



Maintaining Immunizations during COVID-19 Pandemic- Why and How

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Conflict Disclosure Information

Speaker / Facilitator: **Dr. Angel Chu, MD, FRCPC, Clinical Assistant Professor, University of Calgary**

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Other: N/A

I had full editorial control over the content of this presentation and wish to advise that it may contain content that is not consistent with the approved Canadian Product Monographs

Program Overview

- Discuss global successes of immunization programs in prevention of infectious diseases
- Explore strategies for safely coordinating and delivering vaccines during the COVID-19 pandemic
- Understand importance of continuing immunizations during the pandemic

What is Canada's vaccination coverage goal by 2025 for all childhood vaccines?

- A. 75%
- B. 80%
- C. 85%
- D. 90%
- E. 95%
- F. 100%

Canada is on track to achieve vaccine-preventable disease (VPD) reduction targets by 2025 for all notifiable infections EXCEPT:

- A. Tetanus
- B. Pertussis
- C. Measles
- D. Mumps
- E. Invasive pneumococcal disease in adults >65yo
- F. Both E and F

True or False?

- Childhood immunizations rates decreased by up to 20% in Canada during the pandemic lockdown from Mar-Apr/20

TRUE

Immunization – A Global Success Story

- Immunization program is hailed as one of the greatest achievements in medicine
- Improved the lives of every Canadian
- Saved more Canadian lives over the last 50 years, than any other health intervention
- The success of childhood immunization programs have led to record or near-record low levels of vaccine preventable diseases



Vaccines work!

<u>DISEASE</u>		CASES THEN *	CASES NOW **	<u>DECREASE</u>
WHOOPING COUGH		19,878	1,275	93%
MEASLES		61,370	83	99%
CHICKENPOX		72,343	464	99%

Vaccines work!

<u>DISEASE</u>		CASES THEN *	CASES NOW **	<u>DECREASE</u>
MUMPS		43,671	94	99%
DIPHTHERIA		9,010	0	100%
POLIO		5,384	0	100%

VACCINE PREVENTABLE DISEASE



Public Health
Agency of Canada

Agence de la santé
publique du Canada

SURVEILLANCE REPORT TO DECEMBER 31, 2017

- VPD under elimination:
 - Measles (1998)
 - Rubella (2005), including congenital rubella infection/syndrome (2000)
 - Polio (1994)
- VPDs with low level incidence:
 - Diphtheria } <5 cases/ yr
 - Tetanus } <5 cases/ yr
 - *Haemophilis influenza* type b - <25 cases/yr
 - Invasive meningococcal disease - <200 cases/yr (9% serogroup C, 41% serogroup B)
 - ★ • Mumps – outbreaks in 2016/17 in adolescents and adults
- VPDs with moderate level incidence:
 - Pertussis – increasing trend with highest incidence in infants <1y
 - ★ • Invasive pneumococcal disease – highest incidence in adults 60+, children <4y
 - Varicella

Figure 1. Percentage of children vaccinated before their second birthday, childhood National Immunization Coverage Survey, 2013, 2015 and 2017.

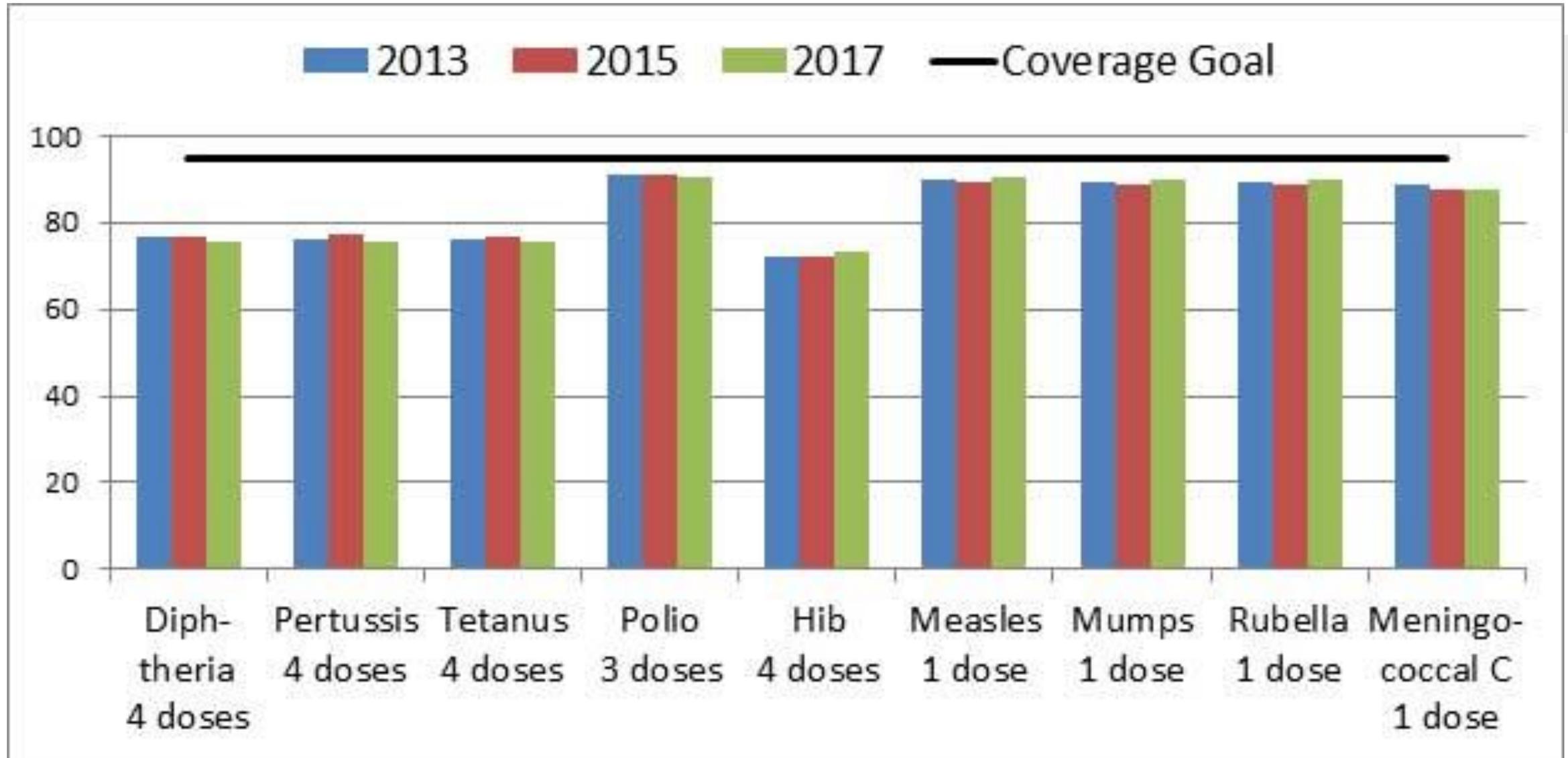
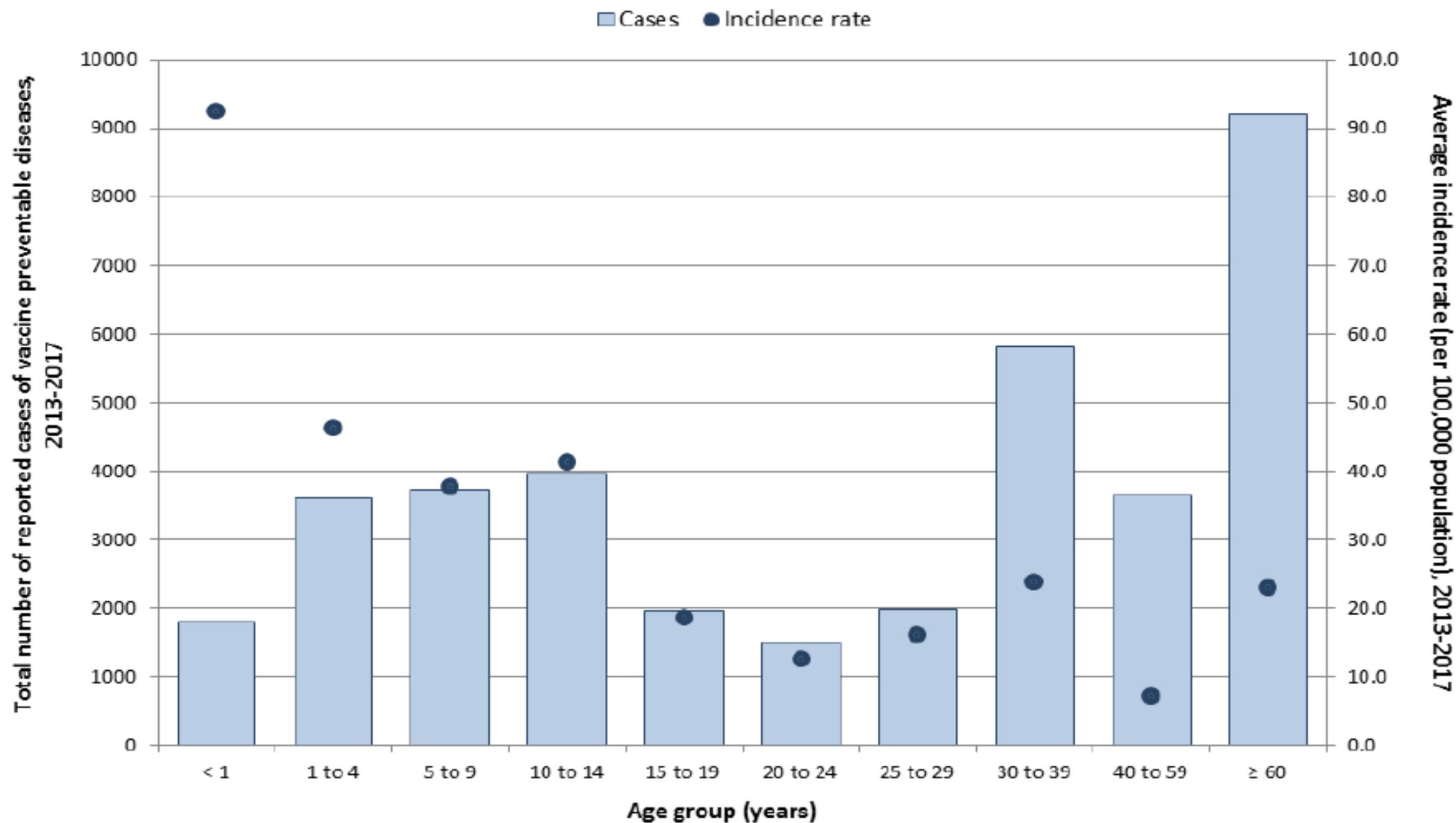
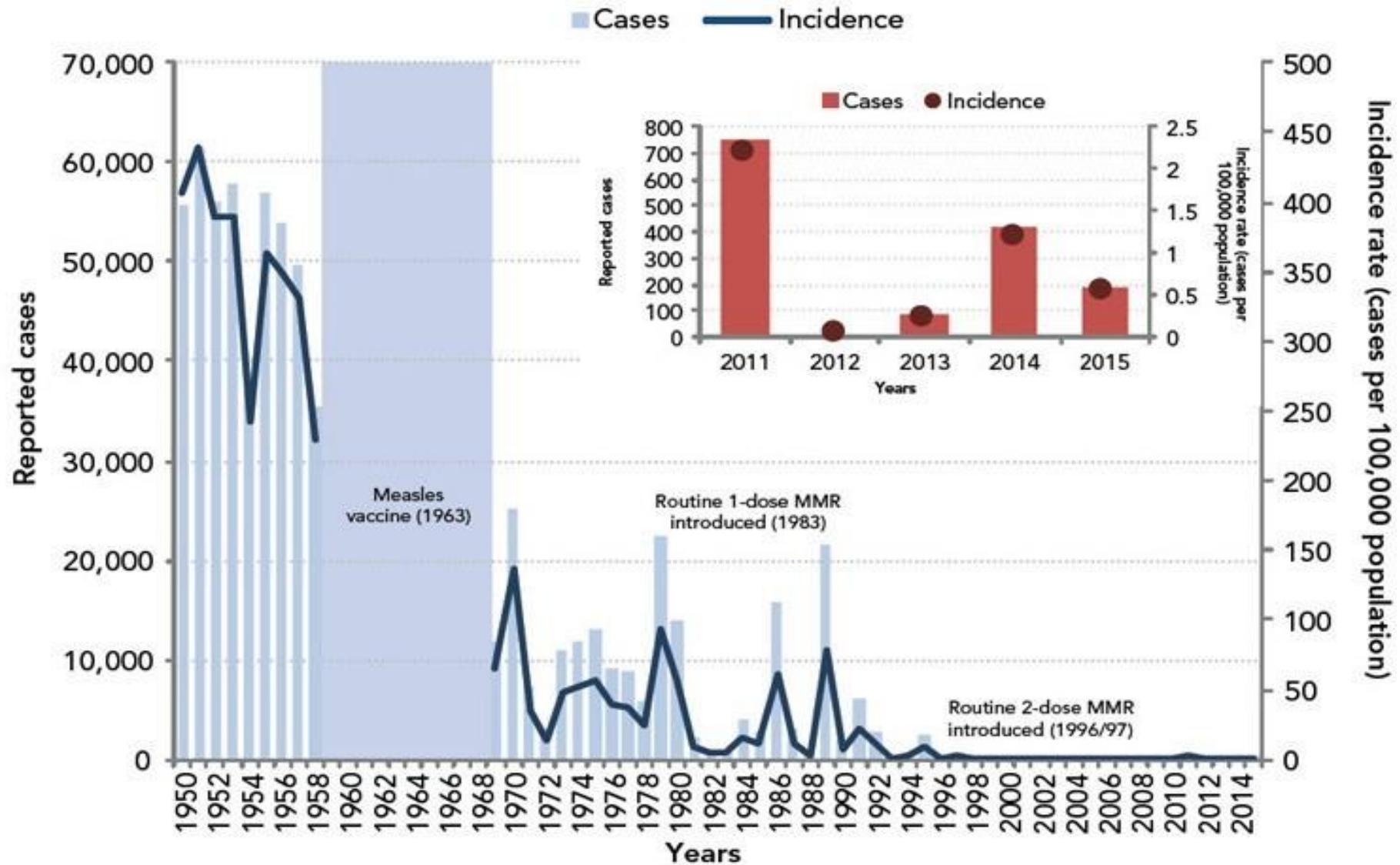


FIGURE 1: Total number and average incidence rates (per 100,000 population) of reported vaccine preventable disease cases in Canada by age group, 2013 to 2017 (n=37,203)⁴

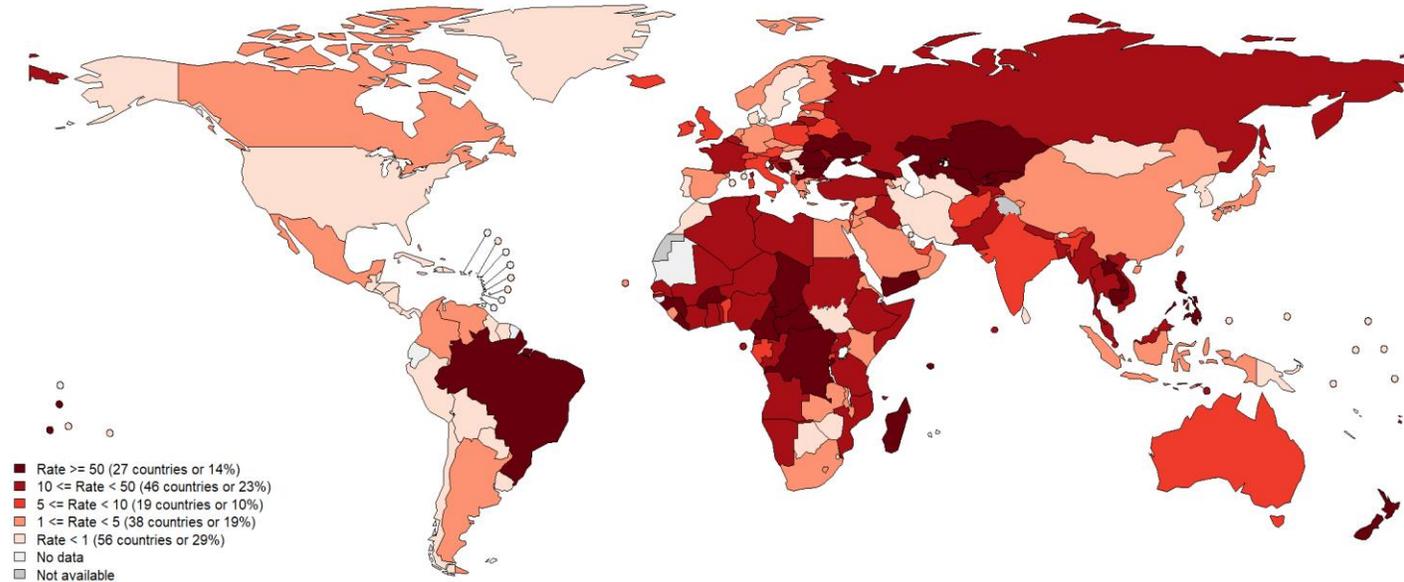


Measles in Canada



Measles Incidence Rate per Million (12M period)

Top 10**		
Country	Cases	Rate
Brazil	29497	138.88
DR Congo	26241	302.57
Philippines	10916	100.97
Nigeria	9572	47.63
India****	9515	6.95
Kazakhstan	7467	401.6
Ukraine	6750	154.13
Bangladesh	6615	39.36
Madagascar	5495	203.75
Uzbekistan	5323	162.25



Other countries with high incidence rates***		
Country	Cases	Rate
Central African Republic	5120	1060.98
New Zealand	2014	420.25
Tonga	34	308.98
Seychelles	29	303.02
Samoa	47	236.29
Chad	2523	159.54



Map production: World Health Organization, WHO, 2020. All rights reserved
Data source: IVB Database

Disclaimer:
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 or 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.

Measles cases from countries with known discrepancies between case-based and aggregate surveillance, as reported by country				
Country	Year	Cases in Case-based	Cases in Aggregate	Data Source for aggregate #s
DR Congo	2019	18,692	311,408	SitRep RDC No. 43
	2020	15,121	65,044	
Somalia	2019	290	4442	Somali EPI/POL Weekly Update Week 22
	2020	56	1101	

- Notes: Based on data received 2020-07 and covering the period between 2019-06 and 2020-05 - Incidence: Number of cases / population * * 1,000,000 - * World population prospects, 2019 revision - ** Countries with the highest number of cases for the period - *** Countries with the highest incidence rates (excluding those already listed in the table above) - ****WHO classifies all suspected measles cases reported from India as measles clinically compatible if a specimen was not collected as per the algorithm for classification of suspected measles in the WHO VPD Surveillance Standards. Thus numbers might be different between what WHO reports and what India reports.

COVID-19 aka SARS-CoV-2

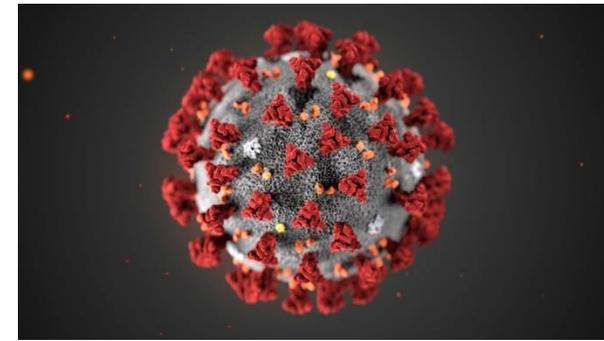
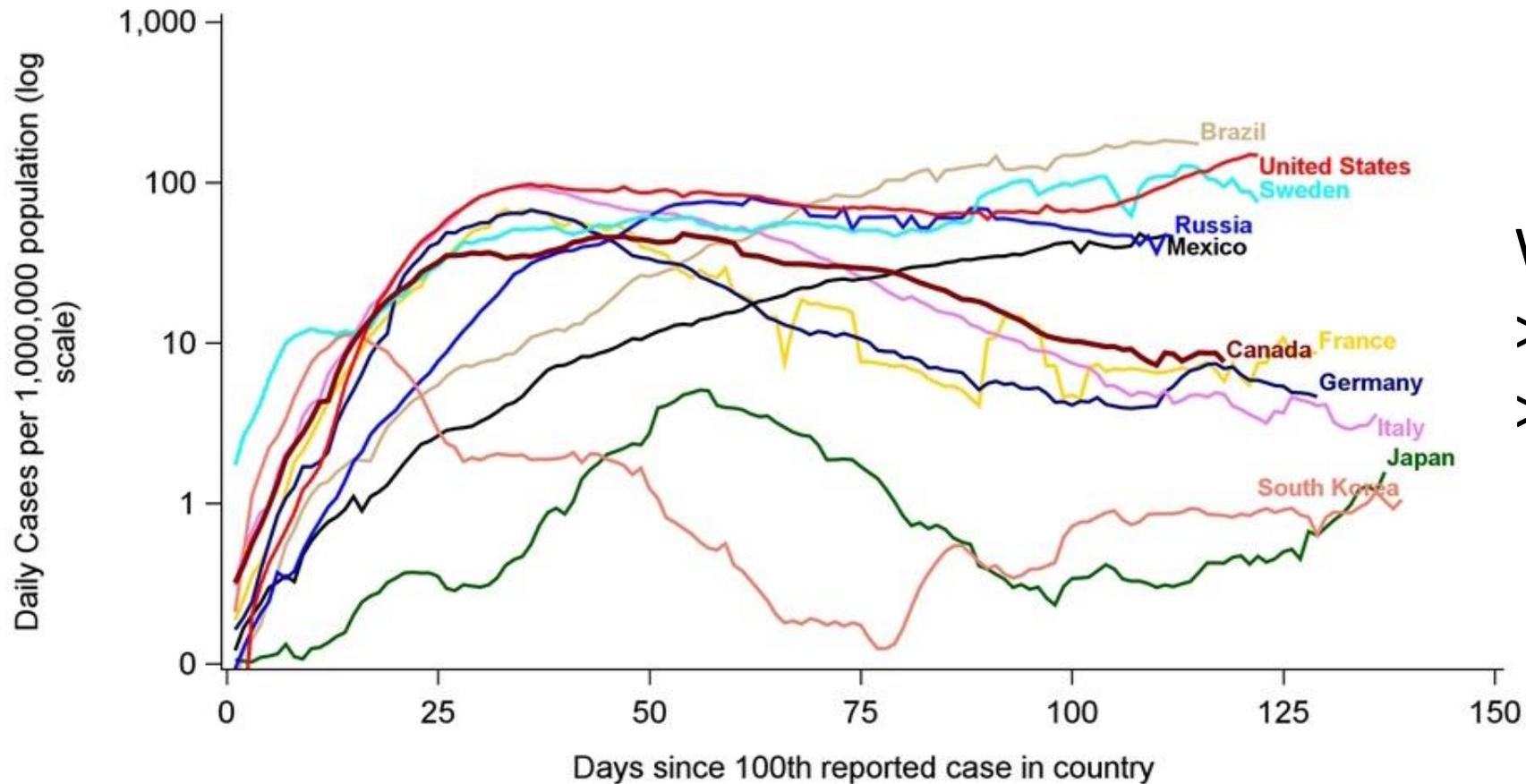


Figure 10. Daily new cases of COVID-19 in Canada compared to other countries as of 7 July 2020 (7-day moving average, population adjusted)



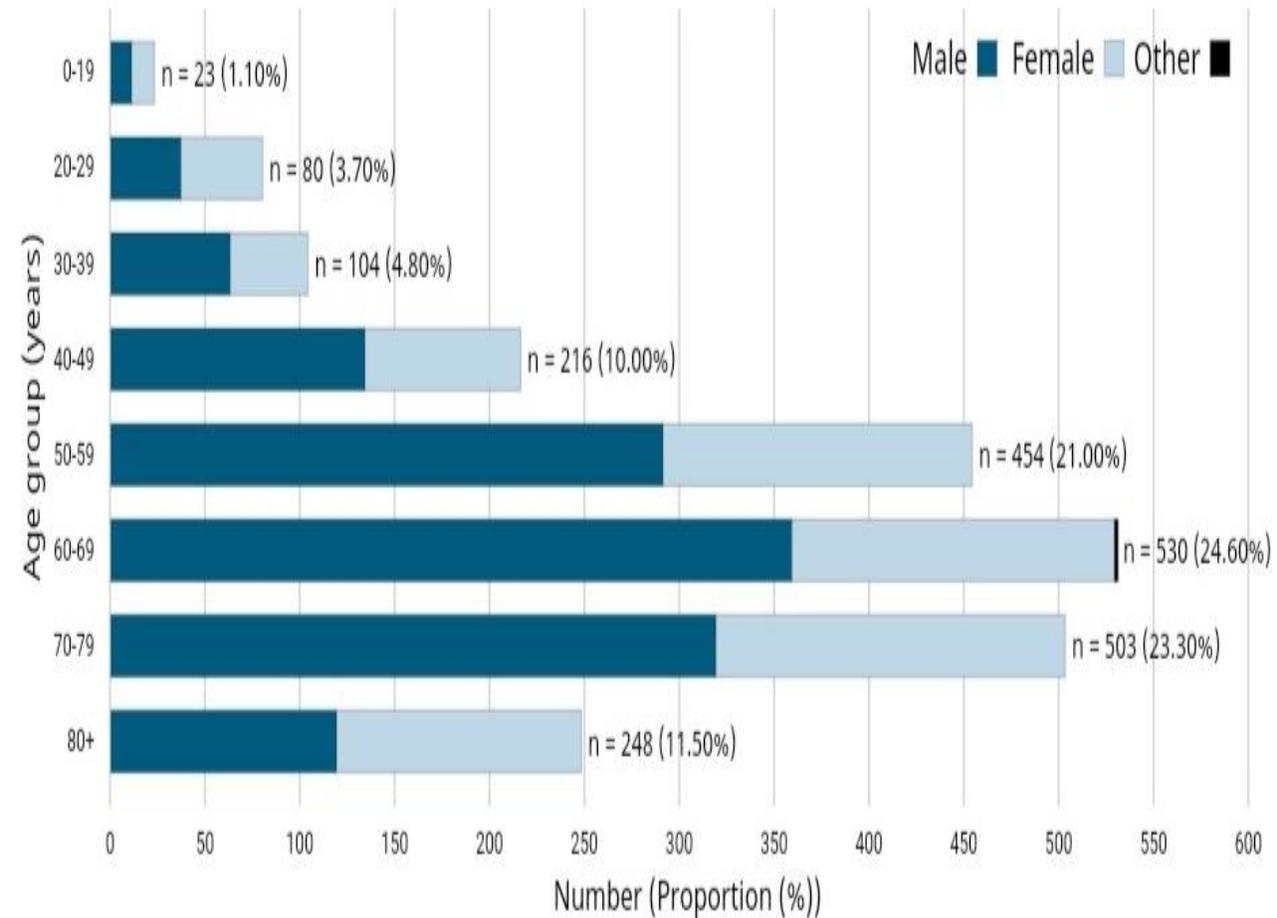
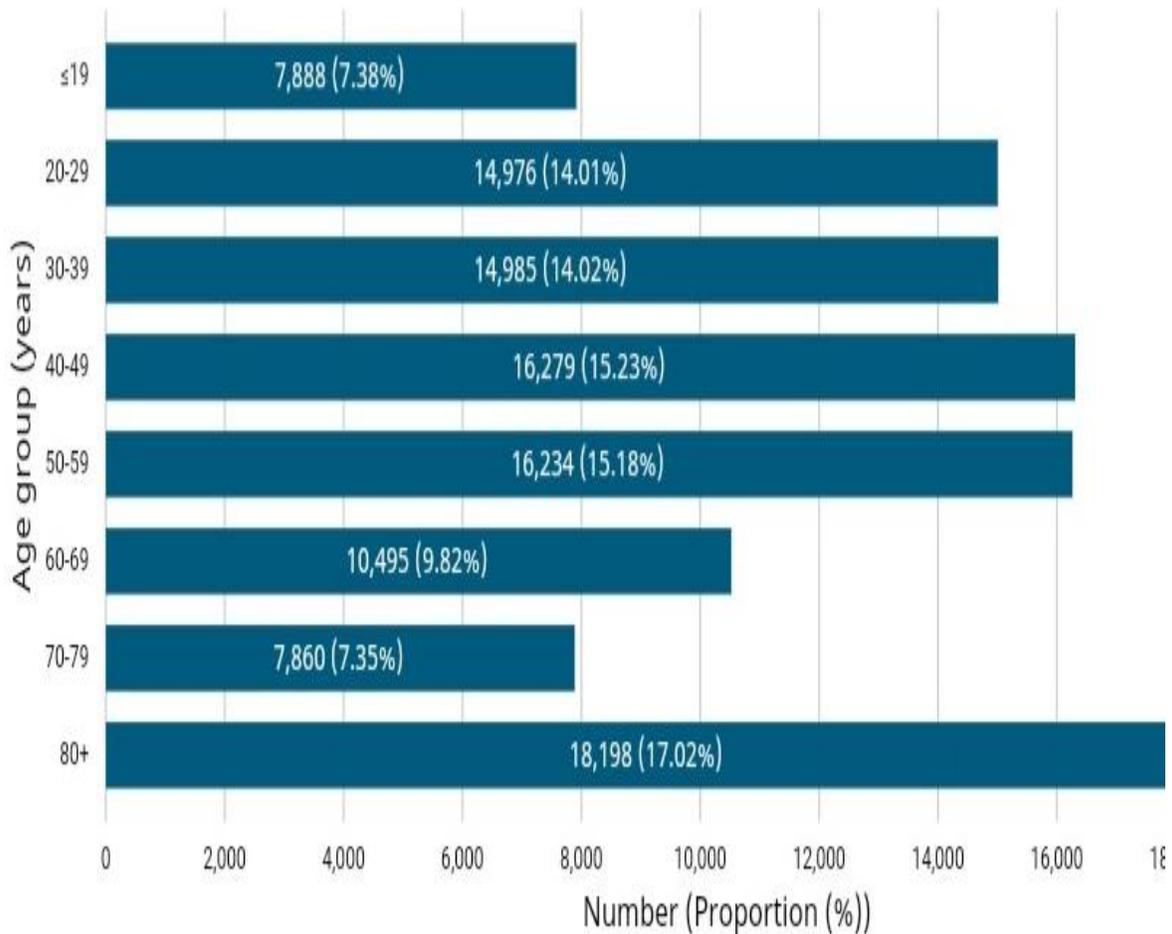
Worldwide:
>13.3 million cases,
>579 000 deaths

Source: WHO

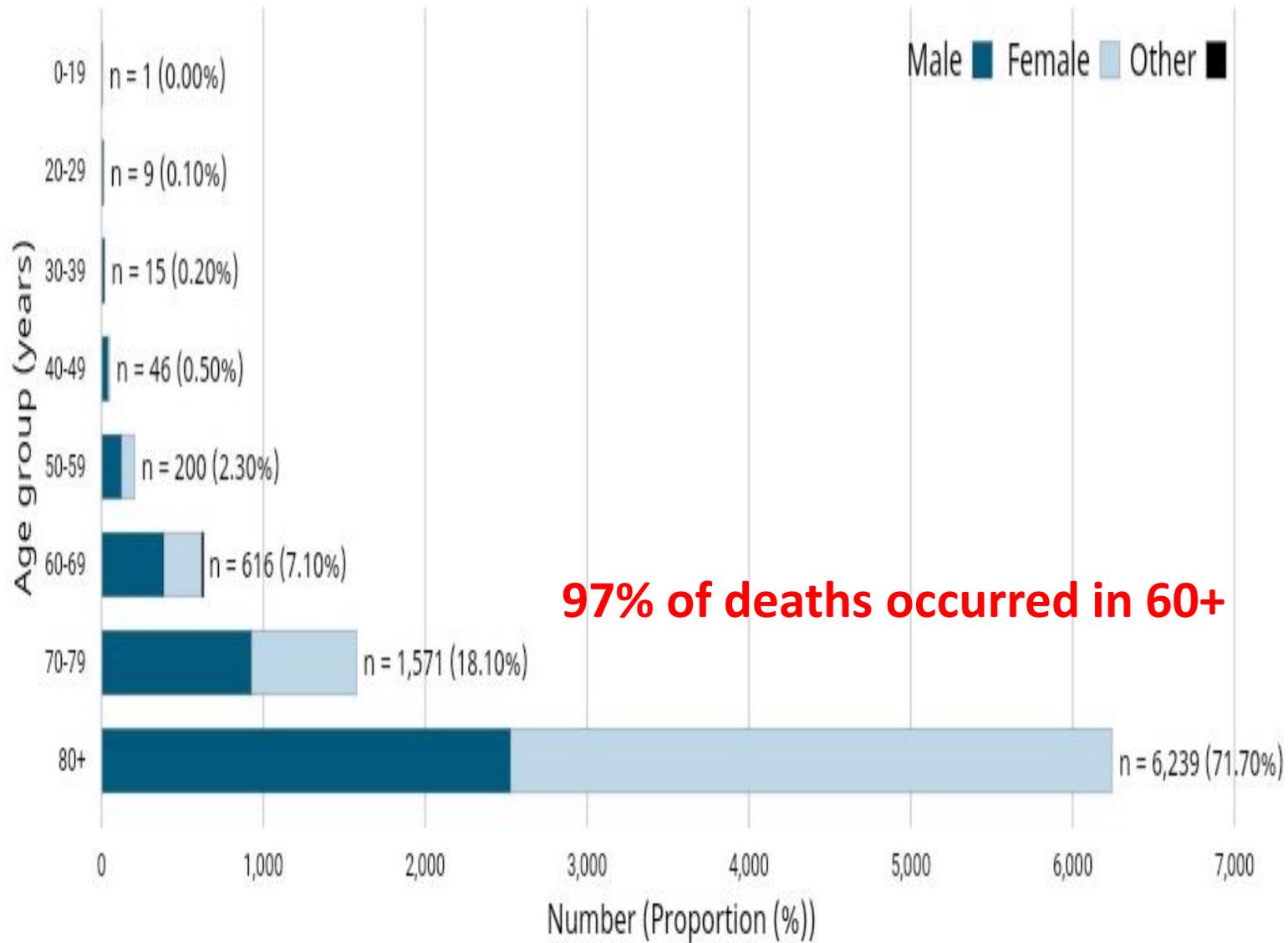
COVID-19 in Canada as of July 13/20

Age

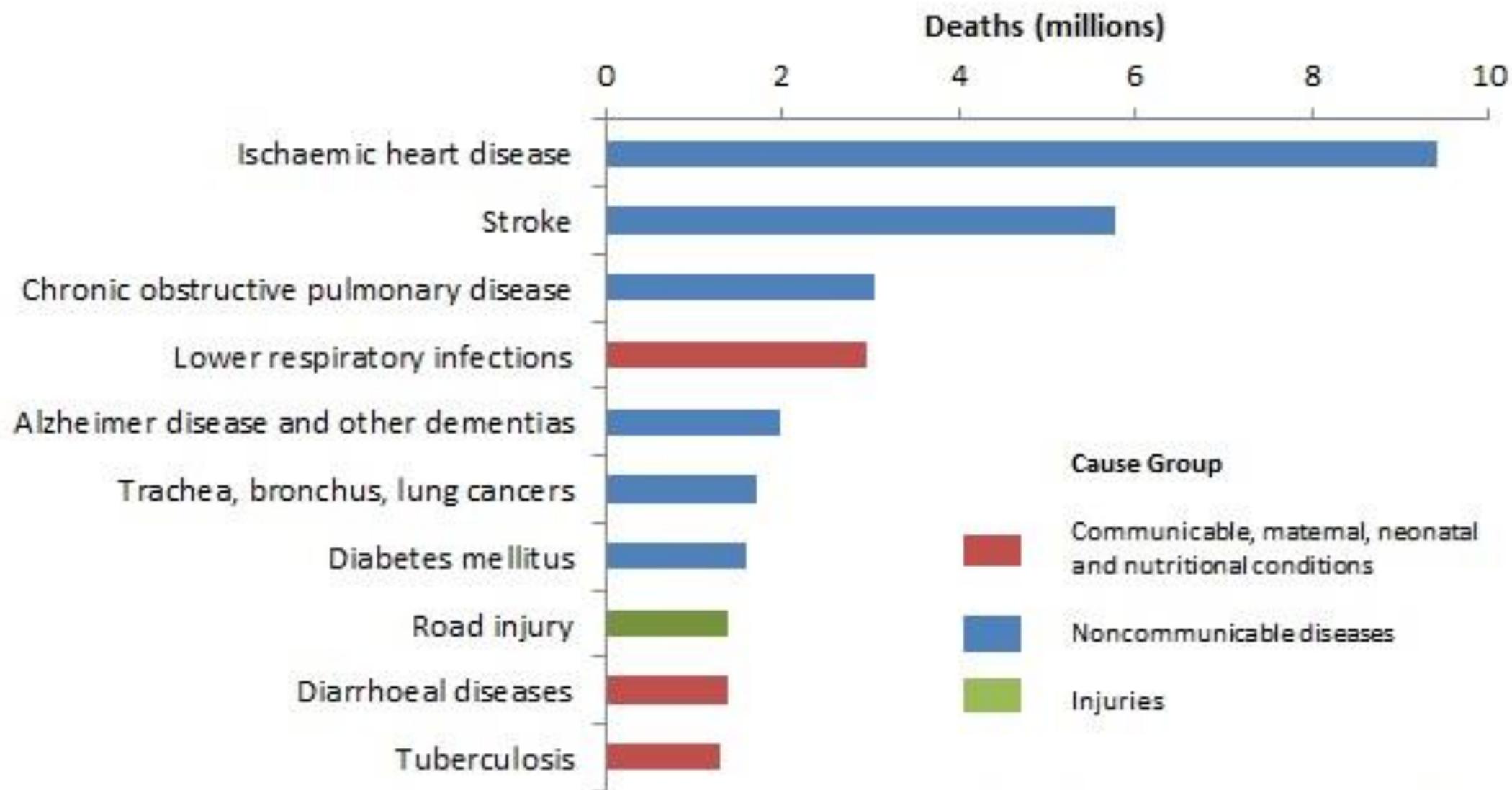
ICU admissions



Deaths



Top 10 global causes of deaths, 2016



Source: Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016. Geneva, World Health Organization; 2018.

Leading Causes of Death in Canada

Rank	Cause	Number of Deaths
1	Malignant Neoplasms (Cancer)	79,084
2	Heart Diseases	51,396
3	Cerebrovascular Diseases	13,551
4	Accidents	12,524
5	Chronic Lower Respiratory Diseases	12,293
6	Diabetes Mellitus	6,838
7	Alzheimer's	6,521
8	Influenza and Pneumonia	6,235
9	Suicide	3,978
10	Chronic Liver Diseases and Cirrhosis	3,385

News / Canada

COVID-19: As Canada's child vaccination rates drop due to lockdown, experts fear other infectious outbreaks

Bianca Bharti

Jun 11, 2020 • • 8 minute read



Calgary

Could vaccine-preventable diseases surge as Alberta reopens?



Alberta doctors concerned fewer children may have been immunized while the province was locked down



Jennifer Lee - CBC News

Posted: June 29, 2020

VPDs Quickly Reappear if Immunization Rates Decrease

- Japan: pertussis immunization rates decreased from 90% to 40%. Cases went from 200-400/y to 13 000 over 3y with over 100 deaths
- Ireland: measles immunization decreased to 76%. In 2000, measles cases increased from 148 to 1200 with several childhood deaths
- Commonwealth of Independent States: diphtheria re-emergence with >140 000 cases and 4000 deaths



World

Polio was almost eradicated. Then came the coronavirus. Then came a threat from President Trump.



A Pakistani health worker administers polio drops to a child at a railway station in Lahore in November. (Arif Ali/AFP/Getty Images)

YEAR-TO-DATE 2019
Jan 1 - Jul 16, 2019
64WPV **69**cVPDV

YEAR-TO-DATE 2020
Jan 1 - Jul 16, 2020
85WPV **210**cVDPV

Source: WHO

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COVID-19 significantly impacts health services for noncommunicable diseases

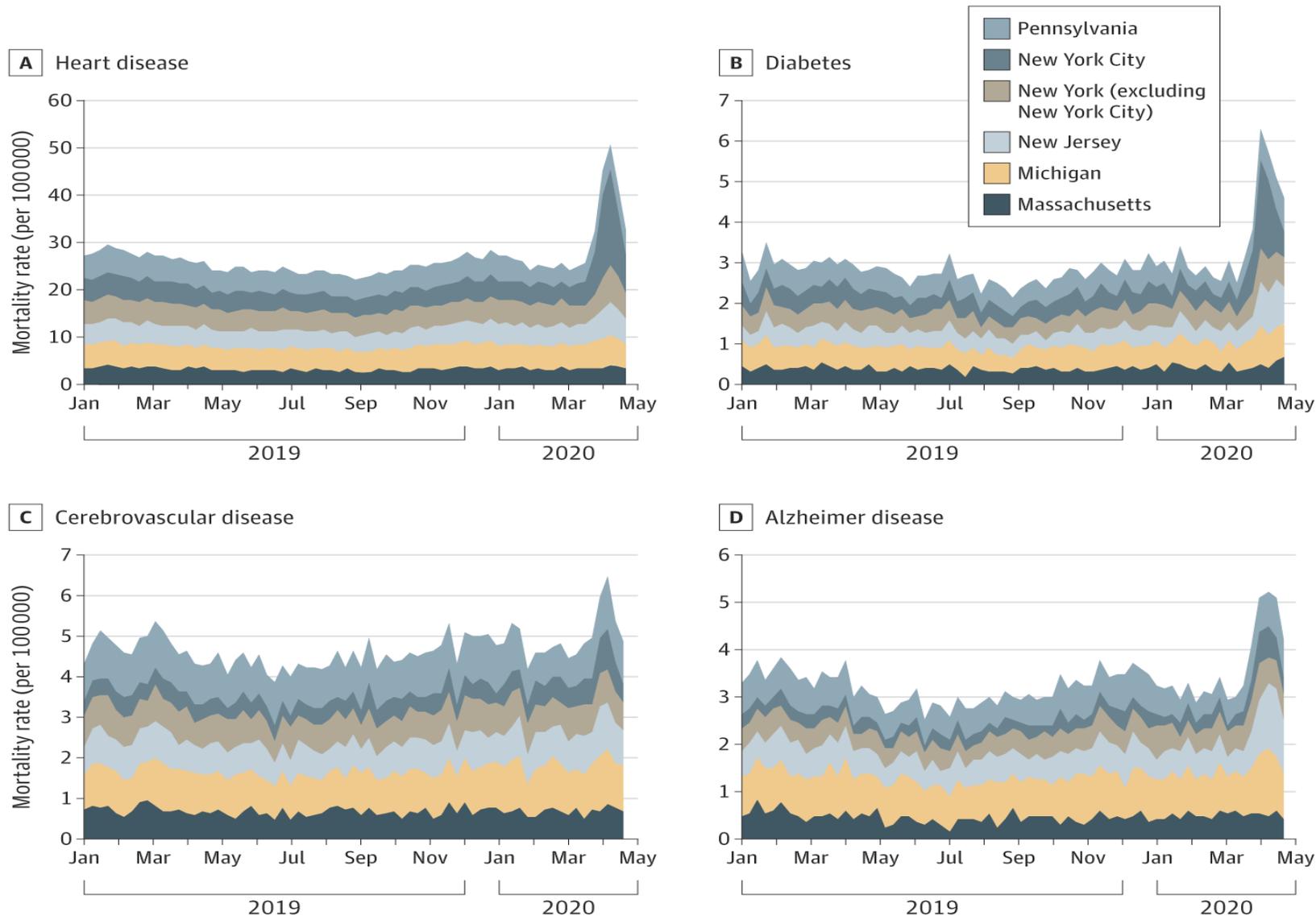


COVID-19 significantly impacts health services for noncommunicable diseases

Noncommunicable diseases kill 41 million people annually (71% of deaths)

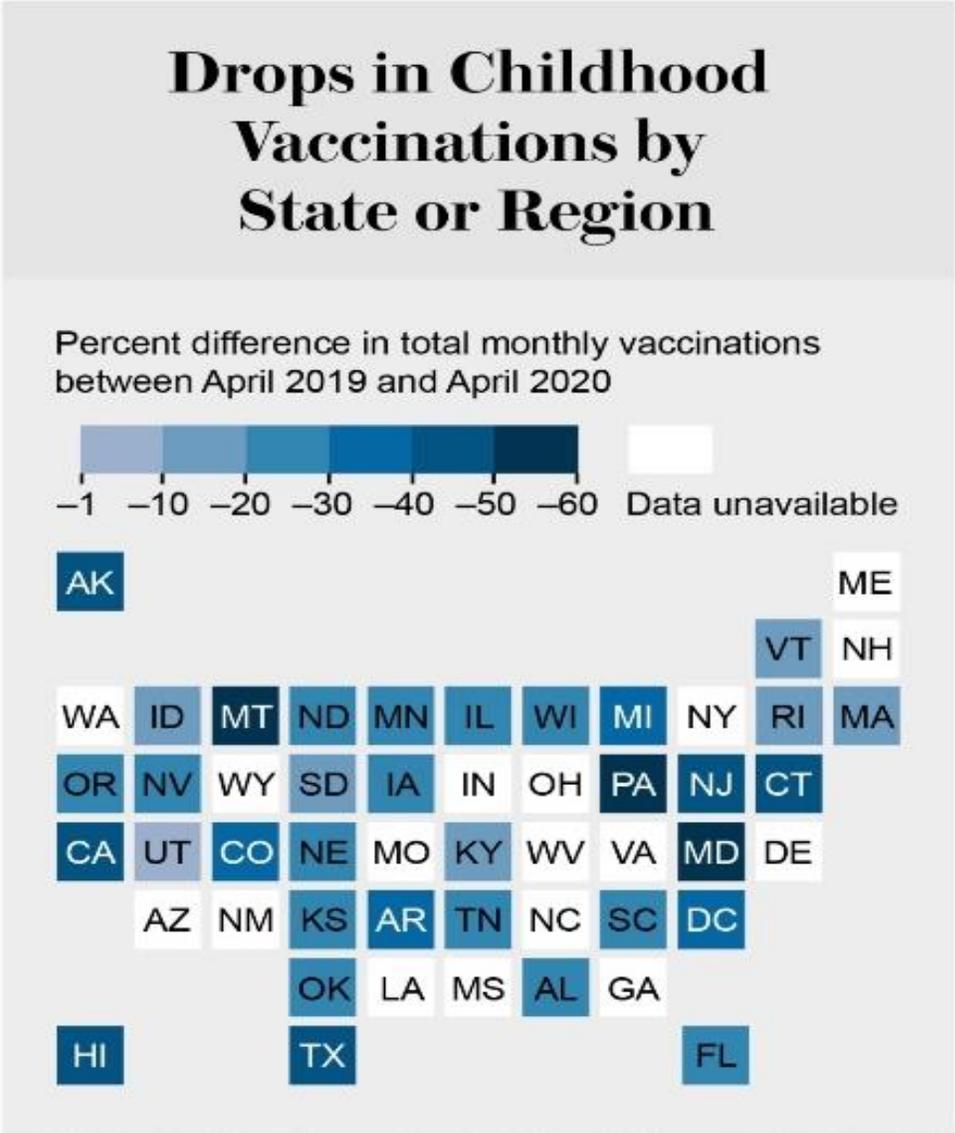
Survey of 155 countries:

- 53% reported complete or partial disruption of hypertension treatment
- 49% diabetes or diabetic-complications
- 42% cancer
- 31% cardiovascular emergencies
- 50% public screening programs
- 63% disruption in rehab services



Weekly Death Rates From January 2019 Through April 2020 Data refer only to underlying causes of death; COVID-19 may have been a contributing cause in an unknown number of deaths. New Jersey and New York City experienced the largest relative increases.

US Vaccination Rates Sharply Declined during 2020



Scientific American July 8, 2020

Decline in Canadian Vaccination Rates

- Childhood vaccines:
 - MB has reported 25% decline in MMR and 21% decline in DTdaP in <2y
- AB school-based vaccines:
 - ~50 000 AB grade 6 students missed 2nd dose of HPV and hep B
 - Grade 9 students missed quadrivalent meningococcal vaccine



Canadian Pediatric Society: “Routine immunizations for children should be kept up to date because any delay or omission in scheduled vaccines puts children at risk for common and serious childhood infections”

WHO: “While the world strives to develop a new vaccine for COVID-19 at record speed, we must not risk losing the fight to protect everyone, everywhere against vaccine-preventable diseases. These diseases will come roaring back if we do not vaccinate”

Reasons for Disruption of Immunizations

- Closure of healthcare facilities/schools or reduced services
- Reallocation of healthcare workers/reduced capacity
- Social distancing
- Anxiety or fear of going out
- Social determinants of health
- Misinformation
- Travel restrictions
- Vaccine supply
- Politics

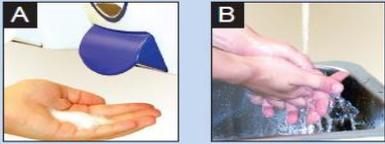
Immunizations, especially in infants and toddlers, is an **ESSENTIAL** service

NACI Interim Guidance on Continuity of Immunization Programs during COVID-19 Pandemic (May 13, 2020):

- If there is insufficient capacity to maintain routine immunization programs, **primary series and booster doses should be prioritized for children <2y**
- Precautions to protect HCP and patients:
 - Screening prior to appointment
 - Face covering/PPE
 - Scheduling
 - Physical distancing
- Defer routine immunizations in symptomatic individuals
- If post-exposure prophylaxis is required (e.g., measles, hepatitis A, hepatitis B, rabies, meningococcus, varicella) → give without delay using appropriate PPE

Putting on (Donning) Personal Protective Equipment (PPE)

1 HAND HYGIENE



- A Using an alcohol-based hand rub is the preferred way to **clean your hands**.
- B If your hands look or feel dirty, soap and water **must** be used to wash your hands.

2 Gown



- A Make sure the gown covers from neck to knees to wrist.
- B Tie at the back of neck and waist.

3a Procedure/Surgical mask

- ◆ Secure the ties or elastic around your head so the mask stays in place.
- ◆ Fit the moldable band to the nose bridge. Fit snugly to your face and below chin.

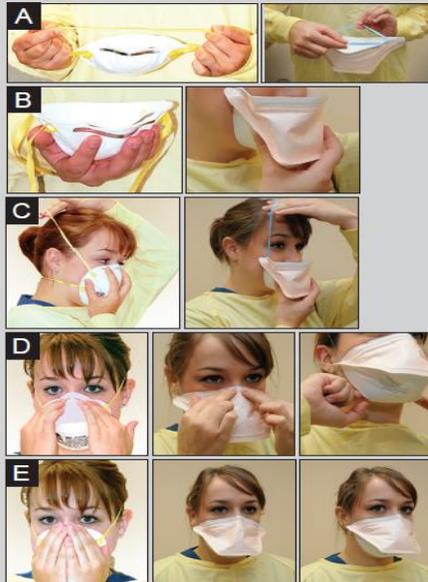


3b N95 respirator

There are different styles of N95 respirators (pictured below). They include: a) molded cup, b) duckbill, c) flat-fold and d) v-fold



All styles have the same basic steps for donning; molded cup and duckbill are pictured below. Refer to the manufacturer for specific donning instructions.



- A Pre-stretch both top and bottom straps before placing the respirator on your face.
- B Cup the N95 respirator in your hand.
- C Position the N95 respirator under your chin with the nose piece up. Secure the elastic band around your head so the N95 respirator stays in place.
- D Use both hands to mold the metal band of the N95 respirator around the bridge of your nose.
- E Fit check the N95 respirator.

4 Eye protection or face shields



- ◆ Place over the eyes (or face).
- ◆ Adjust to fit.

5 Gloves

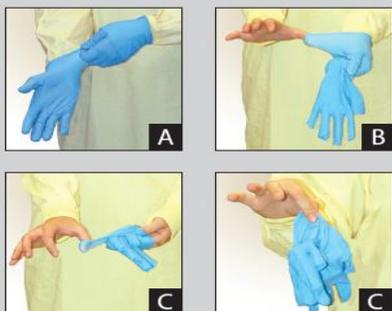


- ◆ Pull the cuffs of the gloves over the cuffs of the gown.



Taking off (Doffing) Personal Protective Equipment (PPE)

1 Gloves



A Grasp the outside edge of the glove near the wrist and peel away from the hand, turning the glove inside-out.

- ◆ Hold the glove in the opposite gloved hand.
- B** Slide an ungloved finger or thumb under the wrist of the remaining glove.
- C** Peel the glove off and over the first glove, making a bag for both gloves.
- ◆ Put the gloves in the garbage.

2 HAND HYGIENE



- A** Using an alcohol-based hand rub is the preferred way to **clean your hands**.
- B** If your hands look or feel dirty, soap and water must be used to wash your hands.

3 Gown



- A** Carefully unfasten ties.
- B** Grasp the outside of the gown at the back of the shoulders and pull the gown down over the arms.
- C** Turn the gown inside out during removal.
- ◆ Put in hamper or, if disposable, put in garbage.

4 HAND HYGIENE



- ◆ **Clean your hands.** (See No. 2)
- ◆ Exit the patient room, close the door and **clean your hands** again.

5 Eye protection or face shield



- ◆ Handle only by headband or ear pieces.
- ◆ Carefully pull away from face.
- ◆ Put reusable items in appropriate area for cleaning.
- ◆ Put disposable items into garbage.

6 Mask or N95 respirator



- ◆ Bend forward slightly and carefully remove the mask from your face by touching only the ties or elastic bands.
- ◆ Start with the bottom tie, then remove the top tie.
- ◆ Throw the mask in the garbage.

There are different styles of N95 respirators but all styles have the same basic steps for doffing.

7 HAND HYGIENE

- ◆ **Clean your hands.** (See No. 2)

How to Proceed with Immunizations

- **Infants and toddlers** → prioritize primary immunization series
- **Children** → prioritize those who have incomplete primary series; may defer 4-6y boosters but prioritize prior to school entry
- **School-based programs** → initiate and/or complete immunizations once schools reopen; no need to restart a series
- **Adolescents** → routine vaccines (e.g. Tdap, HPV, Hepatitis B, MenC-ACYW) can be deferred until full health care services are available, and/or when schools reopen
- **Immunizations during pregnancy** → Tdap at 27-32 wks plus influenza should continue (preferable to combine with another prenatal visit)

- **Adults and older adults** → preferable to combine immunization with another medical visit, and offer multiple vaccines if required, to minimize the risk of acquiring COVID-19 and to reduce the number of health care encounters
- Seasonal influenza programs → alternative delivery strategies being explored
- Reminders for deferred immunizations
- Multidose vaccines **do not need to be restarted** if there is a delay between doses → complete the series when able to
 - (except cholera, traveller's diarrhea, rabies vaccine for PEP)

Concurrent Administration of Vaccines

In general:

- Inactivated vaccines may be administered concomitantly with, or anytime before or after, other inactivated or live vaccines at different sites (except when the vaccine protects against the same disease e.g. pneumococcal)
- Live vaccines given parenterally may be administered with other vaccines on the same visit at different sites
- If 2 live parenteral vaccines are not administered concomitantly, then need to wait at least 4 weeks before the 2nd one is given
- Live oral or intranasal vaccines may be administered concomitantly with, or anytime before or after, other inactivated or live vaccines, except oral cholera (inactivated) and oral polio (live) which need to be spaced 8h apart

Interchangeability of Vaccines

- In general, the same vaccine should be used for all doses in a series if possible
- **Diphtheria, tetanus, pertussis, poliomyelitis, Hib vaccines**
 - An appropriate product from any manufacturer may be used for boosters
- Any of the **quadrivalent meningococcal conjugate** vaccines may be used for re-vaccination, regardless of which vaccine was used for initial series
- **Meningococcal B** vaccines are **NOT** interchangeable
- **Monovalent HA and HB** vaccines are interchangeable
- **Rabies** vaccines are interchangeable. Any vaccine may be used for booster
- No data on **rotavirus**, but if previous product unknown, can complete series with available product
- No data on **typhoid** vaccines, but any product can be used for booster

Individual Infection Prevention Lessons from Covid-19

- Hand hygiene
- Avoid touching face
- Stay home when sick
- Disinfecting surfaces
- Taking care of elderly, vulnerable, those with chronic conditions

VACCINES





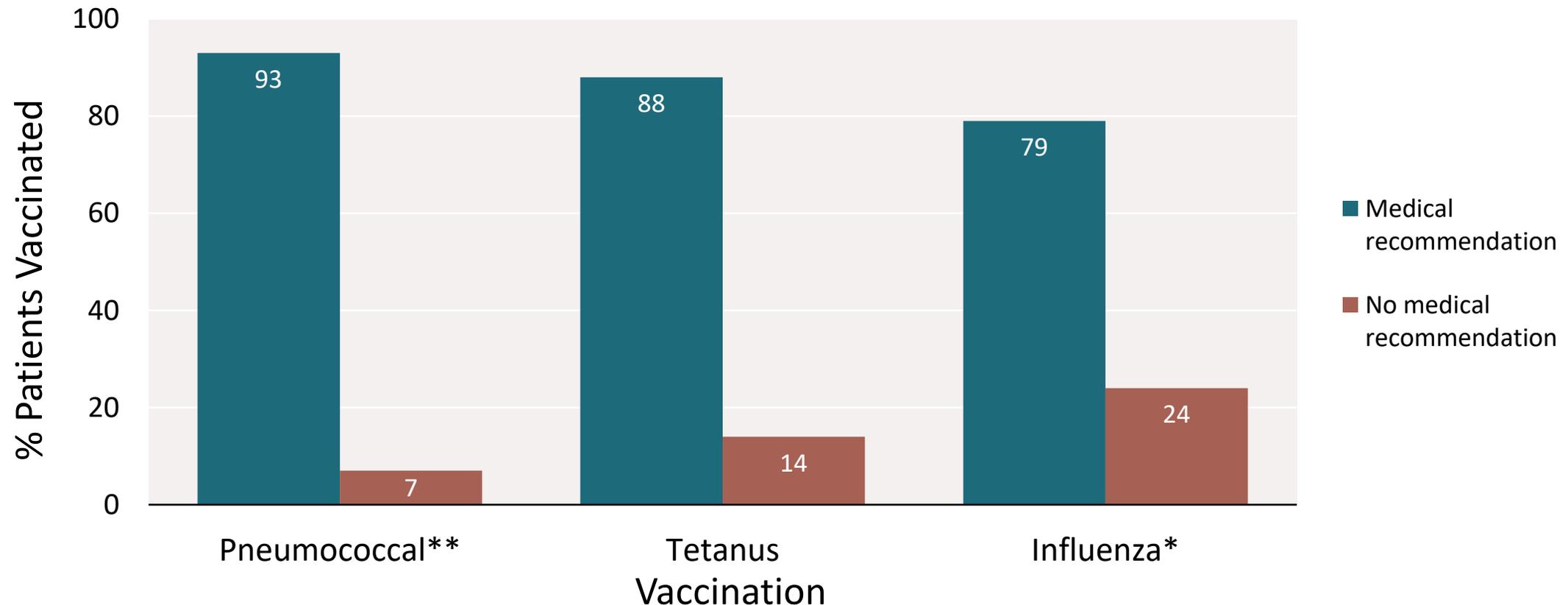
Carlos A. Rodríguez

@CarlosHappyNPO

For those who wanted a world with
no vaccines... here's the world
without ONE vaccine.

6:42 am · 30/3/20 · [Twitter for iPhone](#)

Effect of Healthcare Professional's Recommendations on Patient Acceptance of Vaccination



*Those who visited a health care professional since October 2005 (n=1,551)

**Those 65+ and those 18-64 with chronic condition other than asthma (n=599)

Summary

- Vaccine-preventable diseases carry high morbidity and mortality
- Even brief interruptions in immunization programs will risk outbreaks of VPDs
- Continuation of immunization programs during the pandemic is highly recommended and can be done in a safe manner
- Let's "Do our Part" as HCPs to keep our patients, families, and communities safe from VPDs

“The things that
are worthwhile
take time, and
it is not the
I’s of the world
but the We’s
who achieve them.”

~ Eventually...Gradually...,
THE ROTARIAN,
July 1952 ~

ROTARY CLUB OF CALGARY

Thank you for your support of
“It’s a Crime Not to Read”
at the Calgary Public Library

OCTOBER 2014

QUESTIONS?

Immunize Canada website
www.immunize.ca

The screenshot shows the homepage of the Immunize Canada website. At the top, there is a navigation bar with links for 'Media', 'Contact Us', and social media icons for Twitter, Facebook, and YouTube. A search bar and a 'Français' link are also present. Below the navigation bar is the Immunize Canada logo and a menu with options: 'For the Public', 'For Health Care Providers', 'About Immunize Canada', and 'Resources'. The main content area features a large banner with the text: 'Immunization protects individuals and communities by preventing the spread of disease.' Below this banner is a photograph of a healthcare professional in blue scrubs talking to a young girl who is holding a stuffed animal. A caption below the photo reads: 'As more people are immunized, the disease risk for everyone is reduced.' At the bottom of the page, there are four columns of content: 'Get the Facts' with a plus sign icon and text about immunization in Canada; 'Learn about Immunization' with a clipboard icon and text about how immunizations help protect; 'Common Questions' with a question mark icon and text about answers to questions; and 'Diseases & Vaccines' with a virus icon and text about learning about diseases and vaccines.