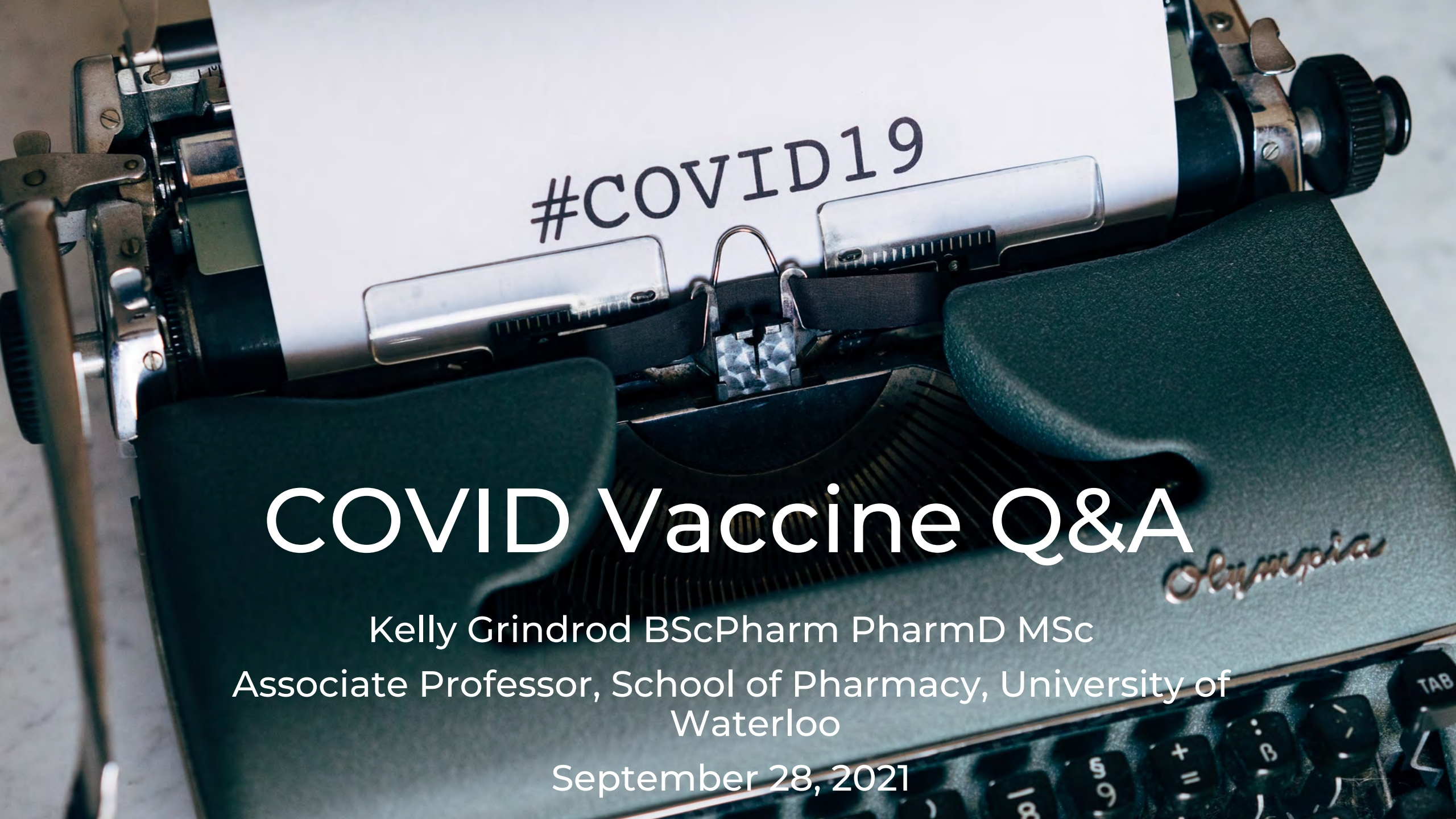


COVID Vaccine Q&A

Kelly Grindrod BScPharm PharmD MSc

Associate Professor, School of Pharmacy, University of Waterloo

September 28, 2021

Overview of presentation

1. Review of Covid-19 infection
2. Information about vaccines
3. Needle fears
4. Q & A

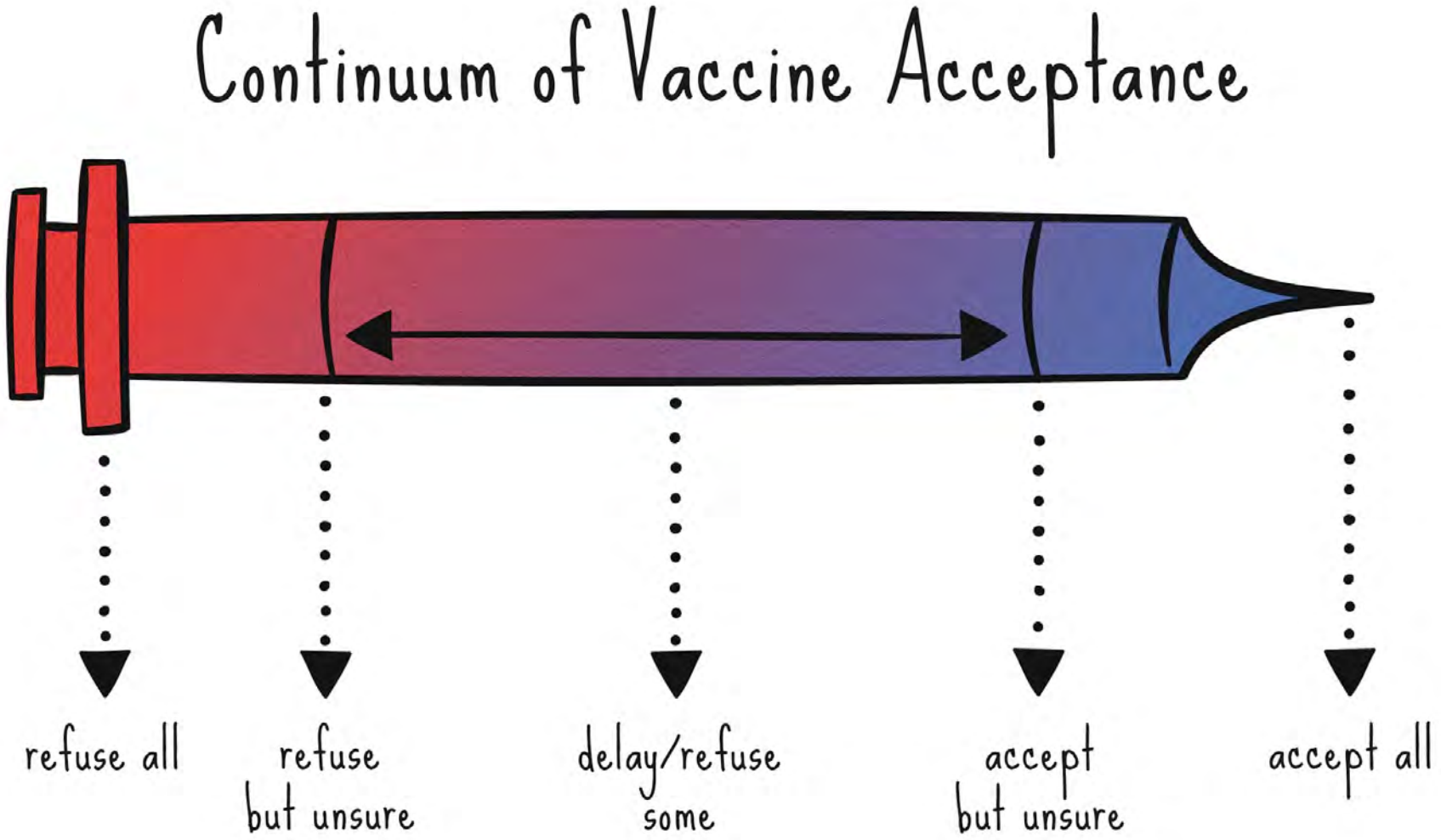
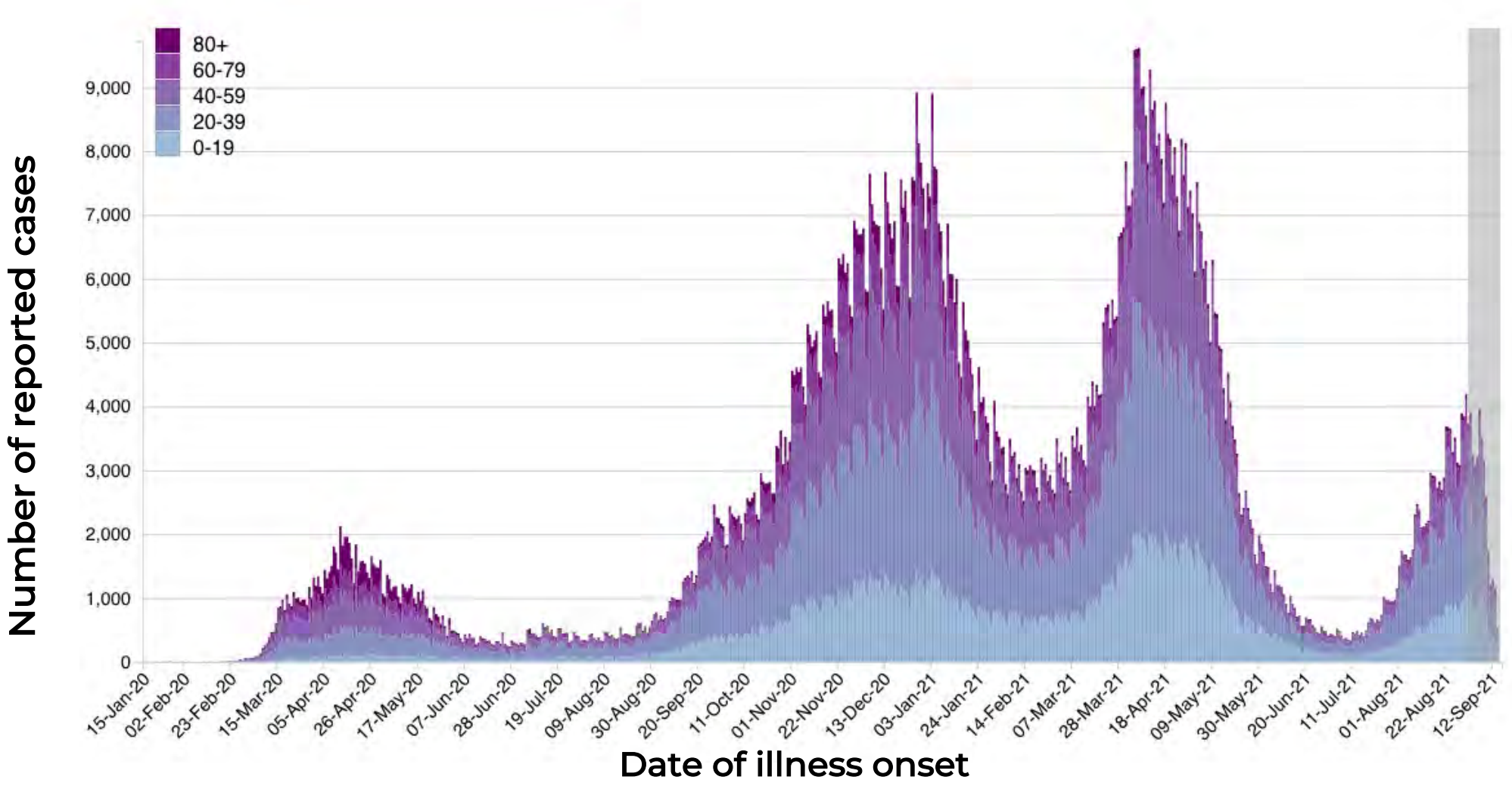


Image Source: Johns Hopkins University. https://coronavirus.jhu.edu/vaccines/report/building-trust-in-

COVID-19 cases in Canada by date illness started (Sept 17, 2021)



Government of Canada. COVID-19 daily epidemiology update. Accessed Sept 2021. https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html

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Covid-19

Vaccine Rates vs. Hospitalizations

Ontario

Rate of vaccination (aged 12+) Fully vaccinated 80% Partially vaccinated 86% Unvaccinated 14%

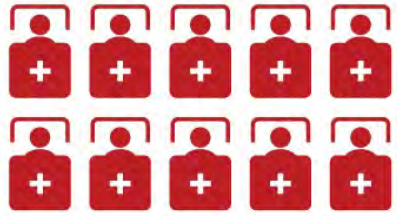
Fully Vaccinated
(per 100,000)

1

Partially Vaccinated
(per 100,000)

5

Unvaccinated
(per 100,000)



10

Your risk of hospitalization and serious illness is highest if you are not vaccinated, especially with Delta.

Numbers from https://covid-19.ontario.ca/data/hospitalizations. September 16, 2021 to September 23, 2021.

NSERC CRSNG

We acknowledge the support of the Natural Sciences and Engineering Research Council of Canada (NSERC).

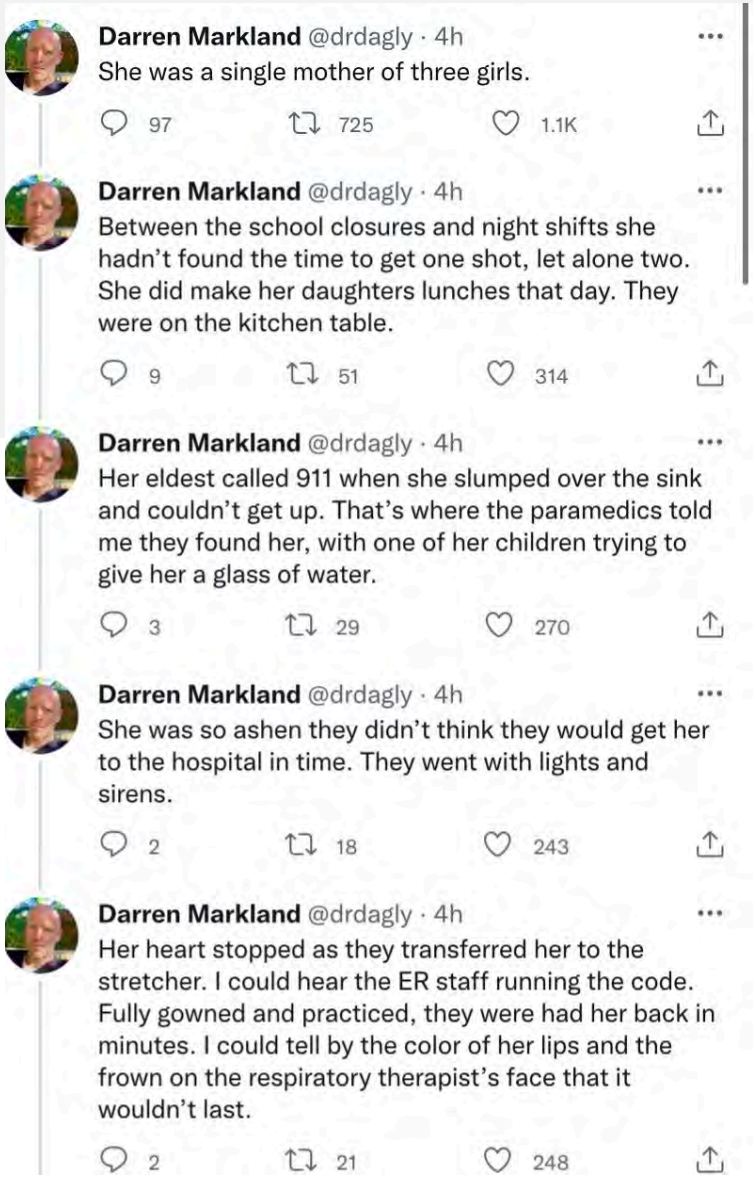
Having concerns is natural - you deserve a chance to have all your questions answered.

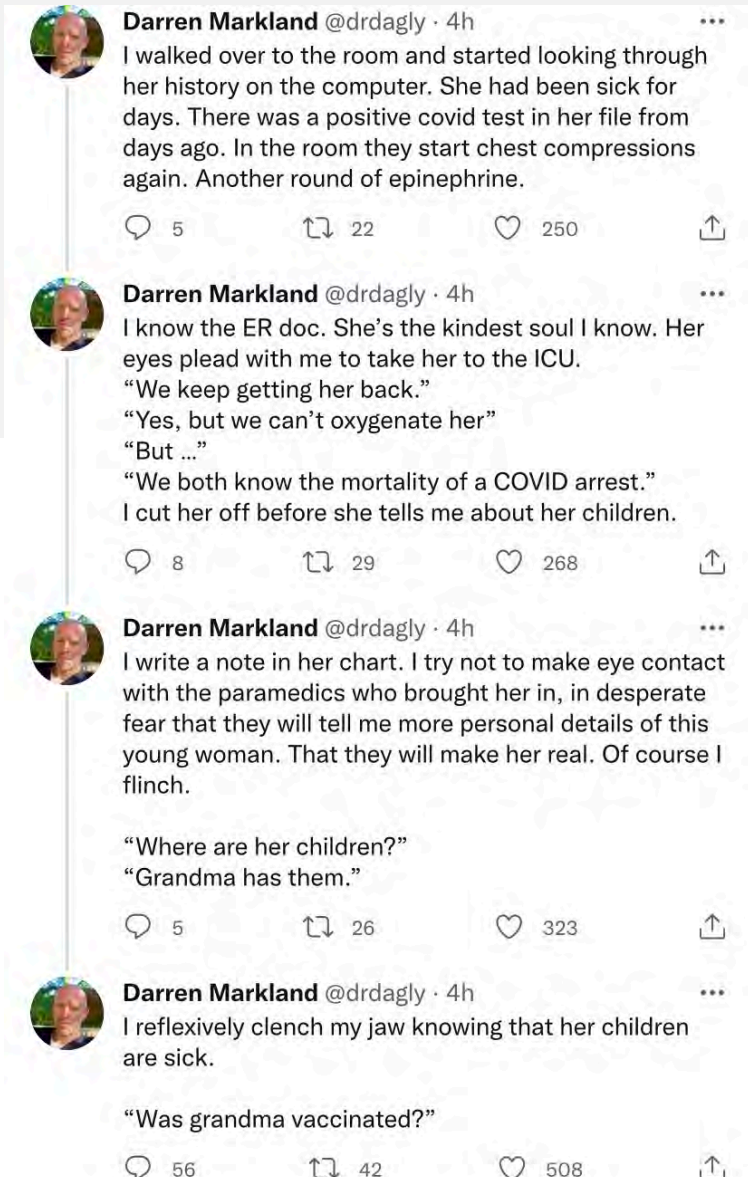
Examples of specific concerns we have heard:

- Minimal perceived risk from COVID-19
- Vaccine was “rushed”
- Vaccine vs illness-induced immunity
- Lack of long-term data
- Vaccine safety and effectiveness

Person dressed in PPE

Stories Matter






Tweet
Open app
Darren Markland
@drdagly
“I … can’t … breath …”
“I know, we are trying to help you.”
“It’s a bad reaction to the antibiotics.”
“No, it’s COVID, and it’s really bad.”
Silent tears now stream down his face,
“F**k you.”
“It’s ok, we will look after you. I promise.”
“I need my mom.”
I shrink a little.
9:19 PM · Sep 9, 2021 from Edmonton, Alberta · Twitter for iPhone


Kevin Mcleod
634 Tweets
Follow
Kevin Mcleod
@dockevinmcleod
Father. Husband. Teacher. Internal Medicine Specialist for the North Shore of Vancouver and Whitehorse. Loving life. Proud
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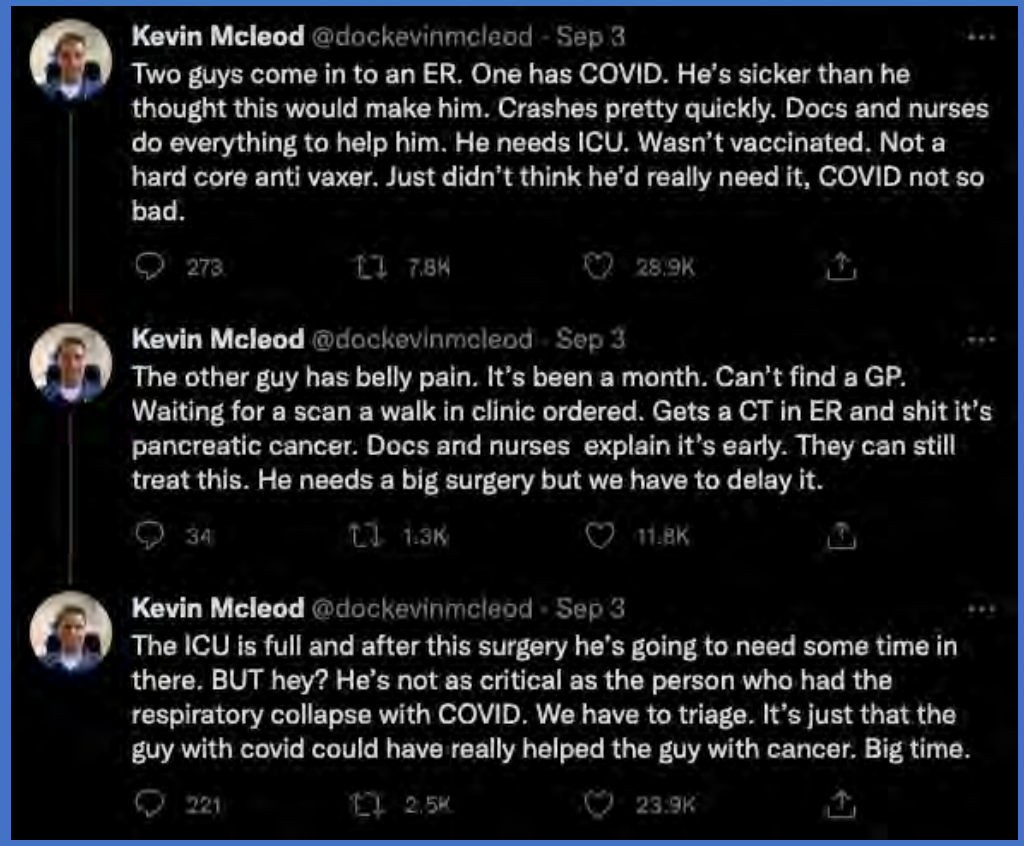
149 Following
4,147 Followers
Followed by Andrea Chittle, Terri Schindel, and 3 others you follow


Kevin Mcleod @dockevinmcleod · Sep 3
Two guys come in to an ER. One has COVID. He's sicker than he thought this would make him. Crashes pretty quickly. Docs and nurses do everything to help him. He needs ICU. Wasn't vaccinated. Not a hard core anti vaxer. Just didn't think he'd really need it, COVID not so bad.
273
7.8K
28.9K
Kevin Mcleod @dockevinmcleod · Sep 3
The other guy has belly pain. It's been a month. Can't find a GP. Waiting for a scan a walk in clinic ordered. Gets a CT in ER and shit it's pancreatic cancer. Docs and nurses explain it's early. They can still treat this. He needs a big surgery but we have to delay it.
34
1.3K
11.8K
Kevin Mcleod @dockevinmcleod · Sep 3
The ICU is full and after this surgery he's going to need some time in there. BUT hey? He's not as critical as the person who had the respiratory collapse with COVID. We have to triage. It's just that the guy with covid could have really helped the guy with cancer. Big time.
221
2.5K
23.9K

CTV News

CTV NEWS

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Complete coverage at CTVNews.ca/Coronavirus

COVID-19 NEWSLETTER
Receive the most important updates in your inbox

COVID-19 VACCINE TRACKER
Track the number of people in Canada who have received doses

Advertisement

CORONAVIRUS | News

Inside an Ontario ICU where the COVID-19 patients are largely young, and all unvaccinated

Avis Favaro CTV National News Medical Correspondent
@ctv_avisfavaro | Contact

Elizabeth St. Philip CTV News
@LizTV | Contact

Alexandra Mae Jones CTVNews.ca writer
@AlexandraMaeJ | Contact

Published Wednesday, September 15, 2021 10:00PM EDT
Last Updated Wednesday, September 15, 2021 10:00PM EDT

CTV National News: Pandemic of the unvaccinated

NOW PLAYING Avis Favaro visits an Ontario ICU that's quickly filling up with young, unvaccinated COVID-19 patients struggling to survive.

Extended: Inside Hamilton General Hospital's ICU

Dr. Sunjay V. Sharma, medical director of critical care at Hamilton General Hospital, shows COVID-19 patients in the intensive care unit.

Extended: ICU nurses urge people to get vaccinated

Erin and Michelle, nurses at Hamilton

"It's scary. It's people younger than me, in some cases healthier than me," Sharma said.

"The unvaccinated COVID-19 patients this hospital is seeing are younger and healthier, in their 30s and 40s. Many them require a specialized form of life support called ECMO, in which their blood is removed to be given oxygen and pumped back into the body because their lungs have failed.

It's the "highest level of life support you can get anywhere," Sharma said.

He pointed out a patient in his 40s, who is hooked up to an ECMO machine.

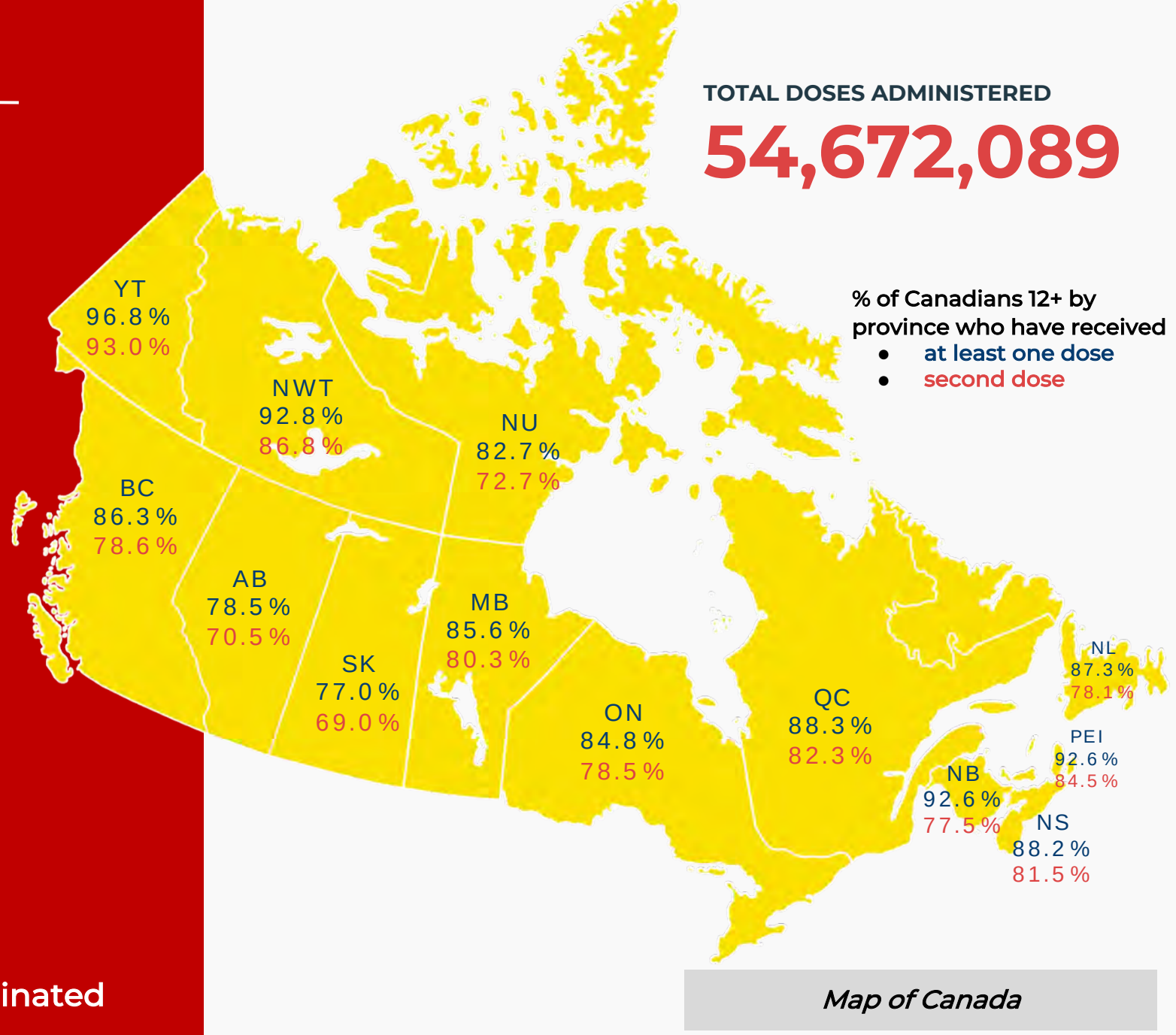
"There's a catheter the size of a garden hose in his neck, and there's a catheter the size of a garden hose [at his] groin," Sharma said.

"And basically it takes the blood out of his groin, puts it the machine, takes the carbon dioxide out, [puts in] the oxygen, and then comes back into his heart."

Most of the patients who are on ECMO with COVID-19 don't have significant co-morbidities.

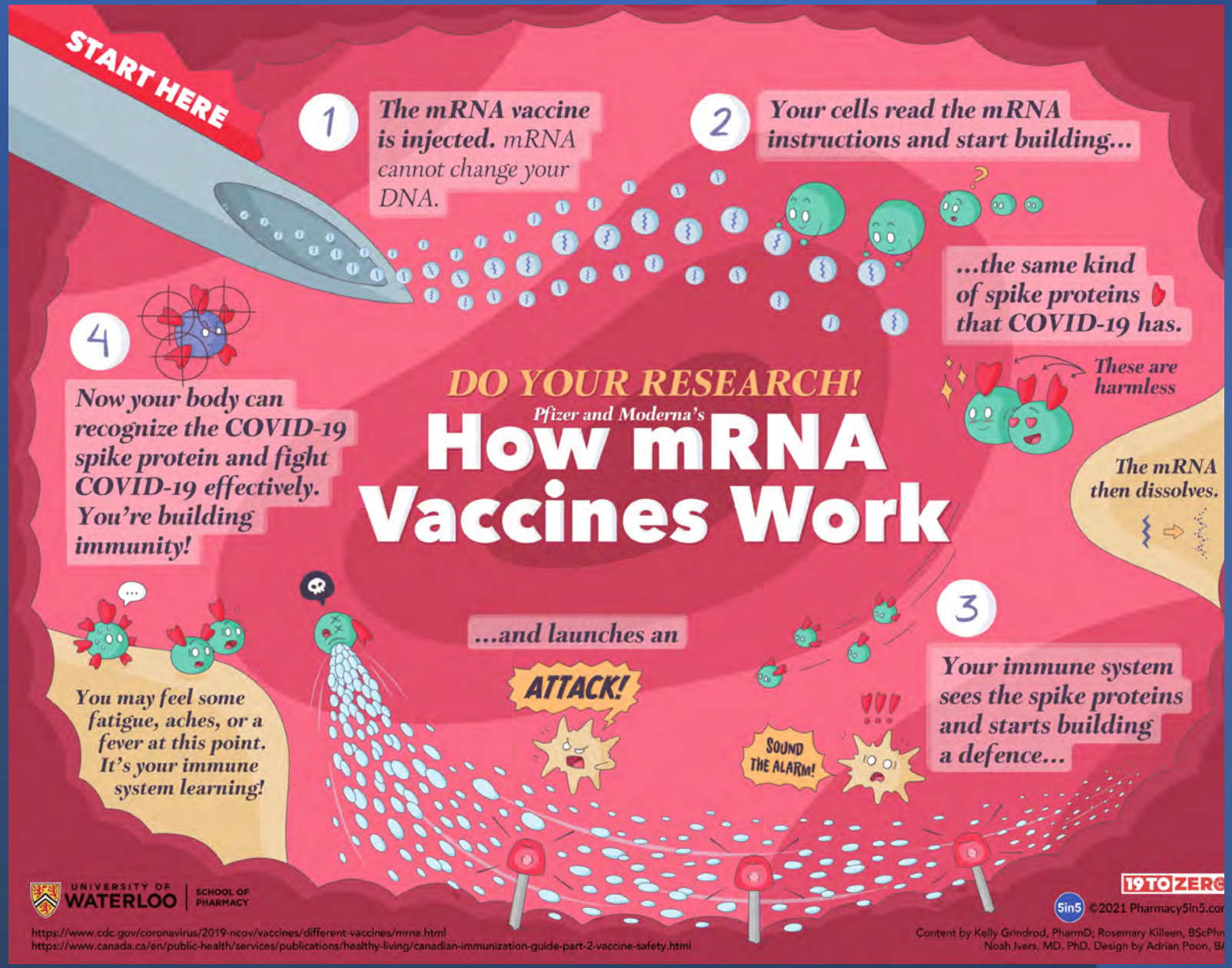
AS OF SEPTEMBER 16, 2021:

Over 54 million doses have been administered in Canada



Map of Canada

% OF ELIGIBLE POPULATION (12+):
85.04% at least one dose; 78.33% fully vaccinated


START HERE
1
The mRNA vaccine is injected. mRNA cannot change your DNA.
2
Your cells read the mRNA instructions and start building...
...the same kind of spike proteins that COVID-19 has.
These are harmless
The mRNA then dissolves.
3
Your immune system sees the spike proteins and starts building a defence...
SOUND THE ALARM!
...and launches an
ATTACK!
You may feel some fatigue, aches, or a fever at this point. It's your immune system learning!
4
Now your body can recognize the COVID-19 spike protein and fight COVID-19 effectively. You're building immunity!
DO YOUR RESEARCH!
Pfizer and Moderna's
How mRNA Vaccines Work
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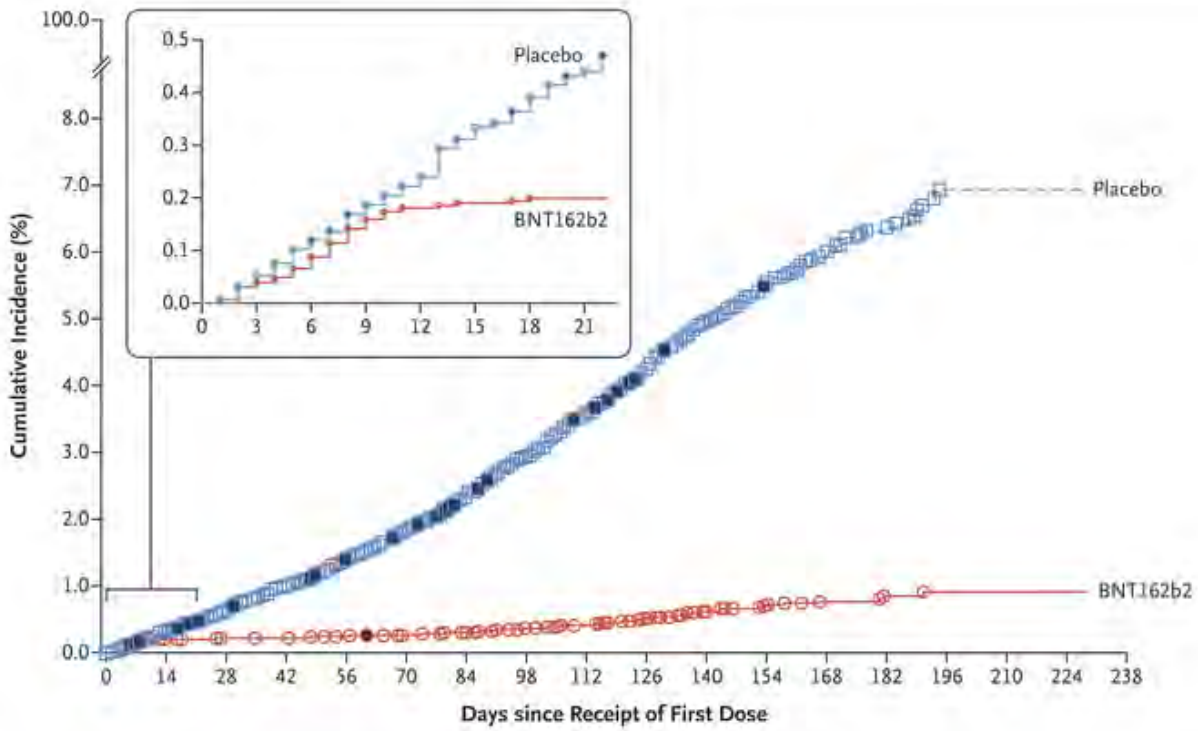
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html
https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-2-vaccine-safety.html
Content by Kelly Grindrod, PharmD; Rosemary Killeen, BScPhn
Noah Ivers, MD, PhD. Design by Adrian Poon, BA

How effective are the mRNA COVID-19 vaccines?

Pfizer (BNT162b2) 40,000+ participants	Moderna (mRNA-1273) 30,000+ participants
95% protection from having the disease	90-94% protection from having the disease
95-100% protection from severe disease	95% protection from severe disease

The vaccine works in people of different ethnicity and age

Person with cell phone wearing mask

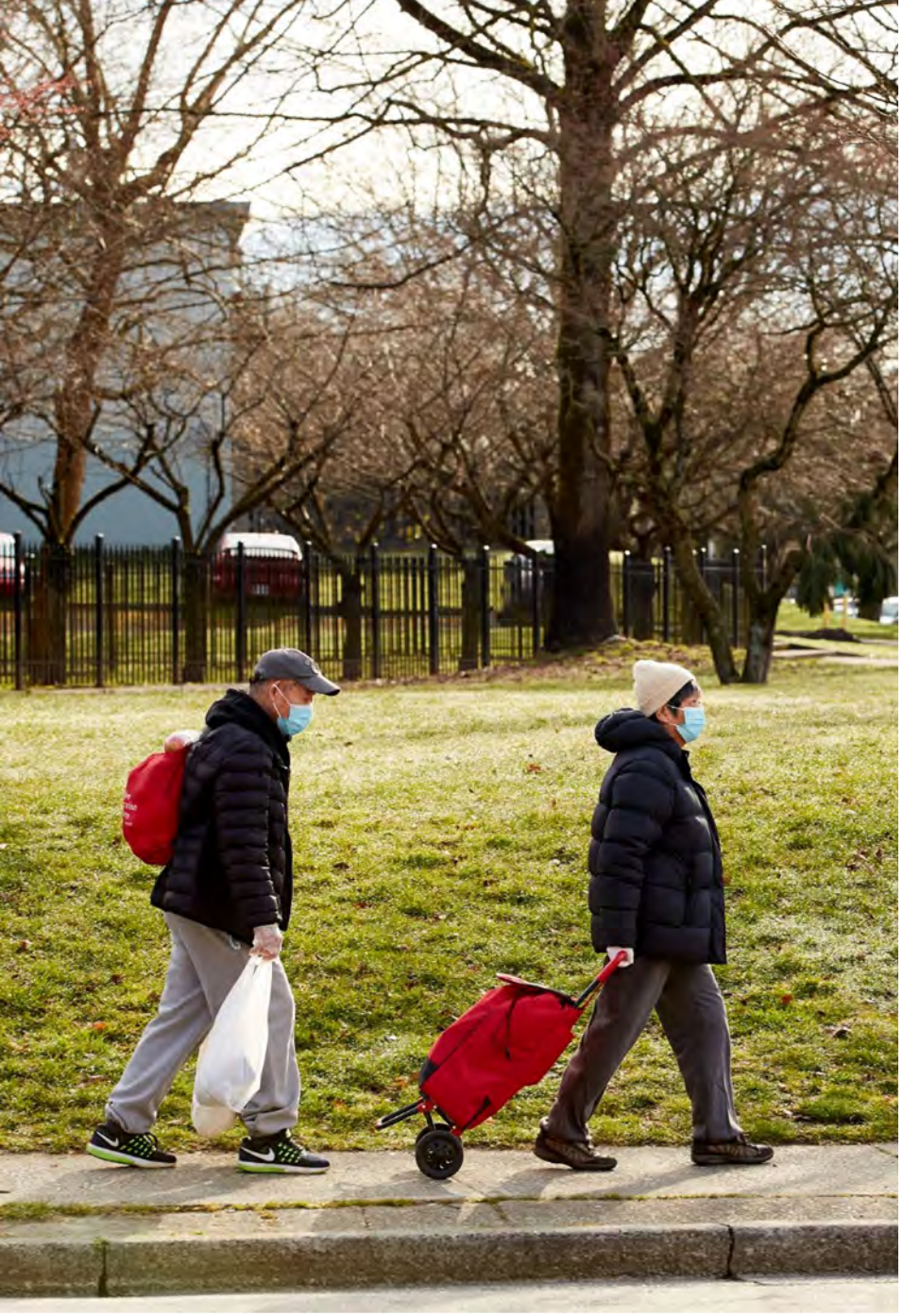


Efficacy End Point	BNT162b2 (N=23,040)			Placebo (N=23,037)			Vaccine Efficacy
	No. of cases	Surveillance time	No. at risk	No. of cases	Surveillance time	No. at risk	
		1000 person-yr			*1000 person-yr*		*% (95% CI)*
Overall: first occurrence of Covid-19 after receipt of first dose	131	8.412	22,505	1034	8.124	22,434	87.8 (85.3 to 89.9)
After receipt of first dose up to receipt of second dose	46	1.339	22,505	110	1.331	22,434	58.4 (40.8 to 71.2)
<11 Days after receipt of first dose	41	0.677	22,505	50	0.675	22,434	18.2 (−26.1 to 47.3)
≥11 Days after receipt of first dose up to receipt of second dose	5	0.662	22,399	60	0.656	22,369	91.7 (79.6 to 97.4)
After receipt of second dose to <7 days after	3	0.424	22,163	35	0.422	22,057	91.5 (72.9 to 98.3)
≥7 Days after receipt of second dose	82	6.649	22,132	889	6.371	22,001	91.2 (88.9 to 93.0)
≥7 Days after receipt of second dose to <2 mo after	12	2.923	22,132	312	2.884	22,001	96.2 (93.3 to 98.1)
≥2 Mo after receipt of second dose to <4 mo after	46	2.696	20,814	449	2.593	20,344	90.1 (86.6 to 92.9)
≥4 Mo after receipt of second dose	24	1.030	12,670	128	0.895	11,802	83.7 (74.7 to 89.9)

Source: https://www.nejm.org/doi/full/10.1056/NEJMoa2110345?fbclid=IwAR2W3YpMaN2riLAoLxEfYFbE2YaIjUBpfEMr-Fi_-HK_PqKw93ocoBLPbZ4

Questions: Boosters & Variants (1)

- How effective is the vaccine since it doesn't build herd immunity? It seems that someone using the vaccine will then have to have a booster every 6 months for the rest of their life!
- Does vaccine effectiveness against the Delta variant decline after a few months?
- Will the COVID vaccine protect me from the variants (ex. Delta)?



Community immunity

Community immunity depends on several factors:

- Contagiousness of the virus
  - Depends on the virus and variants
  - Public health measures
- Vaccine supply, rollout, and uptake
- How long vaccine immunity lasts

While it was originally reported that we would need 75-80% of the population to be vaccinated in order to achieve herd immunity, **this number is likely higher**.

Health experts have avoided stating a percentage more recently due to the evolving nature of the factors above.

Until the world has immunity, variants will continue to emerge.

Public Health England

Protecting and improving the nation's health

COVID-19 vaccine surveillance report
Week 38

Table 1. Summary of evidence on vaccine effectiveness against different outcomes Delta

Outcome	Vaccine effectiveness*		
	Pfizer-BioNTech Cominarty	AstraZeneca Vaxzevria	Moderna Spikevax
Infection	75 to 85%	60 to 70%	
Symptomatic disease	80 to 90%	65 to 75%	90 to 99%
Hospitalisation	95 to 99%	90 to 99%	95 to 99%
Mortality	90 to 99%	90 to 95%	

High Confidence	Evidence from multiple studies which is consistent and comprehensive
Medium Confidence	Evidence is emerging from a limited number of studies or with a moderately level of uncertainty
Low Confidence	Little evidence is available at present and results are inconclusive

* Estimates of initial vaccine effectiveness in the general population after a 2 dose course. This typically applies for at least the first 3 to 4 months after vaccination. For some outcomes there may be waning of effectiveness beyond this point.

Source:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1019992/Vaccine_surveillance_report_-_week_38.pdf

Questions: Boosters & Variants (2)

- Can I get a 3rd vaccine if I want just to be safe or will I be refused if I go to a vaccine site?
- Do we really need a third dose of Pfizer? Why?
- For how long does the Pfizer vaccine offer immunity? Is it true that it weans off by 6% every three weeks? Will it help if other variants develop? Is it even possible to not be of any help?
- I understand the relevance and need for booster shots but wonder if there can be such a thing as "too many" booster shots. Vaccinations against childhood vaccinations have boosters I think at 10 years later and I am not sure how many adults would be "up-to-date" on boosters for polio etc. Are there any health risks from getting "too many" boosters?

Questions: Boosters & Variants (3)

- Will there be booster injections or new vaccines for variants?
- Will we need a shot periodically from now on? How do we get new variants protection in the long run?

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Covid-19

Vaccine Rates vs. Hospitalizations

Ontario

Rate of vaccination (aged 12+) Fully vaccinated 80% Partially vaccinated 86% Unvaccinated 14%

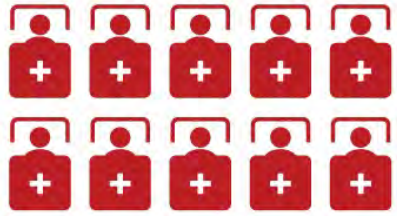
Fully Vaccinated
(per 100,000)

1

Partially Vaccinated
(per 100,000)

5

Unvaccinated
(per 100,000)



10

Your risk of hospitalization and serious illness is highest if you are not vaccinated, especially with Delta.

Numbers from https://covid-19.ontario.ca/data/hospitalizations. September 16, 2021 to September 23, 2021.

NSERC CRSNG

We acknowledge the support of the Natural Sciences and Engineering Research Council of Canada (NSERC).

Third Doses Special Populations (Sept 2021)

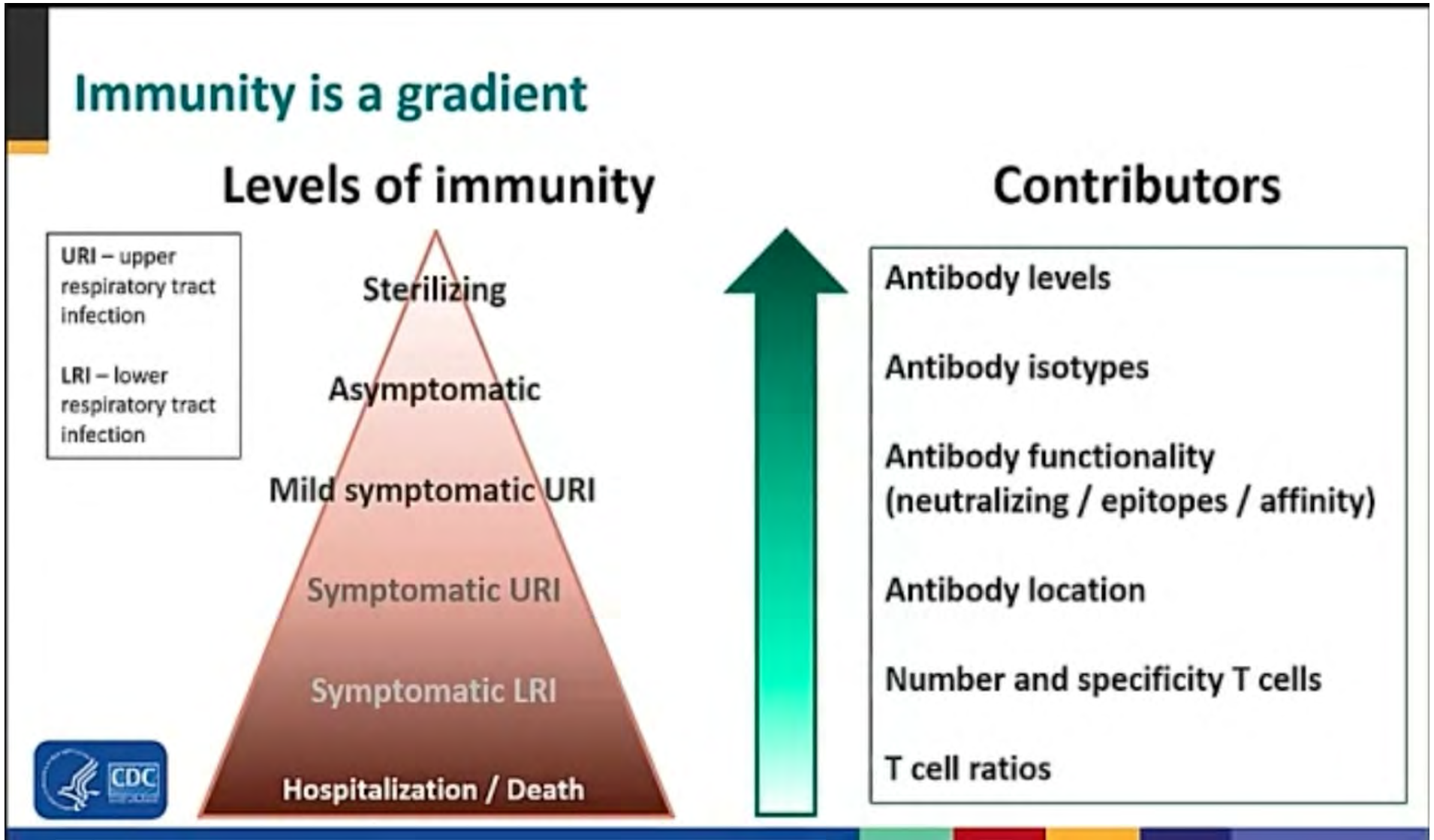
Ontarians with specific conditions are now eligible to receive a follow-up vaccine a minimum of eight weeks after their second dose.

Conditions that qualify include:

- Transplant
- Active cancer treatment (chemo, immune, targeted)
- CAR-T cell therapy
- Moderate primary immune deficiency (eg DiGeorge syndrome)
- Stage 3 or advanced untreated HIV
- Certain immune suppressing drugs

Seniors living in congregate care are also eligible to receive a third dose.

ACIP Meeting (Sept 22, 2021)



Booster Questions We Still Need To Answer

- Is this a 2-dose or a 3-dose vaccine?
- Does it make a difference if the first and second dose are further apart? (21 days vs. 4 months?)
- How effective is the vaccine when newer variants of concern spread?
- Is an annual booster needed? 5 years? 10 years?
- When will we have reliable antibody tests to confirm the vaccine provided immunity?

Questions: Delta & Contagiousness (1)

- Why are educational institutions like the University of Waterloo mandating the COVID shot when it is clearly not protecting the vaccinated adequately? Why are vaccinated people afraid of the unvaccinated if the shot is supposed to protect them?
- Help me with the logic: the vaccine does not prevent me from getting covid (20-30% of breakthrough cases were in the vaccinated). it doesn't prevent me from infecting others. it may protect me from getting severe illness if I get covid. Why do we need to force people to get the vaccine? If I'm vaccinated then I'm protected so why does it matter if my co-worker has the vaccine or not?

Questions: Delta & Contagiousness (2)

- If an adult is fully vaccinated (they have received both doses) can they still contract Covid-19 (symptomatic or asymptomatic) and thus potentially infect someone in their household that is unvaccinated (e.g. a child under the age of 12)?
- It seems to be clear that vaccines do not stop transmission - refer to the CDC report documenting the outbreak at the start of July in Barnstable, Massachusetts. The viral loads were found to be similar in both vaccinated and unvaccinated individuals. Secondly, it is becoming clear that natural immunity is better than vaccine induced immunity - see [link]. That being said, what is the logic requiring vaccination?

Can the virus still spread after vaccination?

You are less likely to get symptomatic COVID-19 if you are vaccinated, which can lower spread.

In some cases you may have a lower viral load or less virus in certain areas of the body if you are vaccinated, which can lower spread.

You are likely to be sicker for a shorter period if you do get COVID-19 and are vaccinated, which can lower spread.

Vaccines lower spread.

Hands against window

Questions: Vaccine Safety (1)

- What's the major risk of the vaccine?
- What research been done on the possible long term adverse effects of the vaccine?
- Some of the unvaccinated have a concern regarding the lack of longitudinal research on the side effects of the vaccine. What information can we give them?
- Have the potential side effects been thoroughly investigated?
  - *Large clinical trials in adults, bridging studies in teens (complete) and kids (pending)*

Man with navy jacket and medical mask

Common Side Effects from the Vaccine

- 8 in 10 people complain of sore arm
  - **BUT** only 1 in 100 call that soreness severe
- 5 in 10 people complain of feeling tired and having a headache
  - **BUT** only 1 in 10 need Advil or Tylenol
- Some reaction to the vaccine is to be expected, but most reactions are mild and can be managed at home

Myocarditis after dose 2 of the vaccine?

Myocarditis is inflammation of the heart muscle. Pericarditis is inflammation of the outer lining of the heart.

COVID-19 infection can also cause myocarditis and pericarditis, possibly at a higher rate (estimated to be 2-3 times higher).

Cases from vaccine have most commonly been observed after dose 2 with a rate of:

- **20 cases per one million second doses in 12-15y**
- **34 cases per one million second doses in 16-17y.**

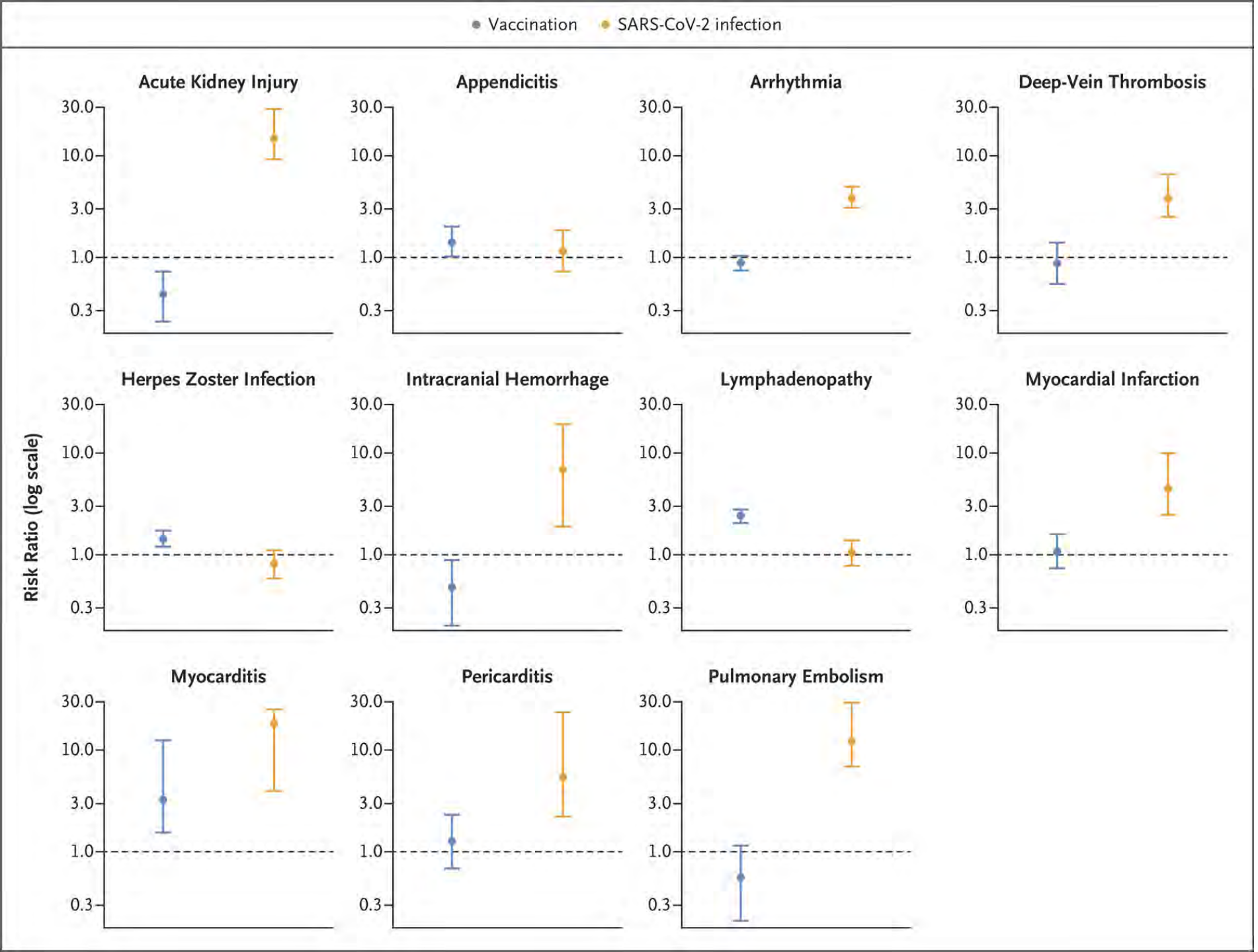
Most patients appear to be younger in age and male and most patients have full recovery from symptoms.

Strategies to Assess Long-term Effects

- Side effects expected within 6 weeks, but still watching
- Need data on long-term protection
- Clinical trials will watch for years
  - Protection and side effects
- Post-marketing research
  - Adverse event reporting systems (AEFI, VAERS, etc)
  - Health database research (ICES for Ontario, etc)
- Need long-term research on COVID infection

Questions: Vaccine Safety (2)

- How safe is the vaccine ultimately, considering all the theories that everyone who got it will demise in three or so years after? A third dose will increase that possibility even more, right?
- A recent study of Israel showed a possible side effect of a herpes zoster infection (15.8 events per 100K). How is that explained / rationalized given they would seem totally not related.
- What would be my options (legal, ethical, moral) for obtaining support (vs compensation) if it is found that the vaccine produced delayed health-threatening or life-changing side effects?



Safety of the BNT162b2 mRNA Covid-19 Vaccine in a Nationwide SettingN Engl J Med 2021; 385:1078-1090 https://www.nejm.org/doi/full/10.1056/NEJMoa2110475

Reported side effects following COVID-19 vaccination in Canada

Summary | Weekly report | Archived reports

We update this page every Friday at 12:00 PM Eastern Time. A summary and background information are available.

This report was last updated on September 24, 2021 with data up to and including September 17, 2021.

What you need to know up to and including September 17, 2021

No new safety signals have been identified in Canada
(three continue to be monitored)

54,773,928
Total doses administered

16,090
Total adverse event following immunization reports
(0.029% of all doses administered)

11,802
Total adverse event following immunization reports that were non-serious
(0.022% of all doses administered)

4,288
Total adverse event following immunization reports that were serious
(0.008% of all doses administered)

194
New adverse event following immunization reports received between September 11 to 17, 2021.
(113 new non-serious and 81 new serious)

- The benefits of vaccines authorized in Canada continue to outweigh the risks.
- Health Canada, the Public Health Agency of Canada (PHAC), the provinces and territories, and manufacturers continue to closely monitor the safety of COVID-19 vaccines. We'll respond to any safety issues right away and will inform Canadians about any risks that arise in Canada.
- Of the **16,090** individual reports (**0.029% of all doses administered**), **4,288** were considered serious (**0.008% of all doses administered**).

Government of Canada | Gouvernement du Canada

https://health-infobase.canada.ca/covid-19/vaccine-safety/#specialInterest

Government of Canada Announces pan-Canadian Vaccine Injury Support Program

From: Public Health Agency of Canada

News release

December 10, 2020 - Ottawa, ON - Public Health Agency of Canada

We as Canadians pride ourselves on our commitment to each other. By getting vaccinated, we protect one another and our way of life. Vaccines are safe, effective and one of the best ways to prevent serious illness like COVID-19.

Vaccines are only approved in Canada after thorough and independent review of the scientific evidence. They are also closely monitored once on the market and can quickly be removed from market if safety concerns are identified. Notwithstanding the rigour of clinical trials and excellence in vaccine delivery, a small number of Canadians may experience an adverse event following immunization, caused by vaccines or their administration.

Like any medication, vaccines can cause side effects and reactions. After being vaccinated, it's common to have mild and harmless side effects — this is the body's natural response, as it's working to build immunity against a disease. However, it is also possible for someone to have a serious adverse reaction to a vaccine. The chances of this are extremely rare — less than one in a million — and we have a duty to help if this occurs.

It is for this reason that the Public Health Agency of Canada (PHAC) is implementing a pan-Canadian no-fault vaccine injury support program for all Health Canada approved vaccines, in collaboration with provinces and territories. Building on the model in place in Québec for over 30 years, the program will ensure that all Canadians have to have fair access to

Focused Communication

University of Waterloo | School of Pharmacy

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September 27, 2021

COVID-19 VACCINE
MEDICAL EXEMPTIONS

Most people can safely get a Covid-19 vaccine. It helps protect people from getting severely ill or dying from Covid-19. Vaccines also lower the risk of spreading Covid-19 to others.

There are, however, a few valid reasons for **medical exemption** from getting the vaccine. This document was created to help people understand those reasons.

It will also explain situations that are **not reasons** for exemption from getting the vaccine, such as being pregnant, breastfeeding, or having had Covid-19 already. People can safely choose to get vaccinated in these circumstances. Details are provided below.

EXEMPTION 1

People who were diagnosed with myocarditis or pericarditis after dose 1 of a Covid-19 vaccine → They should not have dose 2 at this time.

↳ *People with prior myocarditis or pericarditis should speak to their medical team for advice.*

EXEMPTION 2

People who have a confirmed anaphylactic* allergy to an ingredient in a Covid-19 vaccine → They should be referred to an allergist for advice before dose 1.

OR

People who had an anaphylactic* allergic reaction to dose 1 of a Covid-19 vaccine → They should be referred to an allergist for advice before dose 2.

↳ *Many people who are worried they have an allergy to the Covid-19 vaccines have been able to get vaccinated under the guidance of an allergist.*

*An anaphylactic reaction is a severe reaction. It usually involves more than one body system (e.g., the skin, lungs, blood vessels, or gut). Symptoms usually develop quickly during the 15 minute monitoring period. Anaphylaxis must be treated with epinephrine (e.g., EpiPen®). Allergists are experts in identifying and treating anaphylaxis.

This guide was made by doctors, pharmacists, scientists, and patients in Canada. We used expert guidance and scientific evidence to answer questions about medical exemptions to Covid-19 vaccines.

Medical Exemptions

- I understand that for those concerned about allergic reactions, allergists can give small doses to gage and deal with any reactions. This is what they are specially trained to do. I believe it's a referral from your family doctor.

Focused Communication

ALLERGIES TO OTHER VACCINES

Allergic reactions to other vaccines are not a medical reason to be exempt from Covid-19 vaccination.

Covid-19 vaccines are recommended for people who have had allergic reactions to other vaccines.

Why?

The Moderna and Pfizer mRNA Covid-19 vaccines have simple ingredients. It is very unlikely that someone with other allergies will have an allergic reaction to Covid-19 vaccines.

mRNA vaccine ingredients contain mRNA (instructions for making the spike protein) which is wrapped in a lipid (fat) envelope. The lipid envelope protects the mRNA until the cells of the body can use it. Sugars and salts keep the vaccine stable. mRNA Covid-19 vaccines do not contain most of the ingredients found in other vaccines.

The Canadian Society of Allergists and Clinical Immunologists (CSACI) recommends people ask their healthcare provider if the vaccine they reacted to contains any similar ingredients to the Covid-19 vaccine.[17] If not, they can be safely vaccinated.

OTHER ANAPHYLACTIC ALLERGIES
(E.G., FOODS, DRUGS, STINGING INSECTS, AND PLANTS)

Allergies, including anaphylaxis or contact dermatitis (skin allergy), to anything other than a vaccine ingredient are not a medical reason to be exempt from Covid-19 vaccination.

Covid-19 vaccines are recommended for people who have anaphylactic allergies to other things. The mRNA Covid-19 vaccines have simple ingredients. It is very unlikely that someone with anaphylactic allergies to other things will have an allergic reaction to Covid-19 vaccines.

Why?

People who have an anaphylactic allergy to foods, drugs, stinging insects, or other things can be safely vaccinated against Covid-19.[17] A contact allergy to something like latex or nickel does not mean you are at risk of having an allergic reaction to the Covid-19 vaccine.

The Canadian Society of Allergists and Clinical Immunologists (CSACI) recommends people see an allergy specialist before being vaccinated for Covid-19 if they:[17]

a) Have a confirmed allergy to one of the ingredients of a Covid-19 vaccine; OR
b) Had an anaphylactic allergic reaction to dose 1 of a Covid-19 vaccine.

Question: PCR Testing for Diagnosis

- How effective is the PCR test as a diagnostic test? Note, not as an analytical test.

Source: https://apps.who.int/iris/bitstream/handle/10665/342002/WHO-2019-nCoV-lab-testing-2021.1-eng.pdf?sequence=1&isAllowed=y

Answer: PCR Testing is Used for Diagnosis

- PCR is currently our most accurate way of testing for COVID
- “Nucleic acid amplification tests (NAAT) are the reference standard for diagnosis of acute SARS-CoV-2 infection.” *(WHO)*
- PCR is a form of NAAT
- PCR is more <u>sensitive</u> than rapid antigen tests

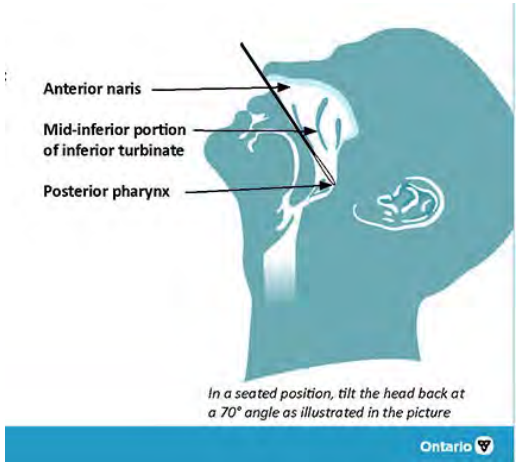
Answer: PCR Testing is Used for Diagnosis

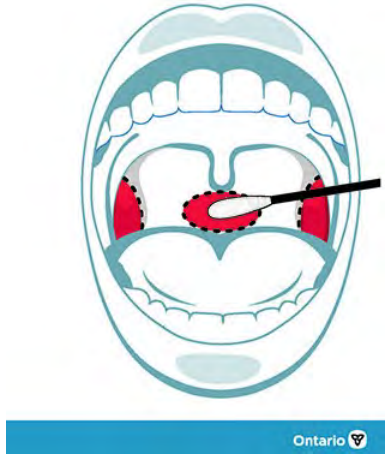
- PCRs are sensitive (≥95%): Strong ability to detect COVID
- PCRs are specific (≥99%): Strong ability to tell difference between COVID and other viruses
- False positives are usually human error

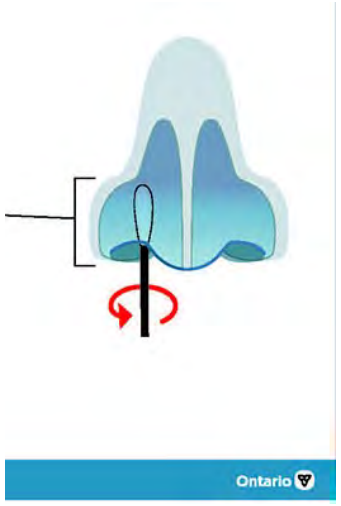
Factors Affecting COVID Results

- True positive more likely:
  - Higher viral load
  - More contagious
  - Nasopharyngeal (NP) sample used

- False negative more possible:
  - Lower viral load
  - Test done too early or late
  - Nose or throat sample used
  - If there is little to no virus in the throat or nose (even if the virus is in the lungs)







Question: Vaccine Research & Development

- How long has the vaccine been under development for?
- Answer:
  - mRNA (60 years)
  - Lipid nano-particles (55 years)
  - mRNA vaccine + lipid nano-particle (25 years)
  - mRNA vaccines in humans (8 years)
    - E.g., Rabies, influenza, Zika

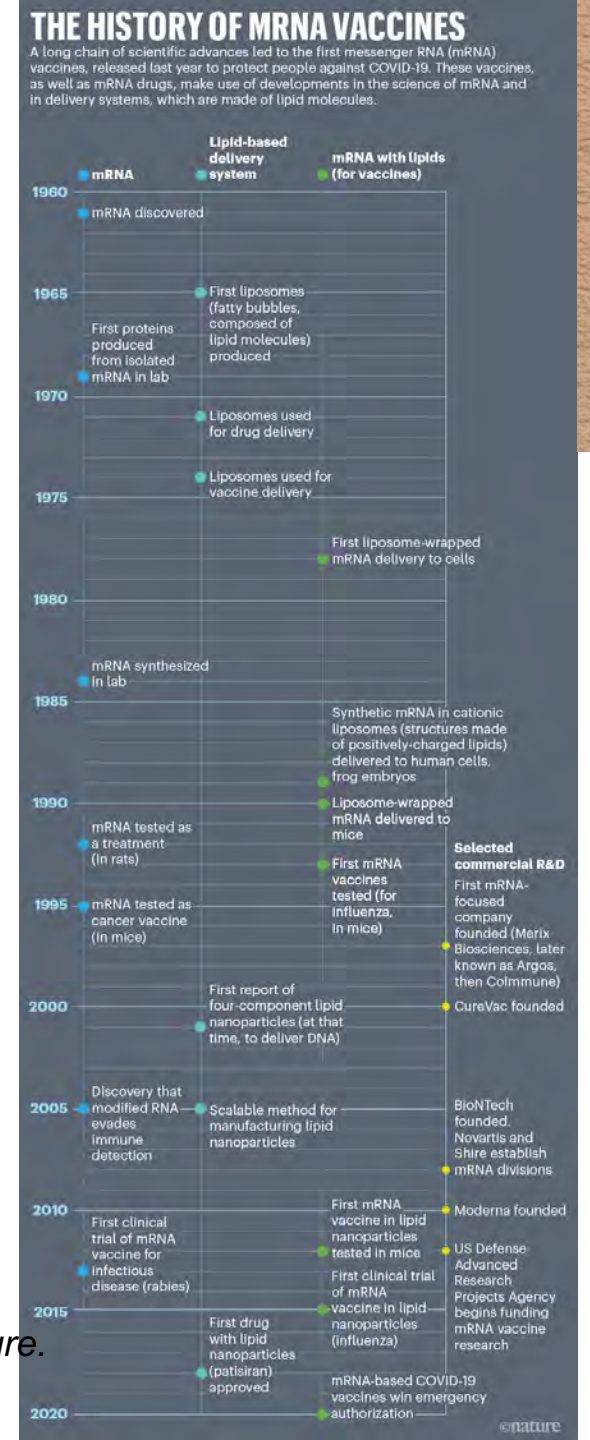
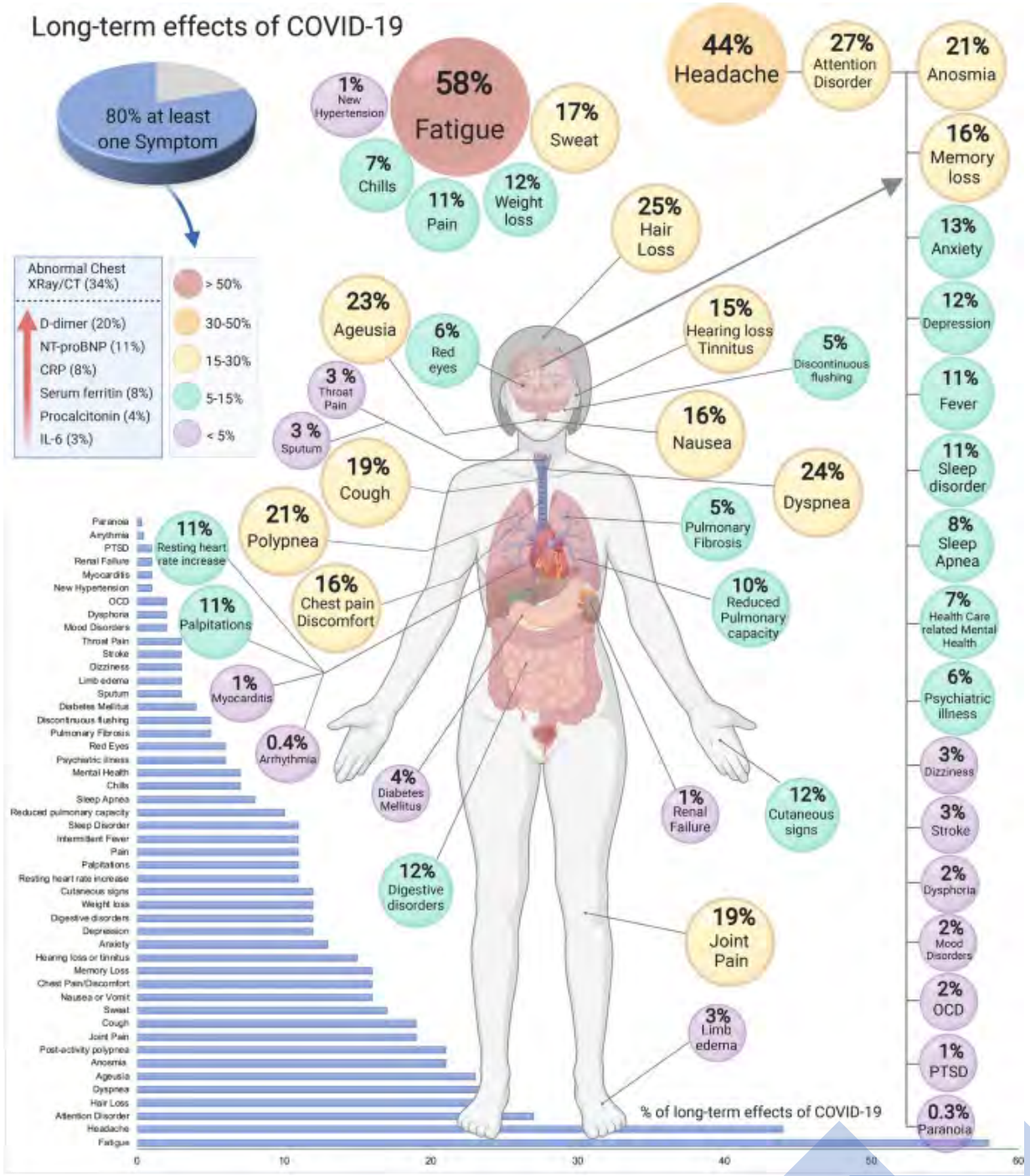


Image Source: Dolgin E. The tangled history of mRNA vaccines (Sept 14, 2021). Nature News Feature. Available at: https://www.nature.com/articles/d41586-021-02483-w

Question: Long Covid

- Is it true that even people who are fully vaccinated and do not have symptoms can still be infected, and can have long-haul COVID-19 symptoms such as fatigue and cognitive impairment?
  - Difficult to assess
  - No standard definition (symptoms for ≥12 weeks?)
  - Not everyone is tested (especially asymptomatic)
  - Many studies of long COVID used self-report
  - Not all studies have a comparator group
  - COVID is new, not clear how long these symptoms last



Lopez-Leon, S., Wegman-Ostrosky, T., Perelman, C. et al. More than 50 long-term effects of COVID-19: a systematic review and meta-analysis. Sci Rep 11, 16144 (2021). https://www.nature.com/articles/s41598-021-95565-8

Question: Is this an "experimental" vaccine?

- What about people who are uncomfortable with being forced to take an experimental drug? The trial phase is not over, the phase three trials do not end until 2023.
  - *70,000 people in the clinical trials for experimental vaccine*
  - *Pfizer used in 137 countries*
  - *Moderna used in 75 countries*
  - *Fully approved in US and Canada*
  - *Hundreds of millions of doses given out worldwide*
  - *Covid is a "novel" coronavirus meaning we are still learning about it too*

Questions: Understanding VAERS

Vaccine Adverse Event Reporting System (US)

- How come in Canada there is no transparency with vaccine adverse effect reporting, i.e. like the VAERS in the US?
- With an average of 70 Americans dying per day from the COVID19 vaccine (see VAERS website for data) why would anyone take this vaccine? Of course this does not include the many thousands of vaccine injured.

Caution Interpreting VAERS

- US hit 690,000 COVID deaths (mortality rate 1.6%)
  - Almost 2000 COVID deaths per day in US
- Many countries have a similar system
- For VAERS anyone can submit and anyone can read
  - Like Yelp or Google reviews
- Needs to be properly verified and analyzed
- Requires significant training
- Role of regulators (Health Canada, FDA, EMA) and advisors (NACI, ACIP)

Source: https://coronavirus.jhu.edu/us-map

Reported side effects following COVID-19 vaccination in Canada

Summary | Weekly report | Archived reports

We update this page every Friday at 12:00 PM Eastern Time. A summary and background information are available.

This report was last updated on September 24, 2021 with data up to and including September 17, 2021.

What you need to know up to and including September 17, 2021

No new safety signals have been identified in Canada
(three continue to be monitored)

54,773,928
Total doses administered

16,090
Total adverse event following immunization reports
(0.029% of all doses administered)

11,802
Total adverse event following immunization reports that were non-serious
(0.022% of all doses administered)

4,288
Total adverse event following immunization reports that were serious
(0.008% of all doses administered)

194
New adverse event following immunization reports received between September 11 to 17, 2021.
(113 new non-serious and 81 new serious)

- The benefits of vaccines authorized in Canada continue to outweigh the risks.
- Health Canada, the Public Health Agency of Canada (PHAC), the provinces and territories, and manufacturers continue to closely monitor the safety of COVID-19 vaccines. We'll respond to any safety issues right away and will inform Canadians about any risks that arise in Canada.
- Of the **16,090** individual reports (**0.029% of all doses administered**), **4,288** were considered serious (**0.008% of all doses administered**).

Government of Canada | Gouvernement du Canada

https://health-infobase.canada.ca/covid-19/vaccine-safety/#specialInterest

Questions: Natural Immunity (1)

- If I'm told by someone that they had COVID-19 early last year (they were never tested; they just got all the symptoms and are assuming it was COVID), what are the experts saying about whether they should get the 2x vaccine shots? This person is telling me they don't need the vaccine if they had COVID-19. Should they get the vaccine anyway, or are they exempt because "my body already has immunity"?
- Given that vaccinated and unvaccinated individuals have similar viral loads - thus vaccines don't stop transmission (CDC report on outbreak in Barnstable Massachusetts) and that natural immunity has been found to be better (preprint of https://www.medrxiv.org/content/10.1101/2021.08.24.21262415v1) - what is the purpose of vaccinating everyone indiscriminately? Is it not unethically to give a treatment to someone who does not require it?

Questions: Natural Immunity (2)

- There seems to be some data for the lowering effectiveness of vaccines (Israel at least) but nothing has been said about the loss of effectiveness of natural acquired immunity. Is natural immunity expected to be different than that acquired from a vaccine?
- Why is natural immunity not taken into consideration? why does someone have to get the vaccine if they've had covid and have natural immunity?

Natural Immunity

- Goal of vaccination
  - Prevention of infection
  - Prevention of severe disease
  - Prevention of transmission
- Natural immunity has risks: “Don’t try this at home”
- Vaccine is highly effective without risk of infection
- Israeli study (pre-print) suggests immunity from infection is stronger, not clear how long this lasts
  - Also shows at least 1 dose provides even stronger immune response

https://www.science.org/news/2020/11/more-people-are-getting-covid-19-twice-suggesting-immunity-wanes-quickly-some

Question: How does the pandemic end?

- With herd immunity quickly coming off the table even at high vaccination rates. What is the end game for this, is there another light at the end of the tunnel?
- Answer: COVID may never go away
  - *May become endemic (constantly present, pops up in clusters of mostly unvaccinated people)*
  - *Will take longer to reach rural and remote locations*
  - *Need to know how long protection (natural, vaccine) lasts against severe illness*
  - *Will lag in developing countries due to lack of vaccine access*

Additional Reading: https://theconversation.com/how-will-the-covid-pandemic-end-167244

Questions: Vaccines & Kids (1)

- "The government of Canada's website shows that there have been 15 deaths in the 0-19 age range since the start of the pandemic. Kids have a much greater chance of dying from cancer, a car accident, random accident...We were told that the benefits of the vaccine out way the risks. This may be true for older people but not for the 0-19 age range. The risk of heart inflammation caused by the vaccine is higher in this age group than the risk of dying from covid.
- Why is pfizer pushing to get it approved for this age range?"

Questions: Vaccines & Kids (2)

- There was news/discussions about 5-11 year old vaccination approvals being delayed until towards the end of the year, now they're expected to be submitted for approval in the next couple weeks. What changed?
- I'm concerned about once a vaccine is approved for children under 12 in the near future. How can I be sure it is safe for my child and that they won't suffer from long-term negative health effects that might not yet be known?
- What is the status of vaccines for the 5-12 group? When can we expect Waterloo Region youth to have access?

Questions: Vaccines & Kids (3)

- When vaccines are approved for use in children under age 12 how will we know they are safe? For reference, I felt very safe getting a vaccine as an adult because by the time it was approved for use in Canada millions had already received them around the world and it would have been evident if there were major problems before I got mine. This will not be the case with the children's vaccine as they will likely be approved at a similar time across the world. Thank you!

Answer: Vaccines & Kids

- A child in Waterloo recently died from COVID
  - We don’t tend to normalize severe illness in kids even when it happens less often than adults
  - Children with comorbidities are also deeply loved and valued
- Data packaged to go to regulators this week
  - Lower dose (30mcg for 12+, 10mcg for 5-11)
- Should take 4-6 weeks to review
- May take another 1-2 weeks to roll-out
- All we know so far is that the studies have data, no one has seen it yet

Question: Future Vaccine Options

- For a variety of reasons, many may be waiting for the medicago, plant based vaccine being developed here in Canada. Will the university have any vested interest in this or help to make it available for staff and faculty? For those of us that are vaccine hesitant this is a very attractive alternative to the mRNA vaccines.
  - *No data yet available on this and not yet approved*
  - *If it is safe and effective based on clinical trials it would likely be another vaccine option*
  - *No timeline on when it will be available*

Questions: COVID Precautions (1)

- If we are alone in a closed office are we safe to take off our mask?
  - *Yes, it should be safe with good building ventilation*
- If we are double vaccinated is it safe to travel?
  - *Depends on your health, location of travel, vaccine supply in that location, and who you are travelling with*
- Is it safe to dine indoors if we are vaccinated?
  - *Depends (as above)*

Questions: COVID Precautions (2)

- Is it safe to hug people if we are vaccinated?
  - Depends on above, possibly
- If we are fully vaccinated, why do we need to disinfect produce & surfaces?
  - Disinfecting produce isn't recommended, washing hands may help
- What about distancing and wearing masks?
  - While community spread is still high this can help to lower it (especially when some are still unvaccinated like kids and others have low immunity)

Questions: Mixed Doses

- Is there any indication that individuals who received AstraZeneca as their first shots will need additional boosters for international travel or increased effectiveness?
- My first vaccine was Astra-Zeneca, my second was Pfizer and I have a couple of questions. Is there any real-world data about the current efficacy of this mixture or how long it is effective for? I am unable to travel to many destinations outside of Canada because I'm not considered 'fully vaccinated'. Do you know if there are any discussions or movements afoot to address this, or to provide a 3rd vaccination or booster that is an MRNA vaccine in Ontario?
- Why do we care how people are vaccinated? That is, international students who have a double vaccine from their home country?

Mixed Doses & AstraZeneca

- Recently accepted by UK, under discussion with US
- Several countries now mixing
- Reason: Safety signal with AstraZeneca (vaccine-induced blood clotting disorder)
- COM-COV (UK), CombiVacS (Spain), Hillus et al (Germany), Schmidt et al (Germany)
- Pfizer is well tolerated after AZ and gives a good immunity boost
- More measured immune response to AZ/Pfizer than AZ/AZ or Pfizer/Pfizer
- More research coming on other combinations

Ivermectin

- Dr. Tess Lawrie's research has shown that ivermectin (the human version, not the animal version - there are 2 versions but the media has failed to make this distinction) is effective in treating covid when taken early. Why are doctors not using it for early treatment? I've heard that Pfizer can't get emergency use authorization if there's an effective treatment (ivermectin). Is this why the government, media, and health officials discount the effectiveness of ivermectin?

Ivermectin

- We do not have high quality studies supporting use
  - We have data that suggests it does not work
  - Significant concerns about research done on ivermectin including the publication of fraudulent data
  - Risks to ivermectin (in human or animal form)
  - This is an “experimental” treatment

What did we find?

We found 14 studies with 1678 participants that investigated ivermectin compared to no treatment, placebo, or usual care.

For treatment, there were nine studies of people with moderate COVID-19 in hospital and four of outpatients with mild COVID-19. The studies used different doses of ivermectin and different durations of treatment.

One study investigated ivermectin to prevent COVID-19.

We also found 31 ongoing studies, and there are 18 studies still requiring clarification from the authors or not yet published.

Main results

Treating people in hospital with COVID-19

We don't know whether ivermectin compared with placebo or usual care, 28 days after treatment:

– leads to more or fewer deaths (2 studies, 185 people);
– worsens or improves patients' condition assessed by need for ventilation (2 studies, 185 people) or oxygen (1 study, 45 people);
– increases or reduces unwanted events (1 study, 152 people).

Seven days after treatment, we don't know if ivermectin:

– increases or reduces negative COVID-19 tests (2 studies, 159 people).

Ivermectin compared to placebo or usual care may make little or no difference to improving patients' condition 28 days after treatment (1 study, 73 people) or to length of hospital stay (1 study, 45 people).

Treating outpatients with COVID-19

We don't know whether ivermectin compared with placebo or usual care:

– leads to more or fewer deaths 28 days after treatment (2 studies, 422 people);
– worsens or improves patients' condition 14 days after treatment assessed by need for ventilation (1 study, 398 people);
– increases or reduces negative COVID-19 tests seven days after treatment (1 study, 24 people).

Ivermectin compared to placebo or usual care may make little or no difference to improving outpatients' condition 14 days after treatment (1 study, 398 people) or to the number of unwanted events 28 days after treatment (2 studies, 422 people).

No studies looked at hospital admissions in outpatients.

Preventing COVID-19

We don't know whether ivermectin leads to more or fewer deaths compared with no drug (1 study, 304 people); no participant died 28 days after the drug. This study reported results for development of COVID-19 symptoms (but not confirmed SARS-CoV-2 infection) and unwanted events, but in a way that we could not include in our analyses. This study did not look at hospital admissions.

“We don’t know…”

Source:
https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD015017.pub2/full

Questions: Talking with People About the Vaccine

- How can we best encourage people to get vaccinated? (Ex. anti-vax persons)
- How do you suggest speaking with friends or family who are vaccine hesitant?
- I'm a pro-vaxer. What's the best way to talk to an anti-vaxer if you want them to change their mind?
- What advice do you have to help convince stubborn unvaccinated friends and family that the vaccines are safe and effective? Is there a particular source that can be referenced that is not from the government?

NERVOUS ABOUT GETTING NEEDLES?

Use the CARD system to have a more positive vaccination experience.

COMFORT

Find ways to be comfortable.

ASK

Ask questions to be prepared.

RELAX

Keep yourself calm.

DISTRACT

Shift your attention to something else.

The CARD system (Comfort, Ask, Relax, Distract) provides groups of strategies that can be used to make your vaccination experience a more positive one. Learn how you can play your cards and use the different strategies to reduce the pain, stress and worries associated with vaccinations.

Choose what CARDs you want to play. There's no wrong move. Look on the back for ideas.

Financial contribution from

Public Health Agency of Canada | Agence de la santé publique du Canada

CIHR IRSC
Canadian Institutes of Health Research

Source: https://immunize.ca/card

Please consider getting vaccinated for the people who love you.

https://hawaiinurses.org/Home/LatestNews/TabId/3562/ArtMID/6249/ArticleID/2422/The-7-Stages-of-Severe-Covid-19-Infection.aspx