

We have to live with Covid-19 like it's the flu

Influenza is not a trivial disease, but Singapore strives for high influenza vaccination coverage for the vulnerable instead of imposing restrictions during seasonal outbreaks.

Ooi Eng Eong

Like many human viruses that originated in animals, Sars-CoV-2 has adapted to life in humans. If it had not been adaptable, Covid-19 would already have been eliminated. We will thus have to live with Covid-19.

Living with Covid-19 means grappling with certain facts. For one thing, we must expect that the number of cases of respiratory infections will come in waves through the year.

In regions with four seasons, respiratory infections such as influenza tend to peak during the winter months. In tropical Singapore, the patterns are less distinct, but the number of cases surges and ebbs nonetheless.

The number of Covid-19 cases will thus likely also settle into such cyclical patterns, driven by the volume of international travel and emergence of new Sars-CoV-2 variants.

DIFFERENT VACCINES PRODUCE DIFFERENT TYPES OF IMMUNITY

A key question is whether we need repeated vaccination to be protected against Covid-19, just like we do against influenza.

Most of us do not need repeated boosters as Covid-19 vaccines were made using a different technology than licensed influenza vaccines.

Influenza vaccines that are widely used consist of influenza viruses grown in production plants, which are then chemically inactivated so that they are no longer infectious.

Inactivated vaccines produce mostly antibodies against viruses. Antibodies bind to specific features on the surface of the virus, much like a bespoke jacket that drapes perfectly over a person. Just as the fitting of a jacket becomes looser or tighter when a person puts on or loses weight, viral mutations could reduce antibody binding to the virus and lower the level of



Vaccination has transformed Covid-19 from a highly fatal disease to a milder illness, says the writer. ST FILE PHOTO

protection against disease offered by such inactivated vaccines.

Importantly, inactivated vaccines cannot produce good killer T-cells against viruses.

Killer T-cells, unlike antibodies, sense the building blocks of viruses, and the order in which these blocks are assembled inside our cells. As the building blocks cannot be changed substantially without risking structural integrity of the virus, it is thus virtually impossible for any virus to fully evade killer T-cells.

For this reason, the best vaccines in the world are live vaccines. Live vaccines comprise pathogens weakened through mutations to their genomes.

Infection with such attenuated viruses does not cause disease. Instead, new attenuated viruses are assembled in the body that collectively trigger the development of both antibodies

and killer T-cells against the virus.

Live attenuated vaccines, however, are difficult to discover or engineer. Fortunately, the Covid-19 mRNA vaccine has proven capable in producing both antibodies and killer T-cells against Sars-CoV-2. The spike protein of Sars-CoV-2, encoded in the mRNA, elicits both antibodies and T-cells that target the spike protein when someone contracts Sars-CoV-2.

THE ORCHESTRA OF OUR IMMUNE SYSTEM

Antibodies and killer T-cells work in concert with a complex network of immune cells.

At the risk of oversimplification, antibodies can be thought of as a first line and killer T-cells an important second line of our defence against infections.

Antibody levels wane over time, regardless of whether they were produced from vaccination or infection. Even with the best form of immunity – the hybrid immunity acquired after both vaccination and infection – antibody levels will, over a period of months, wane to levels insufficient to prevent breakthrough infection.

In such circumstances, or when new Sars-CoV-2 variants emerge, the rest of the immune system will step up.

The first responders to breakthrough infection are T-cells. Other immune responses follow, although the earlier the clearance of infection, the lower the likelihood of severe Covid-19.

Moreover, unlike antibody levels, T-cell responses last a long time. Indeed, those who recovered from severe acute respiratory syndrome (Sars) in

2003 continue to have strong T-cell response against the original Sars coronavirus 17 years later.

Hence, for most of us in Singapore who have completed vaccination and experienced at least one episode of breakthrough Sars-CoV-2 infection, our protection against severe Covid-19 is reasonably robust, even without additional booster vaccination.

However, some groups like the elderly and those with chronic conditions have weaker immunity. For them, any infection, and not just Sars-CoV-2, could tip the fine balance between mild and severe illness.

Like the rest of our bodies, our immune systems weaken with age, making infections harder to fight. Additionally, the elderly often rely on caregivers for independent living. Any illness leaving them bedridden may necessitate hospitalisation.

For these higher-risk groups, the first line of defence – antibodies – must thus be kept at a high level through regular booster vaccination to minimise breakthrough infections.

LIVING WITH COVID-19

Thanks to vaccination, Covid-19 has transformed from a highly fatal disease to a milder illness with a global case fatality rate below 0.1 per cent versus 2 per cent in 2020. It is now mostly a mild-to-moderate influenza-like illness.

To be clear, influenza is not a trivial disease. In many, influenza causes fever, sore throat and cough. It can, on occasion, floor a healthy adult for days with fever and malaise, and remains an important cause of death from a respiratory infection.

However, rather than turn to mandatory masking, social distancing and restricting our borders whenever there is a seasonal influenza outbreak, Singapore, like many other countries, strives for high influenza vaccination coverage for the vulnerable.

We have better vaccines against Covid-19 today than against influenza. Potentially better ones, such as inhaled rather than injected vaccines, are still being explored, which may be even more potent than current ones in preventing Sars-CoV-2 infection in our airway. Arguably, we are better prepared against Covid-19 than we are against influenza.

Hence, while new Covid-19 vaccine and booster recommendations can still be expected in the future, we can already live with Covid-19 as with other endemic viruses like influenza.

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