DEPARTMENT OF THE PRIME MINISTER AND CABINET
TE TARI O TE PIRIMIA ME TE KOMITI MATUA

Proactive Release

The following document has been proactively released by the Department of the Prime Minister and Cabinet (DPMC), on behalf of Hon Dr Ayesha Verrall, Minister for COVID-19 Response:

Priorities of New Zealand's COVID-19 vaccination programme

The following document has been included in this release:

Title of letter: Priorities of New Zealand's COVID-19 vaccination programme

Strategic COVID-19 Public Health Advisory Group

12 October 2022

Hon Dr Ayesha Verrall
Minister for COVID-19 Response
Parliament Buildings
Wellington

Dear Minister

Priorities of New Zealand's COVID-19 vaccination programme

Thank you for meeting with the Strategic COVID-19 Public Health Advisory Group on 10 August 2022 and for providing us with written commissioning on 16 August. We welcome your invitation to provide advice on the objectives of New Zealand's COVID-19 vaccination programme, including how to make them explicit and prioritise them in the context of an evolving pandemic.

Scope of this advice

1. Manatū Hauora advises that the current priorities for New Zealand's COVID-19 vaccine programme are:

    a. *"Supporting a higher uptake of boosters; increasing vaccination rates for high-risk Māori populations, Pacific populations (over 50), all people aged 65+, and vulnerable groups who continue to be disproportionally impacted by barriers to immunisation; second boosters for people in Aged Residential Care (ARC) facilities; and increasing rates of vaccination for 5-11 year olds, particularly for tamariki Māori."*

2. When we refer to 'increasing vaccination rates' in this advice, we are talking about increasing the number of people who can be considered 'up to date' with their COVID-19 vaccinations based on current eligibility. For example, at the present time, for people aged over 50, 'up to date' generally means having received four doses of the vaccine. For severely immunocompromised, it means five doses. For children under 16, it generally means two doses. Those over 16 who have had two doses should be considered 'partially vaccinated'.

3. At this stage of the COVID-19 vaccination programme, we recommend adjusting the language used when talking about vaccination to ensure it remains fit for purpose by emphasising the time since last dose in conjunction with the number of doses (e.g., staying 'up to date' with vaccination based on the number of doses per specific indication, but not using terms such as 'fully

vaccinated' that indicate a 'final state' of COVID-19 vaccination). We consider that the terms 'primary course', 'first booster' and 'second booster' are becoming less useful. This has become more apparent as the programme has evolved with different vaccination requirements for different groups.

4. In line with your commissioning, we have not considered eligibility or vaccine supply issues. Our considerations included interaction with modelling experts and public health officials. The Deputy Director-General of Health, Dr Andrew Old, also provided useful input.

5. We also acknowledge the Department of Prime Minister and Cabinet (DPMC) secretariat who supported this work and the production of this report.

What should our COVID-19 vaccination programme seek to achieve?

6. We support most priority recommendations made by Manatū Hauora regarding New Zealand's vaccination programme for increasing vaccination rates for certain groups. That is, we support the priority focus on high-risk Māori populations, Pacific populations, all people aged 65+, vulnerable groups who continue to be disproportionally impacted by barriers to immunisation, and people in Aged Residential Care facilities.

7. We consider the overarching objectives of our COVID-19 vaccination programme should be to reduce severe disease, death, and hospitalisations. Our efforts should have a priority focus on reducing inequity across these measures, by increasing vaccination rates in groups where the gains would be greatest across those at highest risk.

8. Recent exploratory analysis provided to our group from the Public Health Agency (PHA) observed that there is excess risk of mortality for older ages, Māori and Pacific peoples, those from lower socio-economic backgrounds, and those with co-morbidities. Younger populations are significantly less at risk.

   a. *Older ages:* All international and local data continues to show the overwhelming burden in the elderly. Age is the most important characteristic associated with the risk of post-booster COVID-19 severe disease and death.[1]

   b. *Māori*: The strongest determinant of excess mortality risk for Māori is age and the level of vaccination.[2] The PHA analysis indicated that the risk was more substantial for Māori under the age of 60, compared with non-Māori.

[1] Nafilyan V., Ward I., Robertson C., Sheikh A. (2022). Evaluation of Risk Factors for Postbooster Omicron COVID-19 Deaths in England. *JAMA Network Open 5*(9). DOI: 10.1001/jamanetworkopen.2022.33446.
[2] Manatū Hauora – Ministry of Health (August 2022). Briefing: Inequities in COVID-19 Mortality (HR20221246).

We know that the vaccination rates for Māori, particularly third and fourth dose rates, are lower compared with the overall population.

c. *Pacific peoples*: As for Māori, the strongest determinant of excess mortality risk for Pacific people is age and the level of vaccination.[3] The PHA analysis indicated that the risk was more substantial for Pacific people under the age of 60, compared with non-Pacific people. We know that the vaccination rates for Pacific people, particularly third and fourth dose rates, are also lower compared with the overall population.

d. *Those from lower socio-economic backgrounds:* There is a consistent excess mortality risk with increasing deprivation.[4]

e. *Those with co-morbidities:* We also reflect that data to date from NZ descriptive epidemiology and mortality reports show severe disease and death in those with significant co-morbidities across all age groups, including high rates in pre-existing cardiac and respiratory disease,[5] immunosuppression and those with significant mental health issues, drug, and addiction issues. In younger adults, deaths in those with co-morbidities are disproportionately higher.

How do we achieve these objectives?

9. There are three pathways for potentially achieving these objectives: 1) herd immunity; 2) reduction in spread; and 3) direct individual protection. Given that current vaccines are less effective at preventing transmission (particularly of new variants) in a sustained manner, herd immunity is not a realistic pathway at this time. We therefore need a mix of direct individual protection and reduction in spread to reduce severe disease, death, and hospitalisations.

10. BNT 162b2, the Pfizer mRNA vaccine predominately used for our vaccination programme is particularly effective for individual protection and it shows high effectiveness against severe disease for older ages. Immunity does however wane, particularly against milder disease. Currently duration of immunity is not entirely quantified, but protection for at least six months to severe disease is expected for most.

11. BNT 162b2 is based on the spike protein of the original Wuhan SARS-CoV-2 strain. It is clear now that two doses alone in the current Omicron context do not provide the same protection for adults as for earlier strains. The ability to neutralise Omicron variants in vitro is severely diminished compared to earlier

[3] Manatū Hauora – Ministry of Health (August 2022). Briefing: Inequities in COVID-19 Mortality (HR20221246).
[4] Manatū Hauora – Ministry of Health (August 2022). Briefing: Inequities in COVID-19 Mortality (HR20221246).
[5] Waikato Omicron Hospitalisation Audit Team (2022). Waikato Prospective Rolling Audit of Hospitalised Patients with COVID-19 (Omicron Variant).

variants after two doses but can be achieved following three doses. Vaccine effectiveness after two doses against symptomatic infection with Omicron is reduced compared with the Delta variant.[6,7,8] An Israeli study showed that a third dose, given from around five months after the first two doses, was shown to reduce the rates of COVID-19 by a factor of 11.3 (95% CI 10.4–12.3) and severe illness by a factor of 5.4 (4.8–6.1) in older adults aged from 60 years, for up to 6 months.[9] Further Israeli data has shown that a fourth dose from 4 months after the third dose in those 60 years and older restores vaccine effectiveness against severe disease to around 62% (50 – 74%) and against death of 74% (50 – 90%).[10] The duration of immunity following a fourth dose is currently unknown. Generally, hybrid immunity (where a person has been vaccinated and had a COVID-19 infection) contributes further to protection. However, particularly in view of the recognised waning immunity, there remains a risk of COVID-19 infection for highly vulnerable, so for those at higher risk it is expected based on currently available vaccines they will continue to need repeated doses over time.

12. For healthy younger populations it is expected that, following the appropriate vaccination doses for age, exposure to COVID-19 is less likely to lead to severe disease than other groups. This will offer what is referred to as hybrid protection, immunity developed from being vaccinated followed by exposure to disease.

13. Current New Zealand data reports that 90% of the target population over 12 years have completed their first two doses but only 73% have received their third dose. There are significant disparities for Māori and Pacific people, with only 56% and 61% respectively having received a third dose. The fourth dose[11] has only been received by around 55% of those 65 years and over and 21% of 50-64-year-olds.[12]

14. Using vaccine data provided by Manatū Hauora as well as Risk Scores for COVID-19 Call Prioritisation,[13] we looked at which age groups, prioritised ethnic groups and deprivation groups, would see the greatest benefit from increased coverage of the next dose of the COVID-19 vaccination. Accepting that someone who has not yet received their first dose of the COVID-19

[6] Andrews N, Stowe J, Kirsebom F, et al. (2022). Effectiveness of COVID-19 vaccines against the Omicron (B.1.1.529) Variant. *N Engl J Med 386*: 1532-46. DOI: 10.1056/NEJMoa2119451 (as referenced in the NZ Immunisation Handbook 2020).
[7] Priddy, F.H., Williams, M., Carson, S., et al. (2022). Immunogenicity of BNT162b2 COVID-19 vaccine in New Zealand adults. *Vaccine, 40*(34): 5050-5059.
[8] Ariën, K.K., Heyndrickx, L., Michiels, J. et al. (2022) Three doses of BNT162b2 vaccine confer neutralising antibody capacity against the SARS-CoV-2 Omicron variant. *npj Vaccines 7*(1): 35. DOI: 10.1038/s41541-022-00459-z.
[9] Bar-On YM, Goldberg Y, Mandel M, et al. Protection of BNT162b2 vaccine booster against COVID-19 in Israel. (2021). *N Engl J Med 385*(15): 1393-1400. (as referenced in the NZ Immunisation Handbook 2020).
[10] Magen O, Waxman JG, Makov-Assif M, et al. (2022). Fourth dose of BNT162b2 mRNA Covid-19 vaccine in a nationwide setting. *N Engl J Med 386*: 1603-1614. DOI: 10.1056/NEJMoa2201688.
[11] People who are immunocompromised can have up to five doses.
[12] https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics/covid-19-vaccine-data#booster_counts (accessed on 30 September 2022).
[13] Risk Score for COVID-19 Call Prioritisation (V2.0) - Algorithm Hub (accessed on 10 October 2022).

vaccine is extremely unlikely to do so at this point in the pandemic, our focus therefore moved to the benefits of partially vaccinated people getting further doses. This analysis does not focus on the very high-risk immunocompromised group of people who had a high uptake of the five vaccine doses, offered because of their blunted vaccine response and given the availability of Evusheld in recent months.

15. Analysis of vaccine coverage across all priority groups suggests that the difference between those who have received one and those who have received two doses is small. The biggest difference occurs between those who have received two doses and those who have had at least one further dose. While this is most pronounced among those aged 54 years and younger, the absolute reduction in risk is small in these younger ages.

16. The biggest differences in coverage between successive doses are between doses two and three in people aged between 50 and 64. Almost 88,000 New Zealanders aged between 55 and 64 have received two doses but have not received their third dose, including 5,500 who identify as Pacific people, and 13,000 who identify as Māori.

17. For those aged over 65, 89% of people have received at least three doses, which is higher than all other age groups. However, there is a concerning difference between Pacific people and all other ethnic groups, particularly in high deprivation areas. That is, only 80% of Pacific people in high deprivation areas over the age of 65 have received their third dose. By comparison, of the same age group, 86% who are Māori and 88% of those who identify with 'Other' ethnic groups[14] in high deprivation areas have received at least three doses.

18. We used these data to give us information on general patterns and considered these in making our recommendations below.

Recommendations regarding the prioritisation of objectives

19. We note the significant value in sharing the kinds of data that informed this advice as we continue progressing through the pandemic. Acknowledging that Manatū Hauora has publicly released significant datasets relating to case numbers and vaccine uptake via Github, we believe there is significant value for the academic and citizen science data community in releasing joined up and granular data wherever possible, particularly in relation to hospitalisation, fatalities, and vaccine uptake.

20. We would also recommend that the prioritisation of vaccination objectives be reviewed regularly as the data change over time. In future, this should include hospitalisation and mortality data to allow estimations, such as the number

[14] This includes Asian, New Zealand European and MELAA (Middle Eastern/Latin American/African).

needed to vaccinate to prevent a hospitalisation in different groups, noting that these data were not available in time to inform our recommendations below.

21. To reduce severe disease, death, and hospitalisations, our vaccination programme needs to target those at higher risk. Based on current vaccination rates and highest risk of severe disease, and taking account of what the modelling tells us, we believe the most significant impact would be to:

a. ***Prioritise by dose***

i. *Firstly, increasing coverage for all incompletely vaccinated to get to the third dose completed*.[15]
The greatest gains with the omicron strain are with having completed to at least the third dose.
There is expected to be lesser gain for a focus on fully unvaccinated as this group is less likely to accept vaccination.

ii. *Secondly, increasing coverage of the fourth dose*.[16]
The fourth dose provides useful extra protection for higher risk groups, particularly to combat predicted waning of immunity if it has been more than six months since receiving their last vaccine dose.

b. ***Prioritise by age, ethnicity groups and socioeconomic status***

i. ***By age:***
1. *Firstly, focusing on the oldest age group first, getting up to and including the third dose.*
2. *Secondly, for all aged 65 plus getting fourth doses if it has been more than 6 months since their last vaccine.*

All international and local data is clear that severe outcomes are strongly linked with age. The number one priority should be for this group to get up to date with their COVID-19 vaccination – and we should aim as close to 100% coverage for this group as possible.

ii. ***By ethnicity:***
The primary focus should be to achieve equity in vaccination coverage across all ethnic groups, particularly for Māori and Pacific people. The absolute benefit for obtaining equity outcomes increases with increasing age.
1. *Firstly, prioritise Māori 40 years and older, with a particular focus on those aged 40 to 65 years where this inequity is greatest.*

[15] For people who are severely immunocompromised, this is a fourth dose.
[16] For people who are severely immunocompromised, this is a fifth dose.

2. *Secondly, prioritise Pacific people 40 years and older, with a particular initial focus on those aged 75 years and older.*
3. *Thirdly, prioritise all Pacific and Māori people for doses due by age.*

Across all priority groups listed above, the initial focus should be on increasing vaccination coverage for those in high socio-economic deprivation groups.

22. Alongside these priorities, we recommend retaining a strong focus on those with significant co-morbidities (disabled people, those with severe mental illness, obesity, important medical conditions, those with more than one medical condition).

23. We also note that there is low vaccination coverage for pregnant women. We consider that they are a high-risk group and recommend that they be considered for further attention.

24. **Summary initial priorities**: **New Zealand's COVID-19 vaccination programme should immediately prioritise increasing the uptake of third doses. We recommend starting in those over 75 years old to achieve as close as possible to 100% uptake and remove equity gaps in uptake between Māori, Pacific peoples, non-Māori and non-Pacific peoples and low and high social deprivation groups. We then recommend progressing down through the age brackets to achieve as close as possible to 100% uptake of third dose and remove equity gaps in New Zealanders 40 years of age and older.**

25. Our initial mass rollout of COVID-19 vaccines was very successful and our comparatively high vaccination rates remain a key tool for managing the pandemic. We have learnt much from our initial COVID-19 vaccine campaign and it is important that we leverage these lessons as we look to embed our COVID-19 vaccination programme within our wider National Immunisation Programme.

26. This advice is based on the knowledge of the current circulating COVID-19 strains and the currently available vaccines in New Zealand. The vaccination strategy will need to retain 'nimbleness' to refocus if there arises a new strain or a new vaccine that show a significant shift affecting effectiveness of the vaccines. Updating the language used for communicating public health advice on vaccinations to focus on 'staying up to date' with vaccinations is important with bivalent vaccines already being rolled out in some jurisdictions. It will also be important to closely monitor the progress of COVID-19 disease in vaccinated in the northern hemisphere over the winter season to inform the NZ strategic approach prior to the winter season in 2023.

27. Lastly, we need to balance the emphasis and resourcing attached to the COVID-19 vaccination rollout with other key public health priorities. In particular, we highlight the important focus on measles prevention (MMR vaccination) for tamariki and pertussis protection for infants (timely delivery of maternal and infant vaccination programme). We would welcome the opportunity to further discuss this with you.

We would be happy to discuss any of these recommendations.

Yours sincerely

Nikki Turner (Chair)
Maia Brewerton
David Murdoch
Ella Iosua
Matire Harwood
Patricia Priest