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1 June 2023

s 9(2)(a)

By email: s 9(2)(a)
Ref: H2023022501

Tēnā koe

Response to your request for official information

Thank you for your request under the Official Information Act 1982 (the Act) to Manatū Hauora (the Ministry of Health) on 26 April 2023 for information regarding transgender healthcare and COVID-19. Please find a response to each part of your request below:

> *"What sources did you base your decisions on for each of the following:*
> - *Removing info regarding transgender healthcare*

Manatū Hauora reduced the website content regarding transgender healthcare while an evidence brief to support this area was being completed. This is due to be released in soon and the webpage content has now been moved to Te Whatu Ora (Health New Zealand). More information on this is available on the Te Whatu Ora website here: www.tewhatuora.govt.nz/our-health-system/preventative-healthwellness/providing-health-services-for-transgender-people/.

The September 2022 update to the Manatū Hauora website recognised that overseas jurisdictions, including the United Kingdom, Norway and Sweden, were reviewing the use of puberty blockers in their health systems particularly in younger people. In light of relatively limited evidence available in this area, Manatū Hauora advice was changed to align better with that.

It is important to note that any medical intervention carries a balance of benefit and risk that needs to be considered in context by the person in partnership with their health professional. It is also important that health services meet the needs of all New Zealanders, with inclusiveness and dignity for all. Manatū Hauora is committed to providing better access, support and safe treatment for rainbow communities through our health system and ensuring the system is responsive to the needs of transgender, intersex, and gender-diverse people.

- *Removing mask mandates*

Overview of legal framework and decision-making process in relation to mandates

Throughout the period that mandates have been in place, Manatū Hauora has held regular public health risk assessments (PHRAs) to inform advice that the Director-General of Health provides to the Minister of Health (previously the Minister of COVID-19 Response).

Under section 14(5) of the COVID-19 Public Health Response Act 2020 ('the Act'), the Minister is required to keep COVID-19 orders under review. The PHRAs consider the current risk, and result in advice to the Minister on the recommended measures to mitigate the risk.

Under the Act, the Minister is required to have regard to advice from the Director-General of Health, but is not required to follow it. Health advice is not a requirement to amend, extend or revoke an Order.

The Minister then commissions a Cabinet paper, which assists her in fulfilling her obligations under section 9 of the Act. This Cabinet paper includes consideration of:

- advice from the Director-General of Health (described above);
- any decision by the Government on the level of public health measures appropriate to respond to those risks and avoid, mitigate, or remedy the effects of the outbreak or spread of COVID-19 (which decision may have taken into account any social, economic, or other factors);
- whether the order does not limit or is a justified limit on the rights and freedoms in the New Zealand Bill of Rights Act 1990; and
- appropriate to achieve the purpose of the Act.

The Minister then makes the final decision, drawing on the factors described above and consultation with her Cabinet colleagues.

Sources of information used in decision-making relating to removal of mask mandates

Manatū Hauora has identified 4 documents within scope of this part of your request. All documents are itemised in Appendix 1 and copies of the documents are enclosed. Where information is withheld, this is outlined in the Appendix and noted in the document itself. Where information is withheld under section 9 of the Act, I have considered the countervailing public interest in release in making this decision and consider that it does not outweigh the need to withhold at this time. Please refer specifically to documents 1 through 4.

The requirement to use masks in a large number of public settings was removed on 13 September 2022. The process and advice leading to this decision involved:

- Manatū Hauora held a PHRA on 17 August 2022.
  - Documents 1 and 2 are the material provided to committee members on this topic.
  - Document 3 is the resultant advice the Director-General of Health provided to the Minister for COVID-19 Response, recommended limiting the mask mandate to public transport and health service settings.
- Following this advice, Minister Verrall took a paper to Cabinet. As described above, the role of the Cabinet paper is to combine the health advice, advice provided by other government agencies, and requirements under section 9 of the Act (listed in dot points above).
  - Document 4 is the Cabinet paper that resulted in a decision to limit mask requirements only to visitors to health service settings.

Sources of information used in decision-making relating to removal of isolation requirements for household contacts

Manatū Hauora has identified 7 documents within scope of this part of your request. All documents are itemised in Appendix 1 and copies of the documents are enclosed. Where information is withheld, this is outlined in the Appendix and noted in the document itself. Please refer specifically to documents 5 through 9.

The requirement for household contacts to quarantine was also removed on 13 September 2022. The process and advice leading to this decision involved:

- Manatū Hauora held a PHRA on 17 August 2022.
  - Document 5 is the material provided to PHRA committee members on this topic.
  - Documents 3 is the resultant advice the Director-General of Health provided to the Minister for COVID-19 Response.
- Following this advice, Minister Verrall took a paper to Cabinet. As described above, the role of the Cabinet paper is to combine the health advice, advice provided by other government agencies, and requirements under section 9 of the Act (listed in dot points above).
  - Document 4 is the Cabinet paper that resulted in a decision to remove isolation requirements for household contacts.

Sources of information used in decision-making relating to reduction in isolation period

Changes were made to isolation requirements in February, March, and September 2022. These changes and associated health advice are outlined below.

- On 26 January 2023, Minister Verrall announced a three-phase public health response to Omicron. This involved a reduction in the isolation period for cases and close contacts at Phases Two and Three to 10 and 7 days respectively.
  - Document 6 (including 6A and 6B) is the health advice provided in response to a request from the Department of Prime Minister and Cabinet for information to support development of a Cabinet paper on the response to Omicron.
- On 10 February 2022, Ministers Hipkins and Verrall announced the establishment of the close contact exemption scheme, which provided a mechanism for some close contacts to reduce their isolation period.
  - Document 7 is the health advice provided in relation to this decision.
- On 14 February 2022, the Prime Minister announced that the country would move to Phase Two of the Omicron plan from 16 February 2022. As had been previously signalled, this involved a reduction in case isolation from 14 to 10 days, and for contacts from 10 to 7 days.
  - Document 8 is the health advice provided in relation to a shift to Phase Two in the Omicron response plan, including a reduction for case isolation to 10 days and 7 days for contacts.

- On 24 February 2022, Minister Hipkins announced that the country would shift to Phase Three from 25 February 2023. This meant that close contacts who were not household contacts were no longer required to isolate, and only confirmed cases and household contacts of confirmed cases were required to isolate (both for 10 days).
- On 9 March 2022, Minister Hipkins announced that the isolation period for cases and household contacts would shift to 7 days from 12 March 2022.
    - Documents 9 and 10 are the health advice provided in relation to this decision.

I trust this information fulfils your request. Under section 28(3) of the Act, you have the right to ask the Ombudsman to review any decisions made under this request. The Ombudsman may be contacted by email at: info@ombudsman.parliament.nz or by calling 0800 802 602.

Please note that this response, with your personal details removed, may be published on the Manatū Hauora website at: www.health.govt.nz/about-ministry/information-releases/responses-official-information-act-requests.

Nāku noa, nā

Dr Andrew Old
Deputy Director-General
Public Health Agency | Te Pou Hauora Tūmatanui

Appendix 1: List of documents for release

#	Date	Document details	Decision on release
1	N/A	Memo: Cover note for briefing on the public health value of mask mandates, 17 August 2023	Released in full.
2	11 August 2022	Briefing: Review of the public health value of mask mandates, 11 August 2022 (20221311)	Some information withheld under section 9(2)(a) of the Act, to protect the privacy of natural persons.
3	15 August 2022	Memo: Public Health Risk Assessment of COVID-19 Mandated Response Measures – 17 August 2022	Previously released under: www.health.govt.nz/system/files/documents/pages/memo_-_phra_of_covid-19_mandated_measures_17_august_2022.pdf
4	September 2022	Cabinet paper: Future of the COVID-19 Protection Framework and Moving to the New Approach	Previously released under: www.dpmc.govt.nz/sites/default/files/2022-12/SWC-22-SUB-0159-future-c19-protection-framework.pdf
5	15 August 2022	Memo: August review of isolation and quarantine requirements	A decision on withholding grounds for this document is currently being processed.
6	18 January 2022	Email: Ministry of Health Input into AOG Cabinet Paper on Omicron Strategy	Some information withheld under section 9(2)(a) of the Act.
6A	N/A	Ministry of Health Input into Omicron CPF Settings Cabinet Paper	Released in full.
6B	11 January 2022	Science and Technical Advisory Omicron Update	
7	2 March 2022	Briefing: Enabling COVID-19 cases who are critical workers to return to work (H20220374)	Some information withheld under the following sections of the act: • section 9(2)(a) and • section 9(2)(h) to maintain legal professional privilege.
8	11 February 2022	Briefing: Update on readiness to shift to Phase Two of the Omicron response plan (20020128)	Some information withheld under section 9(2)(a) of the Act.
9	7 March 2022	Briefing: Reduction to isolation requirements for cases and household contacts (20220400)	
10	8 March 2022	Briefing: Reduction to isolation requirements for	

#	Date	Document details	Decision on release
		cases and household contacts (20220415)	

Memo

Cover note for briefing on the public health value of mask mandates

Purpose

1. The attached briefing was in response to Minister Verrall's request on analysis and where possible data on the benefits and risks of mandating versus strongly recommending mask use.
2. The purpose of the briefing was not to provide advice, but rather just summary of the evidence and arguments.
3. This cover note provides an overview of the briefing, and brief additional info on some areas not covered in the briefing.

Key points

4. Masks work to reduce transmission.
5. Mask *mandates* work to improve adherence to masking.
6. The purpose/target for which they are being employed is important to understand in order to answer the question as to whether they work.
    a. We have limited data on which settings are currently driving most transmission in NZ context.
    b. If we were to switch to limiting mandates to most risky settings, this would likely mean adding some from Red, and some not covered, and dropping some from Orange.
    c. However, if the purpose is targeted to protecting the vulnerable, then targeting to places that people can't avoid (essential business, public transport etc) may be effective in reducing transmission to those groups. This is essentially Orange settings.
7. Do mandates wane over time?
    a. Depends to what extent to which it has become a social norm – eg if drink driving was to be decriminalised, large sections of the community would continue not to do it as they understand it to be socially unacceptable, and a risk to self and others.
    b. There are a series of supports that could be put in place to support masking to become a social norm.
8. Under what settings would we remove / reimpose mandates?
    a. The notion of thresholds is helpful. If cases are low then the value of masks (with or without mandates) is also low as there is less risk of being in close contact with someone who is infectious. The higher cases in the community, the higher the risk. If we could define, or suggest, some thresholds that would be helpful.
    b. Although need to be conscious that case ascertainment related to many factors, including deprivation.

c. Conceptual ways thresholds could operate:
    i. Based on judgement considering health and broader impacts (ie status quo)
    ii. Automatically mandated during specified periods:
        1. Based on set of indicators of community transmission (US)
        2. Based on specific timeframe (eg 6-month period) (Germany considering)

9. Impact on rights:
    a. Argument that mask mandates are qualitatively different to vaccine mandates in terms of the extent to which they impinge on people's rights.
    b. Evidence that mandates will help protect people, and in particular as a way of leaning towards -equity.
    c. Crown Law's view is that there are not BORA issues provided there is a way for someone to obtain an exemption.

10. Other considerations
    a. Interaction with HSWA 2015 – 'reasonably practicable'
    b. Potential to link to the presence of a publicly visible CO_2 monitor, and level

Summary of mask requirements at Orange and Red on CPF

	Orange	Red
Definition	**At Orange, there is community transmission of COVID-19, with increasing or significant risks to vulnerable communities, and pressure on the health system from COVID-19.**	**At Red, we need to take action to protect our vulnerable communities and health system from COVID-19.**
Gathering / capacity limits	• *Gathering limits* - no gathering limits indoors or outdoors.	• *Capacity limits* - based on 1-metre physical distancing rule in public facilities, retail businesses or services other than transport station retail business or services, and tertiary education providers. • *Fixed capacity limits* of up to 200 people (or based on 1m distancing, whichever is the lesser) - for indoor hospitality venues, gyms, gatherings, and events. • *Hospitality* – all customers/clients to be seated and separated 1m from other tables, and as far as possible physically distanced by 1m or more when not seated. • *No outdoor gathering limits.*
Face masks	• *Face masks* - required for any person over 12 years of age: - on public transport, school transport, arrival, and departure points for public transport service - parts of premises that are open to the public at: retail business or service, public facilities (excluding swimming pools), pharmacies, veterinary services or animal health and welfare services, court or tribunal, specified social service, NZ Post premises, premises operated by a central government agency, a local authority, or the New Zealand Police - at the premises of a health service, but only if the person is not a patient or worker of the health service. • Medical-grade face masks required for workers (only when working with the public) at: - hospitality businesses - close-proximity businesses - election workers at a voting place - workers at an event - border workers.	• *Face masks* – required as at Orange, with the addition of: - visitors to ECE centres - school settings (Year 4 +) - tertiary settings (in public areas and/or during formal teaching/ learning activities) - people on premises of close-proximity businesses - delivery workers where they are in close proximity to a client or customer - attendees at permitted gatherings (except where defined indoor space used exclusively for the gathering) - attendees at events - people on hospitality premises - when on public transport or school transport service if they are aged 8 years or over or a student in year 4 or above. • Medical-grade face masks required as at Orange, with the addition of: - workers at gyms - staff members working to provide, or support the provision of, education services to students at a registered school.
Exceptions	• The same set of face mask exceptions (eg where exempt, eating, outdoors, emergencies, exercising etc) apply at Red and Orange.	• The same face mask exceptions (eg where exempt, eating, outdoors, emergencies, exercising etc) apply at Red and Orange.

Document 2

Briefing

Review of the public health value of mask mandates

Date due to MO:	11 August 2022	**Action required by:**	N/A
Security level:	IN CONFIDENCE	**Health Report number:**	20221311
To:	Hon Dr Ayesha Verrall, Minister for COVID-19 Response		

Contact for telephone discussion

Name	Position	Telephone
Dr Andrew Old	Deputy Director-General, Public Health Agency	s 9(2)(a)
Dr Harriette Carr	Acting Director of Public Health, Public Health Agency	s 9(2)(a)

Minister's office to complete:

☐ Approved	☐ Decline	☐ Noted
☐ Needs change	☐ Seen	☐ Overtaken by events
☐ See Minister's Notes	☐ Withdrawn	

Comment:

Review of the public health value of mask mandates

Security level:	IN CONFIDENCE	**Date:**	11 August 2022
To:	Hon Dr Ayesha Verrall, Minister for COVID-19 Response		

Purpose of report

1. You have requested a briefing on the value of ongoing mask mandates, and the potential public health risk of removing them. You have requested:
   a. benefits of both mandating the use and strongly recommending use; and
   b. inclusions of any data that may be available to support either view.
2. This report discloses all relevant information.

Summary

3. The evidence that mask wearing decreases the rate of transmission of COVID-19 (and other airborne respiratory viruses) is substantial.
4. The effectiveness of mask mandates as a public health intervention will depend on a number of factors – including the level of community transmission at the point in time; the nature of the settings in which masking is required; cultural and geographical norms around masking; correct mask use; and the extent to which improvements to ventilation/filtration have been enacted as systemic primary prevention.

Benefits of mask mandates

5. The key difference between having a mask mandate and strongly recommending mask use is that evidence suggests adherence is higher when there is a mandate. For example, one US study found that having a local policy that required masking increased the odds of wearing a mask by nearly 3-fold (OR = 2.99, P = .0003) compared to no requirement to wear a mask and by 2-fold compared to a recommendation only[1].
6. At the same time, there is evidence that the effectiveness of mask mandates, as with any repetitive health messaging, wanes over time. Although there are no systematic studies on mask wearing behaviour in New Zealand, in July 2022 15% fewer people believe others used a mask as required 'always or most of the time' compared May 2022 with a further 11% reduction between May and March 2022. In addition, although they should be treated with caution regarding their generalisation to New Zealand, studies from the

[1] Puttock EJ, Marquez J, Young DR, et al. Association of masking policies with mask adherence and distancing during the SARS-COV-2 pandemic [published online ahead of print, 2022 May 8]. *Am J Infect Control*. 2022;S0196-6553(22)00402-3. doi:10.1016/j.ajic.2022.04.010 https://www.sciencedirect.com/science/article/pii/S0196655322004023

US have found links between COVID-19 health message fatigue and adherence to preventative behaviour such as masking.

7. From a public health perspective, mask mandates compared to recommendations may have relatively greater ongoing value in reducing transmission which would in turn mean a greater impact in:

   a. limiting the likelihood of transmission to those most vulnerable; and

   b. limiting the population risk of long COVID, and other post-acute sequelae; and

   c. these effects would still be beneficial and improve equity at low levels of community infection.

8. There are three key public health risks if mask mandates were to be removed:

   a. risk of reduced adherence leading to increased transmission;

   b. risk that the outcomes would become more inequitable, as transmission to those most vulnerable could increase; and

   c. risk that members of the public may misinterpret the change as being a sign that 'the danger has passed'.

Benefits of strongly recommending mask use

9. From a public health perspective, strongly recommending (rather that requiring) masks would have value in:

   a. supporting a stronger focus on ensuring that the interventions to encourage and support mask use were in place;

   b. less stigmatising for those with disabilities that are unable to wear a mask; and

   c. responding to mask fatigue.

10. While reported case numbers are decreasing and hospitalisations have stabilised and starting to decrease, current levels of new infection as indicated by wastewater levels to week ending 31 July, still indicate a high risk of community transmission, as levels are similar to the March peak. Work is underway to provide thresholds in order to indicate levels of community infections that may help guide the level at which mask mandates could be replaced by guidance.

Recommendations

We recommend you:

a) **Note** the contents of this briefing **Noted**

b) **Advise** if you require any further information **Yes/No**

Dr Harriette Carr
Acting Director of Public Health
Public Health Agency
Date: 11 August 2022

Hon Dr Ayesha Verrall
Minister for COVID-19 Response
Date:

Review of the public health value of mask mandates

Background

Legal context

11. The COVID-19 Public Health Response (Protection Framework) Order 2021 (the Order) sets out a list of settings where masks are required to be used at Red and Orange on the COVID-19 Protection Framework (CPF). At Orange, this includes public transport, essential services, and most indoor public spaces. At Red, these requirements are expanded to also include educational settings (schools U4 and above, and universities), and also customers at close-contact services.

12. The Order exempts people from face mask requirements if they have a physical or mental illness or condition or disability that makes wearing a face mask unsuitable.

13. A new process for providing evidence of a person's exempt status was launched on 31 May 2022. The process involves the person making a declaration that they meet one or more of the criteria for exemption. People can apply for passes online via MyCovidRecord, or via one of several assisted channels. To date, more than 37,000 people have been issued with exemption passes, approximately 70 percent of whom were fully vaccinated or boosted.

14. Crown Law considers that mask mandates only engage protected rights insofar as they fail to exempt people who cannot safely or comfortably wear them because of a disability covered by section 21 of the Human Rights Act. This is not a problem with the current approach, as there has always been appropriate exemptions in relation to communication and disabilities that make compliance with mask wearing challenging. Communication is only truly impaired where someone has a hearing impairment, particularly if they rely on lip-reading, but an exemption exists in such cases.

Recent developments and current context in relation to mask mandates

15. The most recent significant change to mask requirements was the move from the red setting to orange which included removal of mask mandates in a number of settings including educational settings (Y4 and above) in April 2022. In July 2022, the Ministries of Health and Education strongly recommended that schools review and reinstate mask policies in all indoor settings for the first four weeks of Term 32.

16. The June 2022 behavioural insights survey commissioned by Manatū Hauora (Ministry of Health) found the following:[3]

    a. Most participants would be likely to wear a mask while at the hospital or medical practice (86%) on public transport (85%), grocery shopping (84%), in a taxi service (83%), in a retail store (82%).

[2] The Ministry of Education does not have data on the number of schools currently requiring masks in all indoor settings.
[3] Attitudes and behaviours to COVID-19 protection measures in the post-Omicron peak, prewinter context, June 2022 Report

b. Situations where participants were less likely to wear a mask were at a bar (61%), walking in the city (53%), at a large outdoor event (53%) and in your home if you are self-isolating (29%).

c. Participants aged 25-34 and 55-64 were more resistant to wearing a mask in any listed situation (particularly to large outdoor events such as rugby games or walking in the city) than other age groups. These participants were more likely to be of European ethnicity and more likely to have tested positive for COVID-19.

17. The July 2022 behavioural insights survey conducted by DPMC[4] indicates a decline in people reporting that they have think other New Zealanders "always or most of the time use a mask as required including on public transport and in shops" over the past month, (from 67 percent to 52 percent).

18. The requirement to wear a mask will have some impacts on individuals and businesses. For example, those with conditions which cause difficulties in wearing a mask may attempt to comply and not be aware of their right to apply for an exemption; or staff at affected businesses such as supermarkets may suffer abuse from customers when seeking to ensure compliance. However, these impacts have not been examined within a New Zealand setting beyond anecdotal reports.

Under what conditions are mask mandates most useful?

19. The value of mask mandates compared to strongly recommending mask use will depend on a number of factors:

a. the level of community transmission at the point in time – when community transmission is high there is relatively greater benefit; when community transmission is low there is relatively less benefit;

b. the nature of the settings – there are some settings where masking is the only practical mitigation possible (at least in the short-term – for example, on public transport), as some settings are more likely to have high-risk people present (e.g. hospitals), and some settings will be higher risk due to the 3Cs (closed spaces with poor ventilation, crowded places with many people nearby, and close-contact settings, especially where close range conversations are necessary without being able to physically distance);

c. cultural and geographical norms around masking – if there are strong norms that mask use is socially accepted and desirable, then the relative gain of requiring masking is less than if this is not a strong norm; mandates will have benefits for those who are relatively ambivalent about a particular action, but will comply if they must. It will be ineffective for those who strongly object to a measure. Therefore, the value of a mandate will be highly dependent on the pre-existing level of support for an action based on the current messaging and encouragement.

d. the extent to which improvements to ventilation/filtration have been enacted as systemic primary prevention – for example, other countries have established ventilation standards and/or requirements for CO_2 monitoring in many or all of the place where mandates typically apply (and in some cases beyond) – this means that

[4] TRA July 2022 Behaviour & Sentiment Topline Report.

the baseline risk in those indoor settings will be lower in those countries, somewhat reducing the relative value of a mask mandate.[5]

e. the extent to which people comply with other public health measures also in force, for example staying home if sick, testing if symptomatic, and isolating if COVID-19 case is confirmed.

20. Given the above, at the current point in time in New Zealand, on balance, the relative benefits of mask mandates outweigh strong guidance as:

a. the level of community transmission (based on wastewater detection) remains relatively high in relation to the March 2022 peak, noting though that reported cases and hospitalisations are declining;

b. there are variable social norms around masking; and

c. there has been very little systemic improvement to ventilation/filtration in these settings – a recent report of CO_2 levels in different indoor settings in New Zealand identified public transport as a location with markedly elevated CO_2 levels [6]. A more detailed analysis would provide further evidence to identify areas of highest transmission.

What is the ongoing relative value of mask mandates in New Zealand compared to public health recommendations to wear masks?

21. From a public health perspective, mask mandates compared to recommendations would have relatively greater ongoing value in reducing transmission when community transmission rates are high, which would in turn mean a greater impact in:

a. limiting the likelihood of transmission to those most vulnerable; and

b. limiting the population risk of long COVID, and other post-acute sequelae.

22. This section will explain and outline evidence for each of the above factors in turn.

Value in reducing transmission

23. The evidence that **mask wearing decreases the rate of transmission** of SARS-CoV-2 (and other airborne respiratory viruses) is substantial[7].

a. Masks (when worn correctly) are effective at preventing transmission of SARS-CoV-2 to a contact (protection) or preventing transmission of SARS-CoV-2 from a case (source control). However, not all masks have the same efficacy for protection and/or source control. Mask wearing becomes more efficacious when combined with other public health measures that reduce the risk of transmission. See appendix 1 for more detailed information.

[5] Manatū Hauora has signalled the importance of ventilation in the built environment for more than a year and has published information regarding ventilation at https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-health-advice-public/covid-19-ventilation, which includes links to the MBIE Healthy Homes Standards. However, the current advice does not address key practical issues such as: acceptable levels of ventilation in a range of built environments; measuring the level of ventilation and recommended interventions to improve ventilation. As a result, New Zealand's level of guidance lags behind jurisdictions such as that of the Victorian Government in Australia (see https://www.coronavirus.vic.gov.au/ventilation).

[6] Whose breath are you breathing. https://www.rnz.co.nz/news/in-depth/470690/whose-breath-are-you-breathing

[7] The Efficacy of Facemasks in the Prevention of COVID-19: A Systematic Review | medRxiv

24. **Mask mandates are typically associated with an increased adherence** (likelihood that someone will wear a mask). Optional mask use will reduce compliance and population effectiveness of the intervention if the aim is to reduce transmission. Mandates provide clear rules for mask use and will enable better compliance then voluntary guidance, at least in the short term.

    a. A study published in May 2022 analysing observed mask wearing was undertaken in 126 cities in the United States[8]. The overall adherence to correct mask use was 48% (52,740/109,999), with a rate of 66.5% (38089/57311) in cities with mask mandates, 31% (11383/36756) in cities where masks were recommended but not mandated and 20.5% in cities where mask wearing was not required (3268/15932). Therefore, having a local policy that required masking increased the odds of wearing a mask by nearly 3-fold (OR = 2.99, P = .0003) compared to no requirement to wear a mask and by 2-fold compared to a recommendation only.

25. **Mask mandates are typically associated with reduced transmission**.

    a. A study undertaken in the USA[9] in 2020 analysed the difference in community transmission rates before and after the introduction of a mask mandates in 15 states for all individuals and reported that a mandate decreased the daily COVID-19 growth rate by between 1 and 2 percent[10].

    b. Mask mandates have been consistently associated with a decrease in the prevalence of COVID-19 in the community, but unless masks are worn during all interactions, it can be difficult to identify if transmission occurred in a setting with or without a mandate in place. A study undertaken in a large US university with a mask mandate used genomic sequencing and contact tracing to identify transmissions events on the university campus[11]. There were over 850 cases of SARS-CoV-2 infection identified through weekly surveillance testing of all students and faculty on campus during the Autumn 2021 semester. There were nine instances of potential in-class transmission, defined as SARS-CoV-2 positive individuals whose only known contact was within the classroom and none of these instances were confirmed to be in-class transmission based on genome sequencing.

    c. Following the removal of mask mandates in New Zealand schools at the start of Term 2 this year, there was a clear increase in case rates in school aged children in May[12]. Case rates in both pre-school children and adults did not increase during this period. However, this change coincided with a move to Orange traffic light levels which also brought about a range of other changes such as removal of gathering limits, return of school assemblies and other fixtures and events so we are not able

[8] Puttock EJ, Marquez J, Young DR, et al. Association of masking policies with mask adherence and distancing during the SARS-COV-2 pandemic [published online ahead of print, 2022 May 8]. *Am J Infect Control*. 2022;S0196-6553(22)00402-3. doi:10.1016/j.ajic.2022.04.010 https://www.sciencedirect.com/science/article/pii/S0196655322004023

[9] Note that the reasons for mask-wearing may in US may vary in some cases compared to New Zealand and it is unclear whether the study design has controlled for these effects in this case. Caution should therefore be used when generalising these results to a New Zealand context.

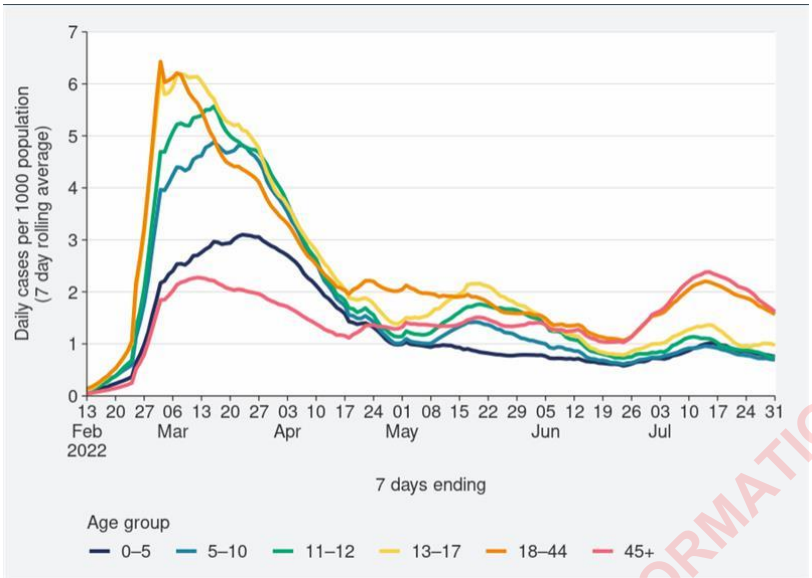
[10] Lyu W, Wehby G. Community Use Of Face Masks And COVID-19: Evidence from A Natural Experiment Of State Mandates In The US. Health Affairs. 2020;39(8):1419-25.

[11] Kuhfeldt K, Turcinovic J, Sullivan M, Landaverde L, Doucette-Stamm L, Hamer DH, et al. Examination of SARS-CoV-2 In-Class Transmission at a Large Urban University with Public Health Mandates Using Epidemiological and Genomic Methodology. JAMA Network Open. 2022;5(8):e2225430-e.

[12] Case rates for children remained relatively low relative to adults in early July despite masks not being mandated in schools however this may be due to the impact of immunity from previous infections on recent COVID-19 vaccination.

to say that the increase is due to removal of mask mandates, especially as some schools continued to require masks to be worn. See Figure 1 below and Appendix 2 for further information.

Figure 1: Daily case rates per 1000 population (7 day rolling average) in New Zealand - by age group, February - July 2022



26. While the message to 'stay home if you are sick' has been strengthened over winter, a key reason why mask mandates are associated with reduced risk of transmission is that they **reduce the risk that someone who is asymptomatic or pre-symptomatic will inadvertently infect another person**.

    a. Data from the United Kingdom (UK) COVID-19 Infection Survey which reported on what can be considered the beginning of the 'Omicron period' (20 December 2021 23 January 2022) indicates that approximately 54% of participants did not report any symptoms (within 35 days after first observed positive test), considered asymptomatic.[13]

    b. The risk of transmission from asymptomatic and pre-symptomatic cases has been established epidemiologically[14]. However, there is conflicting evidence for the relative risk of transmission from these individuals compared to cases who are symptomatic. Overall, any decrease in the infectiousness of individuals before they develop symptoms, or in those who never develop symptoms, is likely to be offset by the lack of isolation or other precautions that these individuals will take as they are unaware that they are infectious.

27. However the **effectiveness of mask mandates may wane over time** - as with any repetitive health messaging[15].

[13] UK Office for National Statistics. Coronavirus (COVID-19) Infection Survey, characteristics of people testing positive for COVID-19, UK: 02 February 2022. 02 February 2022. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/datasets/coronaviruscovid19infectionsinthecommunityinengland.

[14] Gao W, Lv J, Pang Y, Li L-M. Role of asymptomatic and pre-symptomatic infections in covid-19 pandemic. BMJ. 2021;375:n2342.

[15] A 2018 US experimental study (N = 312), for example, found that its subjects suffered from both reactance and disengagement in response to repeated anti-obesity messages. This 'message fatigue' in turn led to a reduced behavioural intention to adopt four

a. Although there is no systematic study in New Zealand on mask-wearing behaviour, 15% fewer respondents to a July 2022 study thought people use a mask as required, including on public transport or the shops, 'always or most of the time' compared to May 2022. There was a further 11% reduction between May and March 2022[16].

b. US studies should be treated with caution regarding their generalisability to New Zealand, given the potential for greater politicisation of mask mandates. Nevertheless a 2021 study (N=268) found that a greater perceived freedom threat was linked to greater reactance, which in turn was associated with lower levels of adherence to hygiene- and social-related COVID-19 preventive behaviour (e.g. mask-wearing and social distancing).[17] Similarly a 2022 study found a relationship between message fatigue and a person's future anxiety and willingness to remain vigilant for those with low autonomy satisfaction[18].

Value in limiting the likelihood of transmission to those most vulnerable

28. **Mask wearing, enhanced by mandates, makes it possible for someone who is at higher risk of poor outcomes to go about their daily life as safely as possible**. This has two benefits: it means that this group is (a) less likely to actually be infected, and (b) that they will be more likely to feel able to continue to safely participate in basic activities of daily life.

29. A conservative estimate is that one in every six New Zealanders is at high risk of poor outcomes. The Ministry of Health does not have precise figures for the number of New Zealanders who meet the definition of being at higher risk, however in April 2022, the number of 'clinically vulnerable' people (which is defined more narrowly than 'high risk') was estimated at 800,000[19]. Increased access to anti-viral treatment coupled with booster vaccinations help to mitigate the risk of severe illness in this group.

30. As BA.5 is more transmissible than previous COVID-19 variants and subvariants, it is reasonable that rates of household transmission will be higher than the BA.2 Omicron wave. In this context, the risk of infection for someone who is at higher risk does not relate simply to their own activities and actions, but rather that of the person with the greatest risk exposure in the household.

31. Therefore, there is a reasonable argument that it is not possible to put in place an equitable response for this group without ensuring that all reasonably practicable mitigations that can be put in place, are in place. The concept of 'reasonably practicable' is drawn from the Health and Safety at Work Act 2015, and simply requires consideration

recommended weight management behaviours (Kim, S. and J. So (2018). "How Message Fatigue toward Health Messages Leads to Ineffective Persuasive Outcomes: Examining the Mediating Roles of Reactance and Inattention." J Health Commun 23(1): 109-116 DOI: 10.1080/10810730.2017.1414900).

[16] See TRA 'July 2022 Behaviour and Sentiment Topline', p.10. The sample for this research is derived from the DPMC Behaviour and Sentiment monitor which runs once every 8 weeks. Only 52% of respondents in July 2022 considered other New Zealanders use a mask as required, including on public transport and in shops, always or most of the time. In May 2022, 67% answered this question positively and in March 2022, 78%.

[17] Ball, H. and T. R. Wozniak (2021). "Why Do Some Americans Resist COVID-19 Prevention Behavior? An Analysis of Issue Importance, Message Fatigue, and Reactance Regarding COVID-19 Messaging." Health Communication: 1-8 DOI: 10.1080/10410236.2021.1920717.

[18] Lee-Won, R. J., et al. (2022). "The Relationship between Future Anxiety Due to COVID-19 and Vigilance: The Role of Message Fatigue and Autonomy Satisfaction." International Journal of Environmental Research and Public Health 19(3): 1062 DOI: 10.3390/ijerph19031062.

[19] 'Options for improving respiratory protection against aerosolised viral particles for vulnerable and priority populations' (HR20220682), 29 April 2022. The definition of individuals 'at higher risk' is slightly wider than the 'clinically vulnerable' definition used in April. That said, many individuals are likely to fall into more than one group on the list. Using the figure of 800,000 as a conservative estimate of the number of people at higher risk; this equates to approximately one person in every six.

of the nature of the risk, the severity of harm that might result, and the existence and availability of control measures. This would ensure that people who are at high risk are not placed at *avoidable* increased personal health risk and are more equitably able to continue with basic daily activities.

32. While it is true that vulnerable people could continue to choose to mask, there is evidence that **source control (2-way masking) is more effective than personal protection (1-way masking)**:

    a. The benefits masking for the case, the contact or both has been studied in the laboratory using particle analysis[20]. Placing a cloth mask on the source resulted in an 80% reduction in the aerosol concentration ($p < 0.0001$). Placing a mask on the recipient reduced the concentration by 41% at a 0.9 m separation ($p = 0.0001$), and masks on both source and recipient reduced the concentration by 92% ($p < 0.0001$). Surgical or N95 mask would be expected to provide a greater degree of protection.

    b. Mask use decreases transmission due to preventing a case from exhaling virus into the air (source control) and by protecting the individual from inhaling virus in the air (personal protection). Source control has been estimated to be more effective than personal protection. Therefore, although a vulnerable person may be able to decrease the risk of infection, they are still reliant on others wearing masks to obtain the maximum protection.

33. It is clear that **Māori, Pasifika, people with disabilities, and people living in areas of high deprivation are likely to be disproportionately affected**[21] if mask mandates were removed and replaced with strong recommendations, as these groups are:

    a. more likely to not be able to work from home

    b. more likely to live in crowded households

    c. more likely to live in multi-generational households

    d. more likely to rely on public transport

    e. more likely to have underlying health conditions that put them at higher risk of poor outcomes

    f. less likely to access health services, or to have high level of health literacy.

34. The above factors mean that these groups will often have both greater exposure to risk and a higher likelihood of poor outcomes if they are infected. Mask mandates act as a counterbalance towards the acknowledged differential exposure to risk.

35. Without specific modelling, it is difficult to assess the scale of the impact dropping mask mandates would have on these groups. It would also depend on the prevalence at the time of the change – the impact would be greater if mandates are dropped while there are still relatively high rates of community transmission. It would also depend on the nature of other mitigations in place at time.

[20] Lindsley WG, Beezhold DH, Coyle J, Derk RC, Blachere FM, Boots T, et al. Efficacy of universal masking for source control and personal protection from simulated cough and exhaled aerosols in a room. J Occup Environ Hyg. 2021;18(8):409-22.

[21] Although this depends on how much transmission would occur in mask mandate settings if the mandates were dropped in favour of strong recommendations.

36. Similar to the argument in relation to people at high risk of poor outcomes, there is a strong argument to be made that it is not possible to put in place an equitable response for these population groups without ensuring that all reasonably practicable mitigations that can be put in place, are in place.

37. **Mask mandates also reflect the principle of active protection in Te Tiriti**. Specifically, in the context of BA.5, this requires a recognition that households that include Māori are more likely to be crowded, multi-generational, and have members who are at higher risk. This highlights the need to ensure, that when transmission rates are high, all mitigations that are reasonably practicable that can be made to essential services, work, school, and public places, are made.

Value in limiting the population risk of long COVID, and other post-acute sequelae

38. There are now several effective tools to reduce the likelihood of poor outcomes in relation to the acute stage of infection: vaccination, antivirals, and effective care pathways from the community through to primary, secondary, and tertiary care as appropriate all act as strong mitigations against poor outcomes.

39. While it may not be possible to get Re to below 1 with highly infectious variants/sub-variants, there is still significant value in trying to prevent infections where possible, as each new infection (or reinfection) effectively 'rolls the dice' for one or more post-acute sequelae that are known to occur such as Long COVID and increased risk of long term (up to 1 year) cardiovascular complications compared to individuals without COVID-19.[22]

40. Long COVID and other post-acute sequelae have personal costs, but also broader impacts on society, in terms of outcomes such as increased disability, increased welfare and health costs, and reduced workforce participation.[23]

What are the potential public health risks of removing mask mandates?

41. There are three key public health risks if mask mandates were to be removed and replaced with strong recommendations while transmission is high:

    a. risk of reduced adherence, leading to increased transmission;

    b. risk that the outcomes would become more inequitable, as transmission to those most vulnerable could increase; and

    c. risk that members of the public may misinterpret the change as being a sign that 'the danger has passed'.

42. This section will outline each of the above risks in turn.

[22] See Ballering AV, van Zon SKR, olde Hartman TC, Rosmalen JGM. 'Persistence of somatic symptoms after COVID-19 in the Netherlands: an observational cohort study'. The Lancet. 2022;400(10350):452-61; and Xie Y, Xu E, Bowe B, Al-Aly Z. Long-term cardiovascular outcomes of COVID-19. Nature Medicine. 2022;28(3):583-90.

[23] For example an August 2022 report from the Office for National Statistics in the UK estimated that 1.8 million people living in private households were experiencing self-reported long COVID (symptoms continuing for more than four weeks after the first suspected COVID-19 infection that were not explained by something else) see https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/4august2022.

Risks in reduced adherence and increased transmission

43. The main risk is that replacing mandates with strong recommendations will lead to the opposite of the above stated benefits:

    a. reduced adherence – while it may be true that compliance is not high in some settings, evidence both from overseas[24] and the recent experience of dropping legal mask mandates in schools strongly indicates that mask adherence would be even lower in these settings if mandates did not exist.

    b. increased transmission – although case rates are currently declining nationally, if mask mandates were removed, case rates could potentially increase – as they did when mask mandates were removed from schools; it is difficult to estimate the likely impact without modelling;

    c. reduced equity – as it likely that the impact would fall disproportionately on those most vulnerable; and

    d. increased population rates of long COVID and other post-acute sequelae – as a result of transmission occurring that would have been avoidable had mask mandates been in place.

Risks in accurately communicating risk to the public

44. There is also a risk that members of the public may misinterpret a shift from mandating masks to strongly recommending masks as a sign that 'the danger has passed'. There are already anecdotal reports that some people believe they are immune because they 'have had COVID', or that 'it's just like a cold'.

45. While there is relatively high public awareness of the range of outcomes from the acute stage of a COVID-19 infection, there is significantly less awareness of post-acute sequelae. If masking is left to a personal decision in relation to risk, there may need to be increased public information on these risks, so that people could make that decision from an informed perspective.

Risks in our ability to manage future waves

46. The COVID-19 pandemic has progressed in waves, which have been due to a combination of new variants and waning immunity. It is likely that this pattern will continue. It is not necessary for new variants to be more severe than previous variants for a rapid increase in hospitalisations which may cause significant pressure on the health system and further stress the health workforce.

47. Therefore, decisions regarding the use of a mask mandate would ideally be made in the knowledge that future waves of infection similar to the BA.2 and BA.5 waves will occur in the medium term and before the pandemic can be considered 'over'.

[24] See for example T. Mitze, R. Kosfeld, J. Rode and K. Wälde, 'Face masks considerably reduce COVID-19 cases in Germany' Proceedings of the National Academy of Sciences of the United States of America (PNAS), 3 December 2020, https://doi.org/10.1073/pnas.201595411.
20 d after becoming mandatory face masks have reduced the number of new infections by around 45%
Germany: https://www.pnas.org/doi/10.1073/pnas.2015954117
Alberta: schools with mandates 3 times more likely to have outbreaks https://www.cbc.ca/news/canada/calgary/alberta-government-mask-mandates-1.6477208

48. There continue to be developments in the management and understanding of COVID-19. The delay achieved from the elimination strategy enabled substantial benefits from vaccination which were substantial and long lasting. Strong baseline measures to prevent transmission of infectious disease are likely to be useful to flatten the curve and enable more effective implementation of interventions (such as new therapeutics) and new knowledge which becomes available over time.

49. In contrast, the removal and then re-instatement of mandates will take time. Considering the highly infectious nature of future variants, there is likely to be widespread community transmission very soon after a new variant is identified. From a public health perspective, it would be preferrable that mask use became a default behaviour, especially in essential services, where other public health measures, such as physical distancing and ventilation are currently not available. The repeated removal and reinstatement of public health measures is unlikely to result in widespread behavioural change.

What is the public health value of strongly recommending, rather than requiring mask use?

50. From a public health perspective, the benefits of strongly recommending (rather than requiring) mask use are as follows:

    a. Now that we have high vaccination rates, a large proportion of the population have also had COVID-19 (and hence, relatively high level of immunity in the community) and we have improved access to antiviral therapies for those that will benefit from them, there is no longer as strong an argument to maintain mask mandates at least in most settings where it currently applies.

    b. It would support a stronger focus on ensuring that the interventions to encourage and support mask use were in place:

        - To achieve a higher adherence to these measures, public health messaging plays a key role, especially if the messages are delivered by trusting figures, and is part of a suite of interventions (behavioural, environmental, legislative, etc).
        - The measures that need to be in place to achieve an improvement in public health behaviour, such as educational programmes, behaviour modelling, targeted public health advice, data collection and distribution and the provision of resources (such as masks) can be implemented without the addition of a legal mandate.

    c. It would respond to mask fatigue – possible explanations of the decline in observed mask wearing behaviour include messaging fatigue, perceived decline in risks/threats (vaccination), social/peer pressure (when among people who are less inclined to mask wearing). Such factors can lead to people taking active or passive actions to restore their freedoms (eg attending large gatherings or not wear masks);

    d. Prolonged mandates past a certain point may alienate the public – and reduce compliance behaviour; at the beginning of the pandemic people were more willing to accept reduced freedom for the greater good.

When do public health interventions typically involve legislative or regulatory requirements?

51. Public health interventions involving legislative or regulatory requirements are typically are put in place where:

    a. EITHER: the actions or inactions of one person have the potential to significantly impact on the health and/or safety of other people – for example, legislative or regulatory requirements apply to drink driving, to following road rules, and to food hygiene;

    b. OR: risk relates to the person themselves, but the potential impact is catastrophic, and/or where there a need to protect workers – for example, legislative or regulatory requirements relate to handling certain chemicals, removing asbestos, and children purchasing tobacco.

52. By contrast, there are no legislative or regulatory requirements in relation to putting on sunscreen, eating healthily, or getting physical exercise. For these types of interventions, guidance or advice is sufficient.

53. In situations where one person's actions have the potential to significantly harm another person, mandates are typically used – as opposed to a variable requirement to act at certain times and not at others. For example, smoking is not permitted in indoor public settings at all times, despite the risk of exposure (in the absence of the mandate) clearly varying by day and time. Similarly drink driving is not permitted at all times, regardless of the number of cars on the road.

Equity

54. This briefing on the public health value of mask mandates has considered relative impact that (a) mask mandates and (b) strong recommendations for masking might have on equity. Please refer to paragraphs 28 - 37 for full analysis.

Next steps

55. Please advise if you would like any further information on any element of this briefing.

ENDS.

Appendix 1: Detailed evidence of masking efficacy at reducing transmission of SARS-CoV-2

56. There is a considerable amount of data on the efficacy of masks in preventing transmission of SARS-CoV-2[25]. A summary of the information is provided in multiple sources including on the Ministry of Health Website.

57. Generally, studies point in the same direction and estimates find that student masking and teacher masking reduce transmission by 85% and 80% respectively. Although much of this data is observational and therefore subject to confounding, taken together, the evidence regarding the efficacy of masks is robust.

58. A large, representative study, with robust methodology, analysing the benefit of masks and ventilation in schools was undertaken in the Autumn of 2020 in Georgia, United States[26]. Mask requirements for teachers and staff decreased the rate of infection in schools.

59. A study on the use of masks in 5- to 10-year-olds found that masking alone did not significantly decrease their risk of infection. Improved ventilation did result in a ~40% decrease in the rate of infection which was similar to the improvement seen with mask wearing in teachers. Notably, the use of dilution only, which involved opening doors and windows, was effective, whereas using air-purifiers only did not significantly decrease the rate of infection. However, this study was not adequality powered to be generalisable to all school aged children and settings.

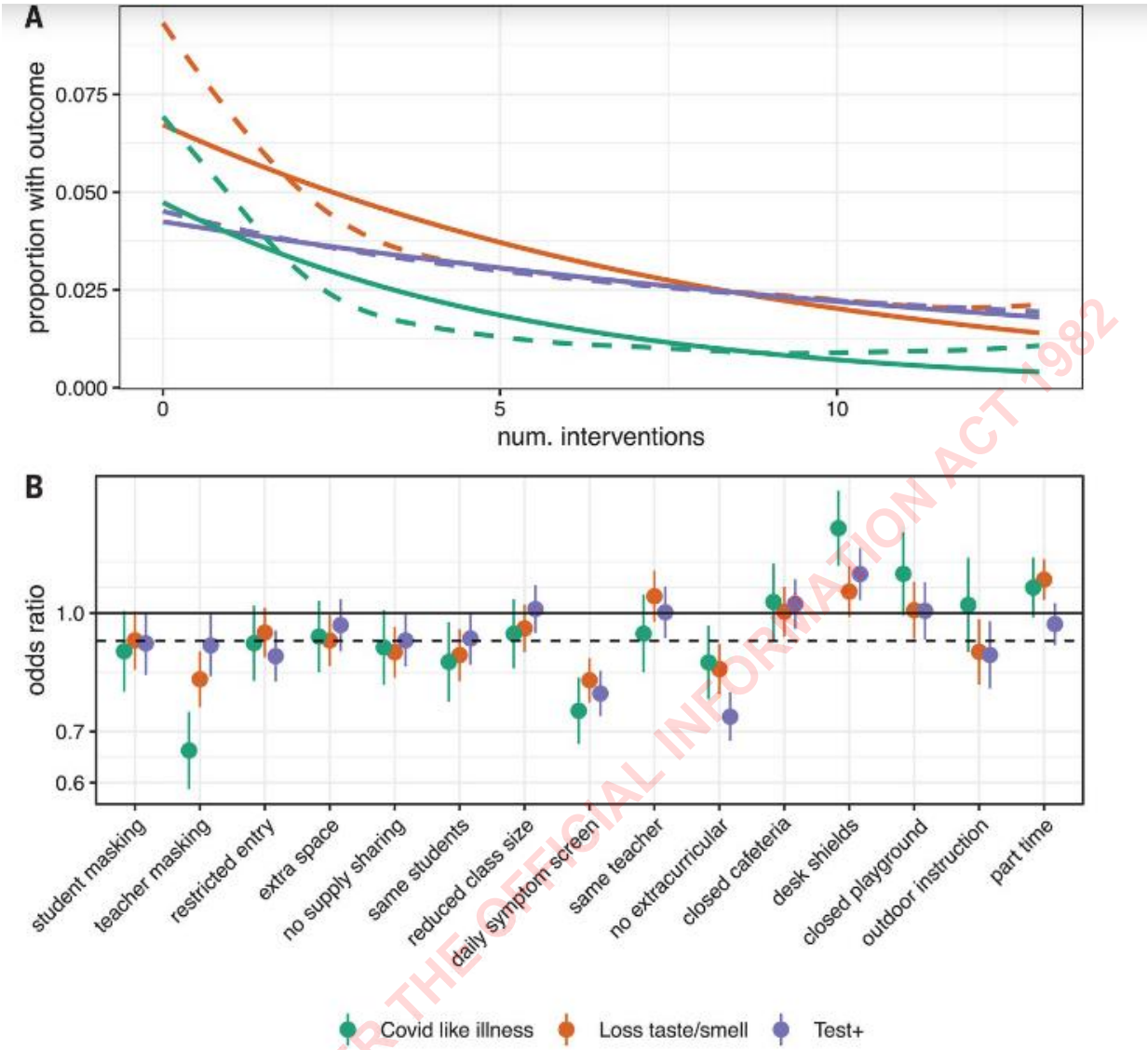
60. Masking is not the only public health measure which can influence the rate of COVID-19 infection. The relative contribution of various public health measures in schools to prevent COVID-19 was published in 2021[27]. This study analysed data collected from 2,142,887 total respondents across 50 states in the United States of America including Washington DC.

61. The study identified that increasing the number of interventions decreased the risk of transmission. Teacher masking and daily symptom screening appeared to be most effective at preventing infection in schools, with benefit also observed from student masking, cohorting and restriction of extracurricular activities [refer to ***Figure* 2**].

62. Reduced class sizes had less of an effect, and desk shields appeared to increase the risk of infection (potentially restricting air flow), which re-enforces the importance of airborne transmission and ventilation in managing COVID-19.

25 Talic S, Shah S, Wild H, Gasevic D, Maharaj A, Ademi Z, et al. Effectiveness of public health measures in reducing the incidence of covid-19, SARS-CoV-2 transmission, and covid-19 mortality: systematic review and meta-analysis. BMJ. 2021;375:e068302.
26 Mask Use and Ventilation Improvements to Reduce COVID-19 Incidence in Elementary Schools — Georgia, November 16–December 11, 2020
27 Lessler J et al. Household COVID-19 risk and in-person schooling. Science. 2021.

Figure 2 Impact of individual mitigation measures



*(**A**) Relationship between number of mitigation measures and percent reporting COVID-19–related outcomes using a log-linear (solid lines) and spline (dashed lines) model. (**B**) Odds ratio of COVID-19–related outcomes by mitigation measure in multivariable model including all measures versus the reduction resulting from a generic mitigation measure (dashed line). Student masking and teacher masking was found to reduce proven COVID-19 transmission in full-time educational settings by 85% and 80% respectively.*

63. With regards to the use of mandates, there is limited advice regarding the success of this in decreasing the risk of transmission of SARS-CoV-2 in schools. There are multiple reasons why there may or may not be a change in the rate of infections with the imposition or removal of mandates. Such reasons include that:

    a. Mandates are often included as part of a raft of policy changes and do not necessarily reflect the changes due to alterations in mask behaviour,

    b. The type of mask used may vary widely, and

    c. Compliance with the mask mandate is not assessed.

64. Internationally, mask mandates have been controversial. Adherence to mask wearing requirements in the United States during the periods these studies were performed was required by federal law. This mask mandate was politically contentious and was overturned in mid-April 2022.

65. A study was published in May 2022 assessing the relationship between local mask wearing policies and the adherence to mask wearing in 126 cities in the United States.[28] **Having a local mask mandate increased the odds of wearing a mask 3-fold (OR = 2.99, P = .0003) compared to no recommendation.** People observed in rural areas were least likely to wear masks. Correct mask use was greatest in December 2020 and remained high until June 2021 (P < .0001).

Factors that improve or reduce mask efficacy

Types of masks

66. N95 masks are very effective at preventing infection when used optimally are more effective than surgical masks. This is the underlying rationale for the use of these masks in high-risk healthcare settings.

67. However, the process for obtaining maximum benefit is part of the rigorous infection control procedures which are mandatory in a healthcare setting. Outside of these settings the marginal benefit of N95 masks vs surgical masks will be substantially decreased, even assuming full compliance.

68. Factoring in a lack of compliance and other behaviours which further decrease the efficacy of masks, there is probably benefit derived from a policy of recommending N95 masks for those at increased risk of infection, or severe outcomes, but the benefit derived from a policy of recommending N95 masks for the entire population is likely to be minimal

Fit testing and fit checking

69. For masks to provide maximal efficiency, all inhaled or exhaled air should be filtered through the mask. Consequently, even a highly efficient mask will not provide benefit unless there is a good seal to the skin. As individuals have different shaped faces, it is testing, which assesses the best type of mask for an individual, is recommended for the use of N95 masks when used in a healthcare setting. The process is time consuming and was not achieved for many border workers or others within various sectors who were required to wear masks.

70. It is highly unlikely that fit testing would be possible for the general public. Fit checking, which is analogous to testing swimming goggles for an airtight fit is recommended and outside of a high-risk healthcare environment, it is likely to be sufficient to provide significantly improved protection from N95 masks.

    d. Ideally, N95 masks or similar should be fit tested. However, even in the absence of fit testing N95 masks provide substantially increased protection compared to cloth masks and some medical masks.

28 Eric J. Puttock, et al Association of masking policies with mask adherence and distancing during the SARS-COV-2 pandemic, American Journal of Infection Control, 2022.

Duration (% of time worn)

71. The greater the time worn, the better the efficacy, but even wearing a mask some of the time is better than not wearing it at all.[29]

e. While continuous mask use provides the best protection from infection, intermittent mask use is also beneficial.

29 Andrejko et al. Effectiveness of Face Mask or Respirator Use in Indoor Public Settings for Prevention of SARS-CoV-2 Infection — California, February–December 2021, MMWR CDC. 2022

Appendix 2: Case study – removal of mask mandates in New Zealand schools in May 2022

Case trends in school aged children

72. It is difficult to determine from the available data if the removal of mask mandates from schools after the move from CPF (COVID-19 Protection Framework) Red level to Orange impacted on the rate of transmission within schools for several reasons. Most importantly, the removal of mask mandates was associated with changes to other measures such as capacity limits used to control the transmission of COVID-19 infection.

73. However, some indirect evidence regarding any varying risk of infection within schools may be obtained by a comparing the rate of infection in school age children and in teachers over time and with similar cohorts. This could indicate that schools are a potential "engine" of transmission of COVID-19 within the community.

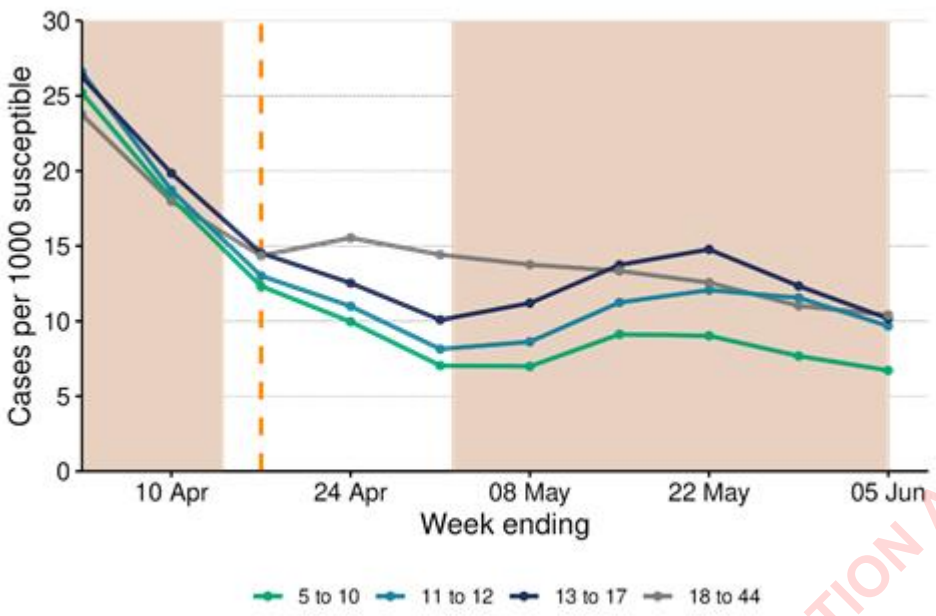
74. Therefore, we have provided an analysis of case rates in school aged children comparing with adults over the period 03 April to 05 June, which encompasses school term break and changes to the mandates. The weekly incidence rate among susceptible populations (defined as those who haven't had a previous infection, vaccination status was not considered) are shown in ***Figure 4***. Age breakdowns within children are chosen to match different school settings; primary, intermediate, and high school. The beige block represents school terms; Term 1 finished 14 April and Term 2 began 2 May. The dashed orange line marks the change to CPF from Red to Orange.

75. Initially there was a steady decline in rates among susceptible school aged children and adults during school term 1; in the two weeks to 17 April (the first Sunday of school holidays), there was a 50% decrease in the rate in all school aged children (5-17 years) and a 40% decrease among adults. The decline in cases among school aged children continued during school term break as well (a 39% decrease to Sunday 1 May), after which there were sudden substantial increases in rates after their return to school (an increase of 35% in the first 2 weeks, which continued in the following week as well). However, for adults during school holidays, overall, the rate changed little, and then continued to decrease after school holidays (however at a slower rate, with ~10% decrease from 1 to 15 June).

76. In general, prevalence drives incidence given adult rates were falling, this would not appear to be the explanation for school aged children having increased rates in mid-May. Furthermore, rates were declining before school holidays, when there was school-based transmission risk for children; with the return of children to school the trend reversed albeit only for the first few weeks of term.

77. These trends could suggest that removing the mask mandate may have increased the risk of acquiring COVID-19 in school settings for a short period at the start of term 2.

Figure 3: COVID-19 case rates in school aged children and adults aged 18-44



School terms are indicated in beige shading, school holidays in white shading. Rates in children declined before and during the holidays but increased when school resumed. Rates in adults (grey) were not impacted as markedly during and after the school holidays.

Teacher absences due to COVID-19

78. The Ministry of Education collects information on teacher absences due to COVID-19, as special arrangements for sick leave are provided for teachers due to COVID-19 infection.

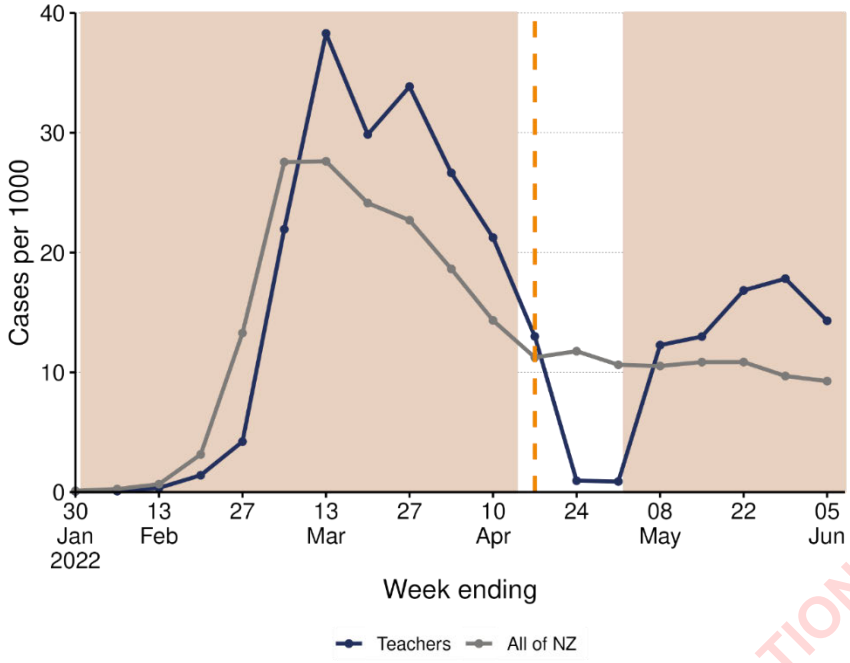
79. A comparison between the case rate in teachers and the total population would indicate their rate of infection is higher than that of the general population [refer to ***Figure 5***]; however, it also possible that their case ascertainment is higher than the general population, although teachers are not required to undertake regular asymptomatic screening.

80. The evidence suggests an increase in transmission in the school environment in Term 2 as:

    a. there was a similar pattern of decreasing rates at the end of Term 1 and increasing at the start of Term 2 as seen in school-aged children, and

    b. trends in the total population were of continued decreasing rates, unlike the increase seen in teachers.

Figure 4 The rate of infection in teachers compared to all of NZ. cases per 100 per day, week.



Behavioural Insights

Achieving behavioural change in the short and long term

81. Key behavioural considerations for mask wearing in schools include:

    a. Effective behaviour change in the short term can be achieved with a 'stick' approach – making mask wearing a requirement – for a short time (eg weeks, months), especially when the threat is seen and felt by parents and children to be real and immediate.

    b. In many situations this is a very useful approach to signal potential danger as well as enhance protection of the population quickly.

    c. In school settings, individual student behaviour (eg mask wearing) is strongly influenced by the behaviour and expectations of their peers.[30]

    d. Additional cost (eg time or financial resources) will influence the ability of individuals to adhere to a mandate.

    e. Providing high-quality masks to schools wishing to implement a masking policy, especially schools in lower socio-economic areas, should increase the uptake.

Mandates are effective when used alongside other tools available for encouraging adherence to public health measures.

82. The use of additional measures, such as improved ventilation and vaccination uptake, will influence the potential benefits from a mandate.

83. Ventilation in schools can usually be achieved through natural ventilation, CO_2 monitoring, and alignment of the use of the space to the ventilation possible in that space.

30 Veenstra R et al. Peer network studies and interventions in adolescence. Current Opinion in Psychology. 2022.

84. Management of additional respiratory pathogens, such as influenza and RSV, which impact on a child's education. For example, the provision of free influenza vaccination for all children and staff. From this perspective, consideration could be undertaken regarding providing a free vaccine for extended whanau and/or the national population.

85. The effective use of COVID-19 vaccination, including boosters in the eligible population, is another tool that can influence the benefits of a mask mandates.

86. The use of a robust strategy of early detection, using rapid antigen testing (RATs), to identify individuals with COVID-19 early and minimise the risk of transmission within schools with a decrease in the requirement for closure of whole schools or classrooms.

Appendix 3: Research on behavioural science of mask mandates

87. Several papers and systematic reviews have concluded that mask mandates improve the level of adherence to varying degrees. There is some evidence that long-term mask mandates could improve adherence to mask wearing when combined with additional interventions[31].

88. Some research found that a voluntary policy was perceived to be less fair and could intensify stigmatisation of those who wore masks. This is because mask wearing is a social contract wherein compliant people perceive each other more positively, and noncompliance is socially punished[32]. Some research pointed out that mask mandates contradict the understanding of a social encounter, and should be enforced only if there is a clear public health need[33].

    a. Use respected individuals as role models at the national and local levels to demonstrate adherence to recommendations and establish social norm

    b. Ensure a unified and clear message with local jurisdictions and healthcare organisations for showing support and providing region specific information.

89. When making changes (especially, reversing) to a health recommendation, it is important to gain support and feedback from local health providers, communities, NGOs, and other stakeholders prior to the change, and be clear and transparent with the public on the reason for the changes.

90. When considering between mandating and recommendation, there is an inherent assumption that the public will understand and appreciate the difference. However, studies on non-mandate scenario have found that the burden on the individual to determine the pros and cons of mask wearing and when to wear a mask can lead to lower adherence to mask wearing. From a public health standpoint, the goal is to achieve a high enough level of adherence. The problem is there is often insufficient local data to provide evidence that a strong recommendation is sufficient to achieve this objective. Furthermore, this still shifts the burden of discerning the appropriate action onto individuals.

91. From a social psychological perspective, there are several reasons for low adherence to public health measures**,** such as confusing messaging, low perceived risk, lack of observable and consistent norms[34].

92. To achieve the public health goal there are other tools that can be used. The advantage of these techniques is that they have the potential to leverage psychological tendencies

[31] Ontario Agency for Health Protection and Promotion (Public health Ontario). Association between mask mandates and population-level COVID-19 outcomes –What We Know So Far. Toronto, ON: Queen's Printer for Ontario; 2022.
[32] Betsch, C., et al. (2020). "Social and behavioral consequences of mask policies during the COVID-19 pandemic." Proceedings of the National Academy of Sciences 117(36): 21851-21853 DOI: doi:10.1073/pnas.2011674117
[33] Zimmermann, B. M., et al. (2021). "Face mask uptake in the absence of mandates during the COVID-19 pandemic: a qualitative interview study with Swiss residents." BMC Public Health 21(1): 2171 DOI: 10.1186/s12889-021-12215-4 ***2021/11/26.***
[34] Young, S. D. and N. J. Goldstein (2021). "Applying social norms interventions to increase adherence to COVID-19 prevention and control guidelines." Preventive Medicine 145: 106424 DOI: https://doi.org/10.1016/j.ypmed.2021.106424 ***2021/04/01/.***

and biases while preserving individuals' sense of freedom. Some options for consideration are already in use in New Zealand but can be enhanced[35].

93. Please note that each study referred to above is independent of each other and follows different methodology. Therefore, conclusions from them are not accumulative, nor are they applicable in different contexts

[35] Young, S. D. and N. J. Goldstein (2021). "Applying social norms interventions to increase adherence to COVID-19 prevention and control guidelines." Preventive Medicine 145: 106424 DOI: https://doi.org/10.1016/j.ypmed.2021.106424 ***2021/04/01/.***

Document 6

From: Ross Thomas
Sent: Tuesday, 18 January 2022 2:57 pm
To: beth.hampton@dpmc.govt.nz
Cc: ruth.fairhall@dpmc.govt.nz; Laura Miller; Steve Waldegrave; Annie Hindle; Mark Heffernan; Jonathon Jones; Kirsten Stephenson; Mikey Smyth; Ross Wood
Subject: Ministry of Health Input into AOG Cabinet Paper on Omicron Strategy.
Attachments: Ministry of Health Input into Omicron CPF Settings Cabinet Paper RT.docx; STA Omicron Science Update (11 January 2022).pdf

Hi Beth,

Please find attached our answers to your commission below.

- **Health**
  - What we know about Omicron, including:
    - What we know about the impact of booster doses, including whether people who are not yet eligible for the booster are more at risk than those who are boosted
  - TTIQ model for Omicron
    - Advice on isolation, in particular, on:
      - the potential impact of allowing asymptomatic or mildly unwell individuals to continue to work, with public health measures in place, if they are critical for business continuity
      - if we reach 5000 cases a day, what impact will isolation have on flattening the curve?
  - Progress of vaccine roll out (though can likely pick this up through the CPF colour review)
  - Vaccine Passes (including info on whether passes can recognise boosters) (there have been some initial discussions on this, but just need the status of this confirmed in writing please)
  - How prioritisation of resources will occur (and who will be prioritised)
  - Advice on whether the set of questions the Director-General of Health will consider when advising on the appropriate colour level for each region are still appropriate, in particular the questions to guide decisions about moving from red to localised lockdowns

The Science and technical advisory update is from 11 January, an updated version will be issued tomorrow which I will forward through promptly.

Let me know if you require any further clarification on the points.

Cordially,

Ross Thomas | Senior Policy Analyst | COVID-19 Policy
System Strategy and Policy | Ministry of Health
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Kaua e mate wheke mate ururoa

Document 6A

Ministry of Health Input into Omicron CPF Settings Cabinet Paper

What we know about Omicron

- Refer to the attached COVID-19 Science and Technical Advisory Update for data on:
  - Transmissibility
  - Clinical features (Symptoms and Severity)
  - Disease Course
  - Immune Evasion, Vaccine Effectiveness and Therapeutics
  - Detection

Vaccination

The primary aim of vaccination is to prevent infection and severe illness in the individual vaccinated. Vaccination with the Pfizer vaccine is effective at preventing severe disease and death due to the Omicron Variant. However, while evidence suggests the Omicron variant is less severe (in terms of hospitalisation and mortality rates), it is significantly more transmissible than Delta.

Two doses of Pfizer are unlikely to be sufficient protection against transmitting the virus to others to prevent widespread outbreaks.

Impact of Booster Doses: Three doses of Pfizer appear to have good protection against Omicron, albeit that evidence is still emerging. This holds true for protection against infection and symptomatic disease - which are relevant for reducing transmission, and therefore related to issues around contact tracing, supply chain considerations, furloughing healthcare workforce etc. – and protection against hospitalisation, which impacts burden on the healthcare system.

Protection against infection: Current estimates are that 3 doses of Pfizer have a vaccine effectiveness (VE) against Omicron infection of ~55-63% and then that wanes over the subsequent months. If someone cannot get infected, then they cannot transmit, so by definition this does provide some protection against 'transmission' within the population generally. There are no measures of VE for 'onwards transmission' (i.e., once someone has become infected, what protection is provided against passing it on). By comparison, 2 doses against Delta were associated with a VE against infection of ~70-80% and that waned to ~40-50%, but estimates varied.

Protection against symptoms: VE for symptomatic disease for 3 doses against omicron is ~70%, and is ~50% after 2.5 months, based on UK data.

Protection against hospitalisation: Emerging data on VE against hospitalisation for omicron (3 dose, Pfizer) is approximately 88-94%, even after waning and even in populations over 65+. Boosting prior to exposure to omicron may have a substantial impact on protecting the healthcare system. Taken together, the VE against infection and symptoms suggests that boosting (3 doses) with Pfizer still provides substantial protection by most vaccine standards. Other countries did not have the opportunity to increase their booster program prior to omicron. For them, the goal of increasing the booster program as the omicron wave was unfolding was more to provide protection for individuals, and less to reduce transmission or healthcare burden at a population level, because they did not have time to rollout high levels of boosting against the speed of omicron wave. Given the opportunity, even a short period of boosting prior to omicron may have a substantial impact on transmission and hospitalisation, particularly in a country with no prior levels of infection.

Timing of Boosters: The decrease in vaccine efficacy occurs soon after vaccination, namely within two months and is marked by 6 months. However, evidence from vaccination from other variants indicate that a slightly longer period between the first and second dose resulted in an improved response. It is difficult to weigh the risk of infection from delaying a booster shot against the possible benefit from an improved response from a delay between vaccination and booster. This balance will be influenced by the prevalence of disease in the community. In the setting of Omicron, a shorter interval would probably be favoured.

Recognising booster shots on 'My Vaccine Pass'

- Currently you do not need to have a booster dose to be 'fully vaccinated' for My Vaccine Pass or an International Travel Vaccination Certificate.
- If you do get a booster dose, it will be added to My Covid Record and you can create another pass.
- The policy work around including boosters in the definition of fully vaccinated and therefore becoming a requirement for a valid vaccine pass is still being worked on (preparing a paper as we speak), and no decisions have been made as yet.

Summary of Vaccination

Intervention	Evidence	Comment
Primary vaccination (2 dose)	Vaccination with the Pfizer vaccine is effective at preventing severe disease and death due to the Omicron Variant. However, two doses of Pfizer are unlikely to be sufficient protection against transmitting the virus to others to prevent widespread outbreaks.	Maximisation of primary vaccination is likely to reduce the number and severity of hospitalised cases.
Booster Vaccination (3 dose)	A third dose / Booster of Pfizer vaccine will further decrease the risk of hospitalisation and severe disease; and will reduce the transmissibility of Omicron for a period.	The United Kingdom has relied on the roll out of boosters to protect the community from Omicron.
Optimal timing from primary vaccination to first booster	Vaccine efficacy against symptomatic disease wanes within 6 months of vaccination. Optimal time for a booster is probably between 2 – 6 months	A high proportion of "boosted" individuals is likely to be required before a marked change in the epidemic curve (cases or infections) is observed. Boosting vulnerable populations may impact hospitalisation burden.

Vaccination of vulnerable individuals and essential workers	Vulnerable individuals are more likely to experience severe disease. The elderly have been shown to be less likely to require hospitalisation from Omicron infection after a booster.	The combination of waning efficacy, severity of outcomes and impact on health services indicates that boosting of at-risk populations including the elderly, Māori and Pasifika is paramount to reducing disease burden

Impact of national or regional lockdowns

- There is limited evidence on the use of lockdowns to control the spread of Omicron. Interstate travel restrictions remain in place for many states including Tasmania, South Australia, and Western Australia, which may have aided in keeping case growth relatively low in these states. However, previous modelling for the Delta outbreak in New Zealand has indicated that once community prevalence is above a certain level, incursions across borders will have less impact on overall dynamics of the outbreak.

- Austria instituted a lockdown in November to curb the growth of Delta and cases declined. However, the lockdown was lifted for the vaccinated in mid-December and following the entry of Omicron to the country, cases again surged to record levels. Similarly, Germany implemented lockdown in early December for the unvaccinated and cases dropped rapidly, however cases have again begun to surge as the Omicron variant spreads throughout the country, despite the lockdown for the unvaccinated staying in place.

Advice on whether the CPF transition settings remain fit for purpose, in particular the questions that guide the decision to switch from 'red' to localised lockdowns

- Using test positivity with baseline of less than 2% would be a useful proxy for determining whether additional public health controls are necessary (including the possibility of localised lockdowns). This indicator is a good proxy for knowing how many positive cases we are missing, as it indicates a "tip of the iceberg". Also, if we use this as a proxy for lockdown, we have the chance to stem cases before they overwhelm our testing system because we are focused on testing as an indicator. We already collect this data, it is available at high frequency, it is part of our early warning indicators and has been used to inform the upcoming CPF assessment.

- Using case rates and r-eff data is likely to be too slow. By the time they hit an agreed threshold for additional public health controls (including the possibility of localised lockdowns; the outbreak would already be advanced and measures such as lockdowns may be less effective – leading to potential overwhelming of testing systems, hospitals etc

- In the initial Omicron Planning, the following triggers to investigate local outbreaks and/ or implement additional controls have been identified:
    - Rapid increase in case numbers
    - Cases/clusters in critical infrastructure workplaces and health care settings
    - Healthcare workers testing positive
    - Hospitalised patients for other indications testing positive

Impact of permitting asymptomatic or mildly unwell individuals to continue to work

- Vaccines are about ~50% effective at preventing onward transmission. If being fully vaccinated results in less severe symptoms than Delta, a highly vaccinated population may increase the volume of asymptomatic cases (i.e. are more difficult to detect and isolate so Omicron remains in circulation in the community). Currently, data suggests that about 10% of all cases are asymptomatic.

- Preprint data from South Africa found Omicron was more associated with asymptomatic infection and transmission than Beta and Delta.

- There is a scenario in which the number of people with Omicron, or who are close contacts of those people, are so high that continued isolation becomes unfeasible. This could be the point at which essential services can no longer operate effectively; or it could be at some lesser point where the societal impact of public health measures are no longer proportionate to the harm being prevented. At this point, we would need to consider whether some people could continue to work.

- There are several factors that would need to be taken in to account. Primarily, where we are in terms of an Omicron wave and the phase of response, or management. In an early part of the wave, we would want to be more conservative in asking people to isolate while unwell or likely still infectious. Later in the wave, a larger proportion of the population is likely to be affected, absenteeism would be high and cumulative impacts on critical workforces/services/infrastructure would be probable. At this stage the risk tolerance parameters would be shifting and the need to maintain critical services may be considered more important than some control measures (such as staying home when unwell or infectious).

- The other set of factors that would need to be considered would be:
    - The criticality of the work;
    - the risk of onward transmission;
    - the risk to vulnerable individuals or groups; and
    - the availability of possible control or testing measures (including RATs testing).

  For example – truck drivers may be considered critical for supply chains – and may present minimal risk to others as much of their time at work may be alone in the cab – with distancing and mask wearing possible when in depots etc. Similarly, milking a dairy herd would have minimal risk to others.

- Roles that are critical and that do present more risk to others, eg healthcare workers, could use alternative management measures such as daily RATs, the usual range of IPC measures – and a variety of other solutions such as telehealth or temporary re-allocation to non-contact roles.

- This would still carry a high risk for onward transmission due to the essential nature of the work and the exposure to public. Settings that are not well ventilated and/ or with inadequate mask wearing would all combine to contribute to onward transmission risk. The American CDC advises that asymptomatic healthcare professionals who test positive for COVID-19 should be excluded from work.

- Sensitivity of RATs depends on the symptom status of those being tested. The sensitivity can range from 30% in an asymptomatic general population to up to 100% in a symptomatic population on day 2 to 5 of illness.

How the prioritisation of resources will occur

TTIQ

- The Ministry of Health has developed a proposed test-trace-isolate-quarantine (TTIQ) operating model in light of Omicron. The proposed TTIQ model has been developed to support the 'Flatten the curve' and 'Manage it' stages of the Ministry's evolving Omicron Strategy. It is grounded on assumptions based on the latest available evidence and outlines the operational changes the Ministry will implement when there is widespread community transmission.

Testing

- Our existing TTIQ response, which utilises PCR testing for symptomatic people, cannot be supported by the laboratory network in the high scenario of +5,000 cases per day. Testing will therefore need to shift to utilising supervised and un-supervised RATs in both clinical and non-clinical settings as a diagnostic tool. As prevalence of COVID-19 increases and with a greater proportion of those being tested being symptomatic, the positive predictive value of RATs is expected to improve.

- In this scenario, the purpose of testing shifts away from case finding, to protecting priority populations from severe disease and/or death, ensuring equity and limiting the impact on society through the protection of critical infrastructure and essential services, including healthcare.

- Priority populations are those communities at risk of suffering more severe impacts and outcomes from COVID-19, including Māori and Pacific Peoples, and rural or remote communities. Community providers, including Māori and Pasifika health providers, will facilitate access to testing for these groups. For those with disabilities or health conditions that place them at higher risk of becoming seriously unwell from COVID-19, access to testing will be facilitated through healthcare providers, such as GPs, where it is felt to be necessary. Critical workers, including the healthcare workforce who need to be tested will access testing through their employers.

- Given the high rates of transmission that are expected with Omicron, there will be a need to prioritise testing for those who are symptomatic and therefore of highest risk of transmitting COVID-19 and of becoming seriously unwell. Asymptomatic testing would be undertaken less frequently, with some exceptions such as screening people interacting with very vulnerable individuals. Asymptomatic testing at the border would still take place to monitor the variants of COVID-19 coming into New Zealand.

- There are global supply constraints on many critical medical supplies, especially rapid antigen test kits currently. Domestically, there is also a limit to the number of PCR tests that laboratories in New Zealand can perform each day while maintaining sufficient turnaround times. Given these constraints, a clear definition of why testing is being performed and the

prioritisation of testing towards those for whom it will make the most difference is essential. As a result, some people who are symptomatic may not be tested and instead may need to self-assess their symptoms and isolate until recovered.

Case investigation and contact tracing

- While the existing definition of "close contact" is likely to continue to be used by public health professionals, a simplified definition is likely to provide the basis for public communications. This would support individuals to self-identify as contacts and take the necessary actions to reduce the risk of onwards transmission.

- When there is significant community transmission, contact tracing may have limited value and Public Health Units are likely to shift their focus to identification and managing outbreaks in high-risk settings. There is likely to be increased use of the 'probable' case definition for close contacts that become symptomatic without the requirement to undergo testing. In addition, isolation periods for cases and close contacts may need to change.

- Routine testing of close contacts may cease, as may investigation and contact tracing of border cases in a Managed Isolation and Quarantine Facility. Instead, priority populations, health workforces and critical infrastructure workers are likely to be prioritised. In-depth phone-based case investigations may be reserved for very high-risk people and may decrease in number due to significant increases in cases. Cases will be asked to identify and advise their close contacts and access publicly available information. This may develop into a self-serve model, where cases are able to use electronic tools to identify exposure events, as well as advise their close contacts and access publicly available information.

- A case self-registration portal is being developed to enable the self-reporting of probable cases (symptomatic close contacts) who have not had formal test results to enable unsupervised RATs, register as a case and access health and welfare support [decisions on the deployment of this functionality will be determined by the MoH].

Science and Technical Advisory Omicron Update

11 January 2022

Key messages

- Limited new data and analyses have been reported since the update of 8 January. The UK Health Security Agency have yet to release an updated Omicron Risk Assessment in 2022.
- Pre-print data from the UK estimates a shorter generation time (interval between infection events) for Omicron (a mean of 1.5-3.2 days) compared to Delta (a mean of 2.5-4 days). However, the study is subject to bias.
- Press reports state that since mid-December the USA hospital admission rate for those under 5 years of age has increased to more than 4 in 100,000 children, up from 2.5 per 100,000, while the rate among children aged 5 to 17 years is about 1 per 100,000. However, children and teens still account for less than 5 per cent of average new daily hospital admissions.
- Data to date shows **VE** against **hospitalisation** to be ~70% after a **primary** vaccine course, declining to ~50% from 25 weeks after second dose. VE against hospitalisation increases to ~90% after a **booster** dose (including in those over 65 years of age).
- Preliminary UK data in those **over 65 years** reported that among those who received a primary course of Pfizer, **VE** for a **booster** dose of Pfizer against **symptomatic** infection was 65% at 2 to 4 weeks but then dropped to 31% at 10+ weeks.
- Evidence continues to accumulate that rapid antigen tests have decreased sensitivity with higher Ct values (low viral load).

Science Update

The information in this table has been summarised at pace. The search was completed at 7.30 am on 11 January 2022

Note: There is limited reporting from usual sources to date in January 2022. The anticipated updated Omicron Risk Assessment from UKHSA was not published on 7 January as expected.

Characteristic	Data
Growth advantage/ transmissibility	**Data confirms Omicron is more transmissible than Delta** Using data from Denmark (to 18th Dec 2021), the effective (instantaneous) reproduction number of Omicron is 3.19 (95%CI 2.82–3.61) times greater than that of Delta under the same epidemiological conditions. [1] In Canada, initial modelling estimates of R_{eff} for Omicron is 1.5 (90%CI 0.78–2.34). [2] Data to 20 December 2021 reported by UKHSA show that, relative to Delta, Omicron is currently more concentrated in young adult age groups (20 to 29) and is less prevalent in children. [3] Of the 1,063 cases in one region of Canada, 59% of 1,063 cases were 18-24 years old and 27% were 25-39 years old, corresponding with the main outbreak environments being in post-secondary education and food/beverage settings. [2] Data from a US health provider in Houston, Texas, indicated a case-doubling time for Omicron of 1.8 days, three times faster than for Delta in this area. [4] Preprint data from South Africa found Omicron was more associated with asymptomatic infection and transmission than Beta and Delta. [5] In England, contact tracing data show a greater proportion of transmission happening outside the household for Omicron than for Delta. [3] Emerging data from the UK estimated a shorter generation time (interval between infection events in an infector-infectee pair) for Omicron during late November to December 2021, with a mean of 1.5-3.2 days (standard deviation [SD] 1.3-4.6 days), compared to a mean of 2.5-4 days (SD 1.9-3 days) for Delta. [6] This translated to a transmission advantage of 160%-210% for Omicron. However, the study is subject to bias from factors such as differences in the populations the variants were present in, differences in immune escape between variants, and using test to test distribution as a proxy for the generation time distribution.
Clinical features (symptoms and severity)	**Severity – data to date indicates hospitalisation rates are lower than Delta, taking into account vaccination status and risk for severe disease. More data are required to confirm this.**

Characteristic	Data
	Recent analysis of data from Public Health Scotland and from Gauteng Province, South Africa indicates hospitalisation rates are not rising at the same rapid rate as cases. [7, 8] Hospitalisation Hospitalisation frequency for Omicron relative to Delta Adjusted for vaccination status (important for understanding basic differences in severity as it can remove differences in vaccine effectiveness from assessment. However, residual confounding for vaccination status may still occur): • Canadian data: risk of hospitalisation or death was 54% lower (Hazard Ratio =0.46, 95% CI: 0.27-0.77)[1]. [9] • Scottish data: risk of hospitalisation 68% lower (observed/expected ratio of 0.32, 95%CI 0.19, 0.52).[2] [10] • UK data: risk of presentation to emergency care or hospital admission 50% lower than with Delta (Hazard Ratio 0.53, 95% CI: 0.50 to 0.57). The risk of hospital admission from emergency departments was approximately 67% lower than with Delta (Hazard Ratio 0.33, 95% CI: 0.30 to 0.37).[3] [11] Unadjusted for vaccination status (provides indication of burden on healthcare at the level of vaccination in country where study conducted): • UK data (adjusted to some extent for prior infection): reduction in hospitalisation of 38% (95%CI 31-45%) for emergency department attendance or admission, and 62% (95% CI 50-70%) for admission, [3] or (from a different group analysing same data, with different methods for prior infection) 20-25% lower for attendance at hospital, and 40-45% for hospital admission. [12] Hospitalisation frequency (not compared to Delta) UK data: England: To 29th December, 815 Omicron hospitalisations had been reported. To the same date, around 650,000 Omicron cases had been reported, but there are lags in hospitalisation reporting and many recent cases are unlikely to have had sufficient observation time to be admitted to

[1] adjusted for vaccination status and region

[2] adjusted for age, sex, socioeconomic status, vaccination status and clinical risk factors.

[3] Controlled for date of specimen and area of residence and further adjusted for age, sex, ethnicity, local area deprivation, international travel, vaccination status. Also adjusted for whether the current infection is a known reinfection, although as reinfections are substantially under-ascertained, the adjustment may not have fully accounted for the effect of reinfections.

Characteristic	Data
	hospital (i.e hospitalisation likely to be underestimated). [11] Some crude data available by day but vary substantially each day, and likely affected by lack of follow up time (people testing positive most recently only followed up for 7 days), and lack of adjustment for age or vaccination status. [12] Scotland: Did not report as numbers too small. [10] Canadian data: Ontario: 29,594 cases to December 25th, of whom 75 (0.25%) hospitalised (or died). Again this is likely to be an underestimate due to very short follow up of those diagnosed later. [9] Paediatric data: Rapid increases in paediatric COVID-19 cases and hospitalisations were reported in the Tshwane District of South Africa, mirroring high community transmission of SARS-CoV-2 (Omicron variant). [13] According to news reports, the CDC says since mid-December the hospital admission rate for those under 5 has increased to more than 4 in 100,000 children, up from 2.5 per 100,000, while the rate among children aged 5 to 17 years is about 1 per 100,000 (**link**). However, the overall hospitalisation rate among children and teens is still lower than that of other age group, and they account for less than 5 per cent of average new daily hospital admissions, according to the CDC. Risk factors for hospitalisation with Omicron: In the UK, the age range of individuals admitted with Omicron to 29 December 2021 was 0 to 100 years (median: 45.5 years); 496 (60.9%) were aged 40 years or more; 30.8% were aged 70 years or more. [11] Public Health Scotland data reported on hospital admissions for COVID-19 (week of 22-28 December 2021) shows approximately 44% were in people 60 plus years of age, and 21% of admissions were in people aged 80 plus. [7] Of note, most cases of COVID-19 at this time in Scotland were Omicron but the proportion of cases of the Omicron variant for each age-group hospitalised are not reported. Time to hospitalisation with Omicron: no data found. Time in hospital with Omicron: median length of stay reported as 2.8 days but strong potential bias as included only those already discharged at 3 weeks after start of Omicron wave (i.e. those with longer stays might not be included). [4] A South African study also found median hospital length stay was significantly lower for Omicron than other variants, but possibly suffers from similar bias. [14] Preliminary analysis of South African hospital admissions in Gauteng Province (includes Johannesburg and Tshwane) reported a median hospital stay of 4 days (inter-quartile range 2-6 days) during an Omicron-dominant period. [8]

ICU admission

Severe/ICU/ventilated frequency relative to Delta

Adjusted for vaccination status (important for understanding basic differences in severity as removes differences in vaccine effectiveness from assessment. However, residual confounding for vaccination status may still occur):

- Among *hospitalised* individuals, after controlling for factors associated with severe disease[4], the odds of severe disease did not differ between S-Gene Target-Failure (SGTF, interpreted as Omicron) infected individuals compared to non-SGTF individuals diagnosed during the same time period (aOR 0.7, 95% CI 0.3-1.4). [15] Compared to earlier Delta infections, after controlling for factors associated with severe disease[5], SGTF-infected individuals had lower odds of severe disease (aOR 0.3, 95% CI 0.2-0.5). [15]

Severe/ICU/ventilated frequency (not compared to Delta)

In Texas, among 862 people who tested positive for Omicron (mainly symptomatic people presenting to healthcare facilities), [4] the maximum ventilatory support required was:

Extracorporeal membrane oxygenation	1 (0.7% of 134 hospitalised, 0.1% of 862 testing positive for Omicron)
Mechanical ventilation	6 (4.5%, 0.7%)
Non-invasive ventilation	9 (6.7%, 1.0%)
High flow oxygen	12 (9.0%, 1.4%)
Low flow oxygen	42 (31%, 4.9%)
Room air (but hospitalised)	64 (48%, 7.4%)

A total of 19.7% (875/4438) of hospital admissions required supplemental oxygen (not further specified) and 6.9% were treated in ICU (308/4438) in an analysis of data from Gauteng Province, South Africa during an Omicron-dominated period. [8]

Risk factors for ICU/ventilation: no data.

Time to ICU/ventilation: no data.

Death

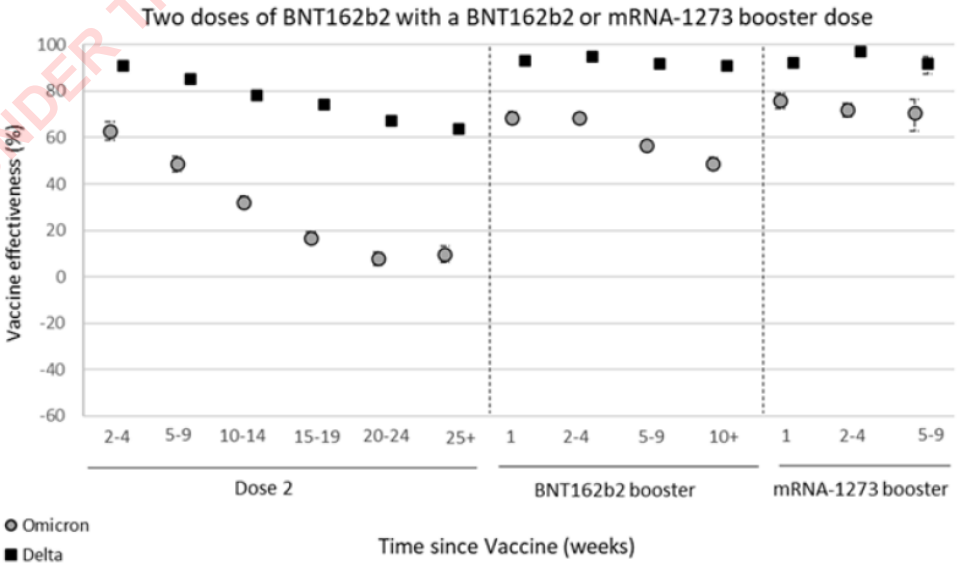
Death frequency relative to Delta: UK data: To 29 December 2021, a total of 57 people were reported to have died within 28 days of an Omicron COVID-19 diagnosis (198,348 confirmed cases of Omicron). [11]

Characteristic	Data
	Risk factors for death: UK data: Of 57 people who died within 28 days of Omicron diagnosis (to 29th December 2021) the age of those dying ranged from 41 to 99 years. [11] Time to death: UK data: median time from Omicron specimen date to death was 5 days (range 0 to 14). [11] Note that specimen date might not reflect date of symptom onset. Other severity information Non-peer reviewed studies (pre-prints) have shown that in hamster and mouse models, Omicron poorly infects the lung, leads to lower viral loads, and produces milder clinical signs of infection compared to those observed with previous strains. [16-18] Data from a study using ex-vivo human lung and bronchus tissue show similar results, with slower Omicron replication observed in the lung and faster in the bronchus compared to previous strains. [19] Clinical symptoms were largely absent in hamsters that were re-infected with Omicron, suggesting that immunity raised against the ancestral strain was protective against Omicron. [17] The characteristics of the antibody-mediated protection observed within this study is of interest while we wait for further studies in humans confirm the relevance of these findings. **Symptoms – Symptoms may be milder in previously infected and/or vaccinated individuals but more data are required. The most common symptoms reported are cough, runny/stuffy nose, and fatigue.** Limited data to date indicates no specific symptom pattern for Omicron compared with Delta. The most common symptoms reported are: cough; runny/stuffy nose; and fatigue. [20-23] The COVID Symptoms Study (by health science company Zoe and Kings College London) reports that headache and sneezing are also common symptoms of Omicron infection. [24] Preliminary information suggests no difference in symptoms between vaccinated and unvaccinated cases of COVID-19 infection but milder and of shorter duration in vaccinated cases (data likely to include both Omicron and Delta cases). (**link**) A study from Canada of 1,063 cases of Omicron (confirmed or suspected) found that only 10% reported shortness of breath. [23] Symptoms reported in paediatric cases in South Africa have included fever, vomiting, diarrhoea and convulsions. [13]

[4] controlled for factors known to be associated with severity (age, presence of comorbidity, sex, province and healthcare sector) and adjusted for the number of days between the date of specimen collection and date of hospital admission, known prior SARS-CoV-2 infection and SARS-CoV-2 vaccination status.

[5] controlled for factors known to be associated with disease severity (age, presence of co-morbidity, sex, province and healthcare sector), and adjusted for number of days between date of specimen collection and date of hospital admission, known prior SARS-CoV-2 infection and SARS-CoV-2 vaccination status.

Characteristic	Data
Disease course	**Median or mean incubation period 3-4 days, maximum incubation unclear (6-8 days reported). Data still limited to once-off exposure events.** Incubation period *NOTE: Incubation period refers to the time from infection until symptom development. The latent period refers to the time from infection until the person becomes infectious (and more likely to test positive)* Single exposure event data (assumes participants infected at event): • Faroe Islands [25]: Observed incubation period was short, ranging from 2 to 6 days, with a mean incubation period of 3.24 days (95% CI 2.87-3.60). All had had 3 doses of Pfizer (2 primary, and booster in last 2.5 months) • Norway [20]: Estimated incubation period was 0 to 8 days, median of 3 days (interquartile range: 3–4). [20] Almost all participants interviewed had received 2 doses of an mRNA vaccine. • USA [26]: Incubation period (6 cases only) of approximately 3 days (73 hours, range = 33–75 hours). [26] Latent period: no data Duration of infectiousness: no data Duration of illness • Faroe Islands [25]: Time to resolution of symptoms varied, and at the end of follow-up, five individuals still reported symptoms, while the rest reported symptoms lasting 1 to 9 days. • For time to hospitalisation and death, see "severity" section above. Data on the disease course remains limited at present, with few quantitative studies to date.
Immune evasion/vaccine effectiveness/therapeutics	**Vaccine effectiveness (VE) – some protection offered against symptomatic disease, however, VE is reduced compared to Delta. Rapid waning of VE occurs against Omicron but a booster dose restores protection. VE against hospitalisation appears to be ~70% after a primary vaccine course, but declines to ~50% from 25 weeks after second dose. VE against hospitalisation increases to ~90% after a booster dose (including in those over 65 years of age).** VE against infection A Danish cohort study has shown VE (Pfizer) against infection of 55% in the month after primary vaccination, [27] VE is significantly lower than for Delta infection and declines rapidly after the first month. [27] Booster vaccination increases VE back to 55%. [27] A study in the Netherlands also found an increased

Characteristic	Data
	risk of infection with Omicron compared to Delta in vaccinated and previously infected individuals. [28] Emerging results from the US indicate that 2-dose VE for Moderna against Omicron infection (determined by S-gene status) was 30.4% (95% CI 5-49) at 14-90 days after vaccination and declines over time. [29] The 3-dose VE was 62.5% (95%CI: 56.2-67.9) against Omicron infection compared with 95.2% (95%CI: 93.4-96.4) for Delta. Among immunocompromised individuals, the 3-dose VE against Omicron infection was very low (11.5%; 95% CI: 0.0-66.5). VE against symptomatic disease VE data from South Africa [30, 31] the UK [3, 10, 11, 32] and Denmark [27] all suggest reduced VE for 2-dose Pfizer vaccine regimens against symptomatic disease caused by Omicron compared with Delta. A booster dose of mRNA vaccine restores rapidly waning protection against symptomatic COVID-19 to levels similar to immediately after the primary course, [10, 27, 33] but early data from England suggest waning also occurs after the booster dose (e.g. VE against symptomatic disease dropped to ~50% 10 weeks after a Pfizer booster and ~70% 5-9 weeks after a Moderna booster following primary Pfizer course - see Figure 1). [3, 11] A UK analysis conducted in the elderly aged 65+ years reported similar results. [34] Among those who received a primary course of Pfizer, VE after a Pfizer booster was 65% at 2 to 4 weeks but then dropped to 31% at 10+ weeks. For those who received a Moderna booster, VE was 70% at 2 to 4 weeks, dropping to 57% at 5 to 9 weeks.  Figure 1: Pfizer vaccine effectiveness against symptomatic disease by period after 2 doses and after a booster. Note this is the updated figure, with more certainty about the data for boosters.

Characteristic	Data
	VE against hospitalisation South African data for VE against hospitalisation: • VE against hospitalisation for two doses of Pfizer was 70% (95%CI 62-76) during Omicron dominance (Delta dominance (93% [95%CI 90-94]) in South Africa.[35] Data were adjusted for age, sex, previous infection, surveillance week, geographic location, and CDC risk factors. • Results from another South African study show that VE against hospitalisation for the Janssen vaccine increased over time since the second (booster) dose. [36] UK data for VE against hospitalisation: • For adults 18+ years, VE was 72% (95% CI: 55-83) 2 to 24 weeks after dose 2, declining to 52% (95%CI: 21-71) 25+ weeks. VE increased to 88% (95% CI: 78-93) 2+ weeks after a booster dose. [11] • For elderly aged 65+ years, booster VE was 94% (95% CI: 89-97) 2 to 9 weeks after a booster dose and 89% (95% CI: 80-95) at 10 weeks. VE after two doses was not reported in this analysis. [34] VE against death No data available **Use of second booster dose** Israel: Initial news reports of a fourth Pfizer dose (second booster) trial in 150 medical personnel in Israel have noted minor side effects only and no safety signals. The fourth dose was given 4-5 months after the third dose. An additional 25,000 people over 60 years have now had a fourth Pfizer dose. (link) Chile: From January 10, people over 12 years who are immunocompromised will be offered a fourth vaccine dose. From February 7 eligibility for a fourth dose will be extended to people over 55 years who had a 3rd vaccine dose at least 6 months previously. (**link**) The fourth vaccine regimen has not been specified. Third (booster) doses were Pfizer or AstraZeneca. (**link**) **Neutralising assays** Neutralisation studies provided initial data predicting lower vaccine effectiveness against with Omicron. [37-42] These data have now been superseded by effectiveness data. **Cell-mediated responses** While data remain preliminary, an increasing number of studies indicate that vaccination provides a durable T-cell response to Omicron infection. [37, 43-46]

Characteristic	Data
	Prior Infection A Qatar study estimated effectiveness of prior infection against preventing Omicron symptomatic re-infection at 61.9% (95% CI: 48.2-72.0) after excluding vaccinated individuals. Effectiveness against hospitalisation/death was 87.8% (95% CI: 47.5-97.1), however both vaccinated and unvaccinated individuals were included in this analysis. [47] **Therapeutics – MAB uncertainty grows, antivirals appear 'ok'** Antibody products In a non-peer reviewed study, only three of the tested 24 therapeutic antibody products (product names not revealed) retained their full potency against Omicron and high-level resistance was seen against fifteen. [48] Several other laboratory studies have shown Omicron is resistant to neutralisation by a number of monoclonal antibodies including casirivimab + imdevimab (Ronapreve). [48-53] Sotrovimab has been shown to retain some neutralisation activity. A preprint from the US found that Regeneron (REGN10933 and REGN10987), and Lilly (LY-CoV555 and LY37 CoV016) monoclonal antibodies were ineffective against Omicron, while Sotrovimab was partially effective. [40] There are news reports that the US has paused distribution of Regeneron and Eli Lilly antibody treatments due to Omicron. (**link**) Deliveries were resumed on December 31, 2021 due to 'variability' in the presence of Omicron. (**link**) Antivirals A non-peer reviewed cell-culture study showed that antiviral drugs that are being developed against SARS-CoV-2 (Legevrio, Paxlovid, acriflavine, remdesivir, AT-527) will likely retain efficacy for the omicron variant. [54] The FDA and MHRA have authorised Pfizer's oral antiviral, Paxlovid (USA in those >12 years old, UK 18 years and over with risk of sever disease). [55] (**link**)
Detection	**More PCR tests recognised as unable to detect Omicron. Saliva testing might offer advantages for Omicron over nasal swabs. RATs under spotlight but evidence is mixed for reduced analytical sensitivity, including two NZ approved RATs.** **PCR** PCR tests continue to be appropriate for diagnosis of SARS CoV-2. [56] On 23 December, the World Health Organization stated that PCR tests that include multiple gene targets are unlikely to be affected and should continue to be used to detect SARS-CoV-2 infection, including the Omicron variant. [57] However, the FDA has identified three COVID-19 molecular tests (from Applied DA Sciences,

Characteristic	Data
	Meridian Bioscience and Tide Laboratories) that are not able to detect the Omicron variant because they target genes with deletions in Omicron [58]. ThermoFisher TaqPath PCR test can detect S gene target failure - an early marker to distinguish between Omicron and Delta, pending sequencing confirmation. [56] Two pre-print studies suggest saliva testing might detect more infections (and possibly earlier) than nasal swabs in PCR testing. [59, 60] **RATs** The performance of the four RATs currently available in New Zealand appear not to be affected by Omicron based on the manufacturers testing. [61-63] UKHSA reports initial laboratory validation of RATs in use by NHS Test and Trace shows similar sensitivity to detect Omicron compared to Delta. [33] A pre-print assessing 10 RATs (only 1 of the four in NZ), also found that all 10 had a sensitivity against Omicron consistent with prior variants. [64] However, a non-peer reviewed study using testing of seven RATs, three of them WHO-EUL approved and two approved for use in New Zealand, using cultured virus found a tendency towards lower sensitivity for Omicron compared to previous variants. [65] One small pre-print found RATs may not detect Omicron in its early phases although PCRs are positive (RATs positive 2 days later than PCR) [60] A pre-print from California assessed the BinaxNOW nasal rapid antigen test and reported decreased sensitivity with higher Ct values, suggesting that repeat testing may be required for those who are at high risk. [66] Sensitivity was 95.2% (95% CI 92-98) for Ct < 30, 82.1% (95% CI 77-87) for Ct < 35, and 65.2% (95% CI 60-70) overall (no threshold). A pre-print on 6 January 2022 reports a cost-effectiveness analysis of providing government-funded RATs for early detection of COVID-19 in Australia. The authors concluded that '*even only minor reductions in COVID-19 transmission rates due to early isolation would justify the additional costs associated with a policy of government-funded RATs*.' [67]
Effectiveness of infection prevention control/ public health measures	A new modelling study suggests that in contrast to Delta, infection prevention control settings in South Africa and UK will be insufficient to control the Omicron outbreak in those countries. [68]

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Document 7

Briefing

Enabling COVID-19 cases who are critical workers to return to work

Date due to MO:	2 March 2022	**Action required by:**	2 March 2022
Security level:	IN CONFIDENCE	**Health Report number:**	HR 20220374
To:	Hon Chris Hipkins, Minister for COVID-19 Response		

Contact for telephone discussion

Name	Position	Telephone
Dr Ashley Bloomfield	Director-General	
Stephen Glover	Group Manager COVID-19 Policy	s 9(2)(a)

Minister's office to complete:

☐ Approved ☐ Decline ☐ Noted

☐ Needs change ☐ Seen ☐ Overtaken by events

☐ See Minister's Notes ☐ Withdrawn

Comment:

Enabling COVID-19 cases who are essential workers to return to work

Security level:	IN CONFIDENCE	**Date:**	2 March 2022
To:	Hon Chris Hipkins, Minister for COVID-19 Response		

Purpose

1. This report seeks your agreement to instruct the Parliamentary Counsel Office (PCO) to draft an amendment to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022 (SRPW). This amendment order would permit the Director-General of Health (DG) to allow COVID-19 cases to carry out work rather than self-isolate where they are critical to the operation of vital services and under specified conditions.

Background/context

Now that the SRPW has come into force, the DG may no longer create exemptions from standard requirements that household contacts and cases of COVID-19 isolate

2. The SRPW specifies requirements to isolate for COVID-19 cases and their household contacts. It also enables the Close Contact Exemption Scheme and the Bubble of One.

3. The DG was previously able to grant exemptions to the isolation requirements for cases, when these requirements were detailed in a section 70 notice. The SRPW doesn't currently have a mechanism to allow the DG to grant exemptions.

Isolation requirements are under review more broadly

4. Our core message is that people should not work (and should stay home) while they are unwell and for as long as they are unwell. The required isolation periods are intended to minimise the risks of transmission while people are, or may be, infectious.

5. The DG has asked for advice on whether the required isolation periods for cases and their household contacts can be reduced. This advice will also consider whether household contacts may break isolation, if they are asymptomatic and test negative. Advice will be provided later this week.

6. These wider changes would help to reduce pressures on the economy and society from large numbers of people being required to isolate, while there are high rates of COVID-19 in our communities.

7. However, there will be exceptional circumstances where services important to New Zealand's economy and COVID-19 response are reliant on small numbers of key workers, and where those workers may need to return to work to keep those services operating – even when they might otherwise be required to isolate as COVID-19 cases. The ability for the DG to grant specified exemptions to the requirement for cases to isolate would provide a safety net in these situations.

The ability of the DG to create exemptions from isolation provisions for cases needs to be restored urgently

8. We are aware of a number of areas where the pressures from cases isolating are threatening essential health services and critical links in supply chains. Restoring the ability for the DG to grant exemptions will provide a mechanism to respond to these issues. For example:

    - Sources in the transport sector have asked that workers in highly critical positions in lifeline services who are COVID-19 cases be permitted to return to work, under appropriate conditions. Air Traffic Controllers and Maritime pilots are examples of workers who fall into this category.
    - We have been informed that Interislander ferries may begin cancelling sailings this week because of staff shortages due to the need for cases to isolate.
    - We have recently received a request that asymptomatic health staff be allowed to work in COVID-19 wards (but only in those wards), from day 0 for as long as they remain asymptomatic.

9. Notices issued under the proposed power would focus on specific workers and would likely have specific safeguards relevant to the context of each situation, to ensure the most appropriate public health measures are in place. They would not be widely applicable like the Close Contact Exemption Scheme, which currently covers over 1 million workers (over 40% of the workforce). However, we note that issuing exemptions on a 'case-by-case' basis, as opposed to a wider exceptions approach, places an additional burden on the DG to ensure that the scope of each exemption is limited to the minimum necessary.

Discussion

10. Isolation of cases continues to be a major tool in our current system for managing COVID-19 as we move into Phase 3 of our Omicron response plan.

11. Introducing exemptions from the requirement to isolate for cases increases the risk of the transmission of COVID-19, even if an exemption is subject to stringent measures to prevent transmission. Creating exemptions could be seen as sending contradictory messages to the public.

12. On the other hand, there is a realistic possibility that reducing the isolation period for cases may be the only practicable way of ensuring that key services such as critical health services and air traffic control continue to be delivered at a necessary level.

13. On balance, we conclude that:

    a) there is a strong case for enabling the DG to create exemptions from the requirement for cases to isolate to allow certain people to return to work;

    b) the DG would need to ensure that ability to work for cases was limited to particular roles or services, where a clear need has been established;

    c) the DG would need to specify appropriate restrictions which ensure that an exemption does not undermine the use of isolation as a tool to manage the transmission of COVID-19 – including on when cases could return to work and the associated public health requirements to manage the risk of infection;

d) The terms of exemptions would need to be consistent with the Health and Safety at Work Act 2015 and the Holidays Act 2003. Workers must not feel compelled or coerced to return to work when they are unwell.

14. The guidance for critical health workers which had been developed under an earlier section 70 notice provides an example of how these exemptions could be specified and the types of infection prevention and control measures that might be required.

Resourcing implications

15. Our expectation is that these exemptions would respond to system issues raised through the incident management networks.

16. If there were a high volume of applications for exemptions directly to the Ministry, this would have resource implications for the Ministry.

s 9(2)(h)

Next steps

19. If you agree, we will instruct the PCO to draft an amendment to the SRPW.

20. As noted above, we are also considering possible changes to the required isolation period for household contacts and cases. We will report on the outcome of this work shortly. Any changes would be progressed in a wider amendment order to the SRPW, likely next week.

Timing

21. It is proposed to make the amendments discussed in this report as a matter of urgency. This would involve a fast-track process as set out below.

22. Wednesday 2 March 2022:

- The Ministry seeks your agreement to make the amendments discussed in this report.

23. Thursday 3 March 2022:

- PCO drafts an SRPW amendment order;
- The Ministry provides you with an SRPW amendment order for Ministerial consultation.

24. As soon as possible, thereafter:

- you consult with your ministerial colleagues;
- PCO finalises drafting;
- the Ministry provides you with a signature draft of the SRPW amendment order;

- once signed and gazetted, the SRPW amendment order comes into effect, making the necessary amendment to the SRPW.

Recommendations

We recommend that you:

a)	**Agree** to the Ministry instructing the Parliamentary Counsel Office to draft an amendment to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022 (the Order) which would enable the Director-General of Health to allow certain workers to be exempted from the requirement for COVID-19 cases to isolate under the Order;	**Yes/No**
b)	**Note** that the Director-General, once enabled by the amended Order, would introduce an exemption which would apply to critical health workers;	
c)	**Note** that all exemptions enabled by the proposed amendment would be tightly restricted in terms of the workers and services to which they would apply;	
d)	**Note** that each exemption enabled by the proposed amendment would specify the circumstance and conditions under which cases could return to work and the required protective measures;	
e)	**Note** that the intention is for these exemptions to address system issues identified in the health system and the supply chain related to COVID-19; however, there may also be a significant volume of applications for exemptions directly to the Ministry;	
f)	**Agree** that this work should be carried out as a matter of urgency, with the aim of introducing an amendment to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022 by Friday, 5 March 2022.	**Yes/No**

Dr Ashley Bloomfield
Director-General of Health
Date:

Hon Chris Hipkins
Minister for COVID-19 Response
Date:

Document 8

Briefing

Update on readiness to shift to Phase Two of the Omicron response plan

Date due to MO:	11 February 2022	**Action required by:**	14 February 2022
Security level:	IN CONFIDENCE	**Health Report number:**	20220128
To:	Hon Chris Hipkins, Minister for COVID-19 Response Hon Andrew Little, Minister of Health Hon Dr Ayesha Verrall, Associate Minister of Health		

Contact for telephone discussion

Name	Position	Telephone
Dr Ashley Bloomfield	Te Tumu Whakarae mō te Hauora Director-General of Health	s 9(2)(a)
Steve Waldegrave	Group Manager, COVID-19 Policy, System Strategy and Policy	s 9(2)(a)

Minister's office to complete:

☐ Approved	☐ Decline	☐ Noted
☐ Needs change	☐ Seen	☐ Overtaken by events
☐ See Minister's Notes	☐ Withdrawn	

Comment:

Update on Readiness to shift to Phase Two of the Omicron response plan

Security level:	IN CONFIDENCE	**Date:**	11 February 2022

To:	Hon Chris Hipkins, Minister for COVID-19 Response
	Hon Andrew Little, Minister of Health
	Hon Dr Ayesha Verrall, Associate Minister of Health

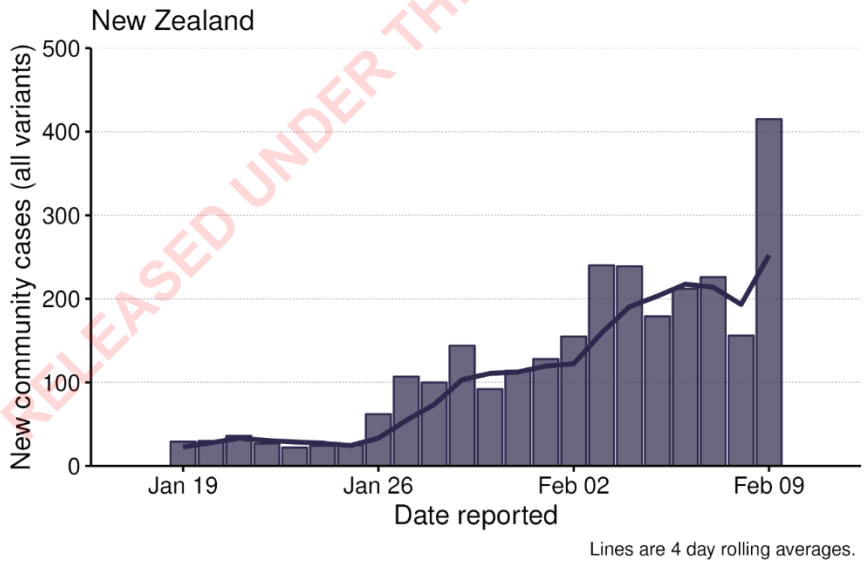
Purpose of report

1. This report provides an update on preparatory work and new isolation settings by the Ministry of Health (the Ministry) to support a potential imminent shift to Phase Two of the Omicron response plan early next week.

Key points

2. Nationally, New Zealand has had a steady increase in cases from late-January to early February. Cases are continuing to rise with February 09 reporting the highest number of cases of COVID-19 community cases since the pandemic began. Figure 1 below highlights the recent rapid increase in cases over recent days.

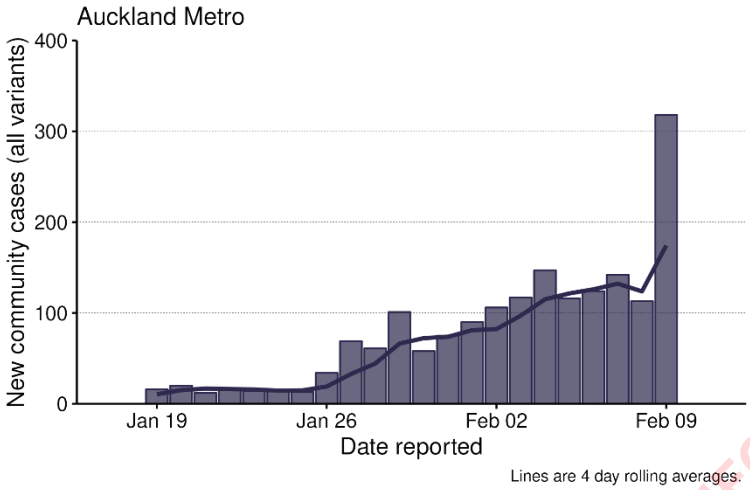
Figure 1: Daily community cases nationally from 19 January to 09 February 2022



Source: EpiSurv 2359hrs 09 February 2022

3. In particular, the current rapid increase in cases is pronounced in the Auckland metro area as highlighted in Figure 2 below.

Figure 2: Daily community cases for Auckland Metro from 19 January to 09 February 2022



4. In response to the increase in case numbers, you have requested an urgent update of 'Appendix 2: Summary of operational health readiness to shift to Phase Two of the Omicron response plan' by 2pm today. This updated overview of operational readiness is attached at **Appendix 1**.

5. Please also find at **Attachment 2** recent advice I have received on changes to the public health settings that are required in advance of a shift to Phase 2 of the Omicron Strategy. The advice shows that there is a strong rationale for moving to shorter isolation periods for cases and contacts as part of moving to Phase 2. It notes that:

   a. The isolation period for all cases is currently 14 days, regardless of vaccination status and COVID-19 variant.

   b. On 31 January 2022, it was agreed that this isolation period will be reduced to 10 days when we move to Phase 2.

6. Importantly, there is good information and evidence now to support a move to shorter isolation periods for both cases (10 days) and contacts (7 days). Likewise, as previous agreed, we recommend a move to 10 days isolation for household contacts concurrently.

7. ***We are anticipating that Phase 2 will need to be triggered on or about Tuesday 15 February 2022***. We note that, consistent with our earlier briefing to you on readiness, the health sector will need 48 hours to prepare systems for the change.

8. As highlighted in Appendix 2, the Ministry of Health and the wider Health sector are on track to be ready on Tuesday 15 February 2022, although there are some key pieces of work that are the focus over the next few days.

Recommendations

I recommend you:

a)	**Note** that New Zealand now has the highest number of COVID-19 community cases since the pandemic began.	**Noted**
b)	**Note** that the updated overview of operational readiness for shifting to Phase 2 of the Omicron Response Strategy at **Appendix 1**.	**Noted**
c)	**Note** that, as part of moving to Phase 2, there is a strong rationale for moving to shorter isolation periods for cases and contacts as set out in the memo at **Appendix 2.**	**Noted**
d)	**Note** that it is likely that phase 2 of the strategic pandemic response will need to be triggered in the next few days, and the proposed date is Tuesday 15 February 2022.	**Noted**
e)	**Note** that some operational readiness components (refer **Appendix 2**) will still involve an unavoidable lead-in time once the decision to shift to Phase Two of the Omicron response plan is made.	**Noted**
f)	**Note** that the Ministry of Health is continuing to work with district health boards to ensure they are ready to move to Phase Two of the Omicron response plan.	**Noted**

Dr Ashley Bloomfield
Te Tumu Whakarae mō te Hauora
Director-General of Health
Date: 11 February 2022

Hon Chris Hipkins
Minister for COVID-19 Response
Date:

Appendix 1: Update of 'Summary of operational health readiness to shift to Phase Two of the Omicron response plan'

Appendix 2: Advice on management of COVID-19 contacts, Isolation periods and locations of Interest

Document 9

MINISTRY OF HEALTH
MANATŪ HAUORA

Briefing

Reduction to isolation requirements for cases and household contacts

Date due to MO:	8 March 2022	**Action required by:**	N/A
Security level:	IN CONFIDENCE	**Health Report number:**	20220415
To:	Hon Chris Hipkins, Minister for COVID-19 Response		
Copy to:	Hon Dr Ayesha Verrall, Associate Minister for COVID-19 Response		

Contact for telephone discussion

Name	Position	Telephone
Dr Caroline McElnay	Director of Public Health, Population Health and Prevention	s 9(2)(a)
Bridget White	Deputy Director-General, Covid 19 Health System Response	s 9(2)(a)

Minister's office to complete:

☐ Approved ☐ Decline ☐ Noted

☐ Needs change ☐ Seen ☐ Overtaken by events

☐ See Minister's Notes ☐ Withdrawn

Comment:

Reduction to isolation requirements for cases and household contacts

Security level:	IN CONFIDENCE	**Date:**	8 March 2022
To:	Hon Chris Hipkins, Minister for COVID-19 Response		
Copy to:	Hon Dr Ayesha Verrall, Associate Minister for COVID-19 Response		

Purpose of report

1. This report provides an update on HR20220400, dated 7 March 2022. It provides advice regarding:
   - a reduction to the self-isolation period for cases and household contacts from 10 days to 7 days
   - an increase in the period during which a case would not be considered a household contact from 1-month to 3-months
   - a reduction to the isolation period for new arrivals required to quarantine, to mirror that for cases.
2. It also seeks your approval to issue drafting instructions to amend the relevant orders to give effect to these changes, to come into force from 11.59pm on Friday 11 March 2022.
3. This report discloses all relevant information.

Summary

4. There is sufficient evidence that the isolation period for cases could be reduced from 10 days to 7 days. This change is not without some risk of further transmission, however on balance the societal impact of a longer isolation period outweighs the public health risk associated with a longer isolation period.
5. Isolation requirements for household contacts would be reduced in line with this, to maintain the current management approach of a household bubble.
6. The isolation requirements for cases and household contacts would also be mirrored for people in MIQ.
7. Independent of isolation requirements, recent evidence indicates that it is safe to extend the period, during which a person is deemed safe from re-infection following a COVID-19 infection, from the current 1-month to 3-months.

Recommendations

We recommend you:

a) **Note** the proposed reduction in self-isolation requirements for cases and household contacts from 10 days to 7 days.

b) **Agree** to reduce the isolation requirements for cases and household contacts from 10 days to 7 days **Yes/No**

c) **Agree** to increase the period, following recovery from a COVID-19 infection during which a person is not considered a household contact, from 1-month to 3-months **Yes/No**

d) **Agree** to reduce the isolation period for new arrivals required to quarantine in MIQ to 7 days, to mirror that for cases **Yes/No**

e) **Agree** to the Ministry instructing the Parliamentary Counsel Office to draft amendments to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022 which would give effect to recommendations b) and c); **Yes/No**

f) **Agree** to the Ministry instructing the Parliamentary Counsel Office to draft an amendment to the COVID-19 Public Health Response (Isolation and Quarantine) Order 2020 which would give effect to recommendation d); **Yes/No**

g) **Agree** to circulate this report to the Prime Minister, the Minister of Justice, the Minister of Health and any other Ministers you think fit for consultation, to fulfil the requirements for making Orders under section 11 of the COVID Act. **Yes/No**

h) **Agree** that this work should be carried out as a matter of urgency, with the aim of introducing an amendment to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022 by 11:59pm Friday, 11 March 2022. **Yes/No**

Robyn Shearer
Acting Director General of Health
Date: 8 March 2022

Hon Chris Hipkins
Minister for COVID-19 Response
Date:

Reduction to isolation requirements for cases and household contacts

Background

8. Omicron is a highly transmissible variant of COVID-19 which has rapidly become the dominant variant in Aotearoa.

9. A careful balance is required between effective outbreak control, minimising the impact on the health and disability system and the negative effects that isolation requirements have on society. The Ministry previously indicated that we would continue to review the available evidence and evaluate once we reached Phase 3 if a further reduction to isolation requirements would be appropriate.

10. Case numbers have increased significantly. The Trends and Insights Report (dated 5 March 2022) estimated the effective reproduction number Reff at 2.7 (95% Credible Interval [CI]: 1.9 - 4.0) nationally and 2.5 (95% CI: 1.8 - 4.0) in the Auckland region. The modelled national doubling time was 2.0 days (95% CI: 1.1 – 3.6).

11. Hospitalisations have also increased in line with modelling. Currently community cases are predominantly in the 10-year-old to 30-year-old age group; hospitalisations are skewed more towards older age groups particularly those over 70 years old. However, as there is often a lag between increases in case numbers and increases in hospitalisations, this may change as the outbreak progresses further.

12. Many countries including Australia have experienced exponential increases in cases and contacts, which has resulted in reduced isolation requirements, primarily driven by societal impacts as opposed to a change in the clinical course of infection.

13. As at 11.59pm 6 March 2022 there was a total of 192,608 cases reported within the last 10 days which are not yet recovered (therefore assumed to be currently within their isolation period). Of these, 192,492 are community cases and 116 are in managed facilities.

14. As of 7 March 2022, there are 121,538 household contacts who are also currently within their isolation period; these are only those that have been identified via the digital COVID-19 Contact Tracing Form or a phone-based case investigation. The actual number of household contacts isolating is likely to be higher.

Case and contact isolation requirements

Case isolation requirements

15. A recent case series of Omicron cases from Japan found that only 11% were culture positive between days 7-9 and zero were culture positive after day 9.[1] A recent United

[1] https://www.niid.go.jp/niid/en/2019-ncov-e/10884-covid19-66-en.html.

States study reported similar findings for Omicron cases.[2] However, the ability to culture the virus does not necessarily mean that the person is highly infectious.

16. A recent study from Qatar of BA1 and BA2 found that those who had recently had boosters had a lower viral load (i.e., higher CT value) and therefore lower infectiousness.[3]

17. International approaches to isolation of cases are varied and have changed over the course of the Omicron outbreak in each country. The European Centre for Disease Prevention and Control (ECDC) recommends fully vaccinated cases isolate for six days after the onset of symptoms and until one negative rapid antigen detection tests (RADT) or RT-PCR test from a respiratory specimen on day 6 or later. Cases who are not fully vaccinated should isolate for ten days after the onset of symptoms.[4]

18. A statement on 30 December 2021 from the Australian Health Protection Principal Committee (AHPPC) on testing, tracing, isolating and quarantining in high levels of COVID-19 community transmission recommended that case isolation periods be standardised to 7 days, regardless of vaccination status.[5]

19. In New South Wales (NSW), cases who are symptom-free, are currently advised to isolate for seven days from the day they were tested. Those with symptoms are advised to remain at home until 24 hours after symptoms resolve and a further test is not required before leaving self-isolation. Cases are advised to take additional precautions for a further 3 days, including avoiding high risk settings such as hospitals.

20. The Australian Government COVID-19 Test and Isolate National Protocols (updated 6 January 2022) also recommend cases isolate for 6 days and if they are symptom-free, can return to daily life on day 7. Those with symptoms should take an additional test on development of symptoms, however they can still leave isolation on day 7 following a negative RAT on day 6.

21. Based on a recent review of the evidence, the Ministry is planning to reduce the isolation time for cases to seven (7) days if symptom-free. If they remain symptomatic after 7 days, they are advised to stay home until 24 hours after symptoms resolve. They should avoid high risk settings whilst they are unwell (e.g., prisons, aged residential care facilities, and hospitals (unless accessing healthcare)). Schools are not considered high-risk settings; however, it is advised that children should not return to school until 24 hours after their symptoms resolve.

22. Should the case still have symptoms after 10 days, they should contact their general practitioner for further clinical assessment and support; the public health risk of further transmission is low. There is no requirement for a test prior to release.

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[2] A Quick Displacement of the SARS-CoV-2 variant Delta with Omicron: Unprecedented Spike in COVID-19 Cases Associated with Fewer Admissions and Comparable Upper Respiratory Viral Loads | medRxiv

[3] Suelen H. Qassim, Hiam Chemaitelly, Houssein Ayoub, et al. Effects of BA.1/BA.2 subvariant, vaccination, and prior infection on infectiousness of SARS-CoV-2 omicron infections. medRxiv 2022.03.02.22271771; doi: https://doi.org/10.1101/2022.03.02.22271771

[4] https://www.ecdc.europa.eu/sites/default/files/documents/Guidance-for-discharge-and-ending-of-isolation-of-people-with-COVID-19-third-update.pdf

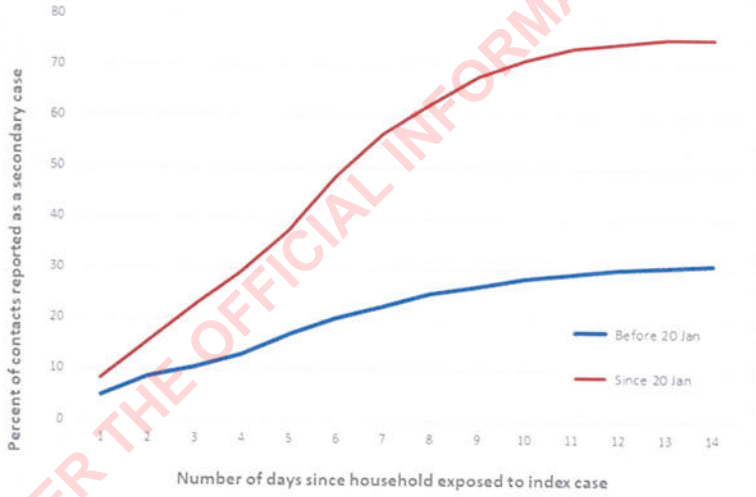
[5] https://www.health.gov.au/news/ahppc-statement-on-testing-tracing-isolating-and-quarantining-in-high-levels-of-covid-19-community-transmission

Household contact isolation requirements

23. Household contacts remain at greatest risk of becoming infected with COVID-19. An analysis of data from the National Contact Tracing Solution (NCTS) since 20 January 2022, determined the secondary attack rate to be 78% (95% CI 72.4%-82.7%) which is substantially higher than for previous COVID-19 variants. This is likely to have been influenced by the large household sizes of those populations which were disproportionately represented in the early stages of the Omicron outbreaks (BA1 and BA2 in New Zealand). However, it is also acknowledged that large households were also a feature of the earlier Delta outbreak.

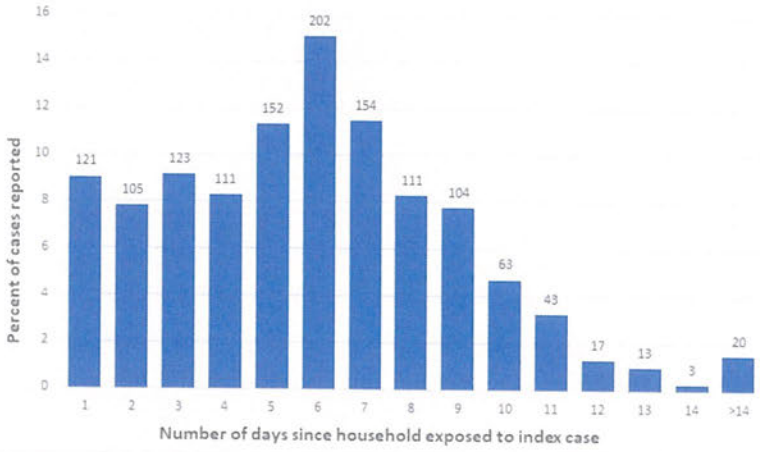
24. This will result in larger absolute numbers of household cases than during the period of Delta transmission. However, the speed of transmission though a household may be only slightly quicker than before 20 January 2022 (see Figure 1). These data are however subject to uncertainty. They are sensitive to recording of dates in the NCTS. Also, these data are based on date of positive test, not infection date, so will also be affected by when a contact is tested.

Figure 1: Percent of household contacts infected by days since exposure to index case, before and since 20 January, 12/12/21 - 25/02/22



25. An analysis of data from household exposures between 20 January 2022 and 11 February 2022, showed that of those cases that were acquired within households, 72% tested positive within 7 days and 21% tested positive between days 8-10. A further 7% tested positive after day 10 (see Figure 2 below).

Figure 2: Percent and number* of cases diagnosed by days since exposure to index case (20/01/22- 25/02/22)**



** Total secondary cases diagnosed in the period was 1,342; number of cases by day is above the percent column*

26. A key limitation when interpreting this data is when the test was taken. It is not known whether more cases, especially asymptomatic, would have been identified earlier if they had been tested earlier. Over the period covered by the data, there were a range of different testing approaches implemented across the country for household contacts with some people not being tested until the case had been recovered, some being tested every five days, and some not being tested until day 8/9.

27. A recent study from the Netherlands of the serial interval between cases and subsequent household cases found that 95% of household cases had a symptom onset up to and including 7 days for Omicron.[6]

28. For contacts, the ECDC recommends that isolation should be 10 days, including testing immediately after being identified as contact and with a PCR test on day 10.

29. The AHPPC statement (30 December 2022) recommended contacts should quarantine for 7 days regardless of vaccination status, have a day 6 test and monitor for symptoms for a further 7 days. Similarly, the Australian Government COVID-19 Test and Isolate National Protocols (updated 6 January 2022) recommend contacts should quarantine for 7 days and take a RAT test or PCR on day 6.

30. Advice from the Centers for Disease Control and Prevention in the United States recommends that household contacts should isolate until 5 days after the last case in the household has completed their isolation period and get tested at that point (as of 27 January 2022).

31. Based on a recent evaluation of evidence and international practice, the Ministry is planning to reduce the isolation time for household contacts to seven (7) days, to align with the changes to the case's isolation period.

32. Rapid antigen testing of household contacts, should be undertaken on day 3 and day 7.

- Day 3 testing will detect those who have waning immunity from vaccination and importantly, would allow these contacts to commence their own 7 days of self-

[6] https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2022.27.6.2200042#html_fulltext

isolation as a case earlier, thereby reducing the impact on both the individual and wider society.

- Day 7 testing provides us with reassurance that they are far less likely to be a case when they return to daily life on day 8.

33. Advice remains in place to undertake an additional RAT if symptomatic. If test is negative, and symptoms persist/worsen, test 48 hours after that negative test. If symptoms resolve, no need for a further test, until RAT to release on D7. If the day 7 RAT is negative, they can return to daily life on day 8.

Public adherence and compliance

34. As widespread community transmission of Omicron continues throughout Phase 3, there is likely to be greater acceptance of these changes as:

- the New Zealand public have accepted a shift from an elimination strategy to a 'manage it' strategy as part of this Omicron outbreak and therefore a higher level of tolerance for transmission is accepted,
- the impact of the outbreak on individuals, communities, and businesses is far more apparent as case and contact volumes have significantly increased, and
- it will lessen the impact on individuals who may have already completed one or more period(s) of self-isolation since the outbreak began, particularly for people who would otherwise suffer inequitable outcomes if they were required to self-isolate multiple times.

35. The reduced isolation period will also address an increasing concern that isolation periods are discouraging people from being tested.

Re-infection with COVID-19

36. In the United Kingdom the rate of re-infection was noted to increase markedly due to re-infections with Omicron after an infection with a previous variant.[7] This resulted in several countries, including New Zealand, decreasing the period (from 90 to 28 days) within which a re-infection could be diagnosed to decrease the risk of Omicron community transmission.

37. Almost all re-infections in New Zealand will be Omicron, following an original Omicron infection. Further evidence is now available to indicate that the rate of re-infection within the first 90 days after a previous infection is very low, particularly if the original and subsequent infections are both with Omicron.[8] Protection from re-infection of different sub-lineages of Omicron is also robust.[9]

38. As a result of these findings, the Ministry has increased the period to 90 days, within which a person who is a recovered case, would not need to self-isolate as a household

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[7] United Kingdom Office for National Statistics, *Coronavirus (COVID-19) Infection Survey, characteristics of people testing positive for COVID-19, UK: 16 February 2022*. 2022.

[8] Stegger, M., et al., Occurrence and significance of Omicron BA.1 infection followed by BA.2 reinfection. medRxiv, 2022: p. 2022.02.19.22271112

[9] Chemaitelly, H., et al., *Protection of Omicron sub-lineage infection against reinfection with another Omicron sub-lineage.* medRxiv, 2022: p. 2022.02.24.22271440

close contact following recovery. They are still advised to watch for symptoms and seek to undertake a RAT if symptoms develop.

39. This change is independent of the changes to isolation requirements above and implementation will commence immediately. There will be communications issued to the public, schools and businesses regarding this change. This advice will be reviewed in the instance of a new variant emerging in New Zealand.

Equity

40. These changes would address the increasing burden of COVID-19 on society and the inequitable impact that isolation requirements have on households and communities; particularly those that have been required to complete one or more period(s) of self-isolation since the outbreak began.

Public Communications

41. The further reduction in isolation requirements for cases and household contacts will need to be supported with a well-articulated call to action to ensure the public, schools, and businesses:

- are motivated and empowered to know what they need to do, and
- understand and accept the rationale on which the changes are based.

42. Clear messaging will be required, particularly with the different types of tests being used. The household isolation time begins when the first case receives their positive test result, and with increased use of RATs this is usually the same day. If the case has a PCR instead of a RAT, the isolation period is calculated from when the case started isolating (onset of symptoms or test date, if asymptomatic).

Next steps

43. Once the amendment orders come into force, by 11.59pm on Friday 11 March 2022, the Ministry will:

- progress the necessary technology changes to the National Contact Tracing Solution (NCTS) to support the reduction in isolation,
- communicate the changes to other Government agencies and the health and disability sector and commence preparation for implementation, and
- engage with the Communications teams to enable public facing information to be updated in preparation for the change.
- The National Investigation and Tracing Centre are working closely with the Border Operations and Managed Isolation and Quarantine teams, who have indicated their support for the proposed implementation date. This will ensure that changes for those in facilities are implemented at the same time and the transition is seamless.

ENDS.