



# UNDERSTANDING COVID-19 VACCINES

COMMUNITY AND ACTIVIST TRAINING  
ON COVID-19 VACCINES



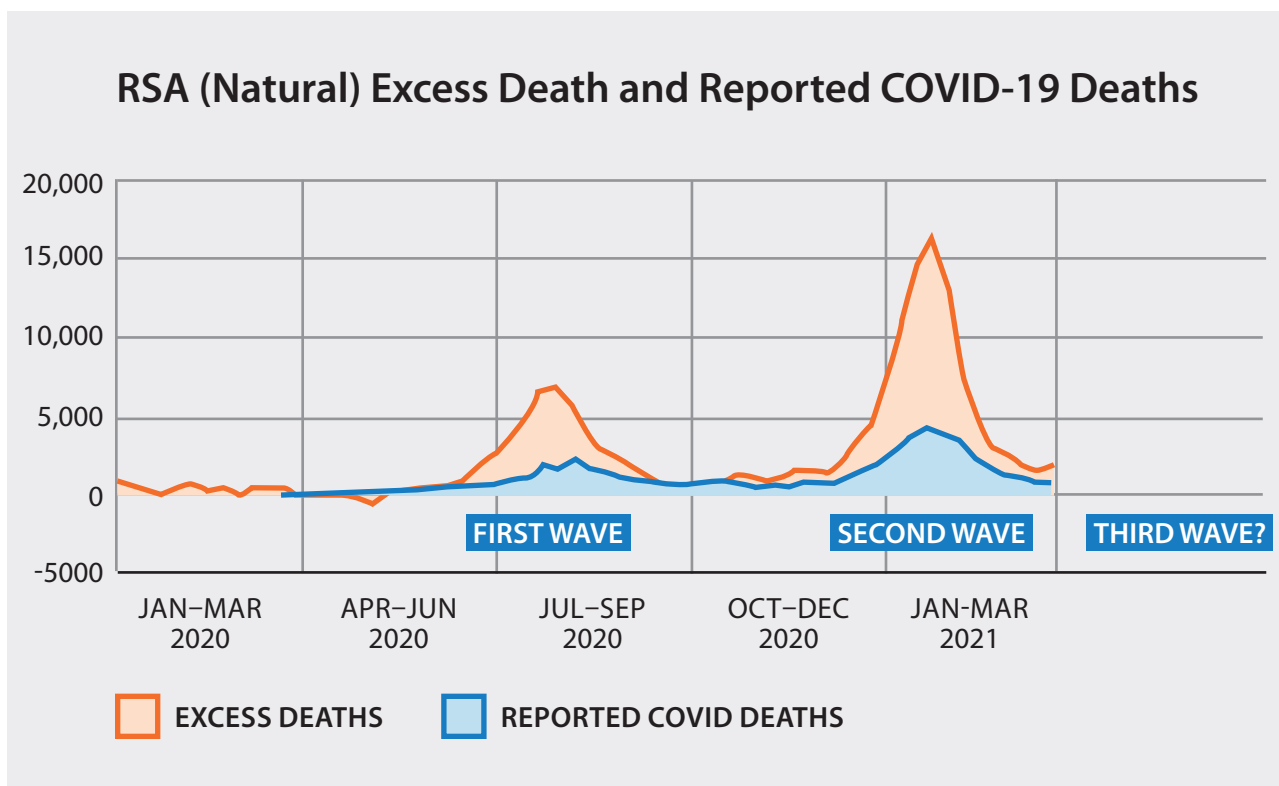
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# WHY DO WE NEED A VACCINE AGAINST COVID-19

	C-19 CASES	DEATHS
WORLD	> 110 MILLION	> 2.5 MILLION
SOUTH AFRICA	> 1.5 MILLION	> 50 000 <i>(possibly closer 140 000 to excess deaths)</i>



Data sources:

- <https://www.worldometers.info/coronavirus/country/south.africa/>
- SAMRC Weekly Death Report 2021



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# WHAT CAN WE DO/HAVE WE DONE TO STOP COVID-19

## PREVENTION

### COUNTRY

- Lockdowns Levels I to V
- Social and economic impact
- Only work short term

### INDIVIDUALS

- Wash Hands
- Wear a Mask
- Physical Distancing
- Avoid crowds
- No indoor places

### COMMUNITIES

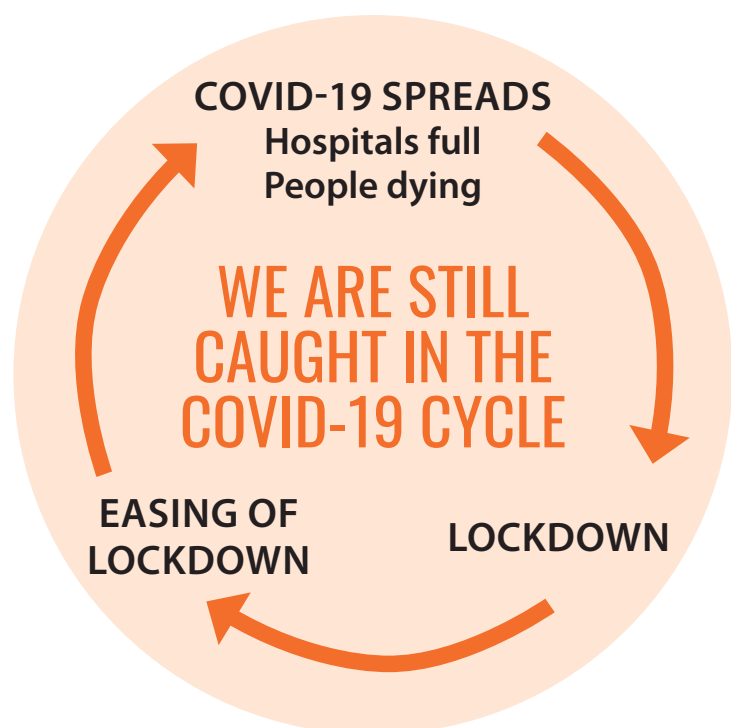
- Support those affected
- Community care centres
- Share good information
- Emotional support
- Nutritional support

### SYSTEMS

- Build better health system
- Health promoters
- Community health workers
- Mobilise for social justice and equality

## TREATMENT

- Steroids
- Anti coagulation
- Oxygen
- Other drugs:
  - › Rapid development of new drugs and re-use of older
- So far, no drug found that is a cure



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# IS THERE A WAY OUT OF THIS CYCLE...?

Once a person recovers from COVID-19 – likely to have individual immunity and antibodies

Once 60–70% people recovered from COVID-19 – likely to have Population (Herd) Immunity

Population (Herd) Immunity = Virus stops spreading

## BUT

- 60–70 % of South African population is 40 million
- For every 100 people infected with COVID-19 about two will die
- If we wait for 40 million people to get COVID-19 and recover we may see 800 000 deaths!!

**Vaccination is a way of giving people immunity without becoming ill with COVID-19. It's a safer path to Population Immunity...**



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# THE HISTORY OF VACCINES

## In last 100 years – several vaccines developed:

- Less dangerous virus cow pox – prevented small pox (Jenner 1796)
- Small pox killed 1/5 and 8/10 babies (1800's)
- 1979 small pox eradicated
- 99% polio eradicated

### Childhood Vaccines (South Africa)

- BCG • Measles
- Mumps • Rubella
- Hepatitis B • Rabies
- Meningococcus
- Pneumococcus
  - Diphtheria
- Whooping Cough
- HPV • Chickenpox
  - Rotavirus

### WHO Immunisation Report July 2020:

One billion children  
vaccinated in 10 years

Saves 2–3 million  
lives per year

### No Effective Vaccine yet against:

- TB • Malaria • HIV



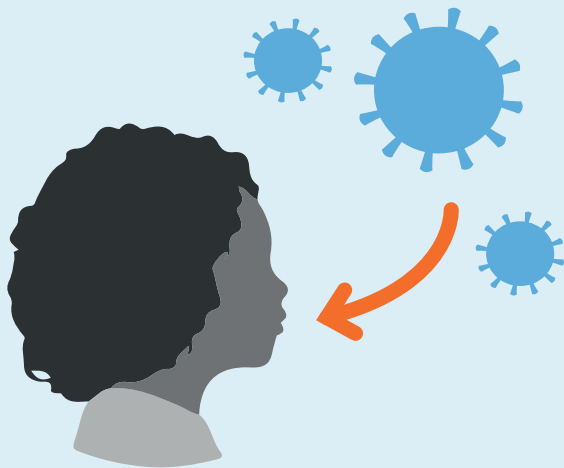
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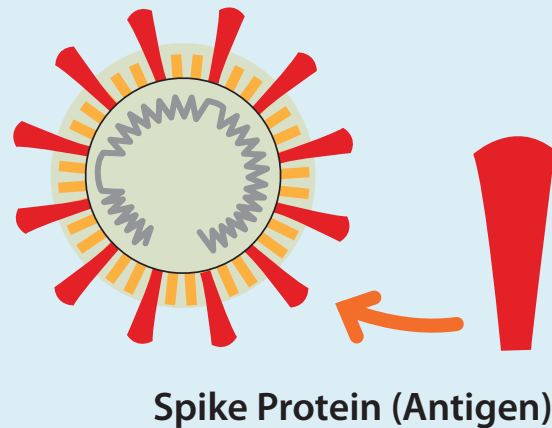
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# WHAT HAPPENS WHEN COVID-19 ENTERS THE BODY?

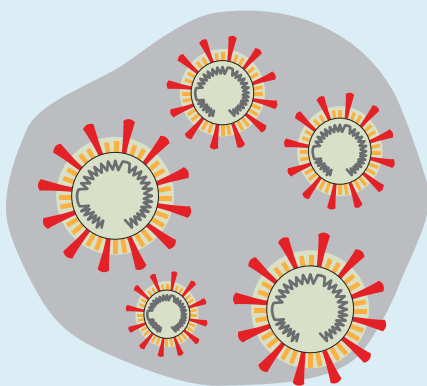
1. Virus enters nose, mouth or eyes



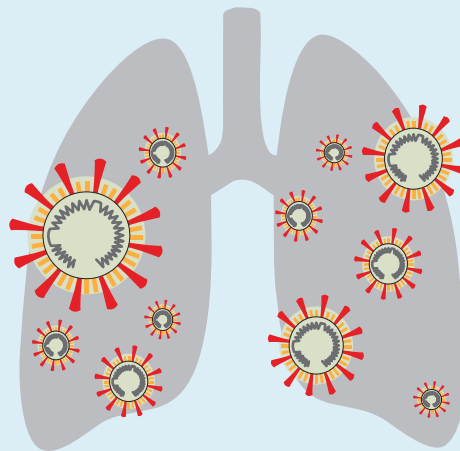
2. COVID-19 uses a spike protein to stick onto then enter our cells



3. COVID-19 uses the cell protein factory to multiply until the cell is full of virus, bursts and releases COVID-19 into the body



4. COVID-19 Virus causes illness



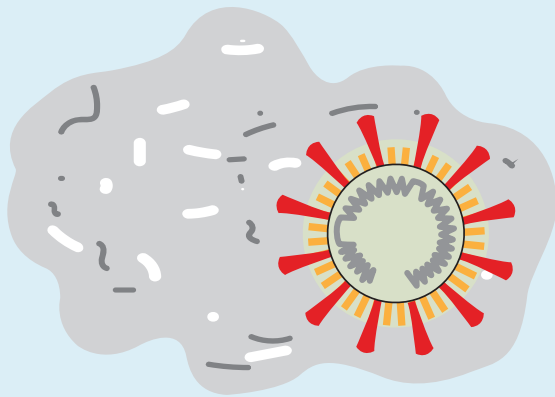
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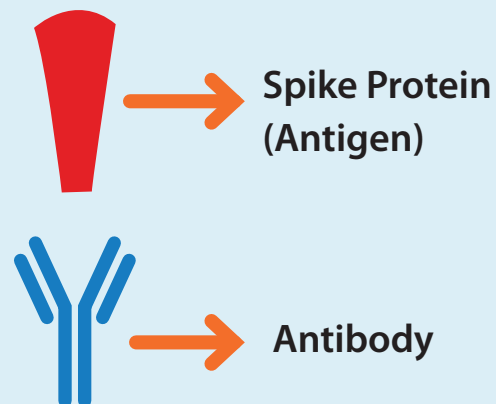
# HOW THE BODY RESPONDS TO COVID-19 (IMMUNE RESPONSE)

1. General immune cells notice the virus, swallow and destroy it



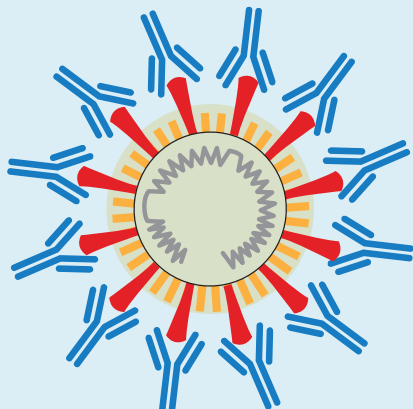
Happens immediately but only a few viruses destroyed at a time

2. Shows immune system what the virus looks like (spike protein)



Body starts making antibodies

3. Antibodies against COVID-19 are made. They block the spike protein and stop the virus from sticking to cells



4. Antibody response is very effective but it takes days to weeks to make the right antibodies against COVID-19. Memory Cells Store a memory of the virus so can destroy COVID-19 if seen again.



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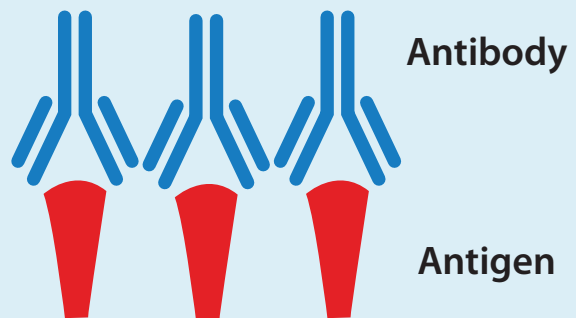
# HOW VACCINES WORK

Vaccines train the immune system to recognize and fight COVID-19 before infection happens

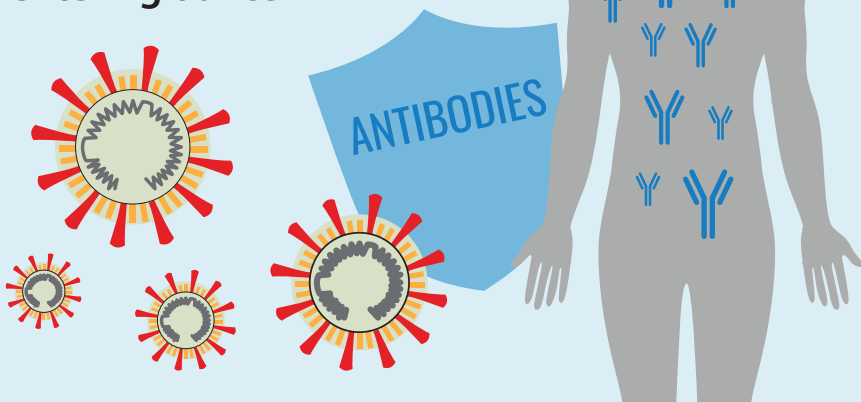
1. Vaccine contains the spike protein (or the message of how to make the spike protein )



2. Spike protein causes the immune system to make antibodies



3. When the COVID-19 virus enters the body, the immune system is ready with antibodies to block them from entering our cell



4. Memory Cells Store a memory of the virus so can destroy COVID-19 if seen again



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# HOW VACCINES ARE DEVELOPED

**PRECLINICAL TRIALS:**  
animal/lab studies to test the idea

**PHASE I:**  
is it safe? <100 people

**PHASE II:**  
does it work? (*few hundred people*)

**PHASE III:**  
safe and effective? (*thousands of people*)

Most vaccines take 10–15 years to develop...  
So how could a COVID-19 vaccine be developed in one year?

## How was these vaccines developed so fast?

1. Massive resources public and private money invested
2. SARS/MERS/Ebola – recent vaccines produced scientific basis
3. Pandemic conditions:
  - working together
  - many people getting infected with COVID = faster results
  - many, many volunteers for trials

Over 290 vaccine candidates, from these only seven completed phase II and registered world-wide:

- PFIZER
- MODERNA
- ASTRAZENECA
- J AND J
- NOVOVAC
- SPUTNIK
- SINOVAC



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# COVISHIELD (OXFORD/ ASTRAZENECA) VACCINE

- Trial started in April 2020 in the (UK, Brazil, South Africa)
- 11 636 volunteers received the vaccine OR injection without the COVID vaccine (placebo)

	NO VACCINE (PLACEBO)	COVISHIELD VACCINE
Number of People	5829	5807
COVID positive	101	30 (70% effective)
Severe COVID	10	0
Severe covid (hospitalised)	10	0
COVID death	1	0
Adverse events	180	163
Allergic RXN	0	1

## VERY COMMON SIDE EFFECTS - USUALLY LAST A FEW DAYS (UP TO 1 IN 10 PEOPLE)

- tenderness, redness and swelling at injection site
- tiredness, feverish, headache
- feeling sick (nausea)
- muscle ache

## COMMON SIDE EFFECTS (UP TO 1 IN 10 PEOPLE)

- a lump at the injection site
- being sick (vomiting)
- flu-like symptoms

## UNCOMMON SIDE EFFECTS (UP TO 1 IN 100 PEOPLE)

- Feeling dizzy
- decreased appetite/abdominal pain
- enlarged lymph nodes
- sweating, itchy skin or rash

- Only 10% effective against mild/mod 501Y.V2 Variant (SA Variant)
- May prevent severe disease but we don't know yet...
- TAKE HOME: It is safe but does not work well against our variant to prevent mild disease



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# JOHNSON AND JOHNSON COVID-19 VACCINE

43 783 volunteers (US, Latin America and RSA) received the vaccine  
OR injection without the COVID vaccine (placebo)

	NO VACCINE (PLACEBO)	J and J VACCINE
Number of people	21888	21895
COVID infection	195	66 (66% effective)
In South Africa	64	23 (64% effective)
Severe COVID	34	5 (85% effective)
In South Africa	22	4 (81% effective)
Deaths due to COVID	7	0
Serious Adverse Events	96	83
Allergic RXN	0	1

## VERY COMMON SIDE EFFECTS (UP TO 50%)

- pain, redness, or swelling at injection site
- tiredness, fever, headache
- feeling sick (nausea)
- muscle aches

Side Effects usually lasts for 2-3 days

All other AE = except slight increase thrombosis – being watched



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# PFIZER COVID-19 VACCINE

43 448 volunteers (US, Brazil, Argentina, RSA) received the vaccine  
OR injection without the COVID vaccine (placebo)

	NO VACCINE (PLACEBO)	PFIZER VACCINE
Number of people	21728	21720
Symptomatic COVID	8	162 (95% effective)
Severe COVID	9	1 (90% effective)
Deaths due to COVID	0	0
Serious adverse events	126 (0.6%)	111 (0.5%)
Allergic RXN	0	10 per million

## VERY COMMON SIDE EFFECTS

- tiredness, fever, headache
- muscle aches
- pain, redness, or swelling at injection site

Side effects usually for 2-3 days



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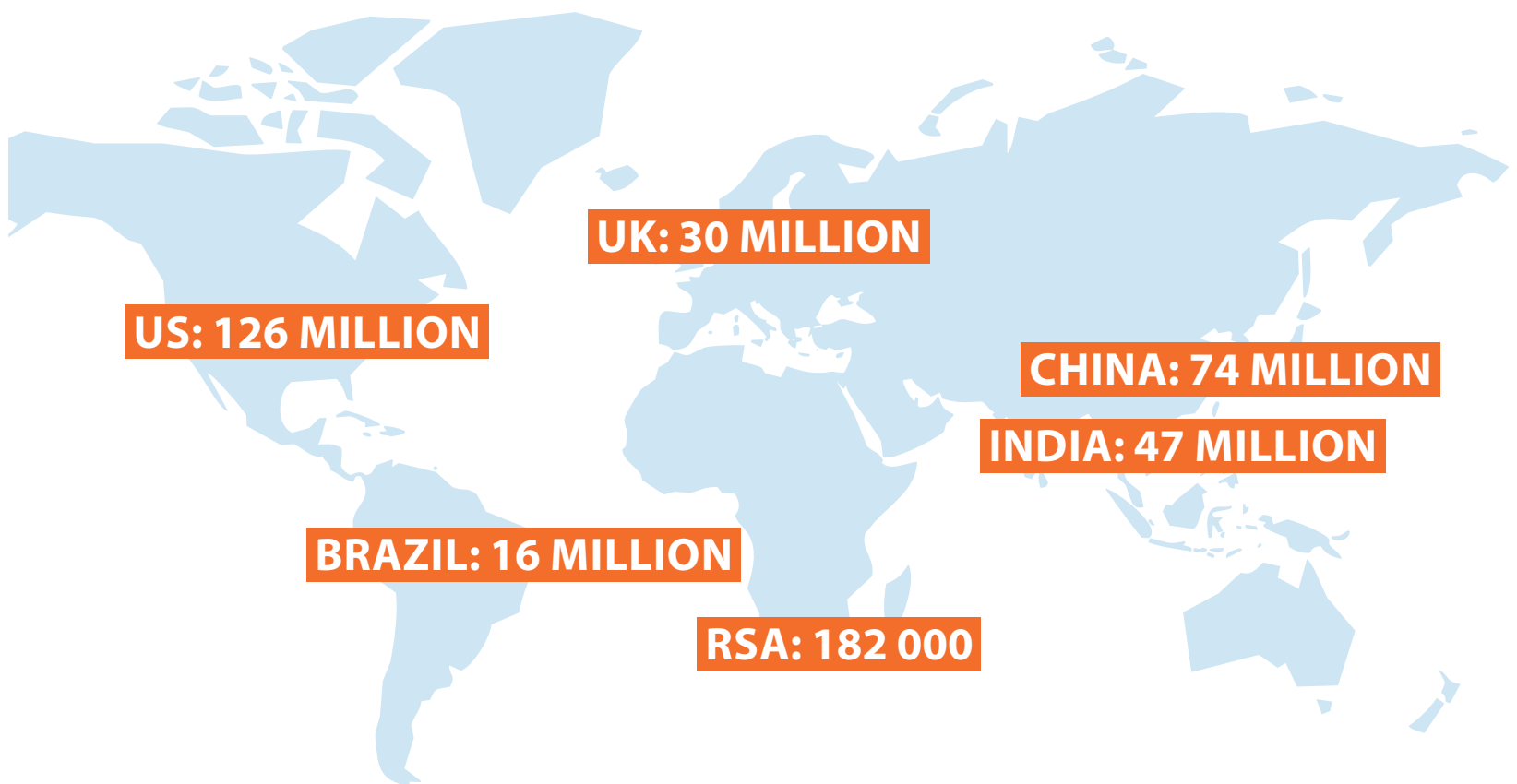
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# VACCINE EQUITY IN AN UNEQUAL WORLD:

Who has received COVID-19 vaccines thus far?

**22 MARCH 2021:  
458 MILLION VACCINE DOSES**



Patents, intellectual property and a profit-based pharmaceutical industry are a threat to equity and solidarity in vaccine access



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# SOUTH AFRICAN VACCINE PLAN



Phased approach for  
vaccine introduction:

## PHASE I

Frontline healthcare workers (HCW) Target population: 1,250,000

## PHASE II

Essential workers Target population: 2,500,000

Persons in congregate settings Target population: 1,100,000

Persons > 60 years Target population: 5,000,000

Persons > 18 years with comorbidities Target population: 8,000,000

## PHASE III

Other persons > 18 years Target population: 22,500,000

Source: National Department of Health (South Africa)



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# INTELLECTUAL PROPERTY/ PATENTS & TRIPS

## INTELLECTUAL PROPERTY:

- When a person develops something new/original, it can be registered to their name.
- This is now that person's Intellectual Property (IP)

## PATENTS:

- A patent is one form of Intellectual Property where a government gives the inventor the right to stop others from making, using or selling something they have invented
- Patents are for a set time-period (in South Africa = 20 years)

## TRIPS

- Trade Related Aspects of Intellectual Property Rights (TRIPS) is an international legal agreement between country members of the World Trade Organisation (WTO)
- It governs Intellectual Property Laws during trade between countries

## WHY THESE LAWS ARE BAD FOR HEALTH

- Patents allow drug companies to monopolise the production of medicines and to control prices
- TRIPS agreements can prevent countries from making life saving treatments/equipment
- e.g patent on COVID-19 test equipment – impact on SA



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# GLOBAL EFFORTS TO ENSURE ACCESS TO VACCINES – COVAX AND C-TAP

COVID-19 VACCINES GLOBAL ACCESS (COVAX)	COVID-19 TECHNOLOGY ACCESS POOL (C-TAP)
<ul style="list-style-type: none"><li>• Plan to Pre Purchase/ Reserve vaccine</li><li>• Low Income Countries – get free vaccine</li><li>• Middle Income Countries purchase at market prices</li></ul>	<ul style="list-style-type: none"><li>• Voluntary commitment to share COVID-19 health technology and knowledge</li><li>• Hopes to speed up discovery of vaccines, medicine etc</li></ul>
<b>BUT</b>	
<ul style="list-style-type: none"><li>• Not enough doses (only 20% population)</li><li>• No challenge to IP/ Patents/price fixing/profit</li></ul>	<ul style="list-style-type: none"><li>• Supported by 34 Low/Mid Income countries</li><li>• No support UK, USA</li><li>• To date, not one pharma company has contributed</li></ul>



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# THE ALTERNATIVE

## COVID-19 TRIPS WAIVER

- South Africa and India proposed an IP Waiver for all COVID-19 related technologies
  - › Duration of the epidemic
  - › Until vaccine has covered the population; or
  - › majority global people immune
  - › Not mandatory for countries
  - › To enable, for example, local production of vaccines
- Co-sponsored Kenya and eSwatini, supported by range of LICs, MICs, the Vatican, WHO, UNAIDS
- Opposed by US, EU, Japan and others

## PEOPLE'S VACCINE CAMPAIGN



**Covid19 People's Coalition SA**  
@CovidCoalition

A People's Vaccine Campaign!

The call to action, endorsed by over 500 organisations and individuals, is to work to educate the public and to push government and big pharmaceutical companies to ensure equitable access and allocation.

<https://c19peoplescoalition.org.za/towards-a-peoples-vaccine-campaign-a-call-to-action/>

**We need to organise and mobilise for a just response to COVID-19, including equity in access to COVID-19 vaccines**



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