COVID 19 Vaccine:
What's it all about?

Crossroads Clinic, Women's College Hospital

Impact of COVID 19 on Newcomers and Refugees

What questions do you have about the vaccines?

Overview

- How do the vaccines work?
- How effective are the COVID-19 vaccines?
- What are vaccine side effects?
- Are the vaccines safe for use in special populations?
- How were the vaccines produced so quickly?
- Were the vaccines tested in diverse populations?
- What is in the vaccines? Can you have allergic reactions?
- Do distancing precautions/masks still need to be used after vaccination?
- What is the current roll-out and eligibility for the vaccine?

How do the vaccines work?

COVID Vaccines

Pfizer-BioNTech

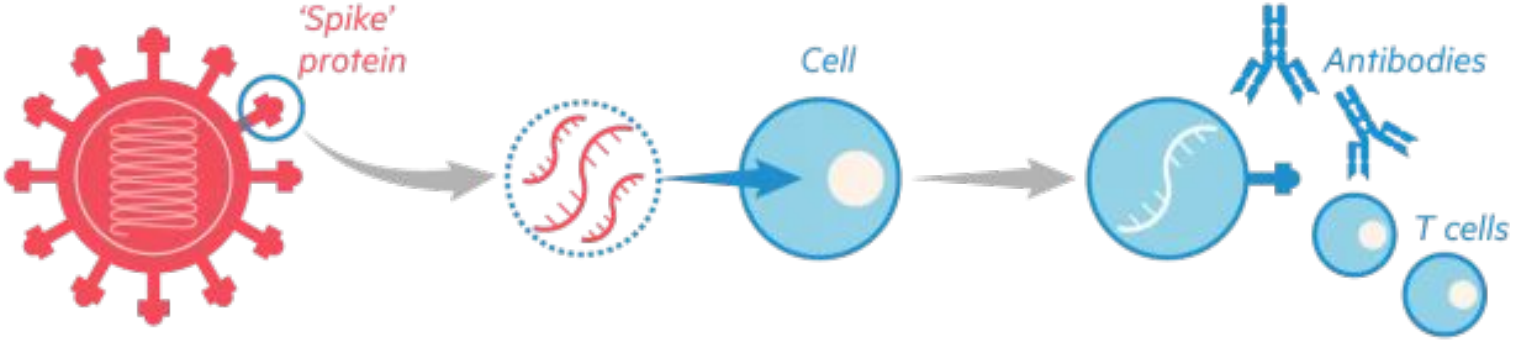
Moderna

Astra-Zeneca

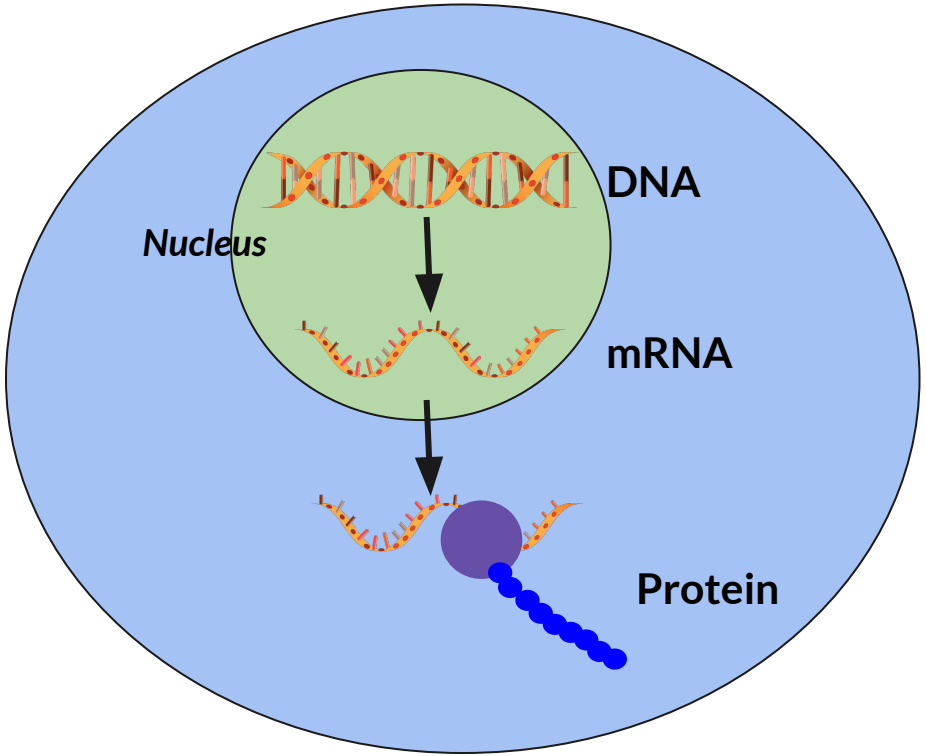
Johnson & Johnson

How do COVID vaccines work?

The vaccines teaches your body what the COVID-19 virus looks like so you can fight the virus if you come into contact with it.

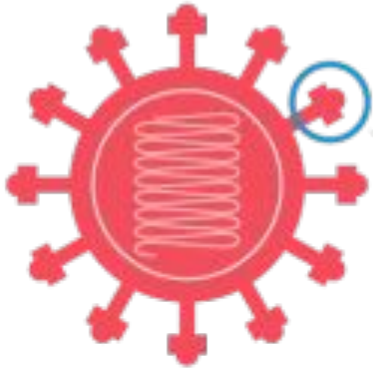


Vaccine mRNA does not affect our DNA



Can we get COVID-19 from the vaccine?

- No!
- The COVID vaccines do not contain the COVID virus
- They cause your body to make a copy of the spike protein **not** the virus itself
- Possible short-term vaccine side effects may be similar to symptoms of infection but one cannot get COVID-19 from the vaccine



How effective are the COVID vaccines?

Pfizer-BioNTech and Moderna Vaccine Clinical Trials (studies)

Pfizer-BioNTech	Moderna
>40,000 participants	>30,000 participants
≥ 16 years	≥ 18 years
21 days apart	28 days apart

How effective are the mRNA vaccines in protecting against COVID-19 illness?

Pfizer-BioNTech	Moderna
95% (7 days after 2nd dose)	94.1% (14 days after 2nd dose)

Efficacy consistent across age, gender, race and ethnicity demographics

AstraZeneca and Johnson & Johnson Vaccine Clinical Trials (studies)

AstraZeneca	Johnson & Johnson
>32,000 participants	>43,000 participants
≥ 18 years	≥ 18 years
4-12 weeks apart	ONLY 1 INJECTION

How effective are the viral vector vaccines in protecting against COVID-19 illness?

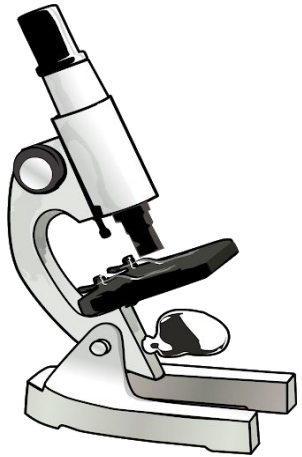
AstraZeneca	Johnson & Johnson
79% (14 days after 2nd dose)	**72% US** **61% Latin America** **64% South Africa** (14 days after **single** dose)

How effective are the COVID vaccines in protecting against HOSPITALIZATION?

Vaccine	Protection from hospitalization
Pfizer-BioNTech	100%
Moderna	97%
AstraZeneca	100%
Johnson & Johnson	100%

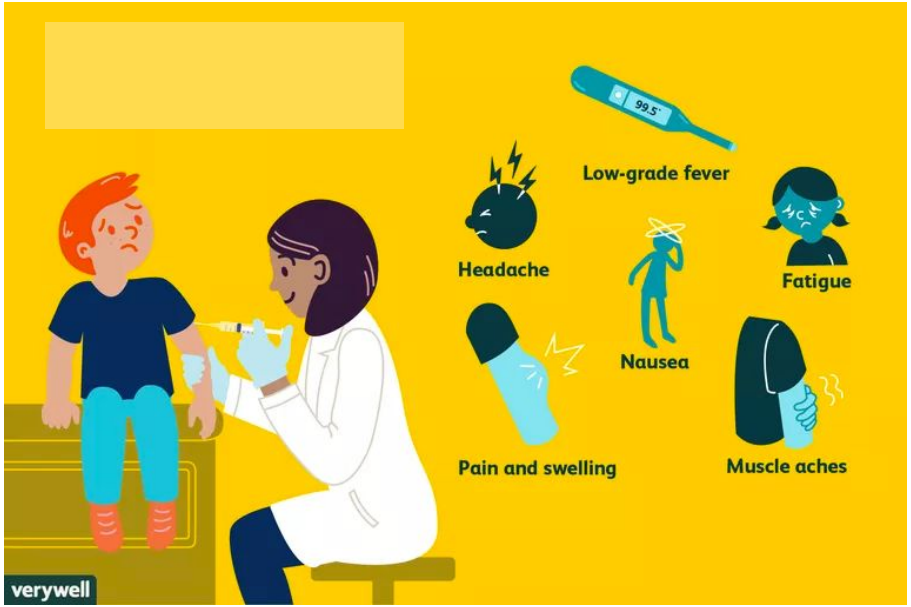
What we are learning

- How effective are the vaccines against the new variants?
- How long does the vaccine provide immune protection? Will we need booster shots?
- Do the vaccines prevent spread of COVID-19?



What are the side effects of the COVID-19 vaccines?

What are common side effects?



Similar to <u>types</u> of side effects from other vaccines
Generally resolve in 1-3 days

Very common ≥10% (more than 1 in 10 doses)

- pain at the injection site
- headache, feeling tired
- muscle or joint pain
- fever or chills
- swelling or tenderness under the armpit (Moderna)

Common 1%-10% (1 in 100 to 1 in 10 doses)

- redness & swelling at the injection site
- nausea & vomiting

Uncommon 1% (1 in 100 doses)

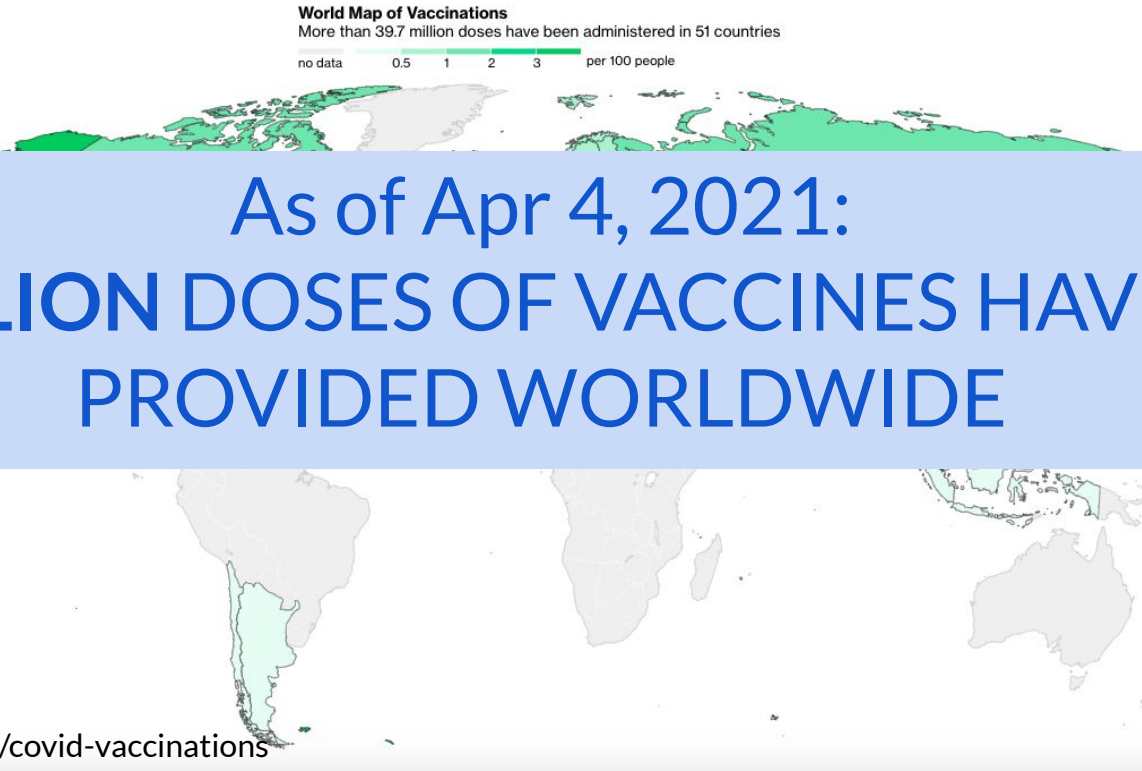
- enlarged lymph nodes

Very rare

- serious allergic reactions such as anaphylaxis

Source: Toronto Public Health

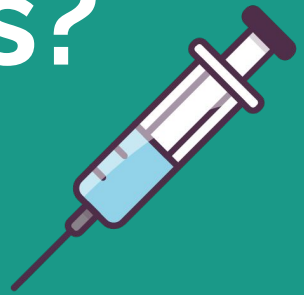
Do we really know enough about the side effects of the vaccine?



As of Apr 4, 2021:
665 **MILLION** DOSES OF VACCINES HAVE BEEN PROVIDED WORLDWIDE

https://ourworldindata.org/covid-vaccinations

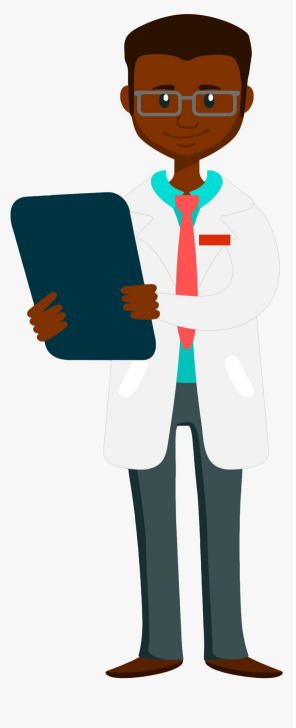
Are vaccines safe for people with certain medical conditions?



Special considerations

- Immunocompromise (conditions/meds)
- Autoimmune disorders

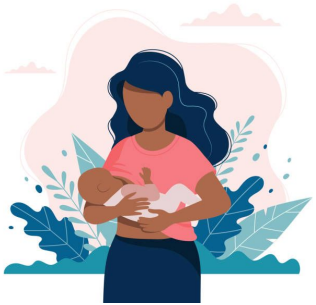
Talk to your health care provider



Can I get the vaccine if I am pregnant or breastfeeding?

- Recommended by WHO and other expert groups
- Based on how vaccines work → unlikely to pose a specific risk
- Risks of severe illness from **COVID-19 infection** during pregnancy
- Further studies underway

Talk to your health care provider



Should I get the vaccine if I already had COVID-19?

- Yes!
- Even if you had COVID-19 in the past, it is uncertain how long the antibodies (immune protection) will last

How were the vaccines produced so quickly?

- ✓ Funding
- ✓ Existing mRNA technology
- ✓ Virus genetic sequence
- ✓ International collaboration
- ✓ Efficient review processes

NO STEPS WERE SKIPPED

Were the vaccines tested in diverse populations?

Studied in diverse populations

Self-identified racial or ethnic background*	Pfizer-BioNTech Vaccine Study	Moderna Vaccine Study
White	83%	79%
Black or African American	9%	10%
Asian	4%	5%
Indigenous ("American Indian" or "Alaska Native")	0.5%	0.8%
Native Hawaiian or Pacific Islander	0.2%	0.2%
Multiracial	2%	2%
Hispanic/Latinx	28%	21%

The vaccines were equally effective in people of different racial and ethnic backgrounds.

Studied in diverse populations

Self-identified racial or ethnic background*	AstraZeneca Vaccine Study	Johnson & Johnson Vaccine Study
White	80%	62%
Black or African American	5%	17%
Asian	4%	4%
Indigenous ("American Indian" or "Alaska Native")	--	8%
Native Hawaiian or Pacific Islander	--	0.3%
Multiracial	10%	45%
Hispanic/Latinx	--	45%

What's in the COVID-19 vaccines?

What's in the mRNA vaccines?

- Medicinal ingredient: mRNA
- Non-medicinal ingredients:
  - Fats
  - Salts
  - Sugar
  - Water

MODERNA

Fats: Lipid SM-102 PEG2000 DMG (1,2-dimyristoyl-rac-glycerol,methoxy-**polyethyleneglycol**); 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC); Cholesterol

Salts: Sodium acetate

Acid stabilizers: Tromethamine; Tromethamine hydrochloride

Sugar: sucrose

What's in the viral vector vaccines?

- Medicinal ingredient: modified adenovirus (cold virus)
- Non-medicinal ingredients:
  - Salts
  - Acid stabilizers
  - Emulsifier
  - +/- Sugar
  - Water

JOHNSON & JOHNSON

Salts: Sodium chloride, sodium hydroxide

Acid stabilizers: citric acid monohydrate, 2-hydroxypropyl-B-cyclodextrin (HBCD), hydrochloric acid, trisodium citrate dihydrate

Ethanol

Emulsifier: polysorbate 80

What is polyethylene glycol (PEG)?

Common substance found in:

- Laxatives and bowel preparations
- Certain cosmetic products
- ES Tylenol, Tylenol EZ tabs, Tylenol gel caps, Benadryl 25mg or 50mg pink caplets, Laxaday, Go-lytely, Reactine 5-10mg tablets, Advil liquid gels, Enteric coated ASA 81mg

What is polysorbate 80?

Common substance found in:

- Many food products (e.g. ice cream, gum, etc)
- Certain cosmetic products
- Other vaccines (e.g. flu vaccine)

What is NOT in the vaccines?

- Food products
- Nuts
- Antibiotics
- Thimerosal
- Formaldehyde
- Fetal cells
- Microchips

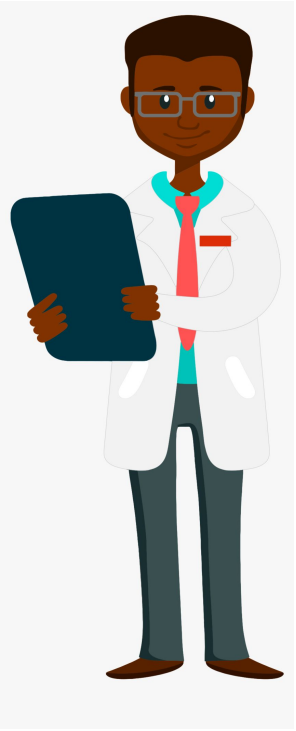
What to do if people have pre-existing allergies?

- Medical staff are available at all sites to deal with allergic reactions
- If history of severe allergies, wait 30 min after vaccination

Caution with COVID-19 vaccines

- Severe allergy to vaccine ingredients (e.g. PEG)
- Severe allergy to prior COVID vaccine

Talk to your health care provider



What happens after receiving the vaccine?

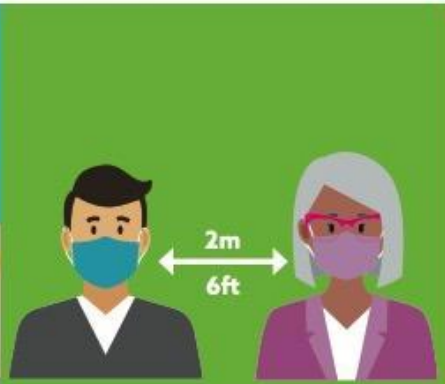
What happens after receiving the vaccination?

- Unclear if can still carry virus
- Some people will still get symptomatic illness
- If fever after vaccine, must still rule out COVID-19 infection

4 STEPS FOR SELF-PROTECTION

We all have a role to play to help reduce COVID-19 spread & keep our city safe:

Stay home as much as possible



Watch your distance

Wear your mask

Wash your hands often

TORONTO.CA/COVID19

TORONTO Public Health

COMMON CONCERNS AND QUESTIONS

What is the effectiveness after the first vaccine dose?

Pfizer:

- 70% effective against symptomatic disease (after 28-34 days)
- 85% effective against hospitalization (after 28-34 days)

AstraZeneca:

- 73% effective against symptomatic disease (after 28-34 days)
- 94% effective against hospitalization (after 28-34 days)

Is the AstraZeneca vaccine safe?

Surveillance systems are in place to look for signs of safety concerns and respond **immediately** in the case that adverse events are detected.

The most recent Phase III trial results from the US identified no safety concerns related to the vaccine.

However, National Advisory Committee on Immunization (NACI) in Canada has recommended pausing the use of the vaccine in individuals under 55 to confirm the vaccine is safe after rare instances of blood clots were observed in Europe.

European countries have since resumed use of the vaccine.

What is the plan for the vaccine roll-out and who is eligible?

Provincial Roll Out: Phase 2 (Apr-July 2021)

Category	Population Size
Seniors (60-79)	2.5 million
Health conditions Congregate setting	2.9 million 0.2 million
Hot spots (age & risk)	0.9 million
Cannot work from home	2.5 million

COVID-19 vaccines are free
OHIP card not required

https://www.hopkinsmedicine.org/

Summary

- Vaccines are well studied, safe, effective
- Many people are at high risk of COVID exposure in work, transit, housing
- Vaccines protect you

Contact us with any questions!

Thank you!
Questions?

More trusted info on COVID-19 vaccines:

- **Multilingual handouts:**
  - https://bit.ly/vaccinebulletin
- **Health Canada:**
  - https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/vaccines.html
- **Toronto Public Health:**
  - https://www.toronto.ca/home/covid-19/covid-19-protect-yourself-others/covid-19-vaccines/covid-19-about-the-vaccines/
- **Hamilton Public Health:**
  - https://www.hamilton.ca/coronavirus/covid-19-vaccine-frequently-asked-questions

Vaccine development and approval in Canada

Vaccine development

-genetic sequence developed very quickly
-funding not an issue
-mRNA technology already existed

Scientists develop a potential vaccine

Scientists conduct lab and animal studies before testing on humans

-no shortage of volunteers
-no shortage of illness

10s of volunteers

Phase I

- Is the vaccine safe?
- What is a safe dose?
- Are there any side effects?

100s of volunteers

Phase II

- How well does the vaccine work?
- Is it safe on a larger number of people?
- Safest and most effective dose?

1000s of volunteers

Phase III

- Does the vaccine prevent disease?
- What are the side effects?

"Rolling review process"

Manufacturer submits application to Health Canada for review

Exploratory → Preclinical → Clinical Trials → Application

Review and approval of vaccines

"Rolling review process"

Teams of Health Canada experts conduct a thorough and independent review of all vaccine data *

Scientific Review

Health Canada approves a vaccine if it is safe, it works, it meets manufacturing standards, and the benefits outweigh the risks

Approval

Governments coordinate the purchase, logistics and distribution of vaccines across Canada

Distribution

All Canadians have access to the vaccine

Vaccination

Continuous monitoring and review to confirm the safety of the vaccine, and that benefits outweigh risks

Ongoing Monitoring and Review

* For COVID-19 vaccines, Health Canada is using a fast-tracked process that allows manufacturers to submit data as it becomes available, and for Health Canada experts to start the review process right away. Vaccines will only be authorized once we have all necessary evidence.

Health Canada Santé Canada

Canada

Crossroads Clinic nurses and doctors receiving the COVID-19 vaccine