

COVID is here to stay: countries must decide how to adapt

The Omicron variant has laid bare the need to live with a disease that throws up an ever-changing set of challenges.

For those who had hoped that 2021 would be the year that put the pandemic in the past tense, the Omicron variant is a harsh reminder that it is still very much present. Rather than laying plans to return to the 'normal' life we knew before the pandemic, 2022 is the year the world must come to terms with the fact that SARS-CoV-2 is here to stay.

Countries must decide how they will live with COVID-19 – and living with COVID-19 does not mean ignoring it. Each region must work out how to balance the deaths, disability and disruption caused by the virus with the financial and societal costs of measures used to try to control it, such as mask mandates and business closures. This balance will vary from one place to another, and with time, as more therapies and vaccines become available – and as new variants emerge.

The emergence of the Omicron variant last November highlighted the ongoing challenges of life with SARS-CoV-2. Some countries were already facing surges in the highly transmissible Delta variant, but vaccines and previous infection conferred relatively high levels of protection against Delta, particularly against severe disease.

It was expected that mutations in the viral genome would slowly chip away at this immunity, particularly its ability to stop viral transmission. But Omicron dealt a swifter and more serious blow to immunity than predicted. It is now clear that SARS-CoV-2 reinfections are more common, and that some of the most widely used COVID-19 vaccines have faltered in the face of the variant. Existing vaccines, developed against an earlier variant, now require a booster to provide substantial levels of protection against infection.

But the news has not all been grim. Vaccines, particularly when boosted, still seem to provide substantial protection against severe disease and death. Early data from animal studies suggest that Omicron might generate a different pathology compared with previous variants, causing greater infection of the upper respiratory tract and less infection in the lungs (see page 177). Data from several countries suggest that the variant is associated with less severe disease, although whether this is due to the variant itself or to widespread pre-existing immunity requires further study.

With infection rates soaring around the globe and many countries still unable to access adequate vaccine supplies, more SARS-CoV-2 variants of concern will continue

to emerge. And, as Omicron has shown, predicting what course those variants will take becomes more difficult as the complexities of viral evolution and pre-existing immunity complicate the models that have previously been used to anticipate the course of the pandemic. Now modellers need to factor in the effects of vaccines, previous infections, waning immunity over time, booster shots and viral variants – and, as the year progresses, they will also have to consider the impact of emerging antiviral treatments.

But what is clear is that the hope that vaccines and prior infection could generate herd immunity to COVID-19 – an unlikely possibility from the start – has all but disappeared. It is widely thought that SARS-CoV-2 will become endemic rather than extinct, with vaccines providing protection from severe disease and death, but not eradicating the virus.

As Omicron and other variants have shown, this only adds to the urgency with which vaccines must be distributed to countries that currently lack supplies. Efforts are under way to bolster vaccine production in countries such as South Africa, which have not historically been centres for vaccine manufacturing. These and other efforts to boost global access to vaccines remain in the best interests of all countries: devastating variants are particularly likely to emerge and seed blazing outbreaks in regions with low vaccination rates, and their spread will be further exacerbated where levels of testing and genomic surveillance are also low.

The next chapter

Fortunately, 2022 is poised to add to our defences against the pandemic. New vaccines – such as protein-based vaccines, which might cost less and have less-stringent storage requirements than mRNA vaccines currently do – will become more widely available. In December, the World Health Organization approved the long-awaited protein vaccine made by Novavax in Gaithersburg, Maryland, for emergency use. Ongoing clinical trials will establish whether upcoming vaccine candidates that target specific coronavirus variants, or that can be inhaled or taken orally, rather than injected, will also be useful. Several nasal candidates are in clinical testing, including one from CanSino in Tianjin, China, and another developed by AstraZeneca in Cambridge, UK.

Meanwhile, new antiviral drugs, formulated in tablets that can be easily administered early in the course of infection to reduce the chance of serious disease and death, offer another approach against COVID-19. In the past few months, some countries have authorized the use of two such drugs: molnupiravir, made by Merck in Kenilworth, New Jersey, and Ridgeback Biotherapeutics in Miami, Florida; and Paxlovid, made by Pfizer, based in New York. Data from pivotal clinical trials of other candidates are expected in the coming year.

All of these will expand the world's capacity to manage SARS-CoV-2 outbreaks. They are cause for hope and optimism, but with a hefty dose of realism: the virus will continue to circulate and change, and governments must continue to rely on the guidance and advice of scientists. We will not always be able to predict the virus's path, and we must be ready to adapt with it.

“The hope that vaccines and previous infection could generate herd immunity has all but disappeared.”