

Strategic COVID-19 Public Health Advisory Group

15 December 2021

Hon Dr Ayesha Verrall
Associate Minister of Health (Public Health)
Parliament Buildings
Wellington

Dear Minister

The COVID-19 Pandemic: Prospects for 2022

You have asked us to provide future-focused advice on what scenarios New Zealand may encounter over the next year in our ongoing COVID-19 response.

1. It is exactly two years since reports first emerged about a mysterious new disease in Wuhan, China. The ensuing 24 months have seemed like a roller-coaster for humanity. While there have been remarkable scientific achievements and dedicated efforts to control the disease in many countries, the overall global response has been lamentable. Millions of people, especially in Africa, still have no access to the vaccines that were starting to become available a year ago. As the SARS-CoV-2 virus replicates, it is continually mutating so that challenging new variants are inevitably going to emerge. Meanwhile the Delta variant, which has been dominant for many months, is causing significant rises in the numbers of cases in many European countries and the USA.
2. The recent appearance of Omicron illustrates both the potential danger of new variants and the need for caution in making any predictions about the future. A distinguished medical scientist in Britain, Sir Jeremy Farrar, has given a sobering warning that the emergence of the Omicron variant shows the world is still “closer to the start of the pandemic than the end”.
3. We are pleased that the Government adopted our recommendation of a strategy of **COVID-19 minimisation and protection**. In this report, we will outline possible developments in control measures, including lessons from other countries, before considering prospects for New Zealand in the coming year.

Vaccine developments

4. New Zealanders have been fortunate to have access to one of the most effective vaccines against SARS-CoV-2 infection. Our vaccine coverage is now relatively high, and this has undoubtedly helped to spare Auckland from a

massive upsurge in cases and hospital admissions, as witnessed in Sydney, Melbourne and many other cities around the world.

5. The goal of 90% complete vaccination of the eligible population must be regarded as a significant milestone, rather than a final target. Every additional percentage point in coverage will provide greater community protection. Moreover, heterogeneity in vaccine coverage increases the risk of serious outbreaks, so continuing efforts are needed to reach unvaccinated groups in the community. Recent experience has shown that locally organised initiatives can be effective, and it has been heartening to see the success of programmes led and delivered by local Māori and Pasifika.
6. There is now convincing evidence that the immunity provided by two vaccine doses wanes after a few months, especially against the Delta variant. This waning of immunity is most pronounced in older people and in those with underlying medical conditions that put them at higher risk. It particularly affects protection against mild disease, while effectiveness at preventing severe illness and death remains relatively strong. Nevertheless, waning immunity is part of the explanation for large waves of infection and hospitalisations that have been experienced in some countries, such as Israel, even though they had initially come close to eliminating the disease.
7. **Booster doses** increase protection against severe illness, particularly in the most vulnerable, and they also reduce community transmission by preventing milder disease. In order to achieve the best possible control of the pandemic in New Zealand, it will be essential to promote the uptake of booster vaccination in the coming months. Ideally most adults should have received a booster before next winter, a season that may be especially challenging (see below). We recommend that individuals should be sent a reminder, as soon as they become eligible for a booster dose, and that further efforts should be made to achieve the same population coverage as for two doses.
8. The immune response to a booster dose (2 + 1 schedule) is far stronger than after the second dose. At present no one can be certain whether further boosters will be required, even though some vaccine manufacturers have been quick to advance the proposition. It is not unlikely that regular boosters will be needed by at least some groups, particularly older people and those with underlying health conditions. Studies are under way to assess the feasibility of combining COVID-19 and influenza vaccines.
9. There could be a more urgent need to provide a third or fourth dose to all eligible people at some time during 2022. Reports are already emerging that the current vaccines are less effective against the Omicron variant, particularly for mild disease, whereas a booster dose increases protection substantially. Since Omicron is likely to enter New Zealand and to spread widely, the gap between the second and booster doses might need to be shortened. It is also possible that another new variant could be highly resistant to current vaccines. Fortunately, the mRNA vaccine technology would probably enable development of an improved vaccine within a few

months, but obtaining sufficient supplies and rolling out vaccination to all eligible people might be a formidable challenge.

10. **Vaccination of younger children** (aged 5 – 11 years) is another measure that would not only protect individuals but also increase community protection, although to a more limited extent. While New Zealand now has a high percentage of people over 12 years of age who are fully vaccinated, our vaccine coverage in the total population (about 73% fully vaccinated; 77% with at least one dose) still lags behind that in many advanced countries, such as Singapore, Portugal, Spain, Canada, Japan, Denmark, and Ireland. This is because New Zealand has a relatively young age structure, reflecting higher birth rates than in many developed nations over recent decades.
11. New Zealand would be less vulnerable to major community outbreaks if a greater proportion of the total population were protected by vaccination. A decision to vaccinate younger children should, however, only be made after a rigorous evaluation of benefits and risks in this age group. On current evidence, we do not consider that vaccination of younger children should be mandated for admission to any facilities or for air travel.
12. It is too early to predict whether a programme of vaccinating primary school age children would need to be repeated in the future, or whether the strategy for children would shift to reliance on acquisition of natural immunity or a programme of infant vaccination.
13. The future vaccination strategy should focus particularly on minimisation of severe disease. With optimal vaccine coverage, severe illness requiring hospitalisation will *mainly* (though not entirely) involve the unvaccinated, yet milder infections could still be very common. Hence there is likely to be considerable pressure on primary health care services. The “holy grail” would be a vaccine that prevents infection and transmission of the virus, as well as severe illness. Such sterilising immunity might ultimately not be achievable, and we cannot foresee this kind of advance during 2022.

Public health and social measures

14. Even as effective vaccines first became available, about a year ago, epidemiologists were warning that **vaccination alone will not be enough** to control COVID-19. This has certainly been borne out by experience in numerous countries, as well as by the results of mathematical modelling.
15. In the state of Victoria, 92.2% of eligible people aged 12 years and over are fully vaccinated. Yet there were still 1,405 new cases of COVID-19 (acquired locally) reported today, with 365 people in hospital and 84 in intensive care units.
16. We have been following developments in many countries, as have groups in DPMC and the Ministry of Health. It would be tempting to identify one or more nations where a successful strategy might serve as a model for New Zealand.

Whenever we start to regard a particular country as a possible model, however, its situation seems to deteriorate! It is important to recognise that all inter-country comparisons are fraught with uncertainty. Epidemiologists regard such descriptive studies as the weakest kind of evidence, because there are so many potential confounding factors that may distort comparisons.

17. A common pattern has been for countries to remove public health restrictions rapidly – sometimes accompanied by rhetoric about “freedom day” or “living with the virus” – but having to reimpose restrictions as numbers of cases and hospitalisations start to rise again. This has been seen in Denmark, Germany, Israel, Singapore, and many other places.
18. Countries that seem to be doing relatively well are those that combine high vaccination coverage with ongoing public health measures – for example, Spain and Italy. Maintaining strong baseline public health measures will be a wise investment for us in 2022. It is important to note that preventive behaviours, such as **physical distancing, working from home, and mask-wearing indoors**, depend on individual patterns of behaviour as well as government edicts. Nevertheless, the provisions of our COVID-19 Protection Framework should be kept under continual review, especially with the advent of the Omicron variant. We believe that some guidelines at the Green setting – such as the lack of requirements for face coverings on public transport (apart from air travel) or record keeping/scanning in shops – should be reconsidered. **We recommend that the Green level guidelines should be reviewed before any region is shifted to Green.**
19. **Testing and contact tracing** are key components of control strategies in many countries. This pandemic has accelerated developments in testing technology. Diagnostic testing continues to depend on nucleic acid detection (as with the PCR test) or antigen detection. Nucleic acid detection methods provide the best diagnostic accuracy (sensitivity and specificity), and they will continue to be the gold standard. Rapid antigen tests offer the advantages of a quick turnaround and suitability for use outside the laboratory, but they have lower sensitivity – so there is an increased risk of missing positive cases. This is an inherent limitation of the method, which is not confined only to tests for SARS-CoV-2. There is a hope that rapid nucleic acid detection tests will eventually replace rapid antigen tests, although this is likely to happen first in particular settings (such as health care facilities).
20. Whole genome sequencing has proved to be a very valuable adjunct to epidemiological methods, and will continue to be important in 2022. Detection of SARS-CoV-2 in wastewater also appears to have assisted the pandemic response. We suggest that a review of the wastewater testing programme would be useful, to help define what role it should play in the new national strategy for controlling COVID-19.
21. We are pleased that the Government has established a Testing Technical Advisory Group. It will be important to develop a clear testing strategy, so that health professionals and citizens know what kind of test to use under particular circumstances. A significant challenge will be to persuade people

who are fully vaccinated that they still need to get tested promptly when they develop symptoms.

22. Testing is useful only if it is followed by appropriate action, such as self-isolation of infected individuals and tracing of their contacts. We need a carefully designed contact tracing strategy, which enables rapid identification and self-quarantine of contacts. Both testing and contact tracing should be continually evaluated with performance indicators. In many countries, too few people are getting tested and the time until self-quarantine of contacts is too long.
23. Our contact tracing capacity needs to be expanded, but it is also necessary to resist being over-ambitious about its scope, so that performance failure is avoided. It is important to be able to maintain high performance when case numbers rise.
24. The role and usefulness of digital aids to contact tracing require clarification. The point has been made that the proportion of people enabling Bluetooth tracing is higher in New Zealand than in most other countries, yet little use seems to be made of this.
25. Early reports suggest that the Omicron variant is even more infectious than Delta. This will put significant pressure on “test and trace” systems, even if the time between getting infected and becoming infectious to others is not shorter. If new variants keep appearing with both increased infectivity and shorter incubation periods, contact tracing systems may need to be adjusted.
26. **Border measures** will continue to play a role in 2022. Mathematical modelling suggests that, if border restrictions are loosened too quickly, there will be larger outbreaks requiring heightened control measures including lockdowns. It will also be important to retain an MIQ system that is able to be expanded if any new variant of concern becomes a serious threat.

Treatment of COVID-19

27. While prevention, especially through vaccination, is by far the most important component of our strategy for COVID-19 minimisation and protection, treatment will play a more significant role in future.
28. The great majority of infected people suffer only mild symptoms, and most of them can be supported in the community. For patients requiring hospital treatment, there have been considerable advances in management. Apart from general supportive care, including provision of oxygen where necessary, most patients now receive corticosteroids such as dexamethasone. More specific therapeutic approaches include monoclonal antibody formulations, IL-6 receptor antagonists, JAK inhibitors, and antiviral agents (such as remdesivir and molnupiravir). Not all of these are approved and funded yet in New Zealand, but more will become available next year.

29. Because of the recent outbreak, hospital clinicians in Auckland have garnered far more experience of treating patients with COVID-19 than have physicians in other centres. This knowledge and expertise is being shared with colleagues in the rest of New Zealand – and will also need to be made available to those in neighbouring Pacific Island countries.
30. A challenge with antiviral drugs is that they must be administered in the early phase of the illness. In the United Kingdom, a randomised clinical trial is planned to recruit 10,000 people who have recently received a positive PCR result and who are either over 50 years of age or have an underlying medical condition. Half of these will receive an antiviral drug, while half will not do so, in order to obtain reliable data on effectiveness.
31. New drugs for a condition like COVID-19 tend to be sold at a high price. If clinical trials show that early treatment with antiviral drugs or antibody formulations is beneficial, difficult decisions will have to be made about how much of our health budget should be invested in this area. Clearly the affordability of new and expensive treatments will be enhanced if we can minimise the spread of COVID-19 in the community.

Evolution of the virus

32. Much of the recent discussion about COVID-19, especially in non-scientific media, assumed that the Delta variant of SARS-CoV-2 would be dominant from now on. Evolutionary virologists considered that was highly unlikely, and the appearance of Omicron should have been a wake-up call. As mentioned in our introduction, rampant replication of the virus around the world means that further variants will arise and some may alter the course of the pandemic.
33. Any new variant such as Omicron will start to displace Delta only if it is more transmissible. A new variant is more likely to have a competitive advantage if it can evade immunity achieved through either natural infection or vaccination. It is not possible to predict whether a more transmissible variant would be more or less virulent, in terms of producing human disease. The common belief that viruses inevitably evolve to be less harmful to humans is unfortunately incorrect.
34. As already mentioned, the Omicron variant appears to be more transmissible than Delta. It is also reported to be more likely to re-infect people who have previously suffered from COVID-19. There is an impression that Omicron may be less likely to cause severe illness requiring hospitalisation and intensive care, but any firm conclusion about this would be premature at this stage. It is also important to remember that, because of the nature of exponential spread, a variant that is twice as infectious (but equally virulent) will produce far more serious illness and deaths than a variant that is twice as virulent (but equally infectious). In other words, Omicron would have to be far less lethal to compensate for any marked increase in transmissibility.

35. Clearly the best-case scenario for humanity would be emergence of a variant that can displace Delta (or its successor) while being much less capable of producing severe disease.
36. We will need to wait for weeks to get reliable answers to key questions about Omicron, including whether this variant is more or less virulent, and the extent to which current vaccines provide protection. On the very preliminary evidence available at present, it seems likely that Omicron could displace Delta in most countries, including New Zealand, during 2022. It will probably not be the last variant we face.

The concept of endemic infection

37. Like the term “herd immunity”, the words “endemic” and “endemicity” have been bandied around in discussions of COVID-19, often without a clear understanding of what they mean. In relation to infectious diseases, the term “endemic” means the habitual presence of an infectious agent within a geographic region or population group. With respect to COVID-19, this term has often been incorrectly conflated with concepts of severity and manageability, implying that an endemic disease is, by nature, mild and easy to manage. Malaria is an endemic disease in large parts of the world: it causes much severe illness and is estimated to have killed over 600,000 people (mostly children) in 2020. Measles is a viral disease also endemic in many countries, and it is a major cause of sickness and death in children. Measles used to be endemic in New Zealand, but it was eliminated by vaccination and other public health measures. Outbreaks continue to occur here, as a result of infected people entering the country, but such outbreaks can often be stamped out fairly quickly.
38. For COVID-19, the elimination strategy that was adopted in New Zealand has so far prevented the infection from becoming endemic. That has enabled most of the country to enjoy relatively normal life over the last couple of years, and it explains the strikingly low burden of illness – with mortality from all causes actually *declining* in 2020, whereas it increased (often substantially) in nearly all other countries studied.
39. Initially it was hoped that New Zealand might be able to maintain its strategy of “zero-tolerance towards new cases”. We knew that was an ambitious goal that might fail, but it was worth pursuing. In the event, the advent of the highly infectious Delta variant, as well as other factors, meant that the significant outbreak that started in Auckland in August 2021 could not be stamped out completely.
40. The revised strategy of COVID-19 minimisation and protection will, we expect, lead to endemic infection with SARS-CoV-2 in the New Zealand population. In the coming months, however, we believe that all practical efforts should be taken to extinguish outbreaks as they occur around the country. Areas that are free of COVID-19 will experience fewer health consequences and less social and economic disruption.

A wide range of possibilities for 2022

41. The preceding paragraphs will have made it clear why we would be loath to make any firm predictions for the first half of 2022, let alone for the latter part of the year.
42. There are reasons for optimism. The outbreak which started in Auckland appears to have peaked, without anything comparable to the large and damaging blowouts that occurred in Sydney and Melbourne. The numbers of hospital admissions and requirements for intensive care have been modest. That very gratifying position can be attributed to high vaccination uptake and an effective public health response, with wonderful support from the people of Auckland. An important component of the public health response was the rigorous lockdown, and it will be some time before we can reliably gauge the effects of shifting from Alert Level 3 to the new COVID-19 Protection Framework.
43. As Aucklanders move around the country and much larger numbers of people enter from overseas next year, it is inevitable that new outbreaks will be seeded in many parts of New Zealand, despite reasonable precautions. But our high vaccination coverage, together with planned public health responses, may mean that outbreaks can be stamped out in some places and at least suppressed in others.
44. On the other hand, the Omicron variant, already present in Australia, is very likely to gain a beachhead in New Zealand in the next few months. It could spread rapidly throughout the country, especially if vaccination with two doses provides little protection against infection and transmission. There could be massive pressure on our health services, compromising primary care as well as hospital capacity.
45. Even if predictions about Omicron prove to be too pessimistic, we foresee a strong likelihood of major challenges next winter. New Zealand has had no domestic cases of influenza over the last two years. Although influenza and RSV (respiratory syncytial virus) infection behave differently, the surge of RSV infections in 2021 illustrates what can happen when immunity falls to low levels and new cases are introduced from abroad. The incidence of most respiratory illnesses increases with the onset of winter, and an escalation of COVID-19 cases could be accompanied by epidemics of influenza and other diseases. This underlines the importance of improving vaccination next year against several diseases, including influenza, measles, and pertussis (whooping cough).
46. In Auckland and the neighbouring region over the last four months, Māori and Pasifika have borne the brunt of the COVID-19 outbreak. These communities will continue to be vulnerable, not only because of their lower vaccination coverage, but also because they are more likely to be exposed to other factors that put them at greater risk – such as poverty, crowded housing, intergenerational households, higher rates of co-morbidities, and barriers to

accessing health care. There needs to be an unrelenting focus on measures to minimise the resulting inequity in health and social outcomes, with initiatives being led by communities themselves wherever possible.

47. China, the country with the largest population in the world, is still following an elimination strategy. So are some of our smallest Pacific neighbours, such as the Cook Islands, Samoa, and Tonga. We need to do everything practicable to avoid introducing COVID-19 to these countries, which would all have limited capacity to deal with large outbreaks. The passage of measles from New Zealand to Samoa in 2019 had tragic consequences.

The future is partly in our hands

48. Many people demand “certainty” and “detailed plans with dates”, as we cope with the most challenging pandemic experienced in over 100 years. They need to be helped to understand that there is inevitable uncertainty, as the world tries to deal with a new viral agent that is continually mutating.

49. Clearly the appearance of new variants such as Omicron is beyond our control, except to the extent that New Zealand should be doing everything possible to support global efforts to end this pandemic.

50. In other respects, however, the probability of alternative scenarios for 2022 partly depends on our own actions. These include progress in primary vaccination, uptake of boosters, Government decisions about the COVID-19 Protection Framework and border restrictions, people’s adherence to public health and social measures, and the success of testing and contact tracing systems.

We will be happy to update our forecasts in the coming months.

With best wishes for Christmas and the coming year,

Yours sincerely

David Skegg (Chair)
Maia Brewerton
Philip Hill
Ella Iosua
David Murdoch
Nikki Turner