

A Perspective on Covid-19 Vaccination

by Dr Morné Strydom, MBChB, BSc (MedSci), MPharmMed, AC Clin Pharm (SA), PhD

The following article was originally published in response to the mistaken belief that vaccination is counter-productive and criticism that the vaccination is not 100% effective.

No vaccine can guarantee 100% protection against infection. That is a myth. Protection from any vaccine depends on a few factors:

- environmental load of virus,
- the host's ability to produce an adequate immune response, and
- the mutagenicity (ability to mutate) of the virus.

The more stable the virus, the less likely it is to mutate. Vaccines are usually very successful in such cases, if the host is able to respond by means of an adequate immune response. Unfortunately, poor immune responders do exist. This is not a vaccine problem, but rather a host immunity problem. This phenomenon is common in dogs, as we have observed with parvovirus vaccinations. The same vaccine may produce an antibody titer in some dogs, while it fails in others. Parvovirus also mutated over the years; hence we see more parvo breakthrough cases in puppies and kennels.

Viruses that mutate regularly will produce different variants or strains. Vaccines may only provide protection against certain strains or variants, with limited protection against novel strains or variants.

Influenza is another good example. This virus also mutates, and the annual flu vaccine aims to protect against the most common strains or variants as observed from that specific season. It will not protect against all strains or variants on an equal level, but cross-reactions do assist in providing some protection. Also, through the years many flu seasons with many generations of flu vaccines helped us to reach a form of herd immunity. Today, influenza is manageable...not gone, but manageable.

Unfortunately, people still get very ill (and die) from influenza. These influenza cases are not captured in the news or social media, since influenza is not a notifiable disease, unlike COVID-19.

We are less than 2 years within a global pandemic. We still have a far road to travel. Our enemy mutates quickly, changing its face rapidly, with many known and unknown strains out there. Corona viruses, including SARS-CoV-02 which is responsible for COVID-19, do what they do best... They mutate. This is a challenge for any vaccine technology. However, great success has already been shown by the current vaccines globally with respect to protection against severe illness and deaths. It lowers the risk significantly, but cannot guarantee 100% protection. Therefore, basic safety protocols still have to be maintained while we are facing this pandemic.

These are the first-generation vaccines, and we are about to enter our second year of the pandemic. This is still early days. The environmental virus exposure is high and even higher during wave peaks. High viral loads may overcome a host's immune system, even after vaccination. It all depends on the ability of the host's immune system to produce an adequate immune response. As it is true for dogs, it is true for humans... We have poor immune responders amongst us. You may not gain the same level of immunity post-vaccination compared to someone else.

This is not a vaccine problem only... The problem is that we are within a young pandemic fighting an ever-changing enemy, with first generation ammunition. Those who received the vaccination, your immune system has been primed. Your security guards received the memo, the photo of the enemy... Unfortunately, the enemy's facial features may have changed a bit. However, some of the security guards may still recognize the intruder. The fighting response may be less, there may be a bit of blood on the floor, but the enemy may still be arrested.

It is still a better scenario compared to naive security guards who may allow the enemy to enter through "customs".
