The Oxford AstraZeneca Vaccine

2021 started with a good dose of hope! Our small and remote island is getting an additional layer of protection for its general health through 100 doses of the COVID-19 vaccine from the UK Government.
The vaccine is an additional powerful tool but it does not mean that we should lower our guards. Quarantine, adhering to hand washing and good respiratory hygiene will remain the cornerstone of protecting our community from this virus.

This piece briefly explains how the Oxford AstraZeneca vaccine works, what is expected from it on an individual level and what is expected from it as the general population?

Let's review some information about the Oxford AstraZeneca vaccine (O-AZ), which is the vaccine we've received and started vaccinating our frontline workers with.

The O-AZ vaccine uses both classical and innovative strategies of stimulating our immune system. It uses a weakened Adenovirus (a flu virus) as a shell to carry modified genetic material of the virus that causes COVID-19 (SARS-COV2); which carries a code. Once this shell is inside our bodies the genetic material carrying the code is read and the spike protein of SARS-COV2 is produced by our own cells.

The spike is just a part of the virus and therefore cannot induce disease. To become infected with COVID-19, the virus itself, not just a part of it, needs to enter the system and grow in the throat, nose and lungs. The vaccine does not contain the virus itself, in addition, the spike of the virus is produced by our own system, this, actually means that you cannot catch COVID-19 by having the vaccine.

Once the spike protein is produced, by our own cells, our immune system is alerted, recognizes it as a foreign organism and starts producing antibodies against it; it also stores the details of this protein in its memory. Our immune system is being trained to respond to the virus. The second dose of the vaccine does exactly the same process, the only difference is that the immune system will act faster and better the second time because it has already been exposed to this protein. This means that the immune system is more ready to respond when it faces the real virus. This is why you are advised that you need both doses of the vaccine in order for your body to respond fully and more effectively.

How does this help the individual? Well, imagine your body after this training; you are exposed to the real virus, it enters your system, spikes included and starts to multiply and grow. This is where the immune system comes in, producing a lot of antibodies to kill the virus, your system will then be able to clear the infection and win the battle. This does not mean you will not feel ill if you get infected with COVID-19 but it is proven that you will not become seriously ill once you are fully vaccinated.

Is it effective? Not all vaccines have the same efficacy (rate of effectiveness). For the Oxford AstraZeneca the efficacy is between 70 and 80 % which means it might not produce the same success in 100% of the people receiving it.

Another unknown is how long our immune system keeps this memory provided by the vaccine. Time will tell when the efficacy of the vaccine in our systems might reduce, meaning that we might need a booster dose of the vaccine. This is not unusual with vaccines, for example, the vaccine for tuberculosis is applied only once in a lifetime but the vaccine for hepatitis needs a booster after a certain period.

Herd immunity?

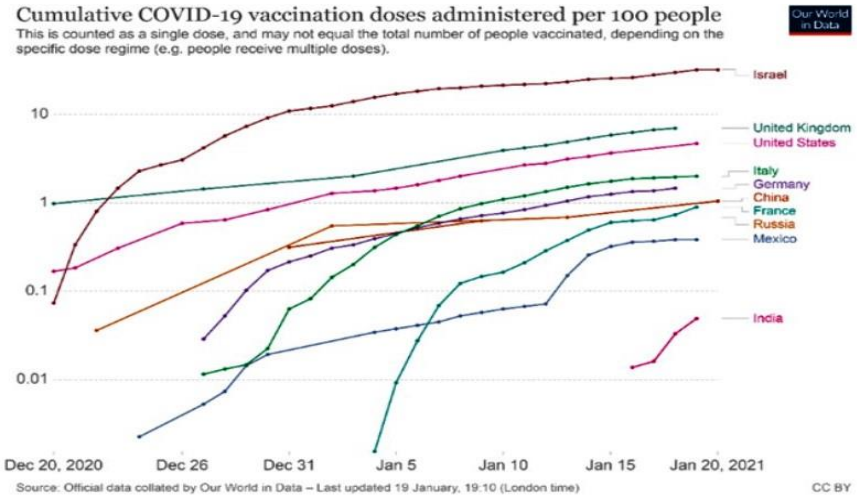
Children under the age of 18 will not receive the vaccine, this is because no children were used within the clinical trials for the vaccine. We are still awaiting results of further research to be assessed and endorsed by scientific bodies to guide the next steps of mass vaccination.

Herd immunity is in simple words; when there are a lot of people vaccinated, those who are not or cannot be vaccinated will still be protected. It is like the vaccinated people form a barrier to protect those who cannot be vaccinated. The proportion of population that needs to be vaccinated to confer herd immunity is also variable and depends on each virus.

To achieve this herd immunity, we need at least 60-70% of the population to be immune (vaccinated) against COVID-19.

One question is on everybody's mind: How the vaccine will shape the pandemic, will it end it?

Eventually, yes. But it will take a lot of time. Take the example of our island, where at least 60-70% need to be vaccinated to confer a certain level of herd immunity and then project it to the entire world's population…. This is a massive program. It will definitely take time until at least 60% of people living everywhere on earth are vaccinated. One thing is sure; the more people vaccinated the faster the pandemic will end.



Graph showing Cumulative COVID-19 Vaccination doses administered per 100 people in different countries around the world.

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