

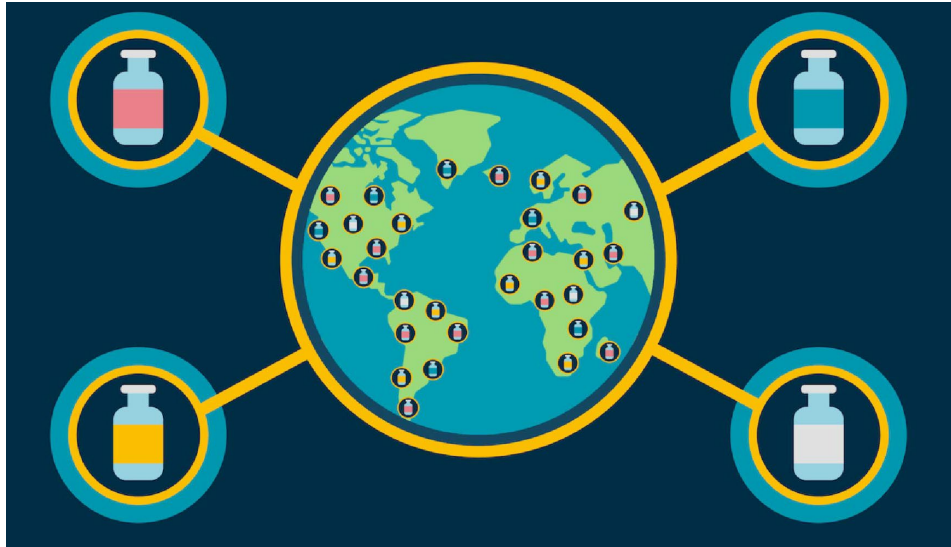
# On COVID-19 Vaccines & Why You Should Get Vaccinated



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DHMOSH Public Health

***October 2021***

# Introduction



# Presentation Outline

- How Vaccines Work
- Addressing Common COVID-19 Vaccination Concerns
- Resources
- Questions





# How Vaccines Work

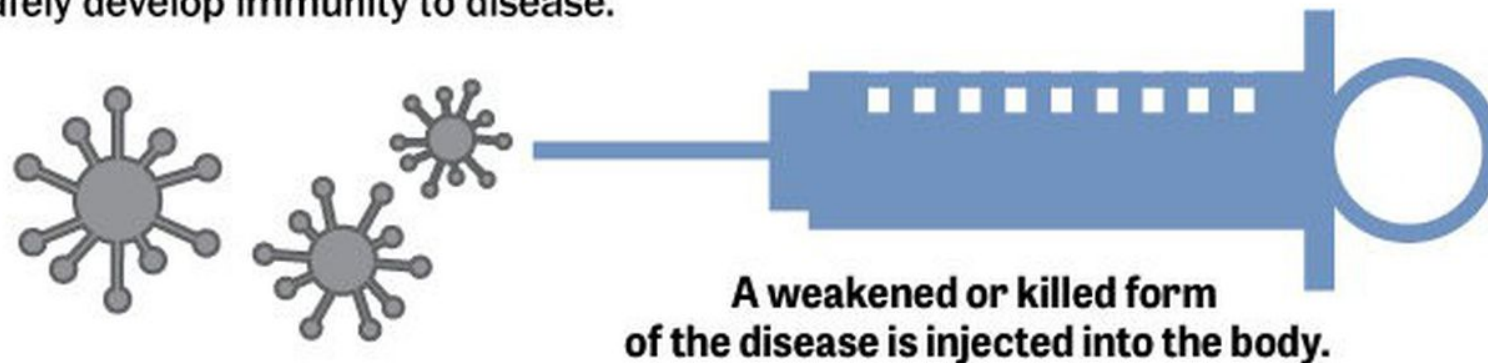


**VACCINES ARE  
ONE OF THE  
BIGGEST  
PUBLIC HEALTH  
VICTORIES  
IN HUMAN  
HISTORY**

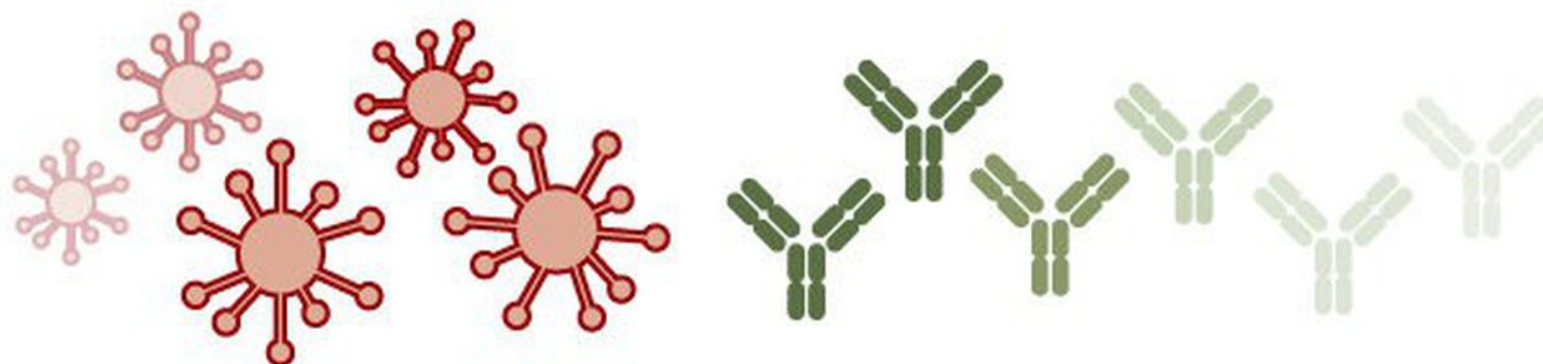
#vaccineswork

## HOW DO VACCINES WORK?

Vaccines reduce the risk of infection by working with the body's natural defenses to safely develop immunity to disease.

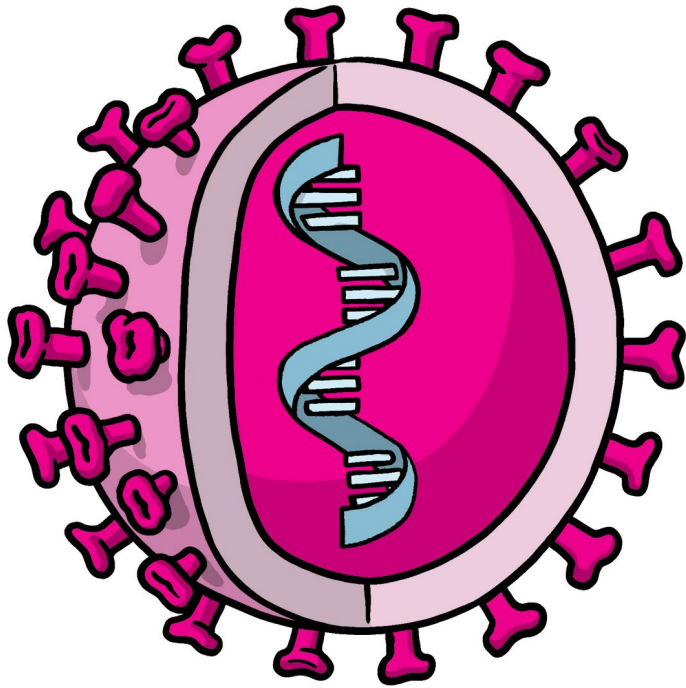


The body creates antibodies to fight the germs.



If the actual disease germs ever attack the body, the antibodies return to destroy them.

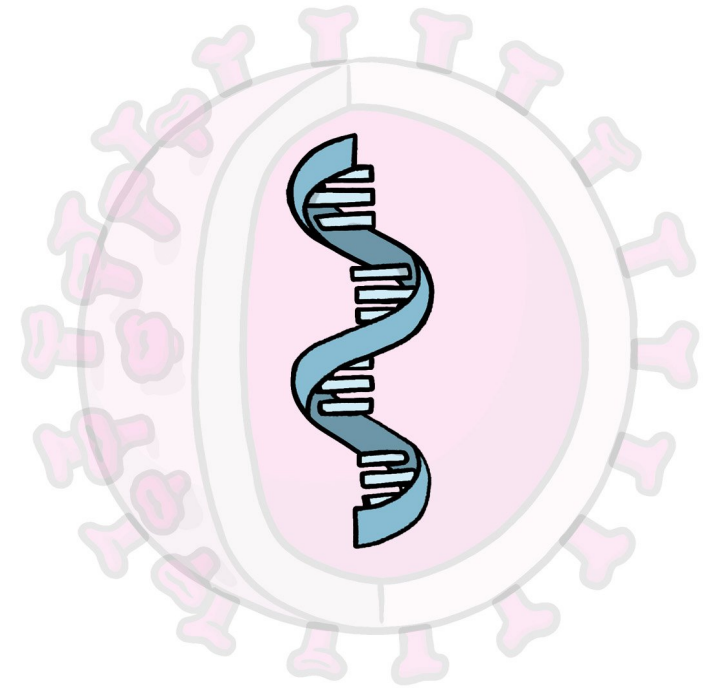
There are three main approaches to making a vaccine:



Using a whole virus  
or bacterium



Parts that trigger  
the immune system



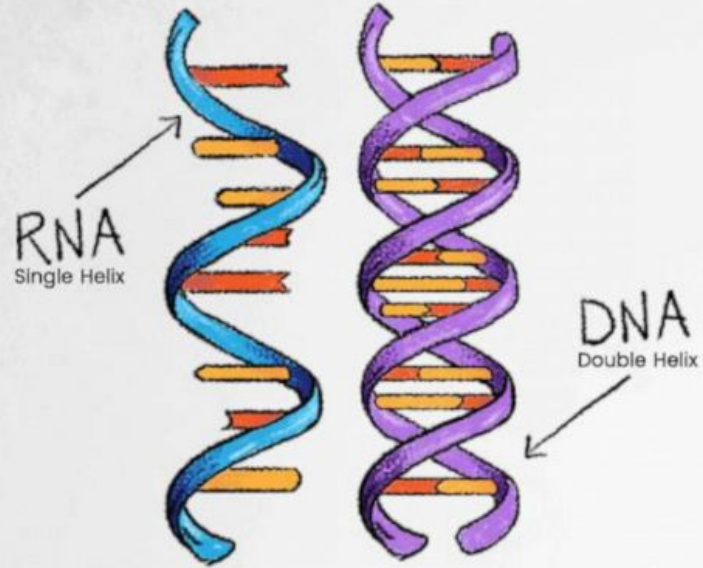
Just the  
genetic material





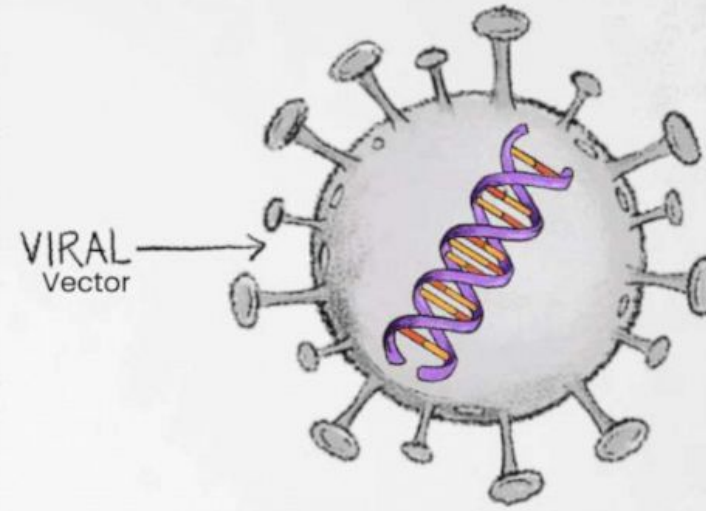
### GENETIC-CODE VACCINES

Pfizer/BioNTech, Moderna



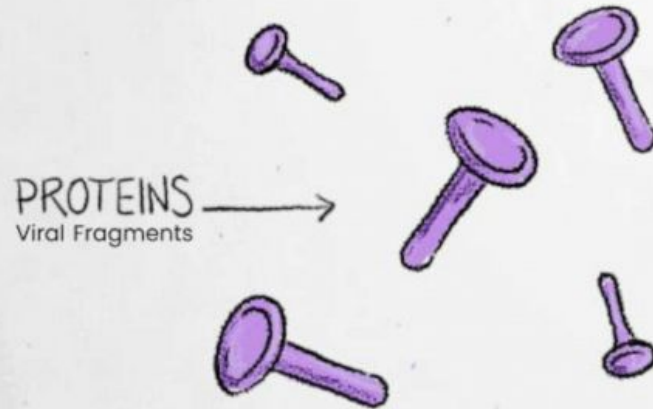
### VIRAL VECTOR VACCINES

AstraZeneca/Oxford, J&J, Cansino, Gamaleya



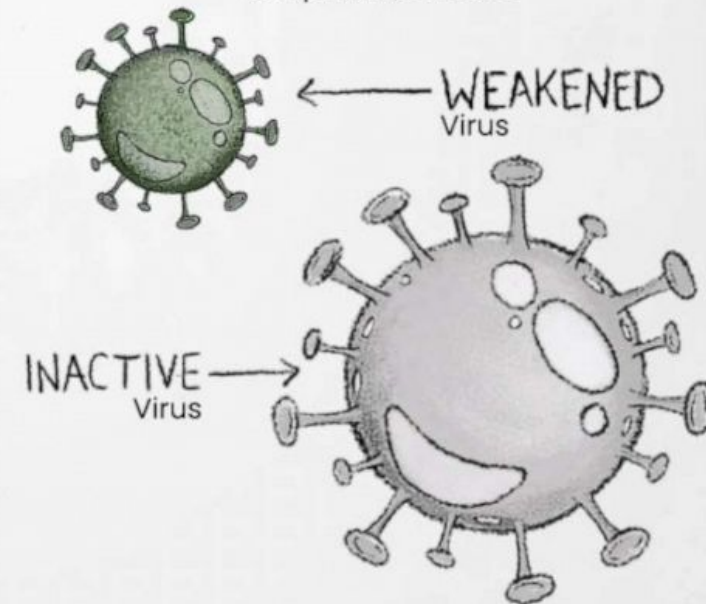
### SUBUNIT VACCINES

Novavax



### WEAKENED/INACTIVE VACCINES

Sinopharm, Sinovac



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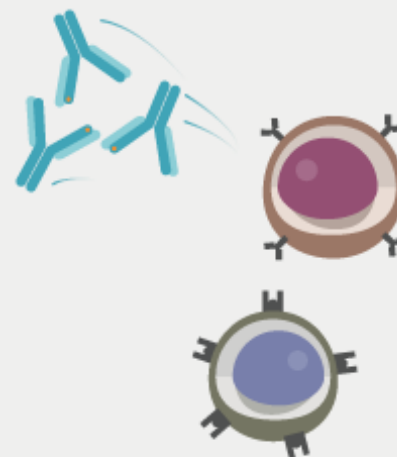
## COVID-19, long-term immunity and vaccines



Vaccines train your immune system using a harmless form of the virus.



The **vaccine** activates your **adaptive immune response**.



The adaptive immune response involves:

**B cells** that make highly specific **antibodies** to stop the virus getting into your cells.

**T cells** that can help stimulate the B cells and kill any infected cells.



These cells remember the virus and remain in the body. This is **immune memory**.

If you encounter the real virus in the future, your immune system responds faster and more effectively to prevent infection. This is **long-term immunity**.

An effective COVID-19 vaccine will produce a strong, long-term, adaptive immune response. It might stimulate B cells and specific antibodies or T cells or a combination of both.

## How coronavirus vaccines compare to vaccines for other viruses

VACCINE	VACCINE EFFECTIVENESS	# OF RECOMMENDED DOSES
Flu (Influenza)	44.0%	1
AstraZeneca novel coronavirus	70.0%	2
Chickenpox (Varicella)	92.0%	2
Moderna novel coronavirus	94.1%	2
Pfizer novel coronavirus	95.0%	2
Measles (MMR)	97.0%	2
Polio	99.0%	3–4

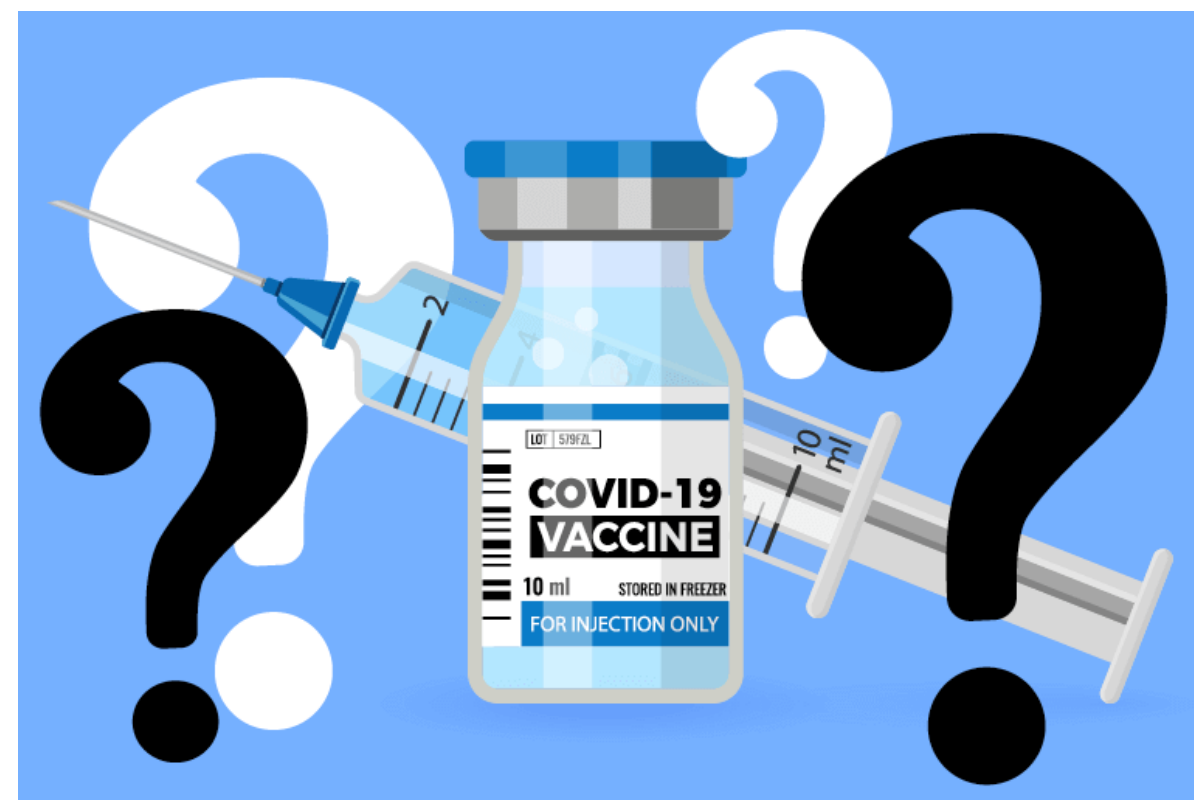
Note: Flu vaccine effectiveness calculated based on yearly average from 2009 to 2019. AstraZeneca, Moderna, and Pfizer coronavirus vaccine efficacy based on early clinical trial results. AstraZeneca results based on an average of two different vaccine dose regimens.

Source: CDC; AstraZeneca; Moderna; Pfizer

INSIDER



# Addressing Common COVID-19 Vaccination Concerns



# Concerns About COVID-19 Vaccination

*I'm not too sure that it's safe to be vaccinated.*

*We don't really need this vaccine, we're young and healthy!*

*I was already sick with COVID so I don't need the vaccine.*

*Unknown effects of this new vaccine might be worse than COVID!*

*I don't like needles.*

*This virus doesn't exist! Vaccine companies just want money...*

*I heard COVID is like the flu and I was so sick last year after my flu shot..*

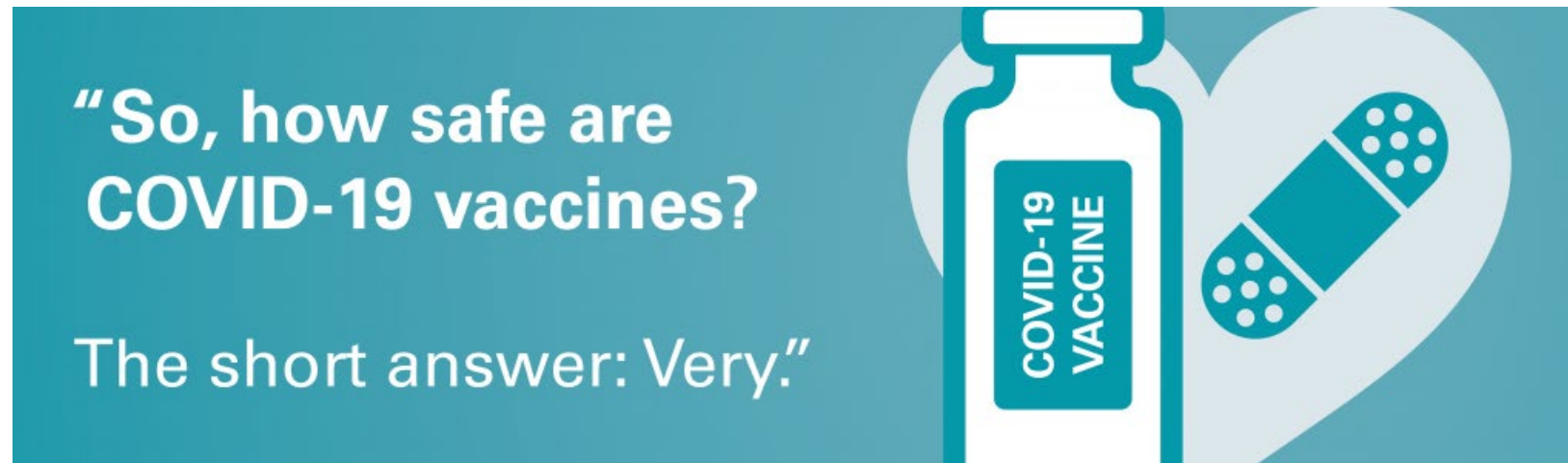


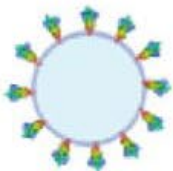
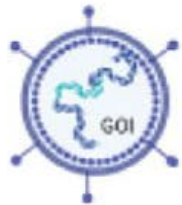
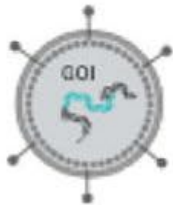
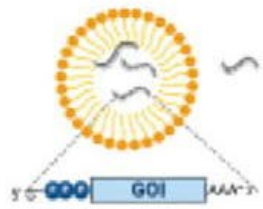


# How Do We Know that COVID-19 Vaccines are Safe?

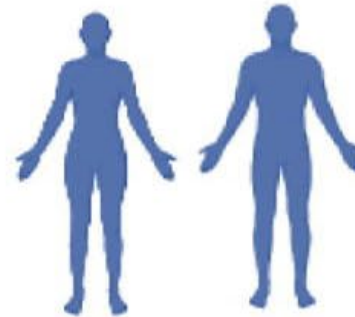


- There are strict protections in place to help ensure the **safety** of all COVID-19 vaccines
- Before receiving validation from WHO and national regulatory agencies, COVID-19 vaccines must undergo **rigorous testing** in clinical trials to prove that they meet internationally agreed benchmarks for **safety and efficacy**

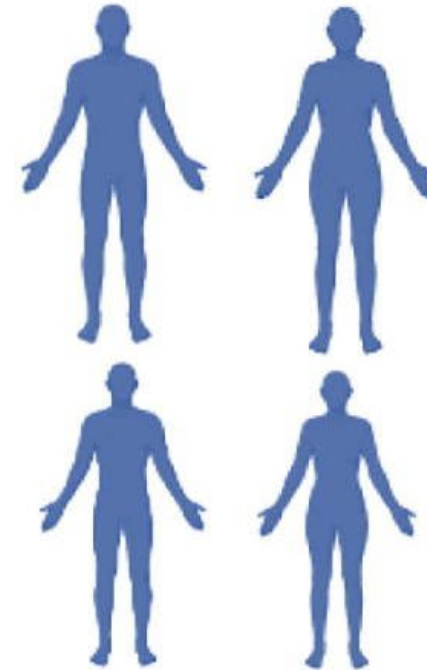




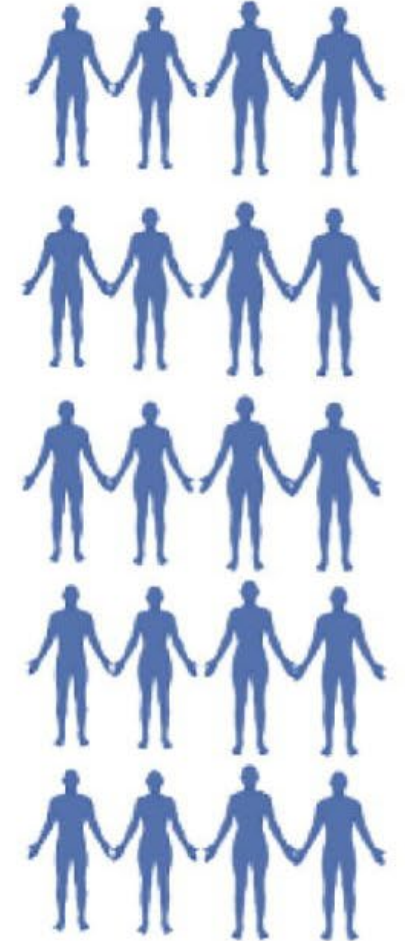
**PHASE I**



**PHASE II**



**PHASE III**



**VACCINE  
DESIGN**

**PRECLINICAL  
TESTING**

**CLINICAL  
TESTING**

# COVID-19 vaccine development timeline



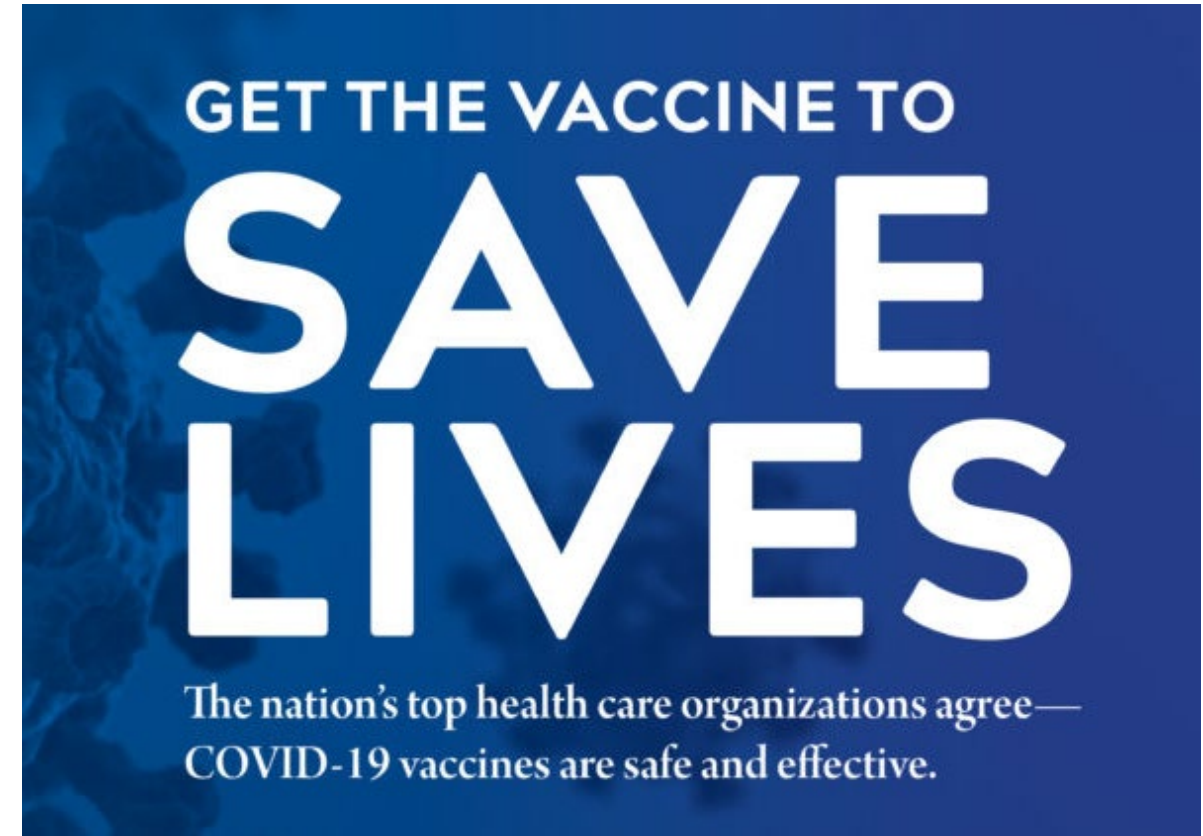
# Typical vaccine development timeline



# How Do We Know that COVID-19 Vaccines are Safe?



- As with all vaccines, WHO and regulatory authorities will **continuously monitor** the use of COVID-19 vaccines to identify and respond to any safety issues that might arise







## Technology, How Do We Know They're Safe?

1. COVID-19 mRNA vaccine technology has been **rigorously** assessed for safety
2. Clinical trials have shown that mRNA vaccines produce an immune response that has **high efficacy** against disease (it works!)
3. mRNA vaccine technology has been studied for **several decades**, including in the contexts of Zika, rabies, and influenza vaccines
4. mRNA vaccines are **not** live virus vaccines and do not interfere with human DNA

### How mRNA COVID-19 Vaccines Work

#### Understanding the virus that causes COVID-19.

Coronaviruses, like the one that causes COVID-19, are named for the crown-like spikes on their surface, called **spike proteins**. These **spike proteins** are ideal targets for vaccines.

#### What is mRNA?

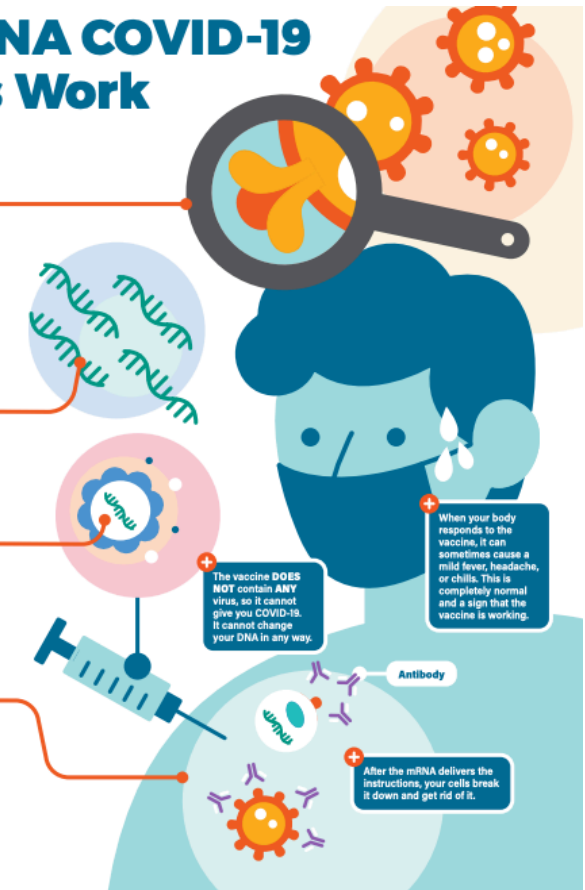
Messenger RNA, or mRNA, is genetic material that tells your body how to make proteins.

#### What is in the vaccine?

The vaccine is made of mRNA wrapped in a coating that makes delivery easy and keeps the body from damaging it.

#### How does the vaccine work?

The mRNA in the vaccine teaches your cells how to make copies of the **spike protein**. If you are exposed to the real virus later, your body will recognize it and know how to fight it off.



#### GETTING VACCINATED?

For information about COVID-19 vaccine, visit: [cdc.gov/coronavirus/vaccines](https://www.cdc.gov/coronavirus/vaccines)



# What are the Side Effects of COVID-19 Vaccines?

Common mild side effects after getting a COVID-19 vaccine may include:

Soreness or redness around injection site



Mild fever



Tiredness



Headache



Muscle or joint aches



You can manage these side effects with rest and taking medicines for fever and pain, if needed.

# Serious illness following vaccination is rare and is usually coincidental.

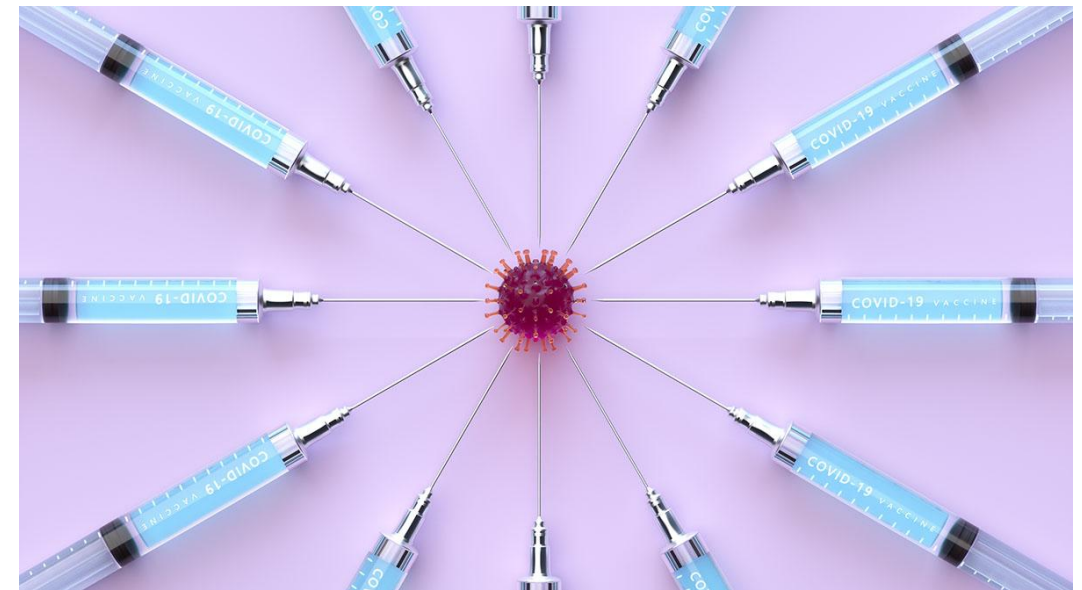
Systems are in place to carefully investigate and monitor any kind of serious illness following vaccination.

**The health and safety of you and your community is the highest priority.**



# What about the Long-Term Effects?

- Serious long-term side are **extremely unlikely** following any vaccination, including COVID-19 vaccination
- Vaccine monitoring has historically shown that side effects generally happen within **six weeks** of receiving a vaccine dose
- **Millions** of people have received COVID-19 vaccines, and **no long-term side effects** have been detected





## Women Who are Pregnant or Breastfeeding?

- WHO recommends that for pregnant women the use of the COVID-19 vaccine be considered on the basis of a **benefit vs risk assessment**
- WHO does **not** recommend:
  - Pregnancy testing prior to vaccination
  - Delaying pregnancy or terminating pregnancy because of vaccination
  - Discontinuation of breastfeeding after vaccination



# Do the COVID-19 Astra Zeneca and J&J Vaccines Cause Blood Clots?



- There have been reports of **very rare** but serious cases of blood clots accompanied by low platelet counts occurring 3 to 30 days after vaccination
- The data has shown that blood clots are **rare**:
  - AstraZeneca vaccine (15 July 2021): **4-6 people** out of every **million** vaccinated
  - Janssen vaccine (7 May 2021): **28 reports** of TTS out more than **eight million** people vaccinated
- It is possible that there a causal link between the vaccine and these symptoms, but **more data** is needed



## Inflammation from mRNA COVID-19 vaccines?

- There have been reports of **very rare** cases of myocarditis and pericarditis following the second dose of mRNA COVID-19 vaccines
- Myocarditis and pericarditis can be **caused** by many factors, including:
  - Infections
  - Viruses
  - Medicines
  - Environmental factors

World Health Organization 30/7/2021

### Heart inflammation and mRNA COVID-19 vaccines

Some **very rare** cases of myocarditis and pericarditis have been reported after the second dose of **mRNA COVID-19 vaccines** (Pfizer and Moderna), mostly in young men.

The currently available data suggests that there is a **potential relationship** between these symptoms and mRNA vaccines.

**Myocarditis** = swelling of heart muscle  
**Pericarditis** = swelling of surrounding membrane

The symptoms of **very rare** cases of myocarditis and pericarditis following vaccination with mRNA COVID-19 vaccines are:

- new and persisting chest pain
- shortness of breath
- racing/pounding heartbeat

If you experience these symptoms within a few days of vaccination, contact your doctor immediately.

Most people **recover completely** with treatment and rest, and have no lasting symptoms.

The benefits of mRNA vaccines greatly outweigh the risk of myocarditis and pericarditis.  
**Get vaccinated, as soon as it is your turn.**

## Inflammation from mRNA COVID-19 vaccines?

- Current data suggests that there is also a **potential relationship** between these symptoms and mRNA vaccines
- Research is underway to **understand** more
- Benefits of these vaccines **greatly outweigh** the risk of myocarditis and pericarditis by preventing deaths and hospitalizations due to COVID-19

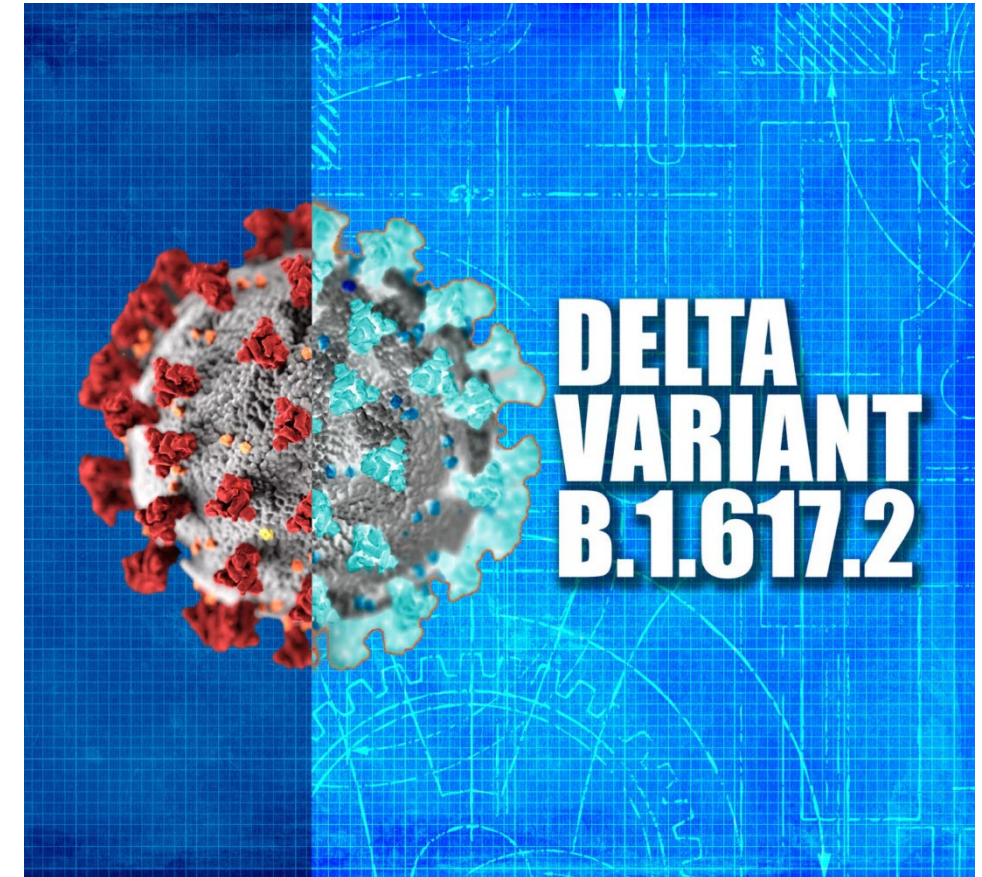




# Are Vaccines Effective Against the Delta Variant?



- COVID-19 vaccines are **effective** against severe disease and death from variants of the virus that causes COVID-19, **including the Delta variant**
- Infections happen in only a **small proportion** of people who are fully vaccinated, even with the Delta variant
- When these infections occur among vaccinated people, they tend to be **mild**



# What are the Benefits of COVID-19 Vaccination?



1. COVID-19 vaccines are **safe**
2. Prevent you from **getting and spreading** the virus that causes COVID-19
3. Vaccines continue to be **highly effective** at preventing hospitalization and death
4. Can help keep you from getting **seriously ill** even if you do get COVID-19

## Vaccines:

FREE, SAFE, PROTECTED

### THE FACTS:

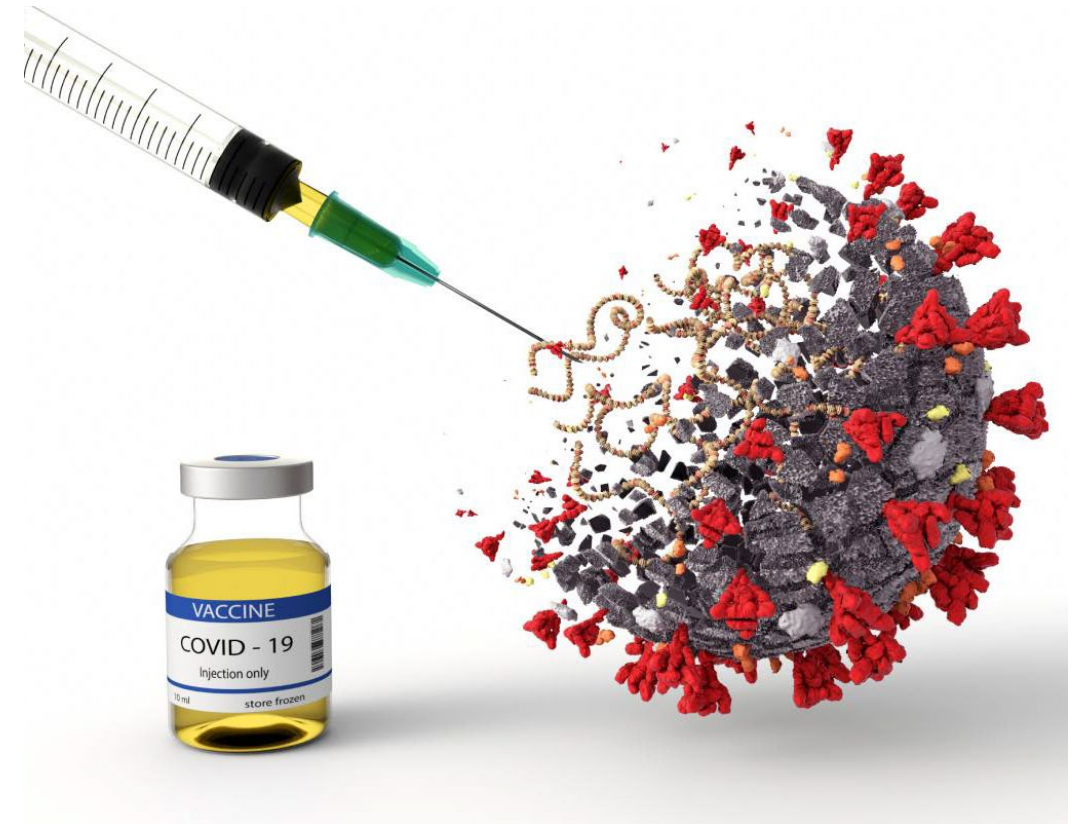
- Free
- Safe for pregnant and breastfeeding women
- Reduces symptoms if you get COVID
- Previous infection doesn't qualify as protection



# What are the Benefits of COVID-19 Vaccination?



5. If you get COVID-19, you also risk giving it to loved ones who may get very sick; getting a COVID-19 vaccine is a **safer choice**
6. Vaccines continue to reduce a person's risk of contracting the virus that cause COVID-19, **including the Delta variant**





# What are the Benefits of COVID-19 Vaccination?



8. Evidence is emerging that people get **better protection** by being fully vaccinated compared with having had COVID-19
9. **None** of the COVID-19 vaccines contain the live virus that causes COVID-19 so a COVID-19 vaccine **cannot make you sick** with COVID-19

**Benefits Of COVID-19 Vaccines**

- Builds your immune system
- Protects you from severe sickness and complications
- Reduces your risk of hospitalization

**CHOOSE TO GET VACCINATED**

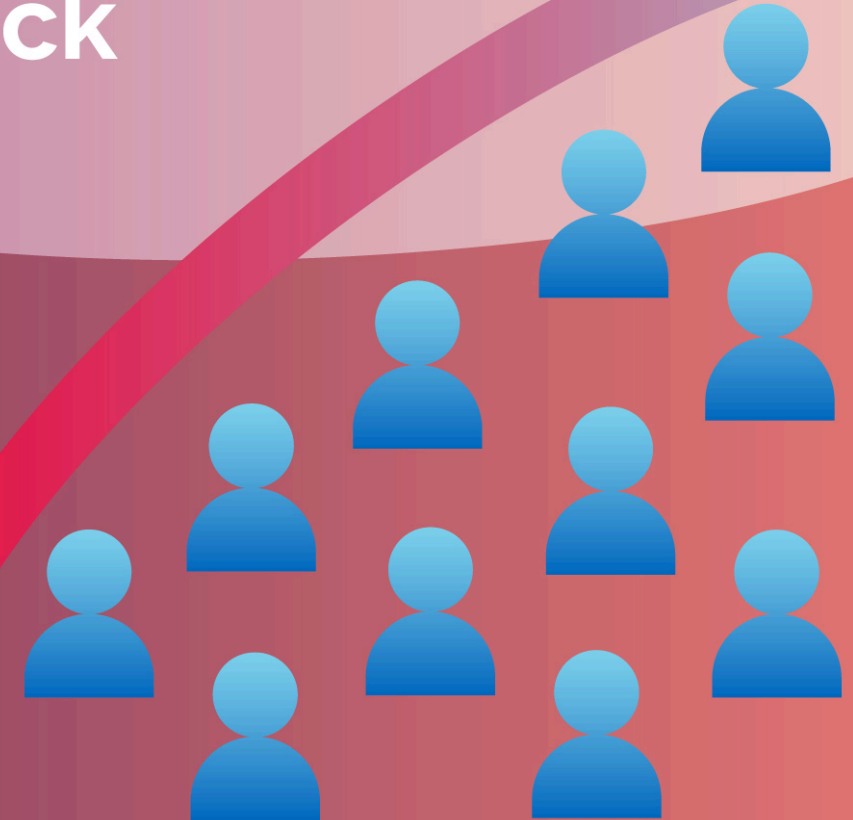
**PAHO** unicef for every child

**VACCINES BRING US CLOSER**

Pan American Health Organization World Health Organization Americas

# Vaccination develops immunity from COVID-19 more effectively than getting infected and sick

Vaccination reduces the risk of getting seriously ill or dying from COVID-19. Those who have already had COVID-19 may not acquire full immunity. Getting vaccinated provides a stronger level of immunity.





# Vaccines are highly effective against severe illness and death caused by COVID-19 variants, including Delta



World Health Organization  
COVID-19 vaccine  
fact series

COVID-19 vaccines may be slightly less effective at preventing infection and mild symptoms caused by the Delta variant, but they are **highly effective** at preventing severe illness and death. Some variants spread more easily.

**Getting vaccinated can save your life and protect you from severe disease.**



30/7/2021


# Everyone Has a Choice



# Learn More About Basics of COVID-19 Here

DEPARTMENT OF  
OPERATIONAL  
SUPPORT

## COVID-19: Vaccines To Prevent SARS-CoV-2 Infection



Dr. Esther Tan, MD MPH  
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DHMOSH Public Health

*Staff Union Townhall*  
*26 Jan 2021*

<https://youtu.be/hcs2Esr0CFQ>

# Acknowledgments

- With thanks to Jamie Jablonowski for her support in developing these slides.





Any questions, please contact  
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[Covidvaccines@un.org](mailto:Covidvaccines@un.org)

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