



Message from the NSTF Executive Director

Still hesitant to take the vaccine?

Our world often seems less understandable now to the non-scientist than ever before. At the same time, our senses and minds are flooded with rumours from friends and family, real time news reports, social media postings, various videos apparently clarifying matters, and almost all the information generated by humankind available at our fingertips... No-one can take in and digest so much information, even if you try to read and watch everything available on one specific topic. Making decisions about what to believe and what not, becomes close to impossible.

Information on COVID-19 has been posted, published and recorded, shared, retweeted and forwarded for about a year and a half now, and is accessible to all, regardless of where the information comes from. Every person reads a tiny sample of what is available, and the saying becomes true: 'A little knowledge is a dangerous thing'¹. Fake news and misguided advice are so prominent that one cannot ignore it.

I am sometimes as overwhelmed as everyone else, but I do think it helps to know what is really scientific, and what information claims to be scientific but isn't. It helps to know which sources and news distributors are more trustworthy than others. Ask yourself: Where did this information come from? The most reliable information comes from science, in the form of talks and articles by experts who have published books and peer-reviewed articles, who have studied and have a PhD in a field related to the coronavirus pandemic. In other words, experts who have done research and each have a large body of knowledge which they have acquired through years of study and reading.

The scientific NSTF member organisations are good sources. See the list and websites here: [Current NSTF Members](#) | [NSTF Awards](#).

Vaccine hesitancy

Vaccine hesitancy might come from not having enough knowledge, mistrusting scientific knowledge sources, and fear of the vaccines. There seems to be huge suspicion of big pharmaceutical companies. There are fears that the vaccines being manufactured will lead to horrific results – like mass murder, or that something like a computer chip will be inserted during vaccination, which will allow 'them' to control the masses of vaccinated people. So far, these fears have been demonstrated to be unfounded.

More than [4.54 billion doses](#) of Covid vaccine have been injected across the world, [30.4%](#) of the world population has received at least one dose of a COVID-19 vaccine, and [15.8%](#) is fully vaccinated. See [Coronavirus \(COVID-19\) Vaccinations - Statistics and Research - Our World in Data](#).

¹ A little knowledge is a dangerous thing' can be found as far back as 1774. There are earlier versions of this expression, and the idea might have originated in 1698. See [The phrase 'A little knowledge is a dangerous thing' - meaning and origin. \(phrases.org.uk\)](#).

More than 36 million people have been vaccinated in the United Kingdom and 150 million people in the United States are now fully vaccinated. Hardly anyone (a tiny number of people) has died as a result of the vaccines, and usually it is not clear at all whether the vaccines were the direct cause of death.

It would not benefit the pharmaceutical companies if the vaccines killed people. Companies care about their reputations. Without having a good reputation they cannot do good business.

I have gleaned some answers to the ongoing questions about COVID-19 and the vaccines from some reputable sources, and hope that they may clarify, rather than complicate matters further. Here I summarise the answers from only two reliable sources.

The [Academy of Science of South Africa \(ASSAf\)](#) is a reliable source (and an NSTF member). The members (or fellows) of the Academy are top scholars whose knowledge, insights and advice are worth reading and listening to. ASSAf recently launched a booklet which is free to download: [2021-assaf-essential-facts-covid19.pdf](#). The booklet addresses all the questions you have ever had but were afraid to ask. It is also an excellent resource for use in schools. Here I just refer to a few quotations from it, but I recommend that the non-technical parts of the booklet should be read by everyone.

Another good resource is a recent article in the *Daily Maverick* newspaper published online on 26 July 2021: [Everything you need to know about vaccines — our only viable strategy for living with Covid-19](#).

Again, the article is reliable because of the authors who wrote it: Lucy Allais, Shabir Madhi, Imraan Valodia, Alex van den Heever, Martin Veller and Francois Venter. (You will see what I mean if you look at the end of the article for a brief introduction to each author.)

The article gives a good overview of the latest expert advice on Covid and the vaccines. Below I summarise and quote mainly from this article and refer to it as the 'DM article'.

How do vaccines work? Are they safe?

The DM article describes vaccines as causing 'a kind of fake infection': "Vaccinations are a way of triggering the body to develop an immune response to a particular disease without having to actually get the disease — a kind of fake first infection."

The ASSAf booklet explains: "Vaccines work by presenting the immune system with a readily identifiable part of a pathogen, which the immune system remembers so that it can quickly respond should it encounter that same pathogen in the future."

In other words, the immune systems of our bodies have 'memory'. They can fight pathogens (viruses and bacteria, e.g.) because they have fought them before. They recognise which types of cells are intruders in the body and should be attacked. Covid vaccines contain a part of the coronavirus. The immune system fights the virus parts in the vaccine, which is not difficult in this case, because the virus parts cannot multiply like the real complete virus. The immune system can then identify viruses that have the same features as the virus parts in the vaccine, and so destroy them.

This is the principle on which all vaccines work. Even the annual 'flu shot' works on this principle. Every year there are new strains of the flu virus, which the body might not recognise as harmful. The flu vaccine prepares the body to recognise new harmful viruses that are slightly different from the old ones with which the immune response is familiar.

The COVID-19 virus is a new (or novel) virus for humanity. For our bodies' immune systems the Covid virus is a new unfamiliar virus, so it can 'sneak' into a body without being detected by the body's defences.

The ASSAf booklet says: "The advent of vaccines ranks among the most important developments in medical and veterinary science of the last three hundred years." (Page 102) Vaccines have ended the spread of many deadly diseases, even to the extent of eradicating some of them completely from societies across the world.

"Vaccines are one of the most successful, and safest, interventions medicine has ever come up with. They have eradicated dangerous infectious diseases such as smallpox, have controlled polio, and have saved billions of lives from measles, tetanus, pneumonia, hepatitis and diarrhoea. They have dramatically decreased viruses responsible for some cancers. They are also safe — bad side effects are very rare and the risk of developing severe illnesses is much smaller than the bad effects of the diseases the vaccines prevent."

Can the Covid vaccines change the DNA of our bodies?

No, they cannot change our DNA.

Our DNA is contained in the nucleus of every cell in our bodies. (The nucleus is like the heart of every cell.) The virus DNA cannot get to our own DNA, which is safely inside the nucleus. The virus replicates (makes copies of itself) without needing our DNA. The virus destroys cells but does not need to penetrate the nucleus.

The material in the Covid vaccines also doesn't go into the nucleus of any cell. The DM article explains: "The most recent mRNA [or messenger RNA] technology, which is used in some of the latest vaccines, uses genetic material that tells our bodies to produce a protein of the virus which then stimulates the immune response."

In other words, mRNA vaccines contain some genetic material of the virus (not the whole virus, only pieces of its DNA). When the vaccines are injected into our bodies, this genetic material causes virus proteins to be made. Of course, the proteins are exactly like that of the Covid virus. The immune system is triggered and attacks it.

What is the difference between the Pfizer vaccine and the Johnson & Johnson vaccine?

The vaccines being used in South Africa at the moment are made by Pfizer and Johnson & Johnson (J&J). The DM article says that they are both excellent choices. "Don't stress about which one is best — the best one is the first one you can get."

The J&J vaccine is taken as a single shot; the Pfizer vaccine as two doses, at least three weeks apart. Other vaccines are being studied and tested.

These vaccines work in different ways. Pfizer is an mRNA vaccine and works like explained above. mRNA vaccines are easier to make and can be manufactured very quickly. It does not need live viruses to manufacture them, so it is much safer to make them.

It is difficult at this moment to compare how well the two vaccines work. They both work very well, even preventing the dangerous variants from seriously affecting people. The exact comparisons between the two will become obvious in time. Currently, they were tested on different groups of people at different places, and there are other differences too. To compare the vaccines scientifically, the tests and trials will have to be done in exactly the same circumstances.

What can go wrong?

The vaccines take time to work. It is only when two weeks have passed since taking the vaccine, that it starts to work. For Pfizer, immunity only kicks in two weeks after the first jab, and the second jab is only successful two weeks after that second dose.

“Do not assume you have enhanced immunity straight after getting your jab. Continue to take precautions. Mask when indoors with people and always open windows in rooms and vehicles.” – *DM article.*

People can catch the infection and get ill during the two weeks after getting the vaccine. They can also be infected just before getting the vaccine and become ill because the vaccine doesn't work immediately.

People can also get ill when they are fully vaccinated, but the symptoms will pass. It is very unlikely that you will need to go to hospital, and very unlikely that you will die. It seems that most of the Covid patients who are currently filling the hospitals are those who are unvaccinated.

“Severe allergic reactions are very rare, but can occur after any vaccination” – *DM article.* If an allergic reaction happens, the health care worker can treat the reaction. It is highly unlikely that you will die as a result of the allergic reaction. Very rarely inflammation of the heart can happen, but it normally goes away quickly.

The J&J vaccine has a very rare effect of blood clotting, and can be serious; but Covid causes clots more often than the vaccine. “...the benefits far outweigh the risks.”

“Recently, the J&J vaccine has been associated with a very rare syndrome causing weakness, called the Guillain Barre Syndrome. This syndrome is also seen in patients who have had the flu and other viruses, and is treatable.”

To summarise: *It is highly unlikely that you will have bad effects from the vaccines. You might have flu symptoms but they will pass quickly. Any unusual side effects (like those mentioned above) can be treated. You will not die from the vaccines.*

How were the vaccines developed so quickly and should this worry me about their safety?

Coronaviruses are not new and vaccines are not new. Vaccines have been widely used for at least one hundred years. Their design and manufacturing processes are well established. The companies and industries already existed and are huge and efficient. The common cold is often caused by one of the coronaviruses. Because coronaviruses and vaccines are well understood, it was possible to develop the vaccines so quickly. When COVID-19 started spreading across the world, it was obvious that this was an emergency situation and the World Health Organisation (WHO) declared it a pandemic. Then large amounts of funding were made available by many countries' governments and by private industry. This is very unusual. Normally drug development takes years, but in this case there was an intense and concentrated effort across the world, with one goal in mind – to design and produce effective vaccines to stop the pandemic. Because various institutions, companies and countries were racing to do so and competing with each other, the vaccines were produced in record time.

The vaccines have been made by well-qualified people in well-resourced environments. They have been thoroughly tested in many trials. Now billions of people across the world have been vaccinated and the vaccines have proved themselves to be safe and effective.

Herd immunity?

The scientists hoped that if enough people can be vaccinated, a point would be reached where the spread of the virus is under control. Unfortunately, it has not been possible to vaccinate enough people fast enough – both in our country and across the world. The virus has mutated many times, and a variety of harmful variants have emerged. Despite the incredible speed of producing the vaccines and even the fast roll-out of vaccination of populations, it is still not fast enough to stay ahead of the virus's mutations. New variants like Delta are able to spread even faster than the first version of the virus. New variants also seem to be resistant to the immunity people get from being ill with Covid. There are also those that are emerging that are more resistant to vaccines.

The authors of the DM article say: "It is unlikely that herd immunity will be achieved with this virus any time soon, and it will probably circulate, mutate, and recirculate throughout our lifetime, reinfecting us several times, like all the other coronaviruses". It is likely that everyone with any contact with other human beings will get the virus. If you get ill, the severity of the illness depends on whether you are vaccinated or not.

Practical advice

Get vaccinated as soon as you are able to.

Not only will you save yourself, but you will probably save others' lives too. "Even though it is possible to get Covid mildly once fully vaccinated, *we now know that fully vaccinated people are less likely to spread the virus.*"

When you get ill with Covid you should wait for 2-3 months before getting vaccinated. Rather get vaccinated before you get ill.

What should you do to prevent getting the virus?

"Covid is an indoor respiratory virus: it is spread in the air, and it collects indoors where windows are closed. You are unlikely to get it outside, and opening windows in rooms, cars, taxis and buses makes everyone much safer."

It seems that keeping surfaces clean is still a good idea but perhaps less important than avoiding interaction indoors or in unventilated spaces. Masks are still very important for preventing the transmission from one person to another.

Why is there so much information and everyone says something different?

We live in the age of the internet and social media. Both of these are somewhat recent developments, since only about 20 years ago. Society has not learned to make rules and agreements around the use of these. So it is left to each individual to be responsible. However, for most people it is too much effort to google the information and ideas that are being spread through social media. People often lack the ability to judge whether the information is reliable. Instead, they share and forward the information unthinkingly, because it is interesting, or sensational, and assumed to be true. Truth is also not always a consideration. Apparently, bad news travels faster than good news. It used to be a good thing that people pass on bad news to warn others – but not if the bad news is false. Humankind is basically not adapted to social media, to ensure that it is used for good and not for gossip. The modern 'grapevine' works too fast for us to handle.

In conclusion: take-home points from the DM article:

- Vaccines will give you near-complete protection against severe illness and dying from Covid.

- Vaccines are safe. All vaccines used in the vaccination programme in South Africa have undergone extensive trials and have been proven to be effective and safe.
- The risk of serious side effects is similar to the chance of being struck by lightning, and side effects are treatable and generally go away on their own.
- It takes time for vaccines to start working well — usually about two weeks, and their working steadily improves after this.
- Vaccines differ in how well they protect against infection and mild Covid. Most vaccines will require at least two doses and provide good protection against severe illness from Covid *two weeks after your first shot*. Until you are fully vaccinated you should continue to take the same precautions as if you are unvaccinated.

The opinions expressed above are those of the Executive Director, Ms Jansie Niehaus, and do not necessarily reflect the views of the [Executive Committee](#) or [members](#) of the NSTF.