Background and overview of approaches to COVID-19 pandemic control in Aotearoa/New Zealand

30 March 2020

Prepared by the COVID-19 Public Health Response Strategy Team

Executive summary

This working paper presents an overview of approaches to COVID-19 pandemic control in Aotearoa/New Zealand. It forms part of background work commissioned by the Ministry of Health (the Ministry) by the Director of Public Health to help inform the response to COVID-19.

The COVID-19 pandemic has rapidly evolved internationally and in Aotearoa/New Zealand. Responding to COVID-19 in a very rapidly changing environment has been the largest challenge globally and domestically probably since World War Two.

A number of **control measures** (border controls, current lockdown under COVID-19 Alert Level 4) have been implemented so far in Aotearoa/New Zealand to deal with COVID-19. However there are now a number of different high level **pandemic strategies** available to control COVID-19 in the short to medium term (up to a year) that are potentially feasible at this time. These include established, but possibly not widespread community transmission, Alert Level 4 with significant control measures, and reduced people through the border. As information comes to hand the feasibility of the different strategies may alter.

The strategies are not all mutually exclusive and, as more local information becomes available, we may be able to operate different strategies in different locations (e.g. isolated communities with no cases may deploy different strategies from areas with multiple clusters).

The strategies are:
- **Elimination** - aims to eliminate COVID-19 transmission within Aotearoa/New Zealand until a vaccine or effective treatment becomes available.
- **Sustained stamp it out** - aims to keep transmission very low (ie, R at 1 or less) until a vaccine or effective treatment becomes available (i.e. tolerate some cases but aggressively manage).
- **Sequestration** - aims to achieve herd immunity (>~60% infection) in the total population by having the healthy population infected as quickly as possible (probably a couple of months) while sequestering known at-risk populations.
- **Mitigation** - aims to develop herd immunity (>~60% infection) through one peak of infection in the population. However, control measures are in place so the peak occurs over a longer period of time (i.e. lower and more spread out) than if there were no control measures.
- **Suppression** - aims to reduce case numbers to a low level until a vaccine becomes available or until the population develops herd immunity (>~60% infection), through intermittent 'controlled' peaks of

infection which are activated by turning on and off population control measures (outlined in the Imperial College modelling).[1]

- **Keep it out** - aims to keep out cases until a vaccine or effective treatment becomes available (might be suitable for isolated areas).

These pandemic strategies have different aims, methods of being delivered, and risks and implications; including for equity. This document sets the scene and articulates the different strategies and their aims, possible timing and sequencing. Further work needs to be done on each of them to determine which strategies are most appropriate and feasible for Aotearoa/New Zealand.

About this document

This is one of a number of papers to be prepared by the COVID-19 Public Health Response Strategy Team. The team is a group of epidemiologists and public health medicine specialists seconded temporarily to the Ministry of Health - Dr Caroline Shaw, Dr Amanda Kvalsvig, Dr Lucy Telfar-Barnard, Dr Anja Mizdrak, Dr Polly Atatoa-Carr, Dr Mel McLeod, Dr Ruth Cunningham.

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1. Introduction

COVID-19 is a respiratory infection caused by a new coronavirus, SARS-CoV-2. The COVID-19 pandemic has evolved extremely rapidly, with the result that individuals and agencies involved in managing the response have had little opportunity to absorb background information about pandemic control and options for COVID-19 in particular.

The aim of this document is to support strategic discussions by providing:
- a brief introduction to the principles of pandemic control, including definition of some key concepts for the COVID-19 response
- features of this virus and implications for control
- a quick timeline of control in Aotearoa/New Zealand to date
- an overview of the different strategies for controlling the pandemic in the next 12 months that are theoretically available to Aotearoa/New Zealand at this time
- potential options for how we might decide to move between strategies.

Note: some readers of this document will already be familiar with basic principles. This content is included to fill gaps for readers from non-health disciplines.

2. Basic principles of pandemic control

Definitions

Outbreaks, epidemics, and pandemics: what is the difference?
- An **outbreak** is an increase in the number of cases of a disease above what is normally expected; cases are confined to a specific geographical area.
- An **epidemic** is similar to an outbreak but extends through a wider area, often with a more rapid increase in cases.

- A **pandemic** is an epidemic that is propagating in multiple countries or continents; this term is often reserved for an epidemic that is out of control.

There is an element of judgement in whether to label an emerging infectious disease an outbreak, epidemic, or pandemic. COVID-19 was declared a pandemic by the World Health Organization (WHO) on 11 March 2020. As explained by the WHO Director-General, the impetus for declaring the pandemic was *"the alarming levels of spread and severity, and … the alarming levels of inaction"*. The Director-General also noted that *"[d]escribing the situation as a pandemic does not change WHO's assessment of the threat posed by this virus. It doesn't change what WHO is doing, and it doesn't change what countries should do."[2]*

As this statement illustrates, although the scale of the response may differ, the principles of outbreak, epidemic, and pandemic control are generally the same, regardless of the label.

Pandemic responses: principles and practice

Three key disease factors[3] that determine the health impact of a pandemic are:
- the number of cases
- transmission dynamics, and
- severity.

These factors are related (for example, higher transmissibility of infection can drive higher case numbers) but each factor contributes information to guide the pandemic response.

There are other contextual factors that also determine the health impact such as demographics, pre-existing health status of the population, health sector capability and capacity.

Number of cases
The number of cases is an important metric for understanding both the magnitude of the public health emergency and the progress of the pandemic. This information can be visualised by drawing the epidemic curve, a graph showing the number of reported cases by date of symptom onset. An epidemic curve can be generated by measuring actual cases or by mathematical modelling. Scenario modelling of likely COVID-19 case numbers in Aotearoa/New Zealand has indicated that without effective control, the number of cases at the peak of the epidemic curve would overwhelm the capacity of the health system, in particular intensive care units (ICUs), and this consideration has strongly influenced the pandemic response.

Another aspect of case numbers is the population distribution, ie, differences in case numbers by age, sex, ethnicity, geographical area, presence of comorbidities, occupation, socioeconomic position, and other risk factors. An understanding of distribution informs control measures aimed at protecting vulnerable groups and promoting health equity. For example, all strategies need to include specific control measures to protect health care workers and other providers of essential services.

Transmission dynamics
Transmission dynamics describe how an infection spreads in a population; see Table 1 below for several examples of transmission parameters relevant to COVID-19. A key parameter that drives both the epidemic curve and the pandemic response is the reproduction number, R. The basic reproduction number (R_0) is the average number of secondary infections per case in a completely susceptible population. R is the effective reproduction number, or the average number of secondary infections per case in the current state of the

population. In essence, stopping a pandemic means bringing R down to <1, and many control measures (eg, physical distancing) are explicitly designed to reduce R.[1]

Severity
Disease severity is the third major determinant of disease and equity impacts. Severity of COVID-19 is further discussed in Table 1 below. Key indicators of severity include the case fatality risk (CFR) and demand on health services at different levels, eg, the number or proportion of symptomatic cases requiring ICU support. Additional demands on health services will likely have equity impacts.

Strategies and control measures to minimise pandemic impacts

In this document and others in the same series we refer to strategies and control measures.

Pandemic strategies are defined by their approach to controlling the pandemic progression or epidemic curve (eg, elimination).

Control measures are the specific actions that are taken (eg, contact tracing, border control) to deliver the strategy.

Each strategy will use different intensity, targeting, and timing of available control measures.

Pandemic responses cannot use a 'one size fits all' approach because optimal strategies will depend on context including geographic location, season, political/social environment, assessments of current and future impact, resources available, and many other factors. Also, interventions aimed at reducing the health impact of a pandemic can bring the public health response into conflict with other priorities such as protecting human rights, cultural values, or economies, requiring nuanced decisions about balancing priorities.

Aotearoa/New Zealand has special considerations for COVID-19 pandemic control:
- It has no land borders, enabling the country to close its borders almost completely to international arrivals.
- The government has obligations in relation to the Treaty of Waitangi to meet the needs of Māori and to ensure equity.
- It has a small population and relatively low population density.
- Indigenous and other disadvantaged populations with pre-existing poorer health are known to be disadvantaged by existing health services and have fared worse in previous pandemics with regard to disease risk, severity, and socioeconomic impacts.[4-6]
- It is currently the primary access point to many Pacific nations, particularly those in the South Pacific, and has a specific duty of care to these Pacific countries (especially given the historic events during the 1918 pandemic and the measles epidemic in Samoa which were both introduced from Aotearoa/New Zealand).
- The availability of ICU beds is currently undergoing expansion but is nevertheless a finite resource.[7]
- A joined up health information infrastructure (eg, a national health identifier) that should allow for good information to be available.

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[1] Note that R and R_0 are sometimes used interchangeably to refer to the reproduction number following non-pharmaceutical interventions

3. COVID-19 features that are particularly relevant for control

Previous pandemic plans have been underpinned by virological and epidemiological assumptions relevant to the influenza virus.[8] COVID-19 differs from influenza in ways that are important for pandemic control (i.e. they give us different options, in particular the opportunity to use a range of non-pharmaceutical measures or control measures as we refer to in this work). These differences and their implications are detailed in Table 1.

The unique characteristics of COVID-19 have implications for the rollout of the pandemic response as well as selection of strategies. International experience of COVID-19 has demonstrated the need for simultaneous implementation of different strategies in different regions; these strategies may be activated intermittently during the pandemic course.[9]

This is a different approach from New Zealand's 2017 pandemic plan, designed for influenza, where response strategies (eg, Stamp It Out) were intended to be implemented sequentially on a whole-of-country basis. In later reports we will further examine this aspect of pandemic strategies for COVID-19.

Table 1: COVID-19: influenza comparison relevant for pandemic control

Issue: differences	Implications for pandemic control
Population susceptibility is higher: around 100% of the population is susceptible to COVID-19; modelling suggests up to 90% of the population could be infected in an uncontrolled epidemic; whereas the annual incidence of influenza is estimated to range from 3 to 11%[10]).	Higher population susceptibility, combined with severity (see below) brings a high risk of health services being overwhelmed, as well as high numbers of deaths: therefore control must be attempted.
The serial interval is longer: the median 4.4 day COVID-19 serial interval[11] (time between cases) is longer than the 3.6 days for influenza.[12]	The longer serial interval means there is more time to trace and isolate contacts. There is therefore more opportunity to eliminate the virus than for influenza. However it also means potentially more contacts.
Presymptomatic transmission is higher: there is currently scant, if any, evidence that asymptomatic or presymptomatic individuals play an important role in influenza transmission, [13] whereas presymptomatic transmission appears to be responsible for about 12% of COVID-19 cases. [11,14]	Presymptomatic transmission means: Contact tracing must include a standard presymptomatic period – this may need to be up to 3 days[14]. - A reduction in the time advantage gained by the longer serial interval (it reduces it if people are symptomatic earlier) - Wider transmission, since people do not know to self-isolate before they are unwell; and - Testing strategies include asymptomatic people, particularly close contacts of cases and/or isolation of contacts since a negative test early in disease does not exclude the possibility of disease.

Issue: differences	Implications for pandemic control
Population distribution is different: influenza incidence and severity are weighted towards the young,[15] while COVID-19 is apparently weighted towards older adults.[16,17]	Possible implications for physical distancing strategies. In theory, the low infection rates in children might make school reopening less problematic than for influenza. However, low reported child infection rates may reflect under-testing. Further, children may play a larger role in transmission than their infection rates suggest.[18]
Disease severity higher: • High levels of ICU admission[1] • High ventilator requirements[1] • Prolonged ICU stays eg, average 15 days in Italy [19] with potentially high (48%) mortality[20] • Higher case fatality rate (lowest estimate 0.3%, compared to 0.1% for influenza[21]).	Push towards carefully titrated public health control measures as rationing of health services can be highly problematic for equity.
Reproduction number is higher: The estimated R_0 for COVID-19 is ~2.5, compared to 1.3 for influenza.	Likely to need a greater combination, range of types and level of intensity of control measures needed to bring the reproduction number below 1. Greater proportion of the population need to be immune to bring the effective Reproduction number below 1. This can be explained simply by the 1-1/R equation: i.e. = 1-1/2.5= 60% for COVID-19 1-1/1.3 = 23% for influenza.
Immunity duration is unknown: While influenza immunity remains 50%+ up to 3.5 years post-infection[22], the duration of COVID-19 immunity is unknown.	Unclear how long it is before an individual becomes susceptible to COVID-19 again.

Issues: similarities	Implications for pandemic control
Broadly similar symptoms.	Can be difficult to clinically discriminate between COVID-19 and influenza (or other respiratory illnesses) thus testing can be essential to confirm diagnosis.
High household clustering of cases[9,23].	Household contact isolation likely to be a successful strategy. Although potential equity implications for larger and multigenerational households.
Asymptomatic cases are a feature of COVID-19 but the level is not well understood [9,13,24].	Regular population sample testing will be needed to measure changes in population susceptibility.
Similar modes of transmission (i.e. droplets, sneezing, coughing, surface to hand).	Hygiene messaging similar to influenza.

4. Pandemic control strategies relevant to Aotearoa/New Zealand at this time

Table 2 contains an overview of different high level pandemic strategies available to control COVID-19 in the short to medium term (up to a year) that are potentially feasible at the present time (in a situation of established but possibly not widespread community transmission, currently at Alert Level 4 with significant control measures in place, and reduced inflows through the border). As information comes to hand the feasibility of the different strategies may alter. All need to be considered against relevant decision making criteria, including equity.

These strategies are not mutually exclusive; more than one approach could be utilised simultaneously in Aotearoa/New Zealand, including in different geographic areas. (Note this is the case in China right now where different strategies are implemented in Hubei/Wuhan vs other parts of China).

We can move between strategies depending on evolving circumstances and local context. However, strategies have different aims and implications, so being explicit about them is important.

These overarching pandemic strategies will require different combinations of specific public health control measures (eg, physical distancing, case isolation).

Table 2: High level pandemic strategies for COVID-19 control in Aotearoa/NZ

| Pandemic strategy name	Aim	Brief description/notes
Elimination	To eliminate transmission within Aotearoa/New Zealand until a vaccine or effective treatment becomes available.	Existing transmission would be eliminated. Any new cases would be from entry at the border which would be tightly managed. Elimination seems to have largely been achieved in Hubei/Wuhan in China.
Sustained stamp it out	To keep transmission very low (ie, R at 1 or less) until vaccine or effective treatment available.	A level of transmission is accepted but is aggressively managed through a combination of control measures. Differs from the suppression strategy by not having an explicit goal of developing herd immunity over time. Examples of countries attempting an approach like this include Singapore and South Korea.
Sequestration	To achieve herd immunity (>~60% infection) in the total population by having the healthy population infected as quickly as possible (probably a couple of months) while sequestering elderly and known at-risk populations.	Healthy population would probably need 70-80% infection rate to achieve 60% immunity in the total population.[25] Likely to result in health system overload, and extensive additional deaths. This strategy is likely to be riskier for populations such as Māori with higher pre-existing morbidity.
Mitigation - with variants	To develop herd immunity (>~60% infection) through one peak of infection in the population, occurring over a longer period of time than if there were no control measures.	Idea of flattening the curve. Implementation of control measures to slow pandemic spread and reduce peak number of infected. Would involve a range of control measures for the majority of the duration of outbreak. Some groups may be less able to do this than others. Sweden is doing a 'minor variant' of this (deploying measures such as hygiene and some physical distancing).[26] Update: 6 April Sweden now

		seems to be increasing the intensity of control measures as their death rates are now higher than comparable countries. Imperial College Report modelled more restrictive control measures in their mitigation scenario.[1]
Suppression	To reduce case numbers to a low level until a vaccine becomes available or until the population develops herd immunity (>~60% infection), through intermittent 'controlled' peaks of infection which are activated by turning on and off population control measures.	This occurs through a series of "curated" small peaks of infection-signalled on and off by tightening and relaxing of a range of control measures. One of the options explored in the Imperial College Report.
Keep it out	To keep out cases until a vaccine or effective treatment becomes available.	Applicable to isolated communities who do not have cases or Pacific Island states. If elimination was successful we would go back to this strategy nationally.

We did not include the 'no control' strategy in this table as it is not under consideration in Aotearoa/New Zealand; nor is it likely to be in future. This would involve allowing the entire population to gain herd immunity in the shortest period of time. It could occur because of a deliberate policy choice or by default due to weak governance and/or infrastructure in some jurisdictions.

Timing

Pandemic strategy sequencing at national level has a temporal dimension. Not all options are available at all times. This is illustrated in Figure 1. We are likely to be best placed to pursue elimination now- although it is possible that we could decide to attempt elimination at a later time period if circumstances were right.

Figure 1: Flow chart of potential options for pandemic strategy sequencing nationally for Aotearoa/New Zealand
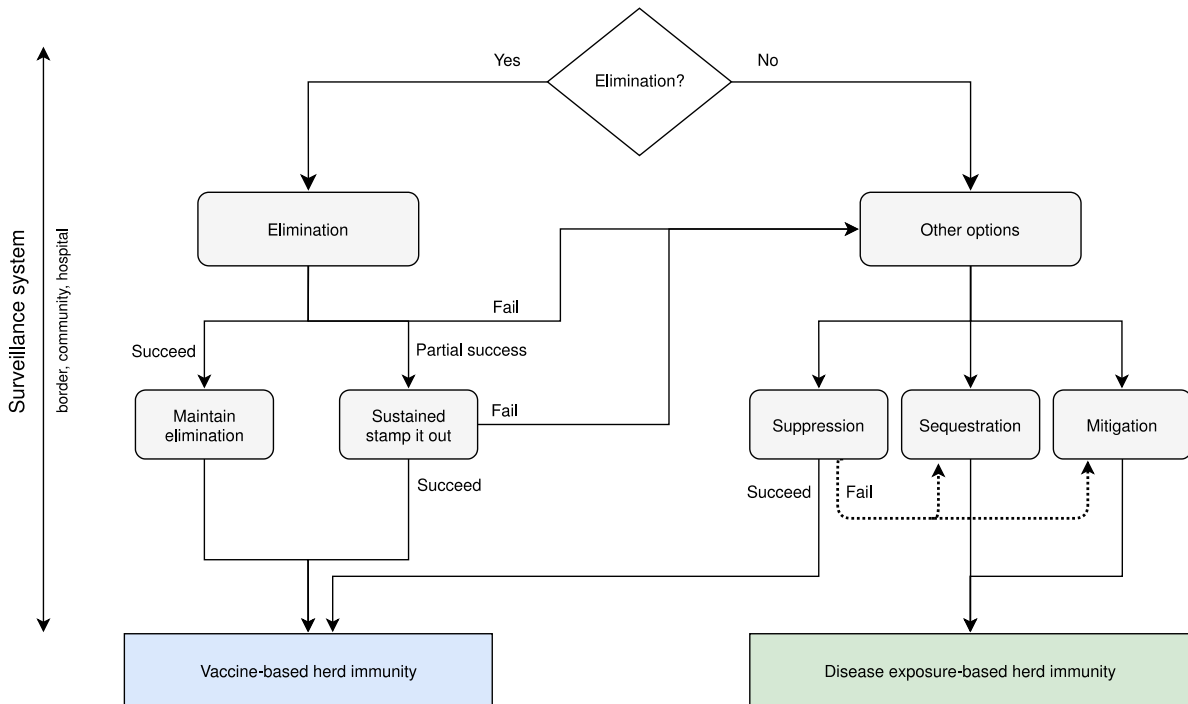
NB: There are other variants/transitions between the different strategies depending on specific circumstances.

Level of strategy

We note that while there has been the assumption within Government of a consistent national level response, this is potentially an inflexible approach.[27] For example some communities could apply a 'keep it out' strategy if they were relatively isolated as the rest of the country did an 'elimination' strategy. This would be particularly relevant for some rural Māori communities.

Sequestration of high risk communities (eg, prisons, rest homes) even during an elimination strategy could also be useful. However, the absence of good surveillance data by region makes regionally specific strategies a challenge at this point. Infrastructure to support regional approaches would need to be in place eg, adequate ability to shift intensity of control measures in specific locations, ability to 'cordon off' specific areas etc.

5. Control measures

What are control measures and how do they work?

Control measures include a wide range of non-pharmaceutical interventions that are aimed at reducing the reproduction number of COVID-19. They act to lower the reproduction number by reducing the contacts between people (this is similar to primary prevention- so an individual is less likely to be exposed to anyone with COVID-19) and/or by decreasing the risk of transmission per contact (this is more like secondary prevention - so if you encounter a person with COVID-19 these interventions reduce the chance they will pass it to you). See Table 3 for examples.

Note some interventions may have slightly contradictory impacts such as reducing external contacts but increasing household contacts.

Table 3: Examples of control measures that reduce contacts and transmission

Control measures to reduce total number of contacts	Control measures to reduce transmission
Case isolation, isolation of contacts of cases (through contact tracing), isolation of high risk populations, working from home, education institution closures (ECE, school and university), restricting mass gatherings, border controls (international and regional).	Physical distancing between people, cough etiquette, hand hygiene, infection control in public spaces, use of personal protective equipment (PPE).

The different strategies aiming to control the pandemic in Aotearoa/New Zealand may require slightly different combinations of control measures at different intensities and different time periods (see Figure 2).

Figure 2: Illustration of intensity of control measures over time under different strategies

† With high levels of border control
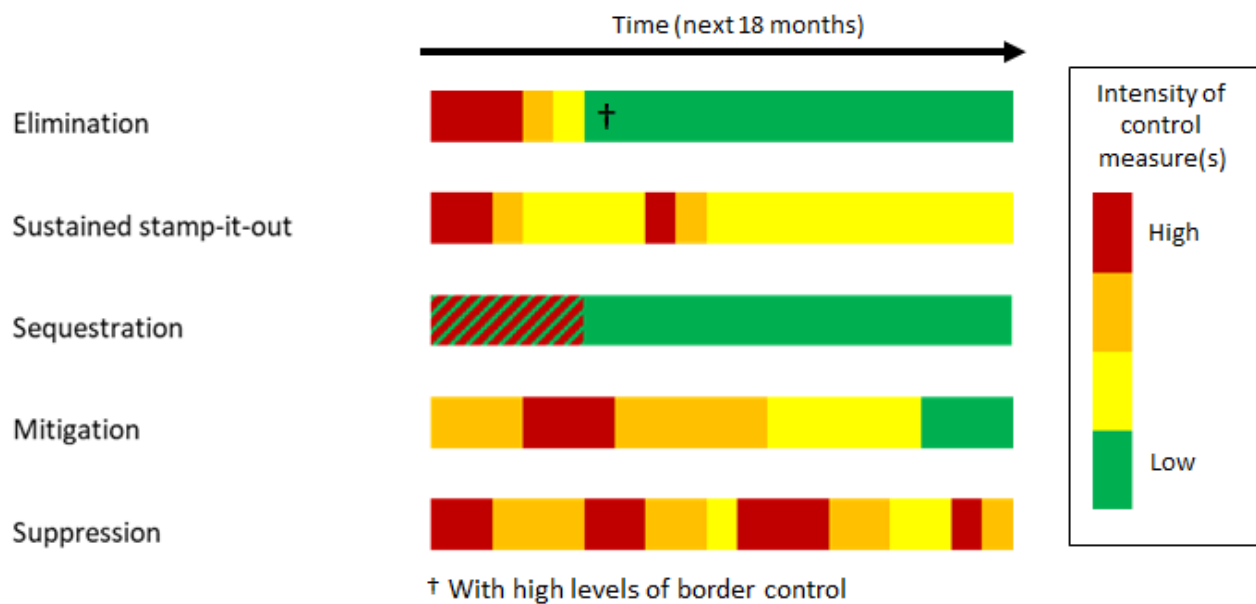
Control measures and equity

Control measures range from quite targeted measures to very wide ranging population level measures. These are implemented with the aim of reducing COVID-19 disease and mortality.

As with previous pandemics,[4] COVID-19 would have inequitable impacts on Māori and Pacific peoples (higher levels of mortality in all age groups, higher disease burden in all ages if it becomes widespread and more significant long term consequences from disease and loss of life compared to the pākehā population).

While Māori and Pacific populations have much to gain from pandemic control, the impacts of the control measures used to reduce COVID-19 will themselves disproportionately impact Māori and Pacific peoples. This is due to existing inequities in health status and in the broader determinants of health (economic position and educational achievement) as a result of the process of colonisation. For example, closing schools is likely to more severely impact groups of children already disadvantaged by the education system, such as Māori and Pacific children and children with additional learning needs.

Replacement options such as online learning have the potential to further disadvantage these groups who have the least access to technology devices and internet access that allows learning to be delivered this way. The consequences of the control measures are also likely to have long term health impacts if they adversely impact the determinants of health for Māori and Pacific peoples.

Relationship between control measures and alert levels

Control measures are currently enacted in Aotearoa/New Zealand though the 4-level COVID-19 Alert System. We are confident that the cumulative impact of all the control measures enacted at Alert Level 4 brings the reproduction number under 1, and this is supported by international experience and evidence.[28,29]

However, it is currently not clear how much each of the specific control measures impact on the reproduction number of COVID-19. Ideally we would have data on this and would be able to identify and apply the least restrictive combination of measures that were needed to reduce the reproduction number.

For example, if we knew that case isolation reduced the reproduction number from $R_{2.5}$ to $R_{2.0}$ and contact tracing resulted in a further $R_{0.5}$ reduction etc then we could make choices about measures that balanced the benefits of specific control measures with the harms of them.

Finally, the impact of other COVID-19 Alert Levels (eg, Level 3 and Level 2) on the reproduction number of COVID-19 is unknown at this point. This means that reducing alert levels comes with risks of increasing transmission of COVID-19 and needs to be done with high quality surveillance, case management and contact systems in place. A precautionary approach with slow graduated reduction, with a focus on minimising inequities, would be most appropriate in the face of these uncertainties.

Table 4 below outlines control measures relevant to COVID-19 control, matched to COVID-19 Alert Levels.

Table 4: Control measures and definitions

Control measure	Description	Level in NZ COVID-19 Alert System
Case isolation	Self-isolation of confirmed and probable cases at home. Isolation of confirmed and probable cases in a supervised facility.	1 NPAS
Isolation of contacts of case	Self- isolation of household contacts for 14 days from the date of close contact. Self-isolation of other identified close contacts of identified cases for (usually) 14 days from last contact with case.	1 1
Surveillance and testing system	Comprehensive surveillance system with supporting testing strategy to inform the response. Plans are detailed elsewhere for COVID-19 surveillance.	1
Workplace closure	All workplaces other than essential services# are closed.	4 3

	Closure of restaurants/bars/cafes Closure of takeaways Closure of retail outlets Online only retail	3 2 4
Workplace physical distancing	Working from home Shift scattering Increased workplace hygiene requirements Distancing requirements within workplaces (e.g. desk spacing)	4 2 1 NPAS
Educational institution closure and physical distancing	Local school/ECE/tertiary institution closure related to cases Mass ECE closure Mass school closure Mass tertiary institution closure Physical distancing measures in reopening of educational institutions (shifts, hygiene, distancing) Staged reopening	3 4 4 4 NPAS NPAS
Community related physical distancing	Bans on mass gatherings Closure of public spaces (indoor) (e.g. libraries, pools) Closure of public spaces (outdoor) (e.g. playgrounds, DOC campsites)	1+* 3 3
Border control	Isolation of arrivals in a supervised facility Self-isolation of arrivals Testing of arrivals Entry ban(s)	2 1 NPAS 1
Pre-emptive isolation of high-risk individuals	Isolation of older adults at home Isolation of older adults in healthcare/aged care facilities Isolation of individuals with pre-existing medical conditions Isolation of prison community	2 NPAS 2 NPAS
Health promotion	Encouragement of physical distancing Promotion of hand hygiene/cough and sneeze etiquette/not touching your face Provision of soap/hand sanitiser to community Mask wearing in public Public decontamination/cleaning	1 1 NPAS NPAS NPAS
Healthcare related physical distancing	GP consultations moving to online Postponement of elective surgery (also rationing measure) Restriction on hospital visits Some secondary care moving online	3 4 NPAS NPAS NPAS

	Postponement of health promotion and preventative care (screening, Well Child Tamariki Ora visits)	
Transport	Restrictions on domestic travel Cessation or restrictions on local public transport operation and use	3/4 3/4

definition of essential services in Aotearoa/New Zealand may be different from other countries so % of working population who fall under this may be different from other jurisdictions.
*mass gathering restrictions depend on alert level. As level increases, the size of mass gathering permitted gets smaller.
NPAS: Not part of Aotearoa/New Zealand COVID-19 alert system.
Interventions to increase healthcare delivery such as increasing ICU capacity are not included as, while they are important, they are not aimed at reducing contacts or transmission.

Next steps

This document has provided a stage setting and high level overview of COVID-19 in Aotearoa/New Zealand, strategies and control measures. Further work is needed to detail all the strategies including control measures to implement them, transitions between strategies and levels of control measures, risks and benefits, and equity implications.

Appendix 1: Summary of COVID-19 control actions to the end of March 2020 in Aotearoa/New Zealand

The National Health Coordination Centre (NHCC) within the New Zealand Ministry of Health was established on the 30th of January 2020 in order to manage COVID-19. Border control measures were established in early February2020 for travellers from China, and this was extended in late February 2020 to travellers from Iran and Northern Italy.

New Zealand's first COVID-19 case was identified on 28 February 2020. On the 16th of March 2020 all incoming travellers were requested to self-quarantine for 14 days (with exemptions in place for asymptomatic travellers from Pacific Islands). On the same day, restrictions were placed on public gatherings of more than 500 people. On the 19th of March 2020 the borders were closed to all incoming travellers except Aotearoa/New Zealand citizens and residents, effective from 23.59 that evening, and public gatherings of more than 100 people were cancelled.

On the 21st of March 2020 the Prime Minister of New Zealand announced the 4-level COVID-19 Alert System,[30] and placed Aotearoa/New Zealand at Level 2 on that date. On 23 March 2020 the Prime Minister increased the Alert Level to 3, and announced Level 4 would apply from 23:59 on the 25 March 2020.
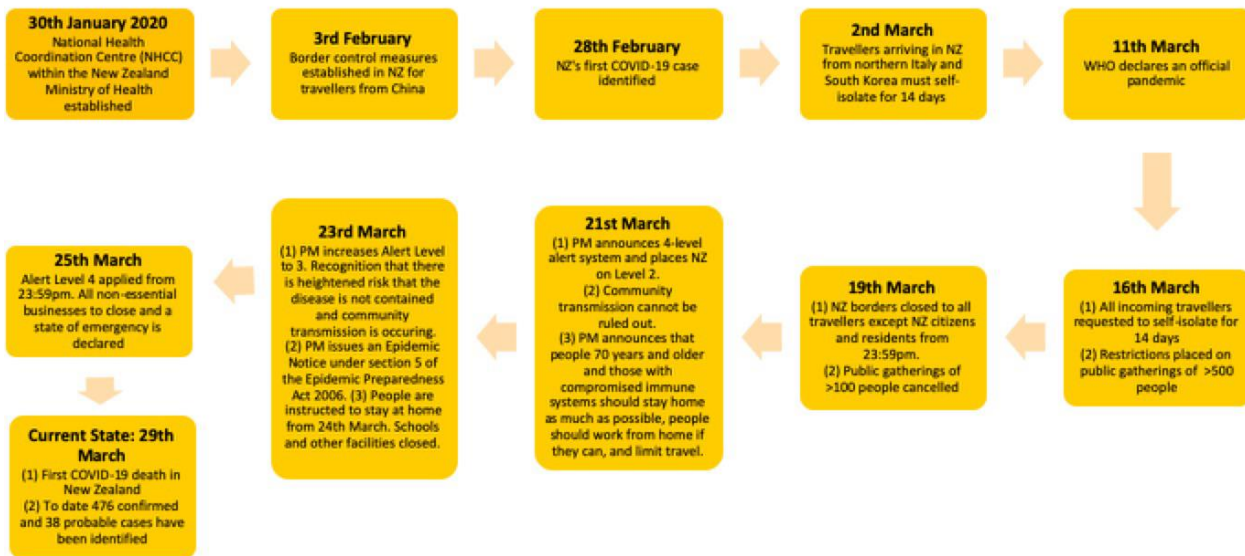
To date (29 March 2020), 476 confirmed and 38 probable cases have been identified, including a small number of geographic clusters. The first COVID-19 death in New Zealand occurred on the 29th of March.

The current COVID-19 case definition for Aotearoa/New Zealand involves epidemiological and clinical criteria for a case to be suspected and notified and testing ordered:
- travel to or from a country or area of concern, or contact with a suspect, probable or confirmed COVID-19 case in the 14 days before onset of illness and
- fever ≥38°C OR any acute respiratory infection with at least one of: shortness of breath, cough or sore throat with or without fever.

In addition, healthcare workers with moderate or severe community-acquired pneumonia and critically ill patients in ICU/HDU with bilateral severe community-acquired pneumonia without an alternative cause are also identified as suspected cases (even without travel or known exposure history). Testing is also done for any person if clinical judgement indicates that testing is warranted. Over 19,000 tests have been conducted over the last few weeks (over 1780 per day, on average).

All those suspected cases awaiting laboratory evidence are required to self-isolate (away from family and household members) until test results are received, and all confirmed cases are investigated to determine transmission history and identify close and casual contacts in order to prevent onward transmission, raise awareness, and support early detection of further cases. Prioritisation is given to the identification of close contacts, particularly household, health-care associated, and high-risk (such as those with co-morbidities, who are immunocompromised, or those who are pregnant).

COVID-19

30th January 2020
National Health Coordination Centre (NHCC) within the New Zealand Ministry of Health established

→

3rd February
Border control measures established in NZ for travellers from China

→

28th February
NZ's first COVID-19 case identified

→

2nd March
Travellers arriving in NZ from northern Italy and South Korea must self-isolate for 14 days

→

11th March
WHO declares an official pandemic

↓

16th March
(1) All incoming travellers requested to self-isolate for 14 days
(2) Restrictions placed on public gatherings of >500 people

←

19th March
(1) NZ borders closed to all travellers except NZ citizens and residents from 23:59pm.
(2) Public gatherings of >100 people cancelled

←

21st March
(1) PM announces 4-level alert system and places NZ on Level 2.
(2) Community transmission cannot be ruled out.
(3) PM announces that people 70 years and older and those with compromised immune systems should stay home as much as possible, people should work from home if they can, and limit travel.

←

23rd March
(1) PM increases Alert Level to 3. Recognition that there is heightened risk that the disease is not contained and community transmission is occuring.
(2) PM issues an Epidemic Notice under section 5 of the Epidemic Preparedness Act 2006. (3) People are instructed to stay at home from 24th March. Schools and other facilities closed.

←

25th March
Alert Level 4 applied from 23:59pm. All non-essential businesses to close and a state of emergency is declared

↓

Current State: 29th March
(1) First COVID-19 death in New Zealand
(2) To date 476 confirmed and 38 probable cases have been identified

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