an acceptable practice in Canada in 2018? An overview. Paediatrics & Child Health. 2019 May; 24(2): p. 92-97.

70. World Health Organization Regional Office for Europe. Best practice guidance: How to respond to vocal vaccine deniers in public. [Online]. 2016. Available from: http://www.euro.who.int/__data/assets/pdf_file/0005/315761/Best-practice-guidance-respond-vocal-vaccine-deniers-public.pdf?ua=1.

71. Attwell K, Ward PR, Meyer SB, Rokkas PJ, Leask J. "Do-it-yourself": Vaccine rejection and complementary and alternative medicine (CAM). Soc Sci Med. 2018; 196: p. 106-114.

72. Canadian Medical Protective Association. How to address vaccine hesitancy and refusal by patients or their legal guardians. [Online]. 2017. Available from: https://www.cmpa-acpm.ca/en/advice-publications/browse-articles/2017/how-to-address-vaccine-hesitancy-and-refusal-by-patients-or-their-legal-guardians.

73. Caring for Kids. When parents choose not to vaccinate: Risks and responsibilities. [Online]. 2016. Available from: https://www.caringforkids.cps.ca/handouts/when-parents-choose-not-to-vaccinate-risks-and-responsibilities.

74. Berry NJ, Henry A, Danchin M, Trevena LJ, Willaby HW, Leask J. When parents won't vaccinate their children: a qualitative investigation of australian primary care providers' experiences. BMC Pediatr. 2017 Jan 17; 17(1): p. 19.

75. Hofstetter AM, Robinson JD, Lepere K, Cunningham M, Etsekson N, Opel DJ. Clinician-parent discussions about influenza vaccination of children and their association with vaccine acceptance. Vaccine. 2017. 2017; 35(20): p. 2709-2715.

76. Connors JT, Slotwinski KL, Hodges EA. Provider-parent Communication When Discussing Vaccines: A Systematic Review. J Pediatr Nurs. 2017; 33: p. 10-15.

77. Reno JE, O'Leary S, Garrett K, Pyrzanowski J, Lockhart S, Campagna E, et al. Improving Provider Communication about HPV Vaccines for Vaccine-Hesitant Parents Through the Use of Motivational Interviewing. J Health Commun. 2018 online ahead of print Feb 23;: p. 1-8.

78. Leask J, Kinnersley P, Jackson C, Cheater F, Bedford H, Rowles G. Communicating with parents about vaccination: a framework for health professionals. BMC Pediatr. 2012 Sep 21;: p. 154.

79. Parrish-Sprowl J. Vaccine hesitancy communication: What counts as evidence. Vaccine. 2018; 36(4): p. 6529-6530.

80. MacDonald NE, Picard A. A plea for clear language on vaccine safety. CMAJ. 2009; 180(7): p. 697–698.

81. Information is beautiful. Is The HPV Vaccine Safe? v2.0. [Online]. 2011. Available from: https://informationisbeautiful.net/2011/is-the-hpv-vaccine-safe-v-2-0/.

82. Fagerlin A, Valley TS, Scherer AM, Knaus M, Das E, Zikmund-Fisher BJ. Communicating infectious disease prevalence through graphics: Results from an international survey. Vaccine. 2017; 35(32): p. 4041-4047.

83. Penta MA, Baban A. Message Framing in Vaccine Communication: A Systematic Review of Published Literature. Health Commun. 2018; 33(3): p. 299-314.

84. Sandell T, Sebar B, Harris N. Framing risk: Communication messages in the Australian and Swedish print media surrounding the 2009 H1N1 pandemic. Scand J Public Health. 2013; 41: p. 860-865.

85. McGlone MS, Stephens KK, Rodriguez SA, Fernandez ME. Persuasive texts for prompting action: Agency assignment in HPV vaccination reminders. Vaccine. 2017; 35(34): p. 4295-4297.

86. Shelby A, Ernst K. Story and Science.How providers and parents can utilize storytelling to combat anti-vaccine movement. Hum Vac and Immuno. 2013; 9: p. 1795-1801.

87. Attwell K, Smith DT. Hearts, minds, nudges and shoves: (How) can we mobilise communities for vaccination in a marketised society? Vaccine. 2018 Aug 19; 36(44): p. 6506-6508.

88. Broniatowski DA, Hilyard KM, Dredze M. Effective vaccine communication during the disneyland measles outbreak. Vaccine. 2016; 34(28): p. 3225-8.

89. Taddio A, McMurtry CM, Shah V, Pillai Riddell P, Chambers CT, Noel M, et al. Reducing pain during vaccine injections: clinical practice guideline. CMAJ. 2015; 187: p. 975-982.

90. World Health Organization. Reducing pain at the time of vaccination: WHO position paper. Weekly Epidemiology Record. 2015 Sept; 90: p. 505-510.

Section 6. Addressing Vocal Vaccine Deniers in Public Forum to Strengthen Resiliency

Social networks, geographic and online, provide an opportunity to explore diverse viewpoints or simply reflect or reinforce current (positive or negative) vaccine beliefs.[1-2] The internet provides vocal vaccine deniers – the noisy, albeit relatively small, extreme end of the subgroup of vaccine refusers – with a potentially wide audience for their fringe views.[3] Misinformation can further spread by social contagion and have a big impact on vaccine decisions.[4]

While the potential damage a vocal vaccine denier can cause through mass the media is significant, response from the immunization program must be approached carefully, thoughtfully and with caution. Poorly prepared or rash responses may backfire and further undermine pro-vaccine messaging.

At the urging of many member states, the WHO Regional Office for Europe in 2016 developed a guidance on how to address vocal vaccine deniers in public.[5] Knowing if, when, why and how to address vocal vaccine deniers in public can enhance immunization programs' decision-making. This guidance should be used with the guidance on trust-building and crisis communication noted in Section 5 (Strategies to Address Hesitancy and Help Foster Demand).[6]

The best practice guidance on addressing vocal vaccine deniers in public emphasizes that:

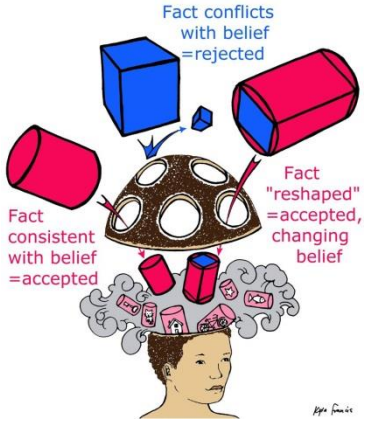
1) The general public, not the vocal vaccine denier, is the target audience

2) The aim is twofold – correct the content, and unmask the techniques that the vocal vaccine denier is using.

Correcting the content is not enough, as risk perception and vaccine decision-making are complex. As noted in Section 5, risk perceptions are intuitive, automatic and unconscious, and much influenced by beliefs. If a fact agrees with the belief, then it is well heard; if not, it does not even register. Correcting misinformation put forward by a denier may not even register with the public, and may only draw further attention to the misinformation. However, also note that deniers' arguments use tactics to misinform and obscure the scientific evidence. Noting this for the public can help rewrap the correction information so it will be better heard (see Figure 6.1), as the public does not like to be knowingly duped or conned.[7]

The goal in addressing the vocal vaccine denier in public is to make the public audience more resilient against anti-vaccine statements and stories, and to support those who are vaccine-hesitant in their vaccine acceptance decision.

Figure 6.1 Beliefs and facts
Wrap the correction to the misinformation with emphasis on the tactic used to misinform – now it registers



Vocal vaccine deniers are skilled at getting their message out. They use tactics such as

a. *skewing science*
b. *shifting the hypothesis if they fear losing an argument*
c. *shutting down critics and avoiding open discussion*
d. *using personal insults, attacks and even legal action on critics of their message*[3]

Assessing the Need for Intervention

Dealing with a vocal vaccine denier can be deeply unpleasant, but if their impact is seriously undermining vaccine acceptance, then the immunization program may determine if action is indicated. Silence may be perceived by some in the public as the immunization program agreeing with the arguments.

Taking on every vocal vaccine denier in public is unlikely to be worth the time and effort needed. Be selective. Determine if the denier is seriously undermining trust in the immunization program and hindering vaccine acceptance. Noise does not always equate with impact. How well known is the denier to the community or subgroup or general population of concern? Are these claims getting not only social media attention but also mainstream media attention? Are public meetings being organized as platforms for this denier? If the immunization program does decide to be involved in public debate, Section 8 (Strategies to support Vaccination Demand and Grow Resiliency) in the Guidance document suggests questions to be thought through.

The spokesperson for the immunization program needs to have sound knowledge of the evidence and, importantly, have good public speaking skills and media training. This is not a task to take on unprepared. Being a good listener is an important asset.

Preparing: Points to Consider

In brief, the guidance document suggests taking the following into consideration:

1. *In advance, prepare 3 key messages.*
2. *Keep the key messages as simple and straightforward as possible.*
3. *Repeat these messages as often as reasonably possible during the public discussion*
4. *Do not repeat the anti-vaccine arguments. Stick to facts, and repeat the key messages.*
5. *Emphasize the high safety instead of the low risk of vaccines (framing) (see Section 5).*
6. *Use inclusive terms to underline a shared identity with the audience – the target here.*
7. *Avoid raising questions about the personal motivation of vocal vaccine deniers.*
8. *Be honest and tell the truth.*
9. *Communicate what has been achieved so far and what needs to be done.*
10. *Avoid humorous contributions during the discussion, as these may be misinterpreted.*
11. *Underline scientific consensus with regard to vaccine safety and efficacy.*
12. *Emphasize the social benefits of vaccines.*

The 3 Step Process

Three steps are recommended in responding to vaccine denialism in public are briefly outlined below:

Step 1. Determine the core topic(s) the vocal vaccine denier is focusing on

The topics of vocal vaccine deniers almost always readily fall into one of these five categories:

1. *Threat of disease*
2. *Alternatives*
3. *Effectiveness*
4. *Trust*
5. *Safety*

Step 2. Identify the core technique being used

While vocal vaccine deniers often mix and mingle techniques, once disentangled, they fall into one or more of 5 categories. These have not changed since vocal vaccine denialism started over 200 years ago when the first vaccine was developed:

1. **Conspiracies**: Arguing that scientific consensus is the result of a complex and secretive conspiracy.
2. **Fake experts**: Using fake experts as authorities, combined with denigration of established experts.
3. **Selectivity**: Referring to isolated papers that challenge scientific consensus.
4. **Impossible expectations**: Expecting 100% certain results or health treatments with no possible side effects.
5. **Misrepresentation and false logic**: Jumping to conclusions, using false analogies, etc.

Step 3: Respond with key message(s)

Correct the content

Once the topic under discussion has been identified, choose a key message that fits, such as one of the following:

Threat of disease:
"Vaccine-preventable diseases can be very severe, and still cause millions of deaths per year around the world. Even with the best available care in the world, vaccine-preventable diseases can cause permanent disability and even death. Prevention is by far the best intervention."

Alternatives:
"There are no equally safe and effective alternatives to vaccinations."

Effectiveness:
"The scientific evidence is clear: vaccination is the most effective health intervention for prevention of many serious diseases."

Trust:
"We as an institution/agency are aiming to sustain the health of every individual member of the public. We are sorry that you have lost trust in our effort, but we hope to regain it."

Safety:
"The scientific evidence is clear; vaccination is a safe way to prevent many serious diseases. Any theoretical risk to the individual and society is far outweighed by the risks to one and all of not doing so."

Unmask the technique:
If the denier's technique has been readily identified, this information can be added to the statement to strengthen the message and discredit the denier (see above).

Conspiracies:
"Ms. P is saying that there is a complex and secretive conspiracy behind the promotion of vaccines. This idea totally ignores the mass of scientific evidence produced by independent scientists all over the world on the benefits of vaccines in protecting public health and well-being. It also overestimates the power and tries to discredit the motives of health authorities everywhere. In the end, it boils down to a simple fact: in places where vaccines are widely used, people lead healthier lives. This has been shown time and time again."

Fake experts:
"Mr. X's argument is based on ideas put forward by people who are *job title by profession* and who are not considered experts in the field of vaccine safety and effectiveness. Their ideas do not reflect the evidence-based consensus among scientists, nor are they representative of public opinion, as the majority of the citizens of *country name* are well aware of the huge benefits of vaccinations for the health of every individual."

Selectivity:
"Ms. Y is cherry-picking the scientific evidence, taking fragments from here and there which appear to back up her position and ignoring the bulk of solid evidence that disproves it. As long as she does not consider the scientific evidence as a whole, we will not have a fruitful discussion."

Impossible expectations:
"In science, this argument is called an impossible expectation. No medical product or intervention, from aspirin to heart surgery, can ever be guaranteed 100% safe. Even though we will never be able to ensure 100% safety, we know that the risks of vaccine-preventable diseases far outweigh those of the vaccines administered to prevent them."

Misrepresentation and false logic (false dichotomy):
"Mr. Z is misrepresenting the facts and reaching false conclusions. I will repeat what is supported by an overwhelming body of scientific evidence…"

More Advice
The WHO's *Best practice guidance: How to respond to vocal vaccine deniers in public* (2016),[5] also provides helpful advice and insights on how to "embrace" the vocal vaccine denier by rebutting the black-and-white perspective and creating a sense of consensus which appeals to the audience. Other chapters cover religious perspectives (see also Section 5), what to do about fake experts and fake /predatory journal articles, how to deal with an interview situation for the public discussion that is unfavourable and other related topics.

Assessment
After addressing a vocal vaccine denier in public, the immunization program needs to review how well the interview went, considering both the viewpoint of the spokesperson and perceptions, and follow-up of the audience and media. Vocal vaccine deniers do not disappear after such events, as many have too much invested both emotionally and monetarily to withdraw. However, judicious use of such interventions may much strengthen the audience who heard the discussion to favour immunization and be more resilient to anti-vaccine rhetoric in the future, i.e., the "inoculation" concept noted in Section 5. The community may become less complacent about giving vocal vaccine deniers major platforms for their views.

KEY POINTS

- The goal in addressing a vocal vaccine denier in public is to make the public audience more resilient against anti-vaccine statements and stories.
- If the denier is to be addressed in public, three steps are recommended:
    1. Determine the core topic(s) the vocal vaccine denier is focusing on;
    2. Identify the core technique being used;
    3. Respond with key message(s), correct the misinformation and unmask the technique being used.
- Evaluate and assess.

References

1. Brunson EK. The impact of social networks on parents' vaccination decisions. Pediatrics. 2013; 131(5): p. e1397-404.

2. Opel DJ, Marcuse EK. Window or mirror: social networks' role in immunization decisions. JAMA Pediatr. 2013; 167(3): p. 304-5.

3. Kata A. Anti-vaccine activists, Web 2.0, and the postmodern paradigm--an overview of tactics and tropes used online by the anti-vaccination movement. Vaccine. 2012; 30(25): p. 3778-89.

4. Bauch CT, Galvani AP. Social Factors in Epidemiology. Science. 2013 Oct 4; 342: p. 47-49.

5. World Health Organization Regional Office for Europe. Best practice guidance: How to respond to vocal vaccine deniers in public. [Online]. 2016. Available from: http://www.euro.who.int/__data/assets/pdf_file/0005/315761/Best-practice-guidance-respond-vocal-vaccine-deniers-public.pdf?ua=1.

6. World Health Organization Regional Office of Europe. Vaccination and Trust. How concerns arise and the role of communication and the role of communications in mitigating crises. [Online]. 2017. Available from: http://www.euro.who.int/__data/assets/pdf_file/0004/329647/Vaccines-and-trust.PDF.

7. van der Linden S, Maibach E, Cook J, Leiserowitz A, Lewandowsky S. Inoculating against misinformation. Science. 2017 Dec 1; 358(6367): p. 1141-1142.

Section 7. Monitoring and Evaluation of Programs Addressing Vaccine Hesitancy

Canada has historically benefited from a relatively high rate of immunization against most vaccine-preventable diseases. However, it is well established that not all Canadians get immunized; recent outbreaks of measles and pertussis underscore this reality. Vaccine hesitancy, along with lack of access to vaccination services, lack of awareness or lack of strong recommendations by healthcare providers can be associated with underimmunization or non-vaccination. As noted in Section 2 (Vaccine Hesitancy Globally and in Canada), vaccine hesitancy is a global problem affecting most countries, including Canada. However, the reasons for hesitancy vary. Vaccine hesitancy is changeable, varying by time, setting, vaccine and context.[1] As vaccine hesitancy is unpredictable, monitoring for hesitancy and evaluating the outcomes of interventions is required so that provincial and territorial programs can track the degree of hesitancy, its impact on uptake in a population and in subgroups, and the effectiveness of their interventions to address hesitancy. This also needs to be tracked nationally to give a pan-Canadian perspective. Currently this is done through the biannual Canadian National Immunization Coverage Surveys – the childhood National Immunization Coverage Survey [cNICS] and the adult National Immunization Coverage Survey [aNICS] (see Section 2 and 3 [Strategies to Detect Vaccine Hesitancy]). Both surveys have significant methodological limitations, including: the potential inaccuracy of self/parent reporting; small sample sizes; low response rates; frequent methodological changes that make multi-year comparisons of coverage challenging; and under-representation of special populations (e.g., First Nations people living on reserves, individuals whose first language is neither English nor French). Furthermore, cNICS offers no rapid, regional, or focal assessment for hesitancy. If a crisis in confidence is occurring, this may be noted by frontline health immunizers in clinics and in office practices, but the degree and extent cannot be rapidly determined.

What can be done?

Online tracking

Given the widespread use of smart phones, online surveys and tools that track what vaccine information is being sought, what questions are being raised and what is being shared on social media networks can also help immunization programs better understand the hesitancy topography in the country.

“Infodemiology”(a combination of information and epidemiology) and “infoveillance” (a combination of information and surveillance) can be acquired when “ big data” is analyzed to track what parents and patients are searching for on health-related internet sites and/or when communicating with others about health using social media.[2] This “fast” or “big” data tracking techniques can be applied to assessing hesitancy and pro- or anti-vaccine sentiments within a country or region in a country. For example, analysis can reveal different social networks and their levels of hesitancy, the social climate for vaccination in different areas of a country, and how rapidly and far a specific vaccine concern is spreading. Geo-mapping can then locate subgroups either spatially or show connectedness on the internet.

While the tools used to track internet sites accessed and social media spread of content were initially very expensive and required a very high degree of computer coding knowledge and expertise to use. Now, many tools are available online, easier to use and are available at no cost. For example, Twitter posts concerning HPV vaccine have been tracked and sorted for sentiment using Twitter application programming interface.[3] While this still requires some computer programming literacy, Twitter does provide helpful insights on how to perform searches (https://dev.twitter.com/rest/reference/get/search/tweets). In another example, concerns about the HPV vaccine – that led to a suspension of the vaccine in Japan in 2013 – were tracked to see if a global spread had occurred using Google Alerts and Google Searches to find websites, online newspaper stories, social media pages, technical reports,

online blogs, and YouTube videos that focused on the Japanese story.[4] Google Alerts and Google Search are both free, easy to use and very familiar to internet users. Google Analytics and other similar tools can provide another level of sophistication for searches and tracking. For example, in 2012, findings of an analysis of readers' online responses to Canadian news articles regarding the Quebec measles outbreak showed that the anti-vaccine minority's volume of comments translated to a disproportionately high representation on online boards.[5] The provinces' and territories' immunization programs might work together with the Public health Agency of Canada to learn how these tools can be most effectively used to track hesitancy and detect crisis.

Regionally – Canada and the Pan-American Health Organization (PAHO)

At the regional level, Canada needs to contribute to PAHO initiatives in tracking of vaccine hesitancy problems across the region. Trends, impact of interventions and impact on vaccine acceptance can be helpful in shaping current and future PAHO responses. There are many actions that can be taken to specifically support countries in tracking hesitancy and monitoring effectiveness of interventions. Developing a bank of PAHO-validated survey questions acquired from different countries in the region could streamline the survey process for different countries. Countries could select the most relevant questions related to their setting, religious background, vaccine of interest and context. Sharing findings across the region can help grow understanding of the complexity of hesitancy and what might work in which settings with which problems.

Optimizing and streamlining online monitoring and analysis of "big data" for tracking of vaccine hesitancy may be better done not as a "one off" but as an ongoing program, so that expertise is built up not only in gathering the data but also in how to use this information at the program level to tailor interventions. Clearly, not all countries in the PAHO region will have the expertise or interest in doing this, especially if they are starting from scratch. Is there a need? Is there interest? How helpful is such work? Can it, and does it, help shift and tailor program interventions? To what effect? Can Canada help? What can Canada learn from others in the PAHO region? Sharing experiences, expertise, findings and lessons learned in this area across the region could be very helpful so that thoughtful decisions about the need for and benefits of these tools can be made, bearing in mind each country's context and needs.

KEY POINTS

- Vaccine hesitancy is changeable, varying by time, setting, vaccine and context. Data are needed at the regional and local levels.
- There is a need for a National Immunization Program to track the degree of hesitancy, its impact on uptake in a population and in subgroups, and the effectiveness of their interventions to address hesitancy.
- A number of tools can be used to track vaccine hesitancy concerns on social media at no additional cost beyond program personnel.
- Building program expertise to monitor "big data" can help support immunization program decisions in addressing hesitancy.

References

1. MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Vaccine Hesitancy: Defintion, scope and determinants. Vaccine. 2015; 33: p. 4161-4.

2. Rosselli R, Martini M, Bragazzi NL. The old and the new: vaccine hesitancy in the era of the Web 2.0. Challenges and opportunities. J Prev Med Hyg. 2016; 57: p. e47-50.

3. Dunn AG, Surian D, Leask J, Dey A, Mandl KD, Coiera E. Mapping information exposure on social media to explain differences in HPV vaccine coverage in the United States. Vaccine. 2017; 35(23): p. 3033-3040.

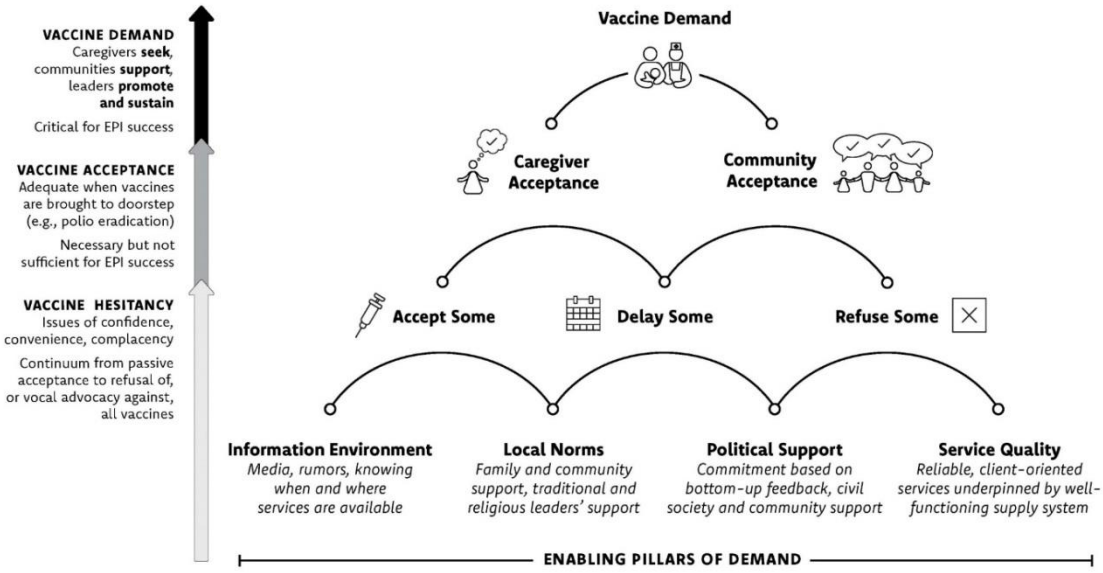
4. Larson HJ, Wilson R, Hanley S, Parys A, Paterson P. Tracking the global spread of vaccine sentiments: The global response to Japan's suspension of its HPV vaccine recommendation. Hum Vaccin Immunother. 2014; 10(9): p. 2543-2550.

5. Pereira JA, Quach S, Dao HH, Kwong JC, Deeks SL, et al. Contagious Comments: What Was the Online Buzz About the 2011 Quebec Measles Outbreak? PLoS ONE. 2013; 8(5): p. e64072.

Section 8. Strategies to support Vaccination Demand and Grow Resiliency

Strategic Objective 2 – the concept of demand – in the Global Vaccine Action Plan [GVAP][1] (approved by all countries at the World Health Assembly in 2012), pushes immunization program managers and partners to think beyond a continuum of hesitancy that ends with passive acceptance, towards a more comprehensive concept that includes the actions of individuals and communities to seek, support, and/or advocate for vaccination services. While addressing hesitancy can help increase vaccine uptake and acceptance, it does not necessarily lead to increased demand – see Figure 8.1.[2]

Figure 8.1 Vaccine Hesitancy and Vaccine Demand



Definition of Demand: *SAGE Decade of Vaccines Working Group*

Demand is the actions of individuals and communities to seek, support, and/or advocate for vaccines and immunization services. Demand is dynamic and varies by context, vaccine, immunization services provided, time, and place. Demand is fostered by governments, immunization program managers, public and private sector providers, local leadership, and civil society organizations hearing and acting on the voices of individuals and communities.

Demand has not had the same research attention over the past decade as vaccine hesitancy and is even more complex than hesitancy. In GVAP's Strategic Objective 2, demand goes well beyond the concept of supply and demand, systems and programs, to encompass human behaviour of both individuals and communities.

Resiliency

In psychology, resiliency is an individual's capacity to cope with significant adversity. For an immunization program, resiliency means that the program can withstand major shocks and disruptions, quickly adapt to changing circumstances, and maintain high vaccine uptake and acceptance over time.[3] Resilience is widely used to inform public health strategies in emergencies and disasters, but it is a relatively new term in vaccine discourse. This is a complex area, with no single strategy put forward, and little research.[4]

Nurturing Demand and Growing Trust and Resiliency at the Country Level

While tailored strategies to grow vaccine demand must be developed that fit specific communities (see below), there are strategies at the general population level that can grow trust and resiliency and nurture demand, particularly amongst those who already accept immunization on time and on schedule. Immunization communication plans can be crafted to reinforce the positive beliefs amongst this population.

Even as studies have shown that the same message is not heard in the same way by anti-vaccine groups compared to pro-vaccine groups,[5] these findings must not negate the development and deployment of messages for the pro-vaccine group. The positive behaviour of pro-vaccine groups needs to be reinforced and valued. Furthermore, vaccine acceptance behaviour needs to be seen by the population as the social norm, not just the default position. The behaviour of actively seeking out and advocating for vaccines needs to be cultivated. Even in communities where immunization is widely accepted in an on-time and on-schedule manner, many may be unaware that this is the social norm because it is not discussed. Having community members speak positively about immunization in their social networks may help nudge fence-sitters and lead to increased demand.[6] This strategy, however, is not without risk. In some communities, there is growing resentment amongst those who vaccinate against those who do not, and this may increase pressure for more punitive policies for those who do not vaccinate.[7]

Social marketing strategies used to grow demand that fit the province or territory, the local culture and the context need to be well thought through, deployed and evaluated. The marketing and communication principles employed to address hesitancy (see Section 5 – Strategies to Address Hesitancy and Help Foster Demand) suggest ways forward, although generating demand likely needs even more components in a multi-pronged strategy than hesitancy does. Furthermore, what works in one area or with one subgroup at a particular point in time may not work in a neighbouring area because of differences in context.

Growing Resiliency and Nurturing Demand: What can immunization programs do at the community level?

Much attention has been paid during the past decade on how to address hesitancy, with examination of different strategies and the realization that no single strategy can overcome hesitancy in all settings (see Section 5). Also, there is clearly no single strategy to increase resiliency and nurture demand.

As the definition notes, demand *is fostered by governments, immunization program managers, public and private sector providers, local leadership, and civil society organizations hearing and acting on the voices of individuals and communities.* Demand is about *the actions of individuals and communities to seek, support, and/or advocate for vaccines and immunization services.* Resiliency is about the individual's and immunization program's ability to cope with adversity (e.g., vaccine scarcity, vaccine safety crisis)**.**

Hearing and acting on the voices of individuals and communities are key elements. For an immunization program, this means having regular dialogue with the range of communities served, and nurturing trust in the relationship with all (see Section 5.1 – Foster Trust). Existing information channels need to be leveraged to enhance the ability of the immunization program to hear the concerns of those with doubts even amongst those accepting vaccine, as well as amongst the hesitant. The doubting acceptors need support to become resilient. Communication must be two way – not just immunization program information being supplied, but also listening to, working with and acting to address community concerns. What information is supplied needs to fit the community, be formatted in ways that can be heard, and address the community's concerns and needs. Tailoring, as with hesitancy, is crucial.

Local and national civil society organizations may have good links to communities, especially those that are vulnerable and/or hard to reach. Their relationships, accompanied by multi-pronged approaches, may help nudge communities to accept vaccines, and in some instances even grow community demand for vaccines. Having the immunization program collaborate with a variety of partners can be helpful in changing behaviour.

Demand does not just happen; it needs efforts to grow it. The four pillars in Figure 8.1 emphasize the breadth of scope that demand-generation programs require: the information environment, local norms, political support and service quality. All need to be taken into account while demand-generating, multi-pronged, tailored strategies that engage the community are being designed. Hearing what the community is saying must also be addressed for local trust in the immunization program to be fostered. For example, in Calgary (Alberta), parents, local pediatrics experts and the public health immunization program came together to have the Catholic school board overturn the local bishop's ban on in-school HPV immunization.[8] This example illustrates the power that a community demanding access can have. Not only did it enhance access by the reinstatement of the school-based program, but it also raised community awareness across the city of the importance of HPV vaccine to health. The strategies used to grow demand in one setting may be helpful in other settings.

Similarly, program resiliency needs to be grown and nurtured. Crisis communication strategies need to be in place in advance of a crisis, so that fast, appropriate action can be taken to minimize the impact of the anti-vaccine insults. Partnerships and relationships need to be strong so they can withstand buffeting and come together to support immunization. As noted in Section 5, many voices coming together to say that vaccines are safe and effective is more powerful than just the immunization program giving this message.

Growing Resiliency and Nurturing Demand: What can local health care workers do at the individual level?

Health care workers can support the growth of resiliency and nurture demand by valuing the decisions of parents/ patients to accept vaccines on time and on schedule, emphasizing that this is the social norm, and that not only is this benefiting themselves and their families, but also their communities.[4] Reinforcing positive behaviour has been shown to influence other behaviour choices such as exercise, adoption of environmentally friendly behaviours, food choices, weight loss, and smoking cessation.

Teens immunized against for HPV vaccine or mommy bloggers for childhood vaccination can be powerful allies for immunization when they speak up. Encouraging them to speak will not only help them become local (and vocal) vaccination champions, but their voices may nudge others to speak up as well. The initiative "I Boost Immunity" in British Columbia (https://iboostimmunity.com/) is a good example of finding and motivating vaccination champions to speak up for vaccination. This type of initiative helps grow the perception that accepting vaccines is the social norm. Such pro-vaccine normative stances can be further encouraged and supported by inoculating people against anti-vaccine rhetoric and increase people's understanding of the techniques that are used (see Section 5.4 – Develop effective communication plans and Section 6 – Addressing vocal vaccine deniers in public forum to strengthen resiliency). Neither teens nor adults like to be conned or duped by anti-vaccine rhetoric.

KEY POINTS

- Addressing vaccine hesitancy can increase vaccine acceptance, but may not lead to increase in vaccine demand.
- Vaccine demand is a more comprehensive concept that includes the actions of individuals and communities to seek, support, and/or advocate for vaccination services.
- Immunization programs can increase demand by:
    - Listening to and working with communities to tailor immunization information to fit the needs;
    - Ensuring the immunization program is of quality and fits the needs of the population, including subgroups who are hard to reach and/or are hesitant;
    - Working with civil society, non-governmental organizations and community leaders to build trust in immunization and in immunization programs across the population;
    - Building political support for immunization.
- Health care workers can support demand by valuing parent/patient's vaccine acceptance decisions, supporting immunization as a social norm that is important for individuals and the community.

References

1. World Health Organization. Global Vaccine Action Plan 2011-2020. [Online]. 2012. Available from: http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/.

2. Hickler B, MacDonald NE, Senouci K, Schuh HB, the informal Working Group on Vaccine Demand (iWGVD) for the Strategic Advisory Group of Experts on immunization (SAGE). Efforts to monitor Global progress on individual and community demand for immunization: Development of definitions and indicators for the Global Vaccine Action Plan Strategic Objective 2. Vaccine. 2017; 35(28): p. 3515-3519.

3. Ozawa S, Paina L, Qiu M. Exploring pathways for building trust in vaccination and strengthening health system resilience. BMC Health Serv Res. 2016 Nov 15;: p. 639.

4. Dubé E, MacDonald NE. Vaccination resilience: Building and sustaining confidence in and demand for vaccination. Vaccine. 2017; 35(32): p. 3907-3909.

5. Nyhan B, Reifler J, Richey S, Freed GL. Effective messages in vaccine promotion: a randomized trial. Pediatrics. 2014; 133(4): p. e835-42.

6. Opel DJ, Marcuse EK. Window or mirror: social networks' role in immunization decisions. JAMA Pediatr. 2013; 167(3): p. 304-5.

7. Carpiano RM, Fitz NS. Public attitudes toward child undervaccination: A randomized experiment on evaluations, stigmatizing orientations, and support for policies. Soc Sci Med. 2017; 85: p. 127-136.

8. Guichon JR, Mitchell I, Buffler P, Caplan A. Citizen intervention in a religious ban on in-school HPV vaccine administration in Calgary, Canada. Prev Med. 2013; 57(5): p. 409-13.