Briefing

COVID-19: Outbreak phases and management approach

Date due to MO:	16 August 2021	**Action required by:**	N/A
Security level:	IN CONFIDENCE	**Health Report number:**	HR 20211740
To:	Hon Chris Hipkins, Minister for COVID-19 Response		
Copy to:	Hon Dr Ayesha Verrall, Associate Minister of Health		

Contact for telephone discussion

Name	Position	Telephone
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Minister's office to complete:

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☐ See Minister's Notes	☐ Withdrawn	

Comment:

COVID-19: Outbreak phases and management approach

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Purpose of report

1. The purpose of this report is to respond to your request for further information on how the contact tracing system would operate across different phases of a COVID-19 outbreak.

2. This report discloses all relevant information and implications.

Summary

3. The contact tracing system has proven effective in managing a range of community outbreaks and, more recently, supporting Quarantine Free Travel (QFT). Each event has presented new opportunities to strengthen the response and enabled the system to evolve.

4. As observed internationally, the risk posed to New Zealand is increasing, particularly given the rise of variants of concern including the Delta variant. It is vital that as the threat of outbreaks become more serious and widespread, the response focus and management strategies adapt. As detailed in Appendix One, the response approach can be characterised into three phases:

    - Phase One – *going hard, going early*; utilising all tools and resources available to prevent an outbreak taking hold.
    - Phase Two – *driving down the numbers*; adjusting the use of available management strategies to focus on the regions and clusters that present the greatest potential to reduce the spread of the disease through contact tracing and other public health interventions.
    - Phase Three – *regain control*; applying population-based management strategies to reduce and minimise social interactions thereby limiting the spread of disease.

5. At each phase, there are different management strategies that can be applied to manage the risk of transmission.

6. The ready contact tracing capacity across Public Health Units and the National Investigation and Tracing Centre is scaled to manage a Phase two outbreak. These resources are also readily available to manage a Phase one outbreak.

7. The surge contact tracing capacity is activated as the response moves towards Phase three, where additional capacity is required to manage increasing case and contact numbers.

Recommendations

We recommend you:

a) **Note** that the Phase one and two ready capacity is up to 150 new cases per day and 5,400 new contacts per day and the Phase three surge capacity is up to a total of 1,000 new cases per day and 6,000 contacts per day. **Yes/No**

b) **Agree** to the contact tracing capacity expectations to respond to initial, significant and major COVID-19 outbreaks in New Zealand. **Yes/No**

Bridget White
Deputy Chief Executive
COVID-19 Health System Response
Date:

Hon Chris Hipkins
Minister for COVID-19 Response
Date: 17/8/2021

COVID-19: Outbreak phases and management approach

Context

8. This paper follows on from advice provided to you on 1 July 20201 regarding contact tracing system capacity (HR20211272 refers).

9. As has become clear through New Zealand's management of a range of outbreaks of COVID-19, and through observing international responses to major outbreaks, outbreaks are dynamic and the approach to managing these must also be dynamic.

10. The phased approach, as depicted in Appendix One, outlines the expected situation at each phase including the number of case and clusters as well as the ratio of contacts per case, and whether the source of these new cases is known. These are key indicators that determine the phases of a growing outbreak.

11. There are a number of different outbreak management strategies which can be utilised including:

    - Source investigation – undertaken intensively during phase one
    - Whole genome sequencing – utilised at Phase one to support source investigation
    - Contact tracing – most extensive at phase one, and then becomes more targeted based on the clusters/areas that present the greatest public health risk.
    - Public health measures including regional and national changes to Alert levels.
    - Testing – both according to the case definition as well as surveillance.

12. The impact of these outbreak management strategies varies across the different phases of an outbreak. Appendix One details how the system will respond to an outbreak including the degree to which the management strategies that are applied at each phase.

13. The national contact tracing system capacity available to be drawn on at each phase is also included in Appendix One. The relevant management strategies that are utilised at each phase, including public health measures including changes to Alert Levels, testing, contact tracing, form the basis of this capacity planning.

14. A key consideration in informing our response framework is the observation of how variants of concern are being managed internationally.

What defines each of the outbreak phases?

15. The outbreak phases are primarily determined by the extent of uncontrolled transmission occurring in the community.

Phase one: Community cluster(s)

16. The scope of this phase is comparable to the range of outbreaks managed in New Zealand between May 2020 and July 2021. Generally, these were localised to specific populations groups and/or areas and controlled within four generations of transmission.

17. This early phase would be typified by low case numbers, very few clusters, very few if any cases with unknown sources of infection and high contact to case ratios. The focus of the response is intensive source attribution work, coupled with extensive contact identification and control.

18. In this phase, the risk tolerance is very low and requires 'pulling out all stops' approach to control the outbreak.

Phase two response: Significant outbreak response

19. The scope of this phase is similar to the New Zealand outbreak between March and April 2020 and categorised by widespread transmission.

20. This phase would be typified by high case numbers, multiple clusters across a range of settings of concern and an increasing number of cases without a known source of infection.

21. The focus shifts from intense source attribution to cluster control, spread prevention with individual cases and contacts. The outbreak is likely to have had at least five generations of transmission within the community.

22. The response approach would shift to a transmission reduction approach that would see a steady reduction of new case numbers using a range of tools including population interventions (e.g. mandated mask-wearing, physical distancing, change in alert levels, limits on gathering size).

23. The contact tracing system would also prioritise its capacity to focus on ensuring individuals are isolating in a timely manner i.e., the mode of communicating with contacts in isolation could change from phone to email follow-up.

Phase three response: Major outbreak response

24. The scope of this phase would be beyond anything New Zealand has currently experienced and is more akin to the Melbourne outbreak in July 2020 or the July/August 2021 Fiji outbreak.

25. This phase would be typified by very high number of cases and clusters and high numbers of cases with unknown sources of infection.

26. The focus of the response at this level would be on regaining control of the outbreak through population health interventions such as widespread medium to long term lockdowns.

The application of the outbreak phases

27. The outbreak phases are a tool for distinguishing the different management strategies that may be used in an outbreak. It is anticipated that the transition through the phases is likely to occur quickly depending on the nature of the outbreak, as opposed to a stepwise linear progression.

28. A key assumption to the national outbreak management strategy is that the response phases may be applied differently across the country, based on the extent of community outbreak experienced within each region.

Capacity at each phase

29. The New Zealand experience of managing COVID-19 has taught us that capacity is not a steady state measurement. Our approach to response management will adjust as an outbreak evolves, and capacity will be utilised where it will most effectively minimise the risk of onwards transmission.

30. The national capacity expectations, as outlined in this paper, have been modelled from our experience of the national outbreak management approach to date. This has informed the underlying assumptions, including the anticipated case to contact ratio, to provide meaningful and realistic capacity plans.

31. We are considering the workforce capacity in responding to a delta-associated outbreak while rolling out a vaccination.

Equity

32. Ensuring that New Zealand's contact tracing response is identifying and isolating those who at risk of adverse health outcomes is a key equity consideration.

33. When requiring individuals to isolate, it is important to ensure there are systems in place to support those that need it i.e., food, appropriate accommodation, access to health care services as well as financial support.

34. The NITC continues to work closely with internal teams that are providing DHB-led wrap-around services, as well as the Ministry of Social Development, public health units and local Māori and Pacific providers to ensure the needs of individuals are supported.

Next steps

35. The National Investigation and Tracing Centre will continue to enhance contact tracing system processes to ensure capacity is available for the appropriate management strategies at each outbreak phase.

ENDS.

Appendix One: A3 Outbreak phases and management approaches

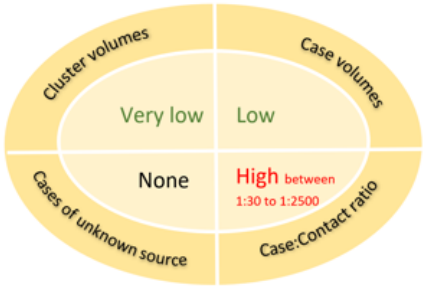
Outbreak Phases and Management Approaches

Phase One: Community cluster(s)

(eg, Auckland August 2020 outbreak to current day)

Situation: A single outbreak with geographically contained sub-clusters and low case numbers, contained within 1-4 generations of transmission.

Focus: Assertive source identification & spread prevention

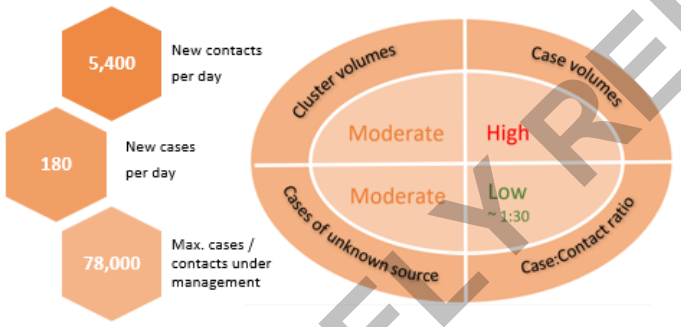


Phase Two: Significant outbreak

(eg, New Zealand March/April 2020)

Situation: Case numbers have increased significantly across NZ. Multiple separate clusters in a range of settings & new cases that have no known source.

Focus: Outbreak control and community spread reduction



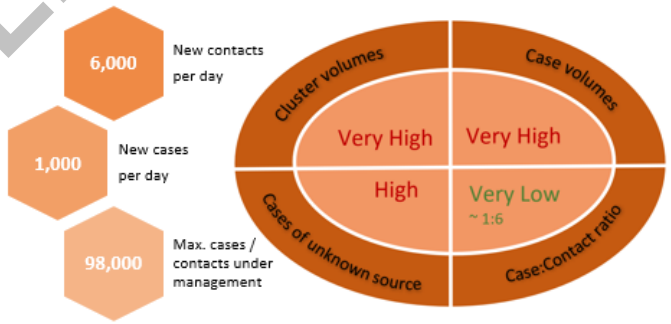
Phase One and Two Ready Capacity

Phase Three: Major outbreak

(eg, Melbourne July 2020 & greater)

Situation: Widespread community transmission. Large numbers of unconnected cases with no known source. Outbreaks causing significant disruption.

Focus: Regain control, minimise hospitalisations & fatalities



Phase Three Surge Capacity

Outbreak management strategies

The impact of outbreak management strategies vary across the different phases of an outbreak.

Outbreak management strategies	Source investigation	Whole genome sequencing	Contact tracing	Testing	Surveillance testing	Lockdown (short-term preventative)	Lockdown (extended)	Vaccination
Phase One	+++	+	+++	++	++	++	-	-
Phase Two	-	-	+	++	++	-	++	+
Phase Three	-	-	+	+	-	-	+++	++

Key: **+++** Significant, **++** Moderate, **+** Minor, **-** N/A

Intervention focus: As the scale of outbreak increases there is shift from individual interventions to a greater reliance on whole population interventions

National application of response phases

The response phase can be applied distinctly to each region, relative to the situation in each area.

The New Zealand system response will focus on aligning the appropriate outbreak management strategies to the local situation

Example of adaptive response