UNDERSTANDING COVID-19 VACCINES

COMMUNITY AND ACTIVIST TRAINING ON COVID-19 VACCINES

Health for All Now!
People’s Health Movement
South Africa
WHY DO WE NEED A VACCINE AGAINST COVID-19

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

COVID-19 Spreads
• Hospitals full
• People dying

WE ARE STILL CAUGHT IN THE COVID-19 CYCLE

EASING OF LOCKDOWN

LOCKDOWN

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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...
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
- Diptheria
- 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
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
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.
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).

   ![Spike Protein](image)

2. Spike protein causes the immune system to make antibodies.

   ![Antigen](image)  
   ![Antibody](image)

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
- NOVOVAC
- MODERNA
- SPUTNIK
- ASTRAZENECA
- J AND J
- 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)

<table>
<thead>
<tr>
<th></th>
<th>NO VACCINE (PLACEBO)</th>
<th>COVISHIELD VACCINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of People</td>
<td>5829</td>
<td>5807</td>
</tr>
<tr>
<td>COVID positive</td>
<td>101</td>
<td>30 (70% effective)</td>
</tr>
<tr>
<td>Severe COVID</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Severe covid (hospitalised)</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>COVID death</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Adverse events</td>
<td>180</td>
<td>163</td>
</tr>
<tr>
<td>Allergic RXN</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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
JOHNSON AND JOHNSON
COVID-19 VACCINE

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

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

**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
PFIZER COVID-19 VACCINE

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

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<th>NO VACCINE (PLACEBO)</th>
<th>PFIZER VACCINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people</td>
<td>21728</td>
<td>21720</td>
</tr>
<tr>
<td>Symptomatic COVID</td>
<td>8</td>
<td>162 (95% effective)</td>
</tr>
<tr>
<td>Severe COVID</td>
<td>9</td>
<td>1 (90% effective)</td>
</tr>
<tr>
<td>Deaths due to COVID</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Serious adverse events</td>
<td>126 (0.6%)</td>
<td>111 (0.5%)</td>
</tr>
<tr>
<td>Allergic RXN</td>
<td>0</td>
<td>10 per million</td>
</tr>
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**VERY COMMON SIDE EFFECTS**

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

Side effects usually for 2-3 days
VACCINE EQUITY IN AN UNEQUAL WORLD:

Who has received COVID-19 vaccines thus far?

22 MARCH 2021: 458 MILLION VACCINE DOSES

US: 126 MILLION
UK: 30 MILLION
CHINA: 74 MILLION
INDIA: 47 MILLION
BRAZIL: 16 MILLION
RSA: 182 000

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:

<table>
<thead>
<tr>
<th>PHASE I</th>
<th>Target population: 1,250,000</th>
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<tbody>
<tr>
<td>Frontline healthcare workers (HCW)</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>PHASE II</th>
<th>Target population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential workers</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Persons in congregate settings</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Persons &gt; 60 years</td>
<td>5,000,000</td>
</tr>
<tr>
<td>Persons &gt; 18 years with comorbidities</td>
<td>8,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHASE III</th>
<th>Target population: 22,500,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other persons &gt; 18 years</td>
<td></td>
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</tbody>
</table>

Source: National Department of Health (South Africa)
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
GLOBAL EFFORTS TO ENSURE ACCESS TO VACCINES – COVAX AND C-TAP

<table>
<thead>
<tr>
<th>COVID-19 VACCINES GLOBAL ACCESS (COVAX)</th>
<th>COVID-19 TECHNOLOGY ACCESS POOL (C-TAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plan to Pre Purchase/Reserve vaccine</td>
<td>• Voluntary commitment to share COVID-19 health technology and knowledge</td>
</tr>
<tr>
<td>• Low Income Countries – get free vaccine</td>
<td>• Hopes to speed up discovery of vaccines, medicine etc</td>
</tr>
<tr>
<td>• Middle Income Countries purchase at market prices</td>
<td></td>
</tr>
</tbody>
</table>

BUT

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<th>COVID-19 TECHNOLOGY ACCESS POOL (C-TAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not enough doses (only 20% population)</td>
<td>• Supported by 34 Low/Mid Income countries</td>
</tr>
<tr>
<td>• No challenge to IP/Patents/price fixing/profit</td>
<td>• No support UK, USA</td>
</tr>
<tr>
<td></td>
<td>• To date, not one pharma company has contributed</td>
</tr>
</tbody>
</table>
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 peopleimmune
  › 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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