

VACCINATIONS AND IMMUNIZATIONS:

What you need to know

Dr. Hortense Nsoh Tabien MD, MPH, PhD
Medical Health Officer
Saskatchewan Health Authority

We acknowledge that Saskatchewan is the traditional territory of first Nations and Métis People and that the land we are coming together on today is Treaty 6 territory.

Potential for conflict(s) of interest:

- **No conflicts of interest**

Learning Objectives

- Getting to know the audience
- Address key concepts in vaccination/immunization:
 - Vaccine vs immunity; vaccination vs immunization
 - The concept of community (“herd”) immunity
- Improving vaccination demand and addressing vaccine hesitancy
- Myths and misconceptions about vaccination
- Useful resources for parents/public and health professionals

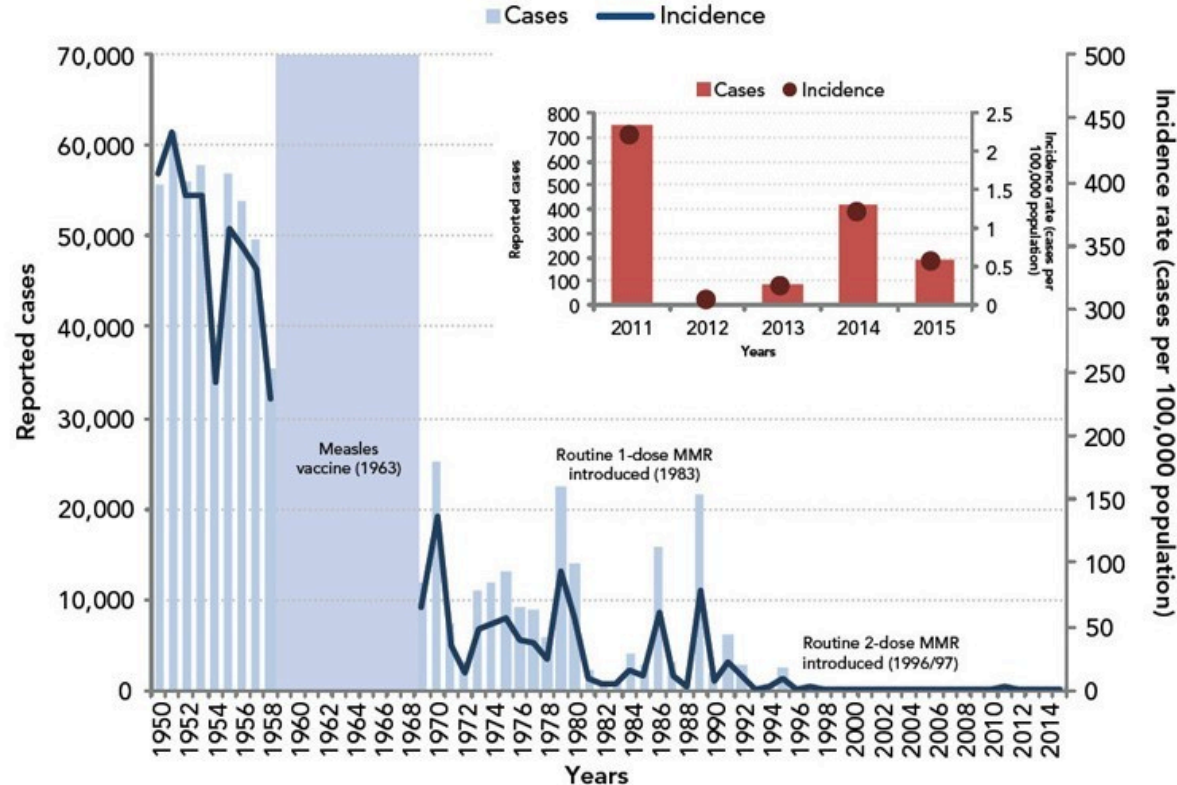
Vaccination (Immunization)

One of the top ten greatest Public Health achievements

- Acting on the social determinants of health
- **Vaccination**
- Safer workplaces
- **Control of infectious diseases**
- Motor-vehicle safety
- Decline in deaths from coronary heart disease and stroke
- Family planning
- Healthier environments
- Healthier mothers and babies
- Recognition of tobacco use as a health hazard
- Safer and healthier foods
- Universal policies

Incidence of Measles

Number of cases and incidence rate (per 1,000,000 population), by year, 1950-2015, and year of vaccine introduction.



Source:

<https://www.canada.ca/en/public-health/services/diseases/measles/health-professionals-measles.html?wbdisable=true#s9>

Key Concepts in Vaccination/ immunization

Vaccine Vs immunity

- Vaccines = products that are used to protect the body against serious and potentially deadly diseases.
 - Unlike most medicines that treat or cure diseases, vaccines prevent them.
 - Vaccines are safe, effective, serious diseases can occur if not immunized
- Immunity = acquiring protection from a disease.
 - If you are immune to a disease, you can be exposed to it without becoming sick.

Vaccination Vs immunization

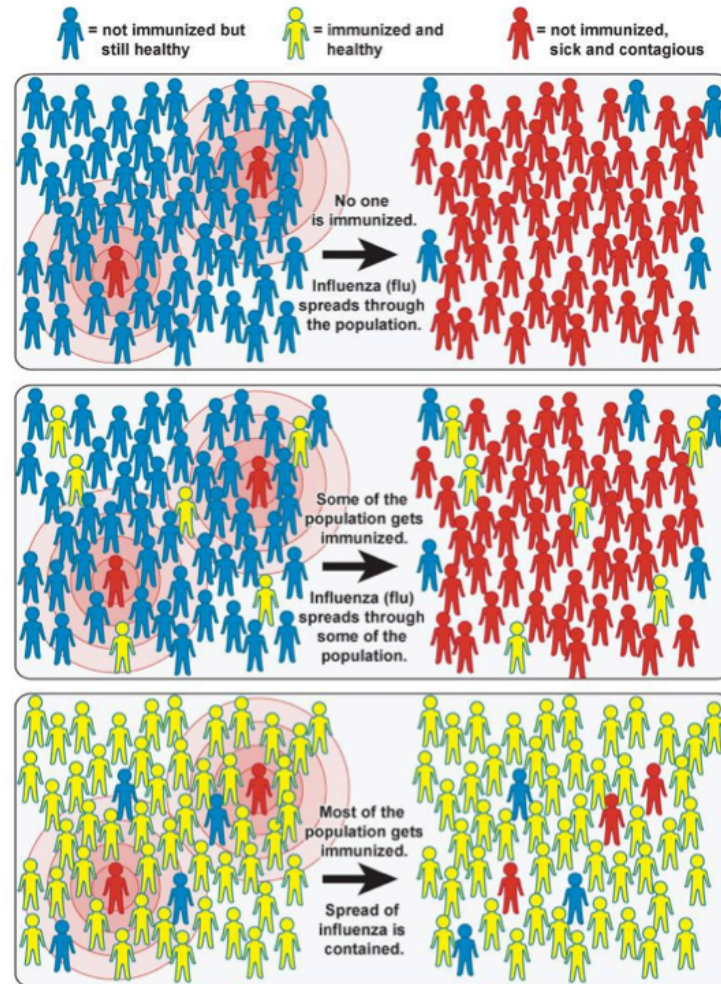
These terms are often used interchangeably. But to be more precise:

- Vaccination: The act of introducing a vaccine into the body to produce immunity to a specific disease. AKA innoculation
- Immunization: A process by which a person becomes protected against a disease through vaccination.

Community (“Herd”) Immunity

- A form of indirect protection from infectious disease that occurs when a large percentage of a population is vaccinated and immune, thereby providing a measure of protection for individuals who are not immune.
 - ---> 93.- 95% for Measles

Community (“Herd”) Immunity



Community (“Herd”) Immunity

- Especially important because some people can't get vaccinated for certain diseases —such as people with some serious allergies and those with weakened or failing immune systems (like people who have cancer, HIV/AIDS, type 1 diabetes, or other health conditions).
- Also important for the very small group of people who don't have a strong immune response from vaccines.

Improving vaccination demand and addressing Vaccine hesitancy

Routine Saskatchewan Schedule

Vaccine and age/grade	2 mo.	4 mo.	6 mo.	12 mo.	18 mo.	4-6 yrs.	Gr. 6	Gr. 8
Rot-5 ¹⁰	•	•	•					
DTaP-IPV-Hib ¹	•	•	•		•			
Pneu-C-13 ²	•	•		•				
Men-C-C				•				
MMRV				•	•			
HA ³				•	•			
Tdap-IPV ⁴						•		
Men-C-ACYW-135							•	
HB							•	
HPV-9 ¹¹							•	
Var ^{5, 6, 8.}							•	
Tdap ⁷								•
Inf ⁹			•					

Routine Saskatchewan Schedule for Immunization

2 months

- Rotavirus
- Diphtheria
- Tetanus
- Polio
- Pertussis
- Haemophilus influenzae type B
- Pneumococcal disease

4 months

- Rotavirus
- Diphtheria
- Tetanus
- Polio
- Pertussis
- Haemophilus influenzae type B
- Pneumococcal disease

6 months

- Rotavirus
- Diphtheria
- Tetanus
- Polio
- Pertussis
- Haemophilus influenzae type B

12 months

- Pneumococcal disease
- Meningococcal disease
- Measles
- Mumps
- Rubella
- Varicella (chicken pox)

18 months

- Diphtheria
- Tetanus
- Polio
- Pertussis
- Haemophilus influenzae type B
- Measles
- Mumps
- Rubella
- Varicella (chicken pox)

4 years

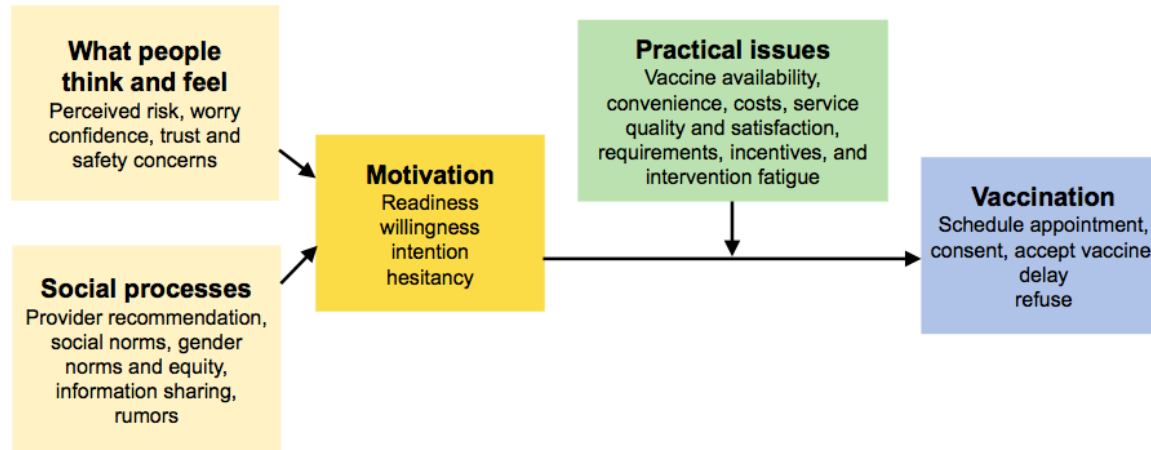
- Diphtheria
- Tetanus
- Polio
- Pertussis

Improving vaccination demand

- Increasing and maintaining vaccination uptake is vital for vaccines to achieve their success.
- Addressing low vaccination requires:
 - adequate understanding of the determinants of the problem,
 - tailored evidence-based strategies to improve uptake, and
 - monitoring and evaluation to determine the impact and sustainability of the interventions.

Understanding the drivers of immunization uptake

Increasing Vaccination Model



Source: The BeSD expert working group. Based on: Brewer NT, Chapman GB, Rothman AJ, Leask J, and Kempe A (2017). Increasing vaccination: Putting psychological science into action. *Psychological Science for the Public Interest*. 18(3): 149-207

Drivers of
immunization
uptake

Improving and sustaining uptake

- Engaging collaboratively with health workers, caregivers/parents, and their families and communities

Improving and sustaining uptake

- Tailoring Immunization Programmes - Equip them with methods and tools to:
 - Identify populations susceptible to vaccine-preventable diseases
 - Diagnose supply- and demand-side barriers and enablers to vaccination
 - Recommend evidence-informed responses to enhance and sustain vaccination uptake.

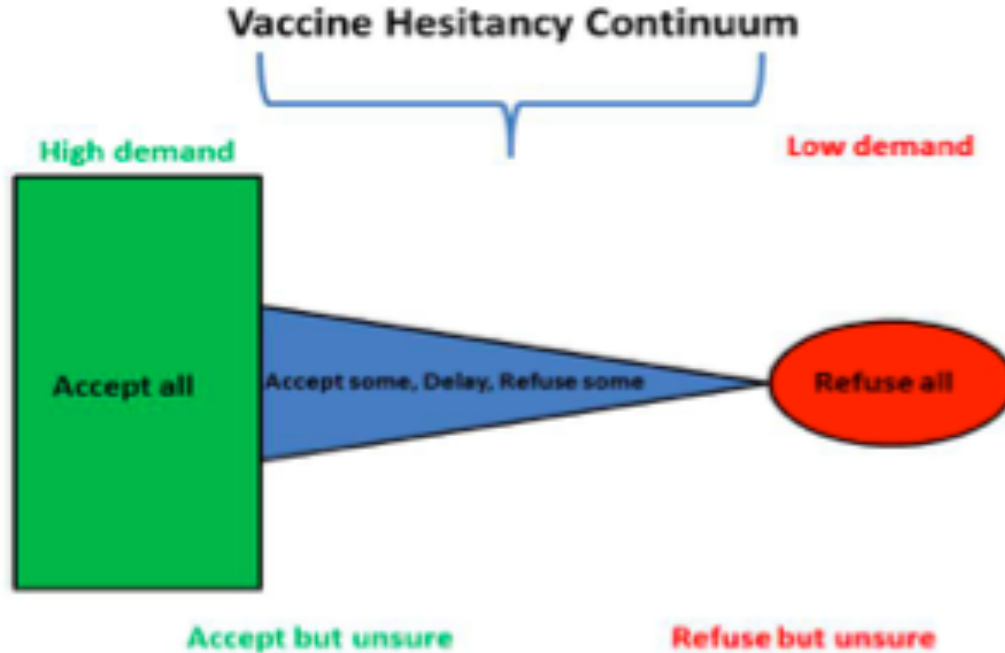
Improving and sustaining uptake

- Addressing missed opportunities for vaccination
 - Many children and adults are not vaccinated because the opportunity to vaccinate them has been missed.
- Addressing hesitancy

Vaccination Hesitancy

- Vaccine Hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccine services
 - It is complex and can depend on specific context varying across time, place and vaccines
 - It is influenced by various factors such as complacency, convenience and confidence.
- Vaccine attitudes can be seen on a continuum, ranging from total acceptance to complete refusal.

Vaccination Hesitancy



The Continuum of Vaccine Hesitancy between Full Acceptance and Outright Refusal of all Vaccines

Source:

https://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf?ua=1

Vaccination Hesitancy



Confidence, Complacency,
Convenience Model of
Vaccine Hesitancy (“3Cs”)

Source:

https://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf?ua=1

Myths and misconceptions about vaccination

The autism-vaccine story

Is there any link between the measles-mumps-rubella (MMR) vaccine and autism?

- In 1998, Wakefield and colleagues published a study of 12 children that suggested a link among MMR vaccine, gastrointestinal symptoms, and autism.

The Evidence:

- At least 20 higher-quality studies have since failed to show any link between the MMR vaccine and autism.

The autism-vaccine story

The Evidence:

- Studies also show no association with the preservative thimerosal, another suggested cause of autism.
- In 2004, 10 of the 13 authors retracted their support for the MMR-autism association.
- Britain's General Medical Council investigation found Wakefield guilty of dishonesty and irresponsibility.
- In 2010, the Lancet fully retracted the Wakefield study.

The autism-vaccine story

The legacy of this unfortunate publication has contributed to rise of vaccine hesitancy and consequent decrease in immunization rates with increased measles rates and continued parental immunization fear.

Myths & Misconceptions

"Diseases had already begun to disappear before vaccines were introduced, because of better hygiene and sanitation".

Myths & Misconceptions

"The majority of people who get disease have been vaccinated."

Myths & Misconceptions

"There are "hot lots" of vaccine that have been associated with more adverse events and deaths than others. Parents should find the numbers of these lots and not allow their children to receive vaccines from them."

Myths & Misconceptions

"Vaccines cause many harmful side effects, illnesses, and even death - not to mention possible long-term effects we don't even know about."

Myths & Misconceptions

"Vaccine-preventable diseases have been virtually eliminated from my country, so there is no need for my child to be vaccinated."

Myths & Misconceptions

"Giving a child multiple vaccinations for different diseases at the same time increases the risk of harmful side effects and can overload the immune system".

RESOURCES

Helpful for Parents/Public:

- Government of Canada: Vaccines for children: Deciding to vaccinate
<https://www.canada.ca/en/public-health/services/vaccination-children.html>

Immunize Canada

<https://immunize.ca/parents>



- The Vaccine Education Center at Children's Hospital of Philadelphia provides complete, up-to-date and reliable information about vaccines to parents.

<https://www.chop.edu/centers-programs/vaccine-education-center>

<https://media.chop.edu/data/files/pdfs/vaccine-education-center-vaccine-ingredients.pdf>

<https://media.chop.edu/data/files/pdfs/vaccine-education-center-vaccine-ingredients.pdf>

- <https://www.ehealthsask.ca/services/Manuals/Documents/sim-chapter10.pdf>
Provides links to the Product Monographs, if parents are looking for more specific information related to each vaccine.

RESOURCES

Additional resources for Health professionals:

- CANVAX <https://www.canvax.ca/> Some good resources currently available from CANVAX include:
 - Literature Review on Effective Strategies to Improve Vaccine Acceptance and Uptake
 - Dominique Gagnon and Ève Dubé
 - Catalogue of interventions addressing vaccine hesitancy (ECDC)
 - EVIDENCE-BASED INTERVENTIONS TO ENHANCE VACCINATION RATES
 - Interventions to enhance access to vaccine services - Home visits
 - EVIDENCE-BASED INTERVENTIONS TO ENHANCE VACCINATION RATES
 - Provider-based interventions—Audit and feedback
- Saskatchewan Immunization Manual,
<https://www.ehealthsask.ca/services/Manuals/Pages/SIM.aspx>
 - Chapter 5, Immunization Schedules.
 - Chapter 7, Immunization of Special Populations.
- National Advisory Committee on Immunizations. <http://www.phac-aspc.gc.ca/naci-ccni/>
- Canadian Immunization Guide. <http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php>
- WHO: Improving vaccination demand and addressing hesitancy
https://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/
- WHO: Best practice guidance: How to respond to vocal vaccine deniers in public
<http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/2016/best-practice-guidance-how-to-respond-to-vocal-vaccine-deniers-in-public-2016>

THANK YOU!
Questions welcome