

Routine childhood vaccination: How to address lapses during COVID-19

Canadian Pediatric Society Grand Rounds

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Conflict of interest

- None to report

Land Acknowledgement

I gratefully acknowledge that the land I work and live on is the unceded territory of the Coast Salish peoples, including the territories of the Səlilwətaʔ/Selilwitulh (Tsleil-Waututh), the xʷməθkʷəy̍əm (Musqueam) and Skwxwú7mesh (Squamish) Nations, who have cared for and nurtured the lands and waters around us for all time. I give thanks for the opportunity to live, work and support care here.

I invite you to acknowledge the traditional territories that you are joining from.

I also acknowledge that we cannot separate the history of our university or our community from the history of colonialism in Canada and the lasting influence it has on BIPOC people. The legacy of colonialism persists today as we continue to work towards racial justice and equity here in Vancouver.



Outline

At the end of this presentation, participants will be able to:

- Evaluate barriers to vaccination that can be addressed by pediatricians and pediatric subspecialists in Canada.
- Describe actions that can address barriers to increase vaccine uptake, including actions from pediatricians and public health.
- Discuss an approach to increasing vaccine confidence and addressing vaccine hesitancy.

A case study

- 15 month old boy, seen in a pediatric clinic for cough – he was born in Vancouver to a non-English speaking mother, who is a newcomer from Eritrea, having arrived as a Government Assisted Refugee during the pregnancy.
- On review of the provincial vaccine registry, you realise that he has had only his 2 month vaccines
- As you discuss with the mother, with an interpreter, it becomes clear that there have been multiple barriers along the way.

Evaluate barriers to vaccination that can be addressed by pediatricians and pediatric subspecialists in Canada

Is there a problem?

Provider barriers

Patient barriers

Impacts – vaccine preventable diseases

Is there a problem?

- Vaccination coverage is not straightforward to measure and many public health activities have been postponed due to pandemic
- Prior to the pandemic – there was variability across the country
- Clues to low vaccination rates
 - Measles outbreaks
 - Polio cases (eg in New York)
- Many countries had disruptions in vaccination programs

Prior to the pandemic, vaccination rates were not optimal – 4-7 year olds who were fully vaccinated in 2018

No school entry mandate

All vaccines

- Newfoundland & Labrador – 95%
- Manitoba – 62%
- BC – 68%

DTaP-IPV, MMR only

- Alberta 79-80%

School entry mandate

All vaccines

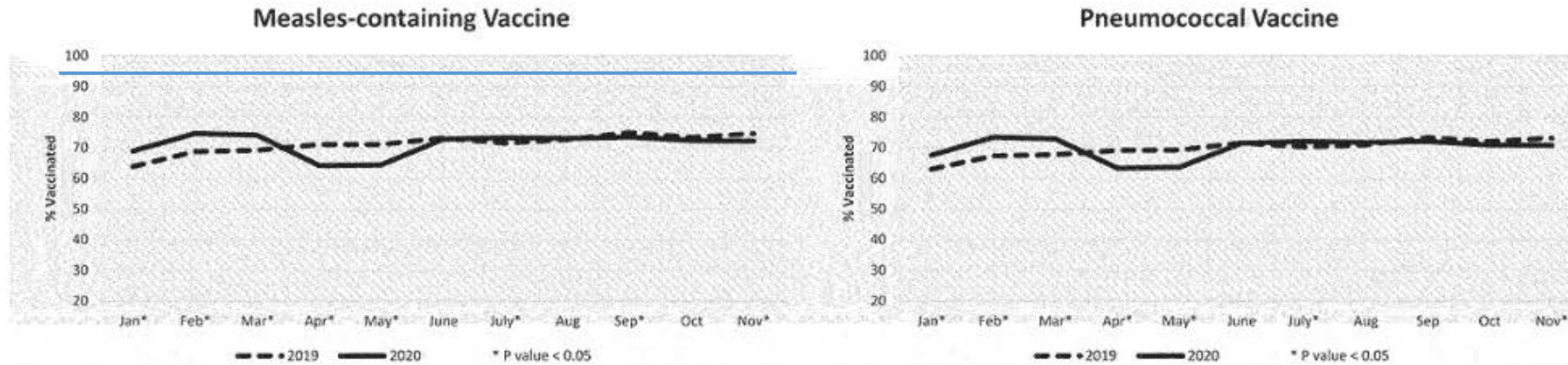
- New Brunswick 78%

DTaP-IPV, MMR only

- Ontario 84-96%

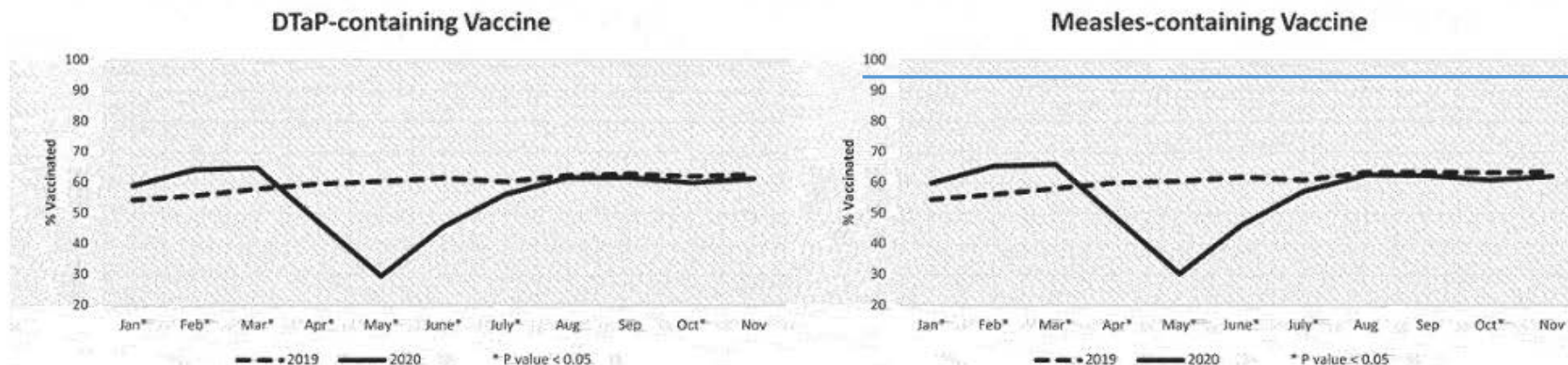
Vaccination coverage in Quebec during the pandemic – declined and then recovered

a) Vaccination coverage by 13 months old



Threshold for preventing measles transmission >95% vaccinated

b) Vaccination coverage by 19 months old



Kiely M et al Hum Vaccin Immunother. 2022 Dec 31;18(1):2007707. doi: 10.1080/21645515.2021.2007707. Epub 2021 Dec 17. PMID: 34920686; PMCID: PMC9553134.

Is there a problem? – world wide

First dose measles coverage dropped to 81% in 2021, leaving 5 million more children unvaccinated compared to in 2019

Coverage of the first dose of measles-containing vaccine (MCV-1) dropped to 81% in 2021, the lowest level since 2008.

This leaves 25 million children vulnerable. An additional 15 million children received only a first dose, but not a needed second dose through regular public health services.

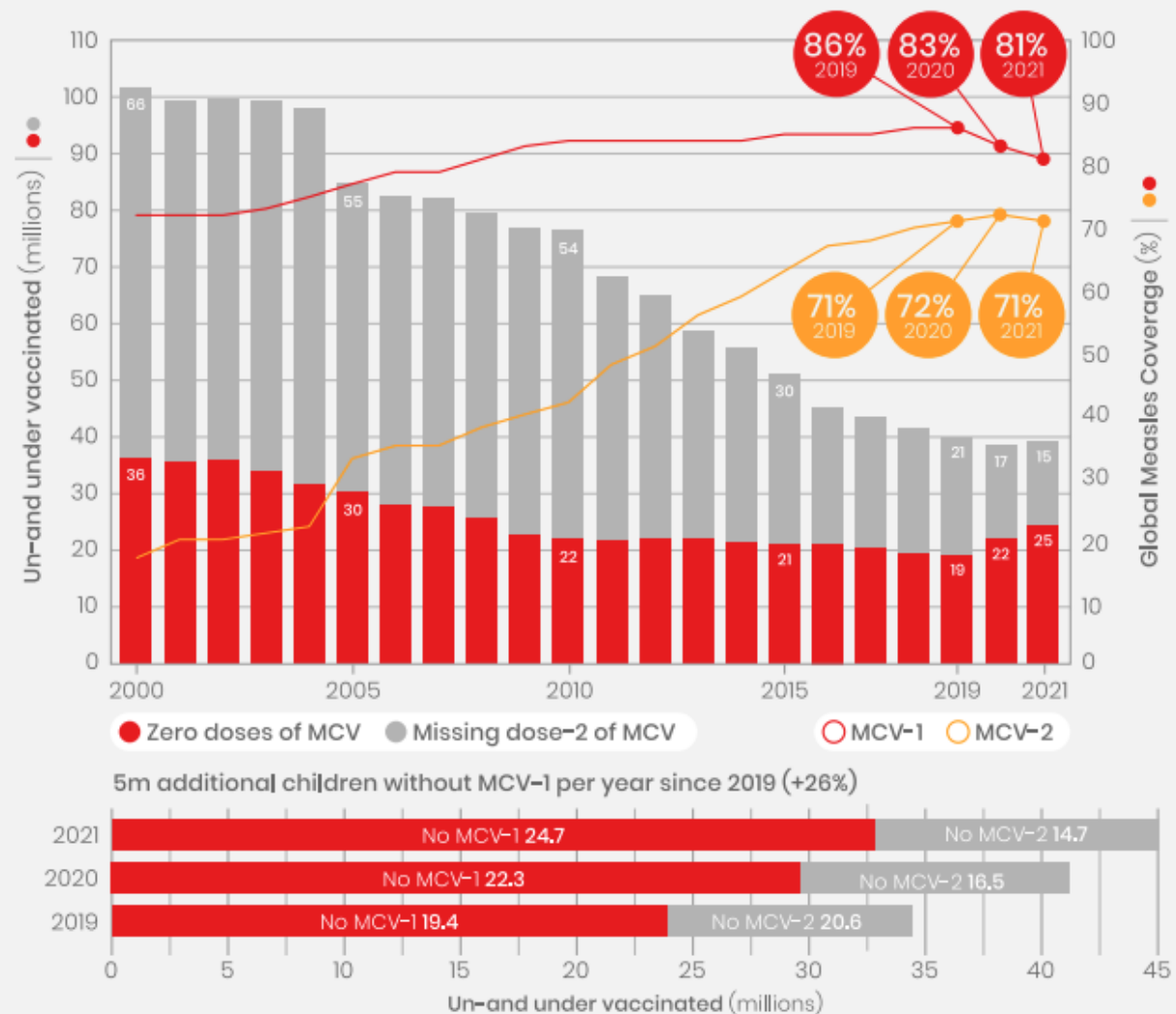
Supplemental Immunization Activities (including campaigns) continue to be required to ensure that all children receive the 2 doses that will protect them from measles.



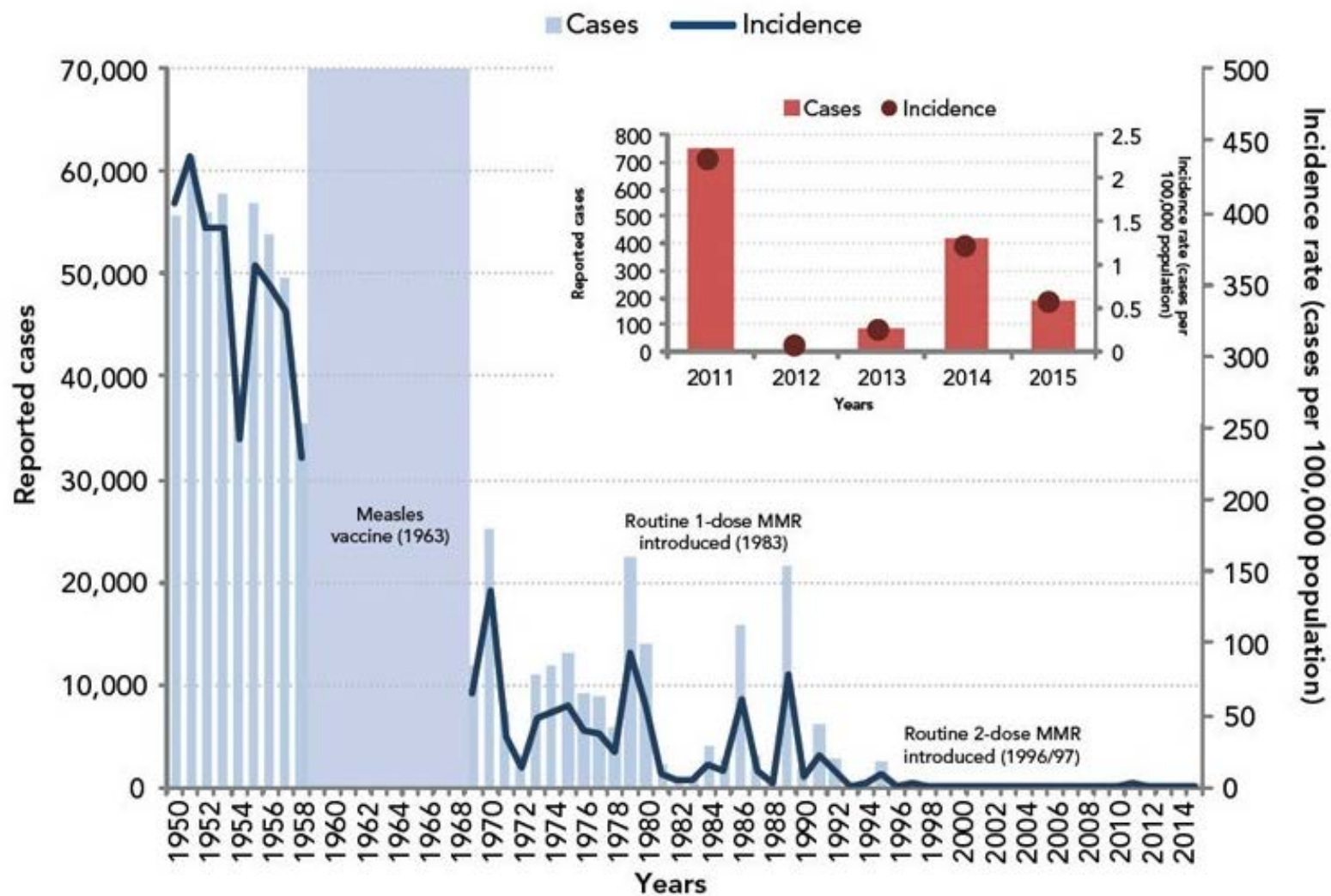
3 of 29

WUENIC 2021

Source: <https://data.unicef.org/topic/child-health/immunization/>



Measles incidence since vaccine became available



Threshold for preventing transmission >95% vaccinated

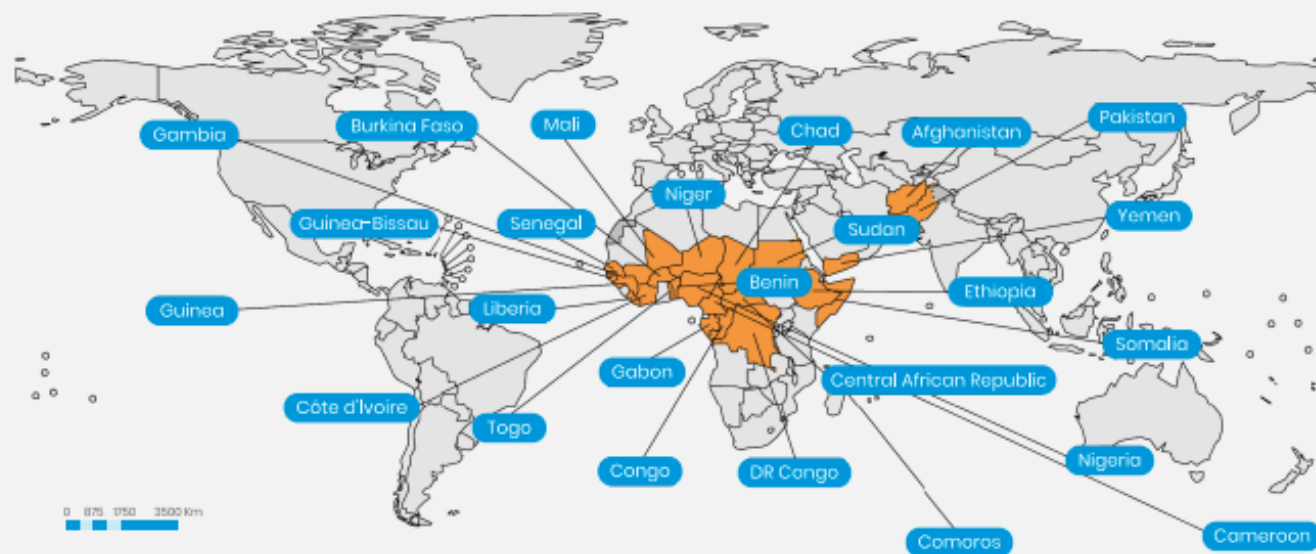
Source:
<https://www.canada.ca/en/public-health/services/diseases/measles/health-professionals-measles.html>

Impact of declines in global vaccine coverage

Measles outbreaks are rife again in low- and middle-income countries

After two years of lower than usual routine immunization coverage, and the postponement of many supplementary immunization activities (including campaigns), the risk of large outbreaks is now very real.

While reported cases of measles are still below the levels seen during the worldwide surge in 2019, a cyclical high, large and disruptive outbreaks are again being detected in the African and the Eastern Mediterranean regions.



Map production: World Health Organization (WHO), 2022. All rights reserved

Data source: IVB Database

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area nor of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Source: <https://data.unicef.org/topic/child-health/immunization/>



Influenza vaccine uptake in children

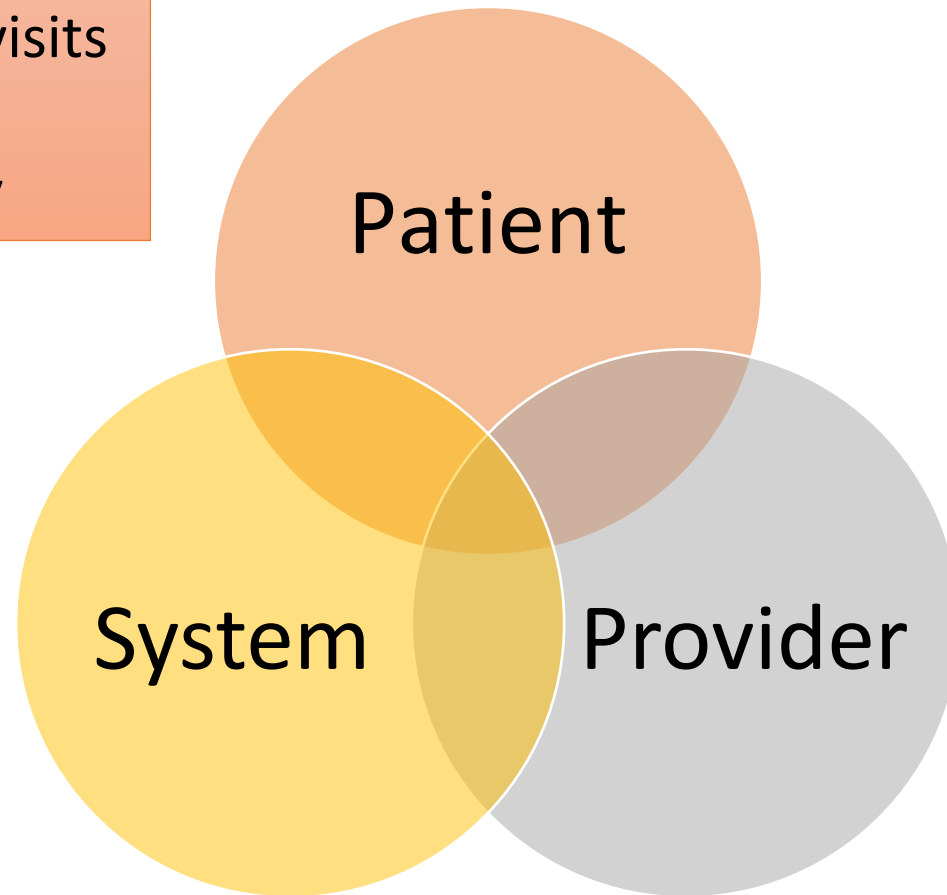
- Recommended for all age 6 months & up
- Uptake typically ~30%
- Prevents but does not eliminate influenza

<https://cps.ca/en/documents/position/vaccine-recommendations-influenza>

Immunization Barriers Model

No access to care
Need for extra visits
Knowledge
Fear / hesitancy

Vaccine shortages
No reminder / recall
Scattering of care
Few school laws



Adapted from Peter Szliagi –
Pediatrics Grand Rounds on
Improving Child Immunization -
<https://www.youtube.com/watch?v=vOTqgtKlp8o>

Weak
recommendations
No reminder / recall
No QA
Ordering vaccines

System Barriers

System barriers

- Vaccine registries
 - Not all provinces have vaccination records that are readily accessible to health care providers
 - Many parents do not have their child's vaccine records
 - (Parent report of "up to date" immunization is very inaccurate)
- Lack of Harmonized Immunization Schedule
 - Varies from province to province
 - Often patients who move provinces end up with gaps in coverage

Provider barriers

- Lack of time for vaccine counseling
- Lack of confidence in vaccine counseling
- Many families do not have a primary care provider

Barriers faced by parents

- Lack of awareness of when children are due for vaccines
 - Automatic notifications
- Appointments available only during working hours
- Language barriers
- Vaccine hesitancy / Fear
- Lack of awareness of the risks of vaccine preventable diseases
 - “Had I known it would be this bad, I would have immunized my children against measles” – a single mother of 4 unvaccinated kids, 3 of which were hospitalised for measles
- Unable to access provider

Barriers faced by equity seeking populations

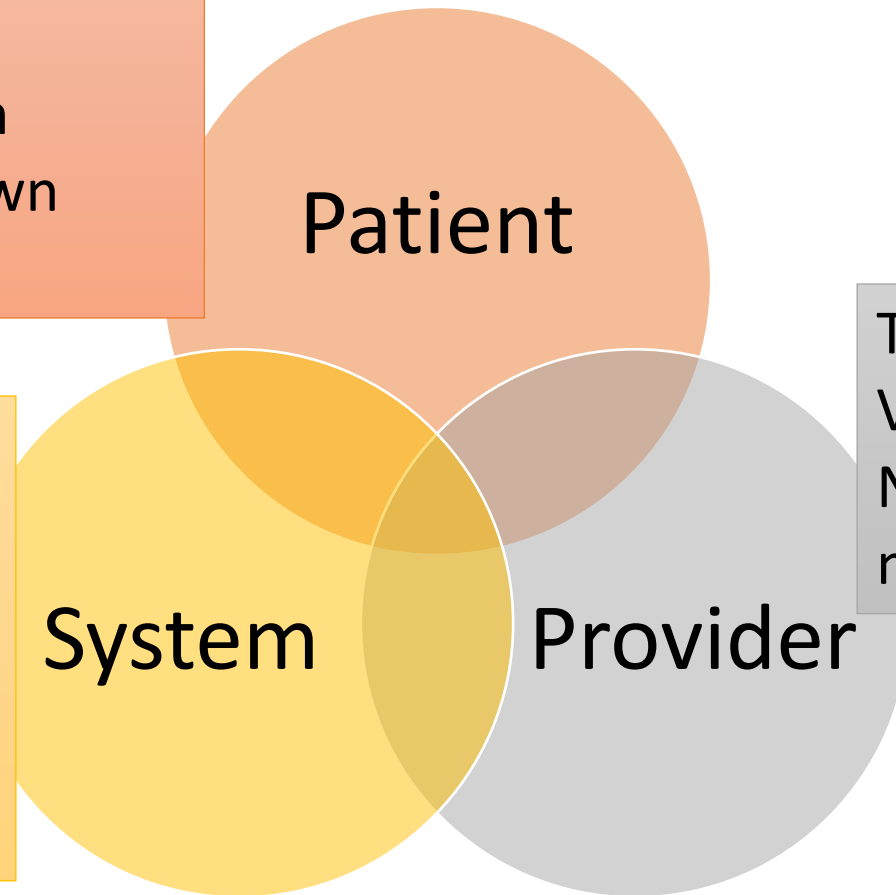
**Patient /
family
barriers**

- Experience vaccine visits as unwelcoming / judgemental
- Missed appointments / unable to rebook
- Language – lack of translator for booking appointments, for vaccine counselling.
- Unable to take time from work
- Mistrust of authorities

Case: 15 month old with only 2 month vaccines

No primary care.
Mom doesn't read.
Mom doesn't speak English
Mom mistrustful of unknown providers.

Family not given vaccine book like they are used to.
No one mentioned there were missing vaccines.
Not clear to parents how to get appointment.



Translation not used.
Visit rushed.
No attempt to rebook after missed appointment

Adapted from Peter Szliagi – Pediatrics Grand Rounds on Improving Child Immunization -
<https://www.youtube.com/watch?v=vOTqqtKlp8o>

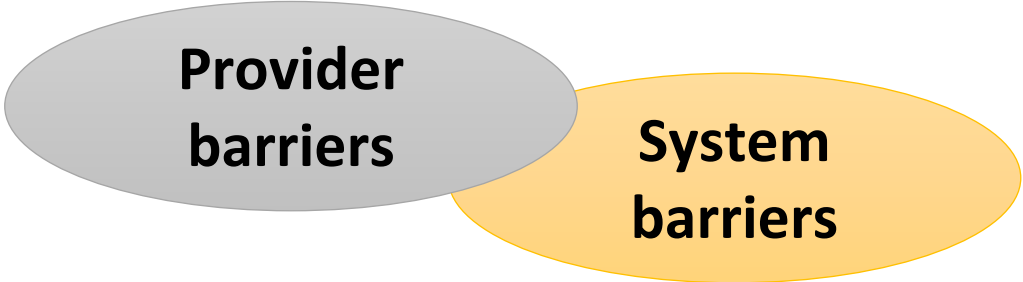
Solutions: How do we mitigate the barriers

System

Provider

Patient barriers

Patient reminder / recall



Provider
barriers

System
barriers

- Use apps, letters, telephone, email
 - Has been demonstrated to be somewhat effective in RCTs & metaanalyses
- Could come from primary care or from public health
- Need EMR system that can flag people with missing vaccines
- Centralised systems are most cost effective.
- *Could ask all patients during fall visits for any reason about influenza vaccines.*

Jacobson Vann JC, et al. Cochrane Database Syst Rev. 2018

Cataldi JR. Curr Opin Pediatr. 2020

Kempe A. Acad Pediatr. 2017.

Overcoming barriers – system actions

System barriers

- Opportunistic vaccination strategies – eg Family Immunization Clinic
- School-based immunization clinics
- Registry (parent report not helpful)
- Laws requiring vaccinations / vaccine records for school entry

Family Immunization Clinic

- Routine & catch-up vaccines
- Immunization counselling
 - After previous adverse events
 - Vaccine hesitancy
 - Complex medical conditions
- Personalized vaccine schedules for complex cases
 - Cancer
 - Other immune suppressive medications
- Nurse and physician consultations
- Immunization education, advocacy and outreach



Strategies

- Patient and Family Focused care service
- Prescheduled Appointments
- Drop In Appointments
- Physician-led appointments for complex cases
- Telehealth Consultation
- Electronic Public Health Documentation
- Email and phone Correspondences and Enquiries
- Roving Cart
- Outreach to patients in special wards settings
- Collaboration with all clinical hospital specialties and public health partners

Who do we see?

- BCCH patients (in or out-patient)
- Complex pediatric patients
- Vaccine hesitant families
- Patients with anxiety
- Patients with needle phobia
- Patients with autism & developmental challenges
 - Occasionally done during GA
- BCW patients/clients
- Family members & visitors of all patients

Services available

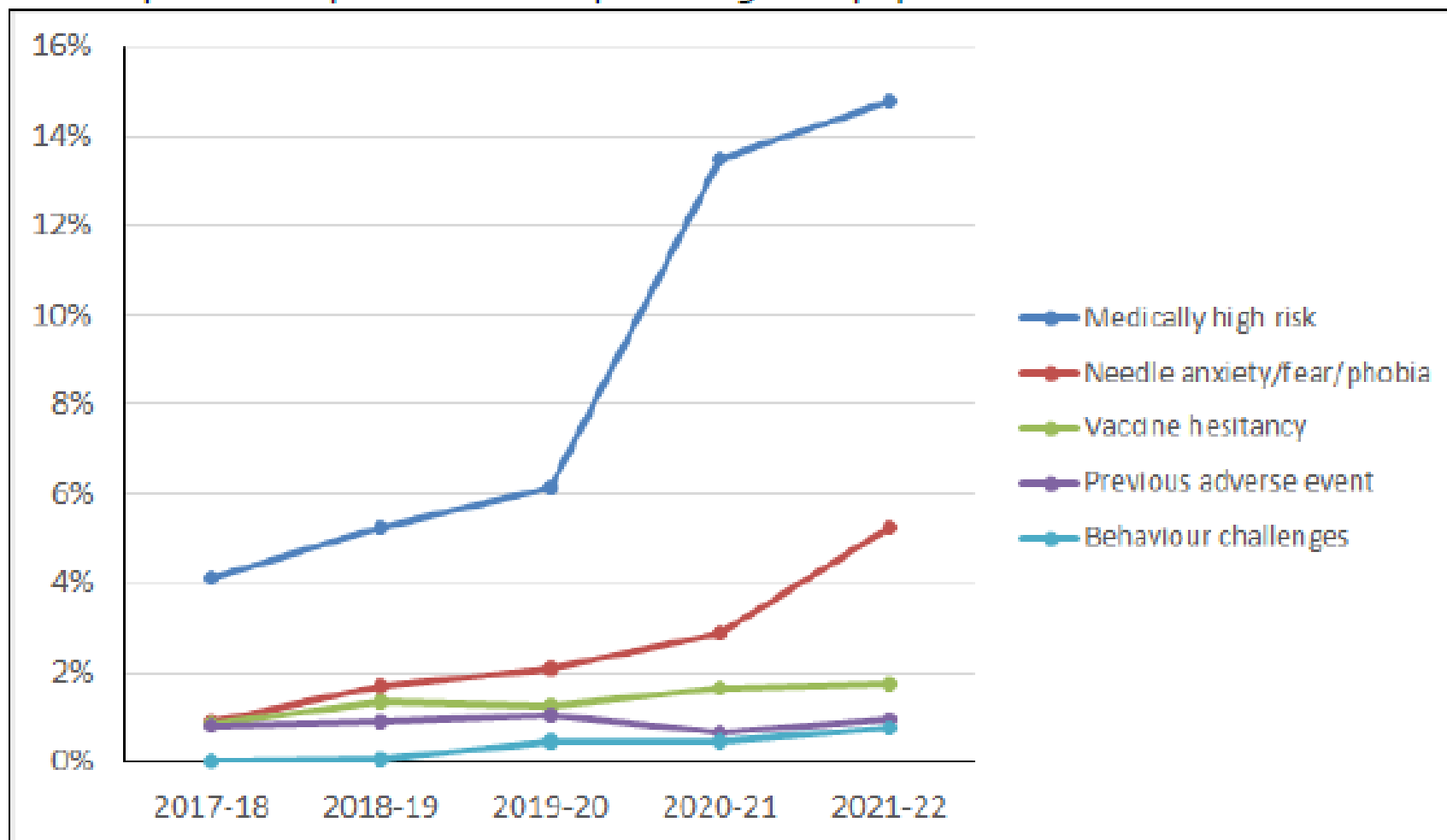
- Nurse and physician consultations
- Child life & psychology support
 - 'Buzzy'
- Technology based distraction tools
 - Belly Breathing app, VR goggles
- Immunization counselling
- Personalized vaccine schedules
- Telehealth services for virtual consults
- Provincial education & partnership with HAs



DistrACTION® Cards



Figure 3. Proportions of patient visits in specific high risk populations at BCCH.



6000-8000 vaccines provided each year.

Complex immunization questions

- If a patient has had an adverse reaction and is uncertain about future vaccinations, consider referring to the SIC network - <https://cirnetwork.ca/network/special-immunization/>

Special Immunization Clinic (SIC) Network

WHAT IS SIC?



The Special Immunization Clinic (SIC) Network aims to improve the assessment and management of patients with medically challenging adverse events following immunization (AEFIs) and underlying medical conditions that may complicate immunization.



SIC conducts standardized assessments of patients with previous AEFIs and underlying medical conditions, and assesses the risk of AEFI recurrence following revaccination.



SIC evaluates vaccine safety, immunogenicity and coverage in immunocompromised patients across six provinces.



SIC has built a national registry of patients assessed in the clinics and their outcomes after vaccination.

RESEARCHERS

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Dr. Karina Top is an Associate Professor of Pediatrics and Community Health & Epidemiology at Dalhousie University and an Investigator at the Canadian Center for Vaccinology in Halifax, NS. Dr. Top is the Principal Investigator of CIRN's Special

Overcoming barriers – What Pediatricians can do

**Provider
barriers**

- Recognize that a strong recommendation of vaccination from a trusted provider is a key intervention to increasing immunization
- Comfort with recognising VPDs & understanding VPD epidemiology
- Comfort with knowing vaccine schedule
 - Provincial & national resources
- Use every clinical encounter as an opportunity to review immunizations
 - If possible based on written records, not patient report

**Provider
barriers**

**Patient /
family
barriers**

Effective vaccine communications

- Patient-centered approach – ideally, have a relationship prior to discussing vaccines
 - Use understandable language
 - Trauma-informed care
- Consider strategies such as motivational interviewing.
- Respect differences of opinion
 - Take time to listen to the perspectives of the patient
- Address pain / fear of immunization

<https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-5-communicating-effectively-immunization.html>
<https://cps.ca/en/documents/position/working-with-vaccine-hesitant-parents>

**Provider
barriers**

**Patient /
family
barriers**

Effective vaccine communications

- Be able to clearly elaborate on the evidence around vaccines – including benefits and risks
- Contrast the known & theoretical risks of vaccines with the known risks with vaccine preventable diseases
- Stories / narratives can be more compelling than statistics for many families

Canada's Vaccine safety system

1. Evidence-based pre-license review and approval process
2. Regulations for manufacturers:
 - (a) Good laboratory practices (GLPs)
 - (b) Good clinical practices (GCPs)
 - (c) Good manufacturing practices (GMPs)
 - (d) Vaccine lot assessment (before release)
 - (e) Regular review of vaccine safety data submitted by the market authorization holder
3. Evidence-based vaccine use recommendations
4. Immunization competencies training for health care providers
5. Pharmacovigilance for adverse events following immunization (AEFIs):
 - (a) AEFI post-marketing surveillance
 - (b) AEFI monitoring (CAEFISS): passive, enhanced and active (IMPACT)
 - (c) Global surveillance (Uppsala Monitoring Centre)
6. AEFI causality assessment
7. Safety and efficacy signal detection
8. Canadian Immunization Research Network special immunization clinics (SICs)

← → ↺ 🏠 cps.ca/en/documents/position/vaccine-safety-system 🔍 ⚙️ 📄 🌐

📧 Inbox (673) - ljsauv... 📅 My Day - To Do 📌 Current Project list (...) 📖 Bugs & Drugs: Home 📖 AAP Red Book 🌐 GH PEG - Global H...

 Canadian Paediatric Society **A home for paediatricians. A voice for children and youth.** ☰

PRACTICE POINT 326 Shares     

Canada's eight-component vaccine safety system: A primer for health care workers

Posted: Jun 15, 2017

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Principal author(s)

Noni E MacDonald, Barbara J Law; Canadian Paediatric Society, [Infectious Diseases and Immunization Committee](#)

[Paediatr Child Health 22 \(4\):e13-e16. \(Abstract\).](#)

Overcoming barriers – addressing family barriers

Patient /
family
barriers

- Tell compelling stories
- Point families to reliable information sources and discuss the frequency of misinformation online.
- Reliable sources:
 - Immunize Canada
<https://immunize.ca/>
 - Canadian Pediatric Society / Caring For Kids



The screenshot shows the Immunize Canada website. At the top, there is a navigation bar with the logo and links for 'For the Public', 'For Health Care Providers', 'About Immunize Canada', and 'Resources'. The main banner features a photo of a healthcare worker with a child and the text: 'Immunization protects individuals and communities by preventing the spread of disease. As more people are immunized, the disease risk for everyone is reduced.' Below the banner, there are four columns of resources: 'Get the Facts' (stating immunization has saved more lives than any other health intervention), 'Campaigns and Promotional Resources' (linking to learn how immunizations help protect from vaccine-preventable diseases), 'COVID-19' (linking to answer questions about COVID-19 immunization and more about COVID-19 disease and vaccines), and 'CARD Game for Kids' (linking to a game for parents and children to play in preparation for vaccination).

Immunize Canada
immunize.ca

For the Public ▾

For Health Care Providers ▾

About Immunize Canada ▾

Resources

Immunization protects individuals and communities by preventing the spread of disease.

As more people are immunized, the disease risk for everyone is reduced.

Get the Facts

In Canada, immunization has saved more lives than any other health intervention.

Campaigns and Promotional Resources

Learn how immunizations help protect you from vaccine-preventable diseases and their complications.

COVID-19

Answer your questions about COVID-19 immunization.

More about COVID-19 disease and vaccines ▶

CARD Game for Kids

Parents and children can play the CARD™ game in preparation for their vaccination, as well as during and after the vaccine.

Vaccine hesitancy

Basic approach

Resources & courses

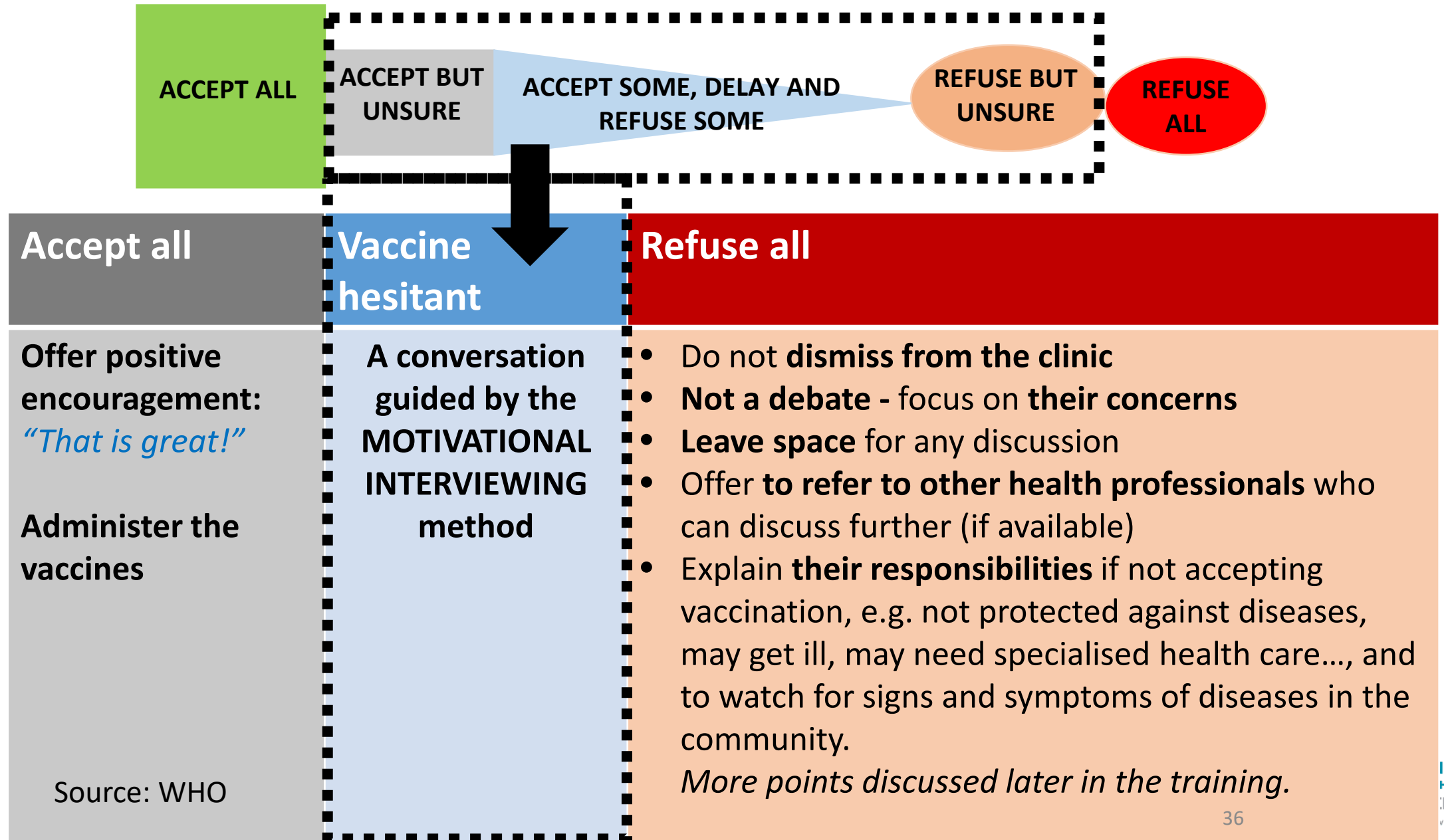
What is vaccine hesitancy?



- **A delay in acceptance or refusal of vaccines**, despite availability of vaccination services
- **Complex and context** specific, varying across time, place and vaccine

Source: WHO - https://cdn.who.int/media/docs/default-source/immunization/demand/trainingmodule-conversationguide-final.pptx?sfvrsn=32a16425_2

If hesitant, how to proceed?



Key steps to approaching vaccine hesitancy

- Understand the key role that sound vaccine advice from a health care provider can play in parental decision-making
- Use communication techniques that are trauma-informed, simple and clear
- A presumptive approach is more likely to result in acceptance
- Use stories – they can be more convincing than statistics

Factors influencing vaccine hesitancy – very complex (and increasing)

- lack of understanding about the vaccine being given and about immunizations in general;
- conflicting information from a variety of sources (for example, alternative medicine practitioners, anti-vaccination websites);
- mistrust of the source of information (for example, perceptions of business and financial motives of the vaccine industry);
- perceived risk of serious adverse events and concerns regarding injections (for example, pain and anxiety associated with immunization; coincidental rather than causal adverse events that are perceived as vaccine-related);
- lack of appreciation of the severity and incidence of vaccine preventable diseases;
- sociocultural beliefs (for example, religious beliefs).

Source: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-5-communicating-effectively-immunization.html>

Equity-seeking communities may have heightened mistrust

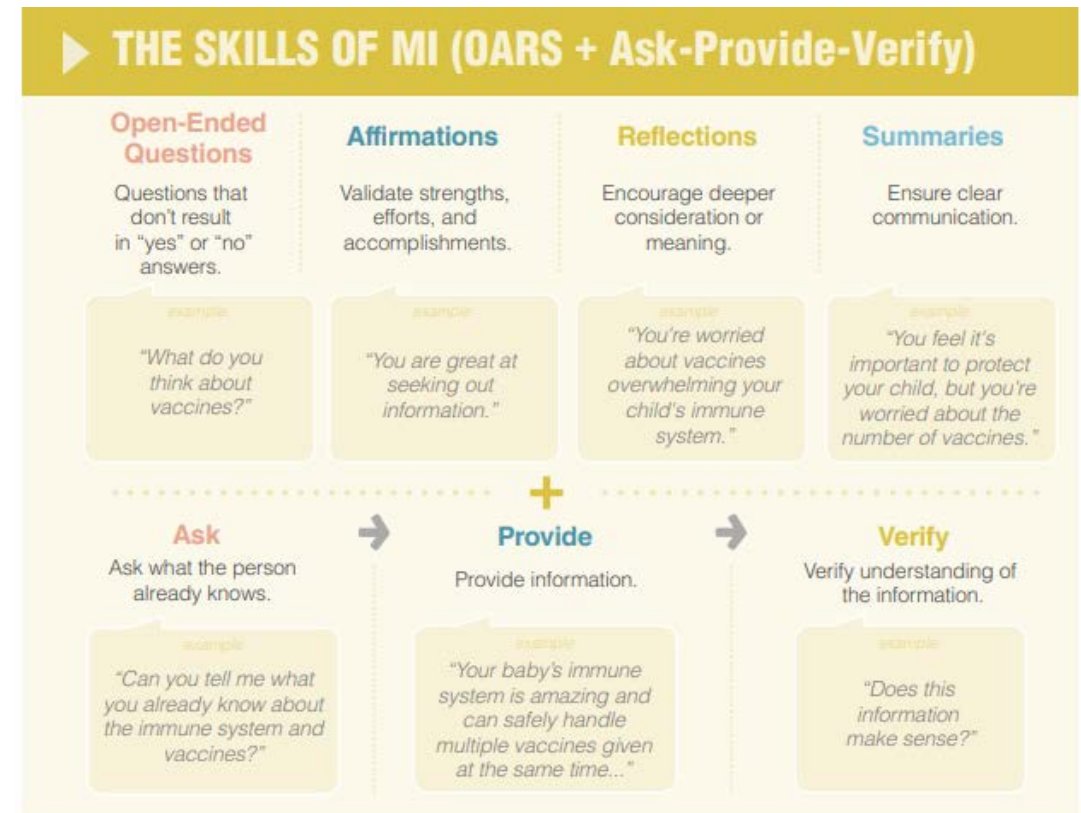
- Communities experiencing systemic racism – Black, Indigenous, People of Colour – may also have profound mistrust of the medical establishment and our advice
- Based on historical and personal experiences
- Culturally safe care and using trusted knowledge brokers may assist in dispelling myths

Dada D. Strategies That Promote Equity in COVID-19 Vaccine Uptake for Black Communities: a Review. J Urban Health. 2022 Feb;99(1):15-27.

Manca T & Canadian Immunization Research Network (CIRN) investigators. "We need to protect each other": COVID-19 vaccination intentions and concerns among Racialized minority and Indigenous Peoples in Canada. Soc Sci Med. 2022 Nov;313:115400.

Motivational Interviewing

- MI can be effective for a variety of health issues
- Uses collaborative, goal-oriented communication



Canadian Pediatric Society – Practice points & online learning modules



A home for paediatricians. A voice for children and youth.



The Education Program for Immunization Competencies (EPIC) is designed for all health care providers who administer vaccines. This self-guided online program covers all aspects of safe, effective immunization practice and delivery.

Registration includes free access to the online learning module 'Moving to Acceptance: Strategies to address concerns about vaccines.'



A home for paediatricians. A voice for children and youth.

PRACTICE POINT

243 Shares     

Working with vaccine-hesitant parents: An update

Posted: Sep 14, 2018

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Principal author(s)

Noni MacDonald, Shalini Desai, Betty Gerstein; Canadian Paediatric Society, Infectious Diseases and Immunization Committee

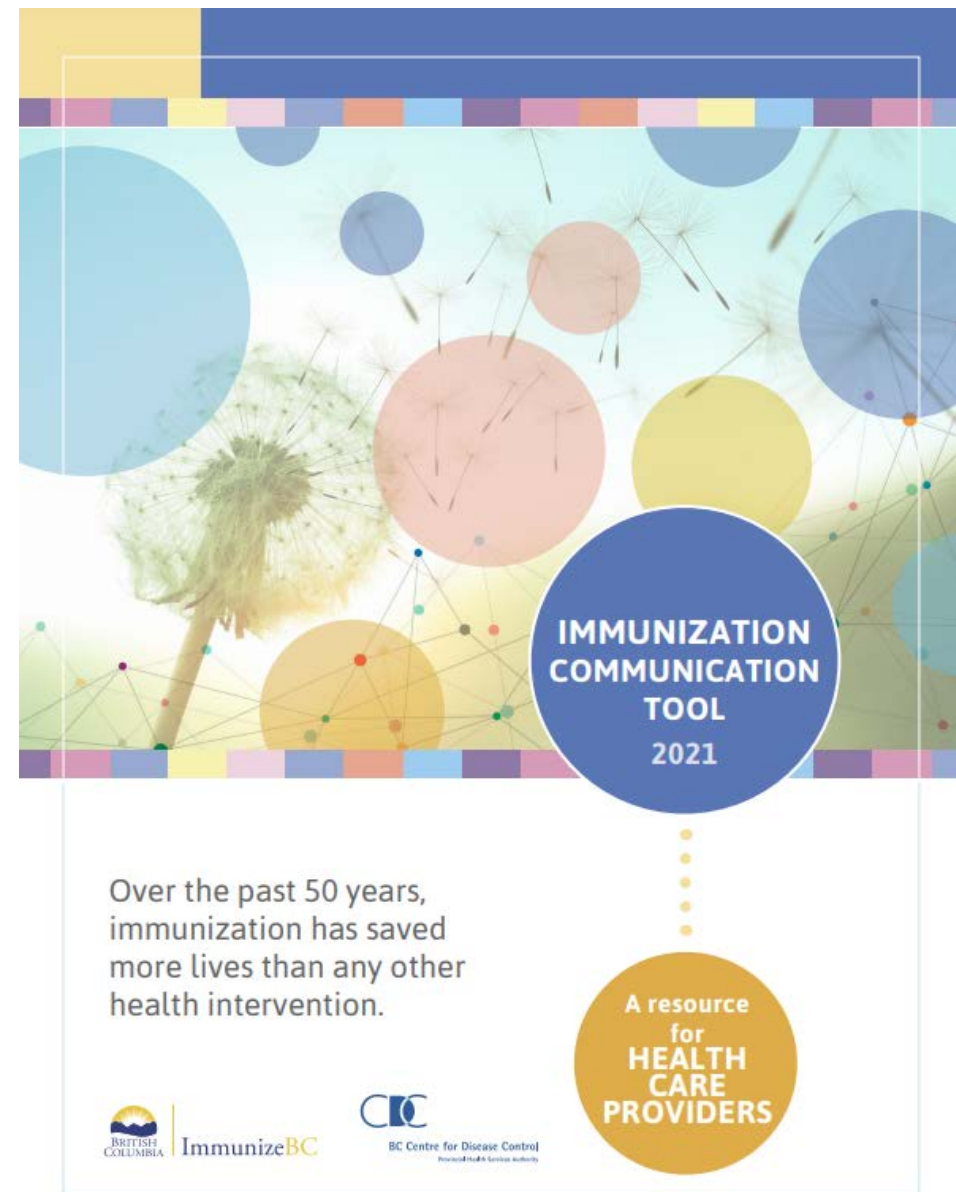
[Paediatr Child Health 2018 23\(8\):561 \(Abstract\)](#)

Immunization Communication Tool (BC Center for Disease Control)

- Step by step guide to discussing vaccine hesitancy

<http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Immunization/Vaccine%20Safety/ICT-2021.pdf>

(Or google “BCCDC Immunization Communication tool”)



Canadian Immunization Guide (CIG)

- Exhaustive source of national immunization information
- (Provincial sources are also available)



Government
of Canada

Gouvernement
du Canada

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MENU ▾

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Canadian Immunization Guide: Part 1 - Key Immunization Information

Table of contents

- [Immunization in Canada](#)
- [Benefits of immunization](#)
- [National guidelines for immunization practices](#)
- [Communicating effectively about immunization](#)
- [Principles of combination vaccines](#)
- [Principles of vaccine interchangeability](#)
- [Vaccine administration practices](#)
- [Storage and handling of immunizing agents](#)
- [Timing of vaccine administration](#)
- [Blood products, human immunoglobulin and timing of immunization](#)
- [Immunization records](#)
- [Recommended immunization schedules](#)
- [Basic immunology and vaccinology](#)
- [Contents of immunizing agents available for use in Canada](#)

Organization:

[Public Health Agency of Canada](#)

Updated: see [Table of Updates](#)

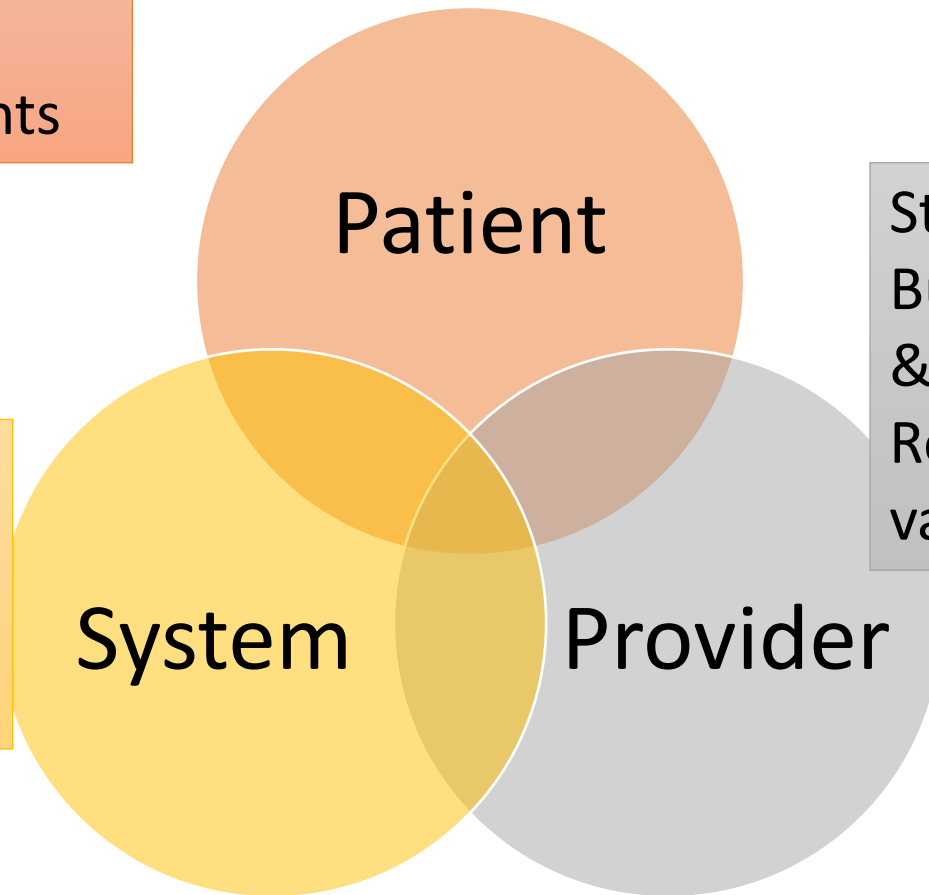
Related Topics

- [Canadian Immunization Guide](#)
- [Introduction](#)
- [Part 2 – Vaccine Safety](#)
- [Part 3 – Vaccination of Specific Populations](#)
- [Part 4 – Active Vaccines](#)
- [Part 5 – Passive Immunizing Agents](#)

Addressing Immunization Barriers

Apps for tracking / vaccine reminders
Low barrier appointments

Reporting of immunization status
Vaccine registries
Harmonizing schedules



Strong recommendations
Building skills to discuss VPDs & AEFIs
Reminders & discussion of vaccines at every opportunity

Adapted from Peter Szliagi –
Pediatrics Grand Rounds on
Improving Child Immunization -
<https://www.youtube.com/watch?v=vOTqgtKlp8o>

Thank you!

Questions??

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racism task force

UBC Division of Pediatric Infectious
Diseases & Vaccine Evaluation Center



Image: <https://www.who.int/news-room/feature-stories/detail/how-to-talk-about-vaccines>