EMGUIDANCE

The AstraZeneca/Oxford COVID-19 vaccine

How is it made and how does it work?

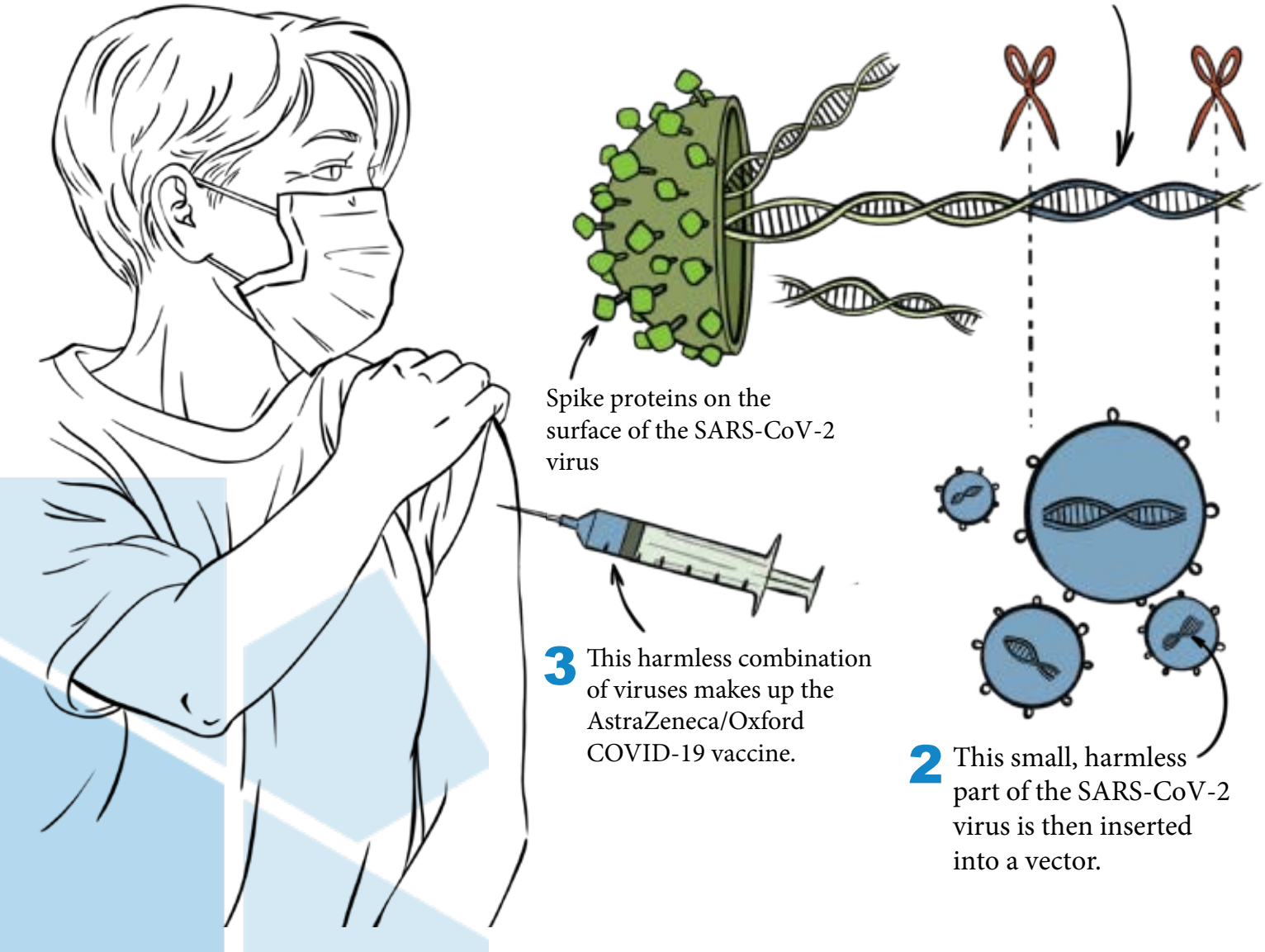
This vaccine uses 'virus vector' technology:

Did you know? SARS-CoV-2 is the corona-virus that causes the illness COVID-19.

Did you know? Spike proteins on a virus help it to pry open human cells so that the virus can get inside and infect the cells.

1 In a laboratory, scientists remove a small piece of genetic material from the SARS-CoV-2 corona virus.

This piece is part of the genetic material that helps the corona virus make spike proteins on its surface. On its own, this genetic piece of the virus is harmless and can't make anybody sick with COVID-19.



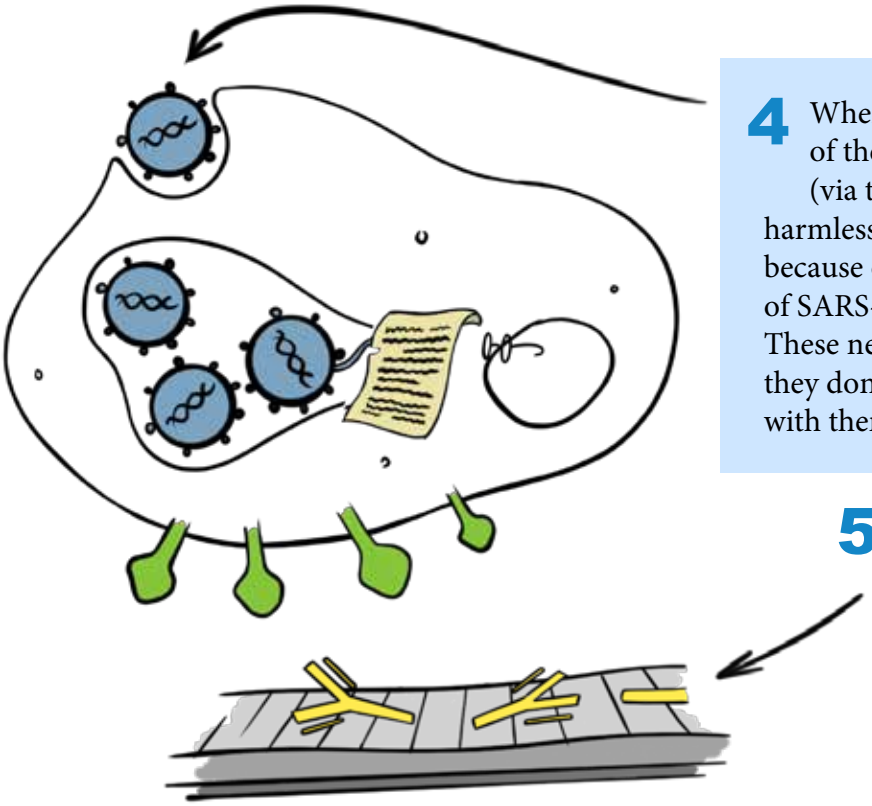
Spike proteins on the surface of the SARS-CoV-2 virus

2 This small, harmless part of the SARS-CoV-2 virus is then inserted into a vector.

3 This harmless combination of viruses makes up the AstraZeneca/Oxford COVID-19 vaccine.

Did you know? A vector is a different virus that has been genetically modified to be weak so it can't grow or cause any illness in the body. It serves as the carrier for the small piece of the SARS-CoV-2 virus: it's the 'bus' that helps the vaccine get the small, harmless part of the SARS-CoV-2virus into our body cells. In the AstraZeneca/Oxford COVID-19 vaccine, a virus called an adenovirus (which causes the common cold in chimpanzees) has been modified and weakened to be used as the 'bus'. This virus has been used before to successfully develop vaccines for flu, Zika and the MERs coronavirus so scientists know it's safe and works well.

Inside the human body

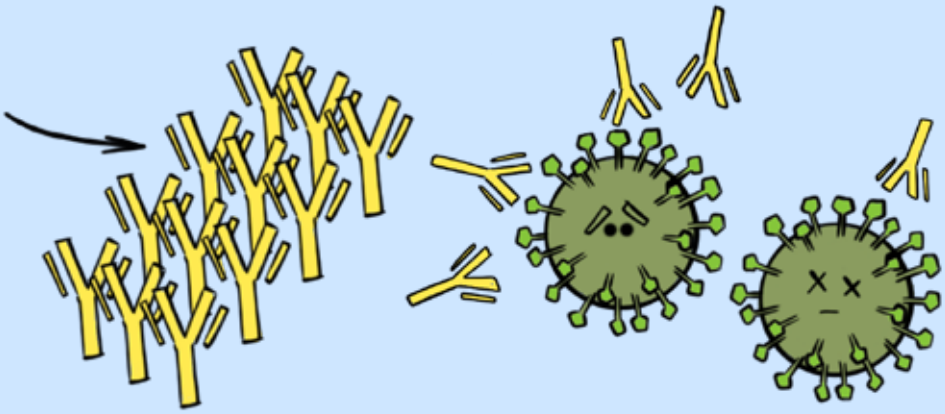


4 When the 'bus' carrying the small, harmless part of the SARS-CoV-2 virus enters our body cells (via the vaccine), it triggers our cells to make harmless SARS-CoV-2 spike proteins. This happens because our bodies can read the message on the piece of SARS-CoV-2 genetic material inside the 'bus'. These new spike proteins can't make us sick because they don't have the rest of the SARS-CoV-2 virus with them and they only last a short time.

5 Our bodies recognise these spike proteins as being part of a virus so we produce antibodies and memory cells to fight it. The cell also recognises the adenovirus (even though it is harmless now) and switches on its 'alarm system' which gets our immune system going.

6 We now have an army ready to fight the actual SARS-CoV-2 virus if it ever enters our bodies! We'll be able to fight it quickly and effectively so we don't get COVID-19.

We don't know yet how long this army will last but the memory cells may remember how to make this army for years or even decades after the vaccination.



FAQs about the AstraZeneca/Oxford vaccine

Is it safe?

Yes. This type of technology has been proven and used before. That's partly why it was developed so quickly. Safety has been assessed carefully throughout the process, at every stage, and no shortcuts have been taken. Its safety has also been carefully assessed by regulatory bodies around the world who have to approve the use of any vaccines in their countries.

Does it have side effects?

Side effects noted to date with this vaccine are those you would expect from any vaccine, including tenderness, pain, irritation and/or bruising at the injection site for a few hours or days. Because your immune system is responding to the vaccine, building protection against COVID-19, other side effects may include generally feeling unwell, fatigue, chills or fever, headache, nausea or muscle and joint pain.

How many doses will I need?

The AstraZeneca/Oxford vaccine requires 2 doses,usually given 28 days apart.

How effective is it?

This vaccine was designed using the spike protein of the original SARS-CoV-2 virus. It's about 70% effective in preventing mild and moderate COVID-19 when up against the original SARS-CoV-2 virus. That means 70% of people that take it are unlikely to get even mild or moderate COVID-19. Any amount above 50% is considered a successful vaccine.

How long will immunity last?

We don't know the answer to this yet. But when similar technology was used for a MERs vaccination (MERs is also a coronavirus), people who had been vaccinated with it still had strong immunity a year later.

Why is it less effective against the new South African variant of COVID-19?

Viruses often mutate (change). They can do this by accident, or they can do it to try and last longer: if they change, they can find new hosts who haven't already been infected by them and therefore aren't immune to them. SARS-CoV-2 has mutated into various new forms, one of which was first discovered in South Africa and is called the South African variant or 501.V2 or B1.135.

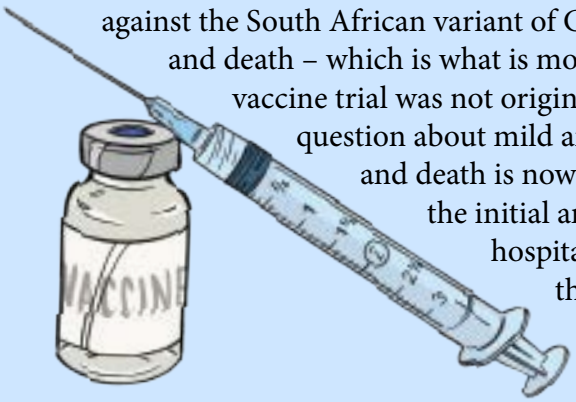
Some of the changes with this mutation were on the virus's spike protein. This change means that the new South African variant isn't as easily recognised by the antibodies our bodies produce when either (a) we've already had the initial variant of COVID-19 or (b) we've taken a vaccine designed to work against the original variant. So our bodies still recognise the new variant as a virus, but the army of antibodies created by the vaccine doesn't recognise the changed spike protein as effectively and so it doesn't mount as big a reaction against it. That's why the vaccine may be a little less effective against the new variant.

The good news is that it's possible that the current AstraZeneca/Oxford vaccine may still protect against severe COVID-19, i.e. COVID-19 that causes hospitalisation and death, even if it doesn't protect against mild and moderate COVID-19 caused by the new South African variant, because it's still recognising the danger and mounting some form of attack against the virus. We're waiting for results on this.

New, slightly adjusted vaccines that will effectively protect against the new variants (so that our vaccine-induced army effectively recognises the spike protein and forcefully fights it) are also rapidly being developed and it's possible that these could be made in just 4 to 6 weeks if needed.

Estimated cost: Approx. R60 per dose

Important to understand



It's important to understand that when the data is looked at, this vaccine may still prove to be useful against the South African variant of COVID-19 because it may still protect against hospitalisation and death – which is what is most critical during this pandemic. The AstraZeneca/Oxford vaccine trial was not originally set up to analyse this question, it was set up to answer the question about mild and moderate COVID-19. But the data about hospitalisations and death is now being analysed carefully and we will know more soon. In the initial analysis, none of the 2000 subjects taking this vaccine were hospitalised or had died! We will keep you updated, but it may mean that South Africa can go back to using this vaccine to prevent hospitalisation and death, even if it doesn't effectively protect against mild and moderate COVID-19.

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