

# Memo

## Adapting COVID-19 Surveillance, Intelligence and Contact Tracing Reporting and Data Management for Omicron

<b>Date:</b>	27 January 2022
<b>To:</b>	Dr Ashley Bloomfield, Director General of Health
<b>Copy to:</b>	Dr Caroline McElnay, Director of Public Health Dr Ian Town, Chief Science Advisor Sarah Turner, Acting Deputy Chief Executive, COVID-19 Health System Response Robyn Shearer, Deputy Director General, District Health Board Performance & Support Shayne Hunter, Deputy Director General, Data and Digital
<b>From:</b>	Gill Hall, Group Manager, Science and Insights, COVID-19 Health System Response
<b>For your:</b>	Decision

### Purpose of report

1. The purpose of this memo is to describe key national reporting metrics and how they will change in the Omicron outbreak. It provides an overview of reporting challenges and addresses current gaps in data collection and management.
2. Surveillance reporting and intelligence analysis will be affected as we move from low, to medium, to high case numbers. Data quality and timeliness issues will occur more often as we get nearer to and surpass, the 'flatten the curve' stage of outbreak management.
3. The COVID-19 Protection Framework (CPF) settings rely on the use of expertise and data to inform a robust assessment of the evolving COVID-19 situation, public health risk, as well as the capacity and capability of the health system to respond.

### Background and context

4. Since the initial international detection of the Omicron variant on 24 November 2021, the world has seen a spike in cases, with daily new cases reaching an all-time high of 3.1 million per day this week.<sup>1</sup> Danish research further estimates the  $R_{eff}$  (effective reproduction) for Omicron to be 3.19 (95%CI 2.82-3.61) times greater than that of the

<sup>1</sup> Our World in Data. COVID-19 Data Explorer. 21 January 2022.

Delta variant under the same epidemiological conditions.<sup>2</sup> Given the highly infectious nature of this variant, a community outbreak within Aotearoa New Zealand will result in high daily case counts.

5. The relative size of the projected outbreak paired with developments in the domestic COVID-19 response e.g., expansion in the use of rapid antigen testing (RAT), will impact data recording. Consequentially, this will influence the way in which the COVID-19 Intelligence and Data Analytics teams will be able to convey essential information on indicators, such as cases, hospitalisations, and mortality.
6. Taking proactive steps to address these risks will reduce any later challenges in effectively disseminating key information during an Omicron outbreak.

## Key Surveillance reporting

7. Currently, the COVID-19 Intelligence Team produces a daily Situational Report (SitRep) and in-depth Case/Outbreak Investigation Reports when required to provide oversight of specific cases and/or emerging outbreaks. In addition, the team develops a weekly Trends and Insights Report and fortnightly Surveillance Report to provide a round-up of trends and insights from all our surveillance sources; both these latter two reports were initiated to meet different operational requirements.
8. During the Omicron outbreak, we will continue to provide daily SitReps, which will include a breakdown of the ethnicity, age, gender, and location of daily cases, assuming National Health Index (NHI) numbers continue to be available. This will capture community cases and contact tracing details by outbreak provided the data continues to be accurate.
9. The SitRep will continue to be updated and distributed at 11:00am daily. It will contain an epidemic curve of cases, newly reported cases and total cases by DHB, age and ethnicity and newly reported cases in past 7 days by the same breakdowns.
10. The previous spike in case numbers for Delta reduced data quality and completeness due to data entry being a manual process completed by Public Health Unit (PHU) staff, whose efforts were redirected to outbreak control. Reduced data quality consequently impacted the Case Investigation Report and the Intelligence function's ability to report on linked and unlinked cases.
11. Similarly, during an Omicron outbreak, we anticipate that we will be able to provide an in-depth Case/Outbreak Investigation Report while the outbreak is relatively small (i.e., below 10 cases) and simple (no more than three distinct clusters) and while we are in a 'stamp it out' stage of outbreak management. Following this threshold, case information will be incorporated as data tables in the SitRep. Contact tracing data tables will also be incorporated for as long as data quality allows.
12. When the Case Investigation Report becomes unsustainable and reaches the case and cluster size described above or the <sup>Phase</sup> stage of outbreak management turns to a 'manage it' stage, (we anticipate the weekly Trends and Insights Report will be produced more

<sup>2</sup> Ito, K., C. Piantham, and H. Nishiura. Relative Instantaneous Reproduction Number of Omicron SARS-CoV-2 variant with respect to the Delta variant in Denmark. J Med Virol, 2021.



- frequently, every three days, though the focus will remain providing insights for the past week (while data quality allows). The Trends and Insights report will include analyses by gender and vulnerability according to deprivation and other vulnerability indicators outlined in the COVID-19 Surveillance Strategy. ✓
13. As Rapid Antigen Tests (RATs) become a common testing option, the national repository of tests processed by laboratories will be less reflective of the number of COVID-19 tests being administered in the community. ✓
  14. Work is underway to allow for unsupervised RATs to be logged but there are concerns related to data quality and completeness that are not yet resolved. ✓
  15. People taking RATs in self-isolation under the 'reconnecting New Zealanders' framework will be monitored via a survey under a high trust model. ✓
  16. When data ceases to be complete, we will continue to be able to report demographic details of cases that are attached to an NHI (age, gender, ethnicity, and location). ✓
  17. As the outbreak evolves, we do not anticipate being able to report on small clusters; however, work is underway to develop a solution to be able to report high-risk clusters, such as where there may be risk of severe outcomes for individual and/or health systems (e.g., within aged residential care facilities and hospitals) or increased likelihood of super-spreader events (e.g., schools and large events). ✓
  18. It is recommended that the fortnightly Surveillance Report shift to a monthly report in order to round-up trends and insights from all intelligence and surveillance sources. Capturing data will become less robust in some instances once there is endemic Omicron, so a monthly Surveillance Report is more appropriate in order to maintain high-quality surveillance reporting. ✓
  19. There has been change in scope across the reports that the Science and Insights teams produce. Revisiting each of the reports, assessing the audience, purpose and frequency is underway to effective and efficient communication of content internally and externally. ✓
  20. The table below list the key national reporting metrics that are systematically collected and can be reported on through an Omicron outbreak. The key indicators below provide the best data for overall trends and evidence to inform decision making in managing the outbreak.
  21. At present they are reliable, but the quality, completeness and timeliness of these metrics below will be affected in the medium and high scenarios. This will also impact our ability to produce intelligence. Action is underway to improve these issues.

## Summary of key national reporting metrics & actions underway to improve reporting

Key Metrics	Current Data source	Challenges/Limitations	Action underway to improve
Case numbers and details	EpiSurv	<p>With high case counts, data will be less detailed and consequently, daily situational reports will provide more high-level and general information.</p> <p>Continuing to have the NHI for each case is essential to report the ethnicity, age, gender, and location of cases.</p> <p>People who self-administer RATs will not be included in the testing and case data.</p> <p>Once cases move to a self-management pathway (currently that is when cases exceed 5,000 per day), contact tracing data will not be able to provide the same level of information.</p>	<p>Shift to probabilistic reporting (this involves developing statistical frameworks to estimate projected cases in the community per day).</p> <p>The reporting tool for self-isolating cases is still in development so it is currently unclear what information will be captured.</p> <p>However, it will be significantly less than what is currently available.</p>
Hospitalisations	<p>Daily IMT update.</p> <p>Critical Health Resource Information System (CHRIS) – This system is new, and the Ministry has not yet switched over to using it for ICU and hospitalisation reporting</p>	<p>The data sources currently used only provide numbers of people in hospital, recovered or acute status, and no case details (with the exception of Auckland).</p> <p>The Ministry does not currently have access to the NHIs of people in hospital in real time (with the exception of Auckland). This limits our ability to report on and analyse hospitalisations, which impairs the reporting for early warning systems, paediatric hospitalisations, vaccine effectiveness, case demographics, and potential to explore equity-based outcomes.</p>	<p>Work is already underway for an automated way for hospitals to report admissions, especially NHI numbers, to the Ministry of Health as a priority.</p> <p>Note the work to move to CHRIS is underway as an interim solution but dependant all DHBs using this system and providing information for both ICU and hospital beds. It should be noted that this system, as well as all</p>

*I understood we were establishing the capability to capture this information through people being able to upload data onto the web. — ok I see in find when*

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		<p>Distinguishing between cases that have been hospitalised <i>with</i> COVID-19 or <i>for</i> COVID-19 will be especially important to understand potential burden on the healthcare system. Worked is needed to determine how this can be reported, however it will be limited to information available in the National Minimum Dataset (NMDS) which is accurately available with a 1-month delay from discharge.</p> <p>Understanding the distribution of cases between hospital beds and ICU beds is also important.</p>	<p>other interim solutions, will rely on front-end staff manually providing updates, which are likely to become less accurate if the number of hospitalisations increases.</p> <p>Compiling post-discharge ICD-10 codes of symptoms and outcomes related to COVID-19 will be helpful in managing an authoritative list of cases who have been hospitalised.</p>
Deaths	<p>IMT – PHU immediately notifies IMT of the death</p> <p>EpiSurv</p>	<p>There is currently a delay between the call notifying IMT of a death and the information being uploaded to EpiSurv. This reporting lag will increase during an Omicron outbreak.</p> <p>If post-mortems are needed, there could be months of delay in reporting accurate mortality figures.</p> <p>As the number of deaths increase a standard definition of COVID-19 death will be required for reporting purposes.</p>	<p>We are working with Data and Digital to create a more robust way of reporting on deaths related to COVID-19. This will use mortality data already available in the Ministry's data warehouse.</p>

Testing	Éclair	<p>Under medium or high scenarios, reliable testing data would be limited to hospital and routine essential workforce testing data rather community testing data.</p> <p>Éclair data will only be available for nasopharyngeal and saliva tests. RATs will not be captured in the Éclair national testing repository. This will reduce our ability to analyse trends and levels of testing, such as test positivity rates, particularly if there is a high level of non-supervised RATs.</p>	<p>We are working to replicate evidence-based methodologies used in other jurisdictions to forecast cases and hospitalisations from hospital testing data and routine workforce testing.</p>
Wastewater	ESR	<p>Binary signal detection of positive wastewater results will not be useful in a medium or high scenario. However, quantification of the signal would allow us to monitor trends in the prevalence of active or recently recovered cases.</p>	<p>We will work with ESR to scale up the ability of wastewater quantification analysis. This analysis may only be useful in the early phase of the omicron outbreak.</p>

## Key Surveillance and Contact Tracing Challenges

22. The COVID-19 Surveillance Strategy and its core outputs, updated 22 December 2021, remains relevant in the detection and management of the Omicron variant in Aotearoa. Surveillance will continue to provide precise data and analysis to assist <sup>Phases</sup> Stages 1 and 2 of the Ministry's Omicron Strategy – when there are less than 1-2 cases <sup>? per</sup> in the community.
23. However, in the medium and high case number scenarios, surveillance, reporting and advice will shift towards supporting a 'flattening of the curve approach,' and ultimately a 'manage it' stage of outbreak management.<sup>3</sup> At this point, timely analysis of overall trends will be used to inform decision making and planning. Surveillance indicators and subsequent reporting will need to be modified. Work is underway to ensure reliability and robustness of core surveillance indicators.
24. Under such scenarios, additional and/or modified surveillance systems will be needed to track the outbreak, especially given the international evidence that less infection is diagnosed and reported, so the infection rate will diverge from the case rate. Evidence based

<sup>3</sup> Stages 2 and 3 of the Ministry of Health's Omicron Strategy 2022



estimation methods such as Bayesian statistical techniques will be used to fill the resulting gaps in surveillance data.

25. One implication for surveillance is the impaired accuracy due to delayed and underreported cases. The interpretation of trends and the monitoring of changes in the epidemiology of the pandemic will need to be more cautious and carefully consider increasing data issues. In particular, if a self-reported testing outcome requires a confirmatory polymerase chain reaction (PCR) test, this may lead to double counting if an NHI is not included.
26. We may not be able to accurately quantify the proportion of underreported cases, cases where there has been a delay reporting, or where there is a lag in updating subsequent information. ✓
27. However, proxy measures, influenza and other acute respiratory illnesses, sentinel surveillance, and modelling can be used to monitor trends in underreporting of cases. Retrospective updating of confirmed/probable cases, hospitalisations, and deaths (amongst other measures and indicators) may be required, and it is possible for cases to be updated weeks or months after they are reported.
28. How a case or contact is defined for surveillance purposes will change and/or vary and may differ from operational needs. For instance, an individual testing positive by RAT would need to be clinically treated the same way as a PCR positive individual; and operationally, contact tracing and quarantine measures would likely be applied in the same way. However, for counting cases, differentiating them between a confirmed and probable case might be necessary to interpret the data more accurately. ✓
29. At present there are issues of quality, completeness and timeliness of primary care data related to general practice (GP) consultations and provision of primary care services. Provision of care data is also an issue for data from secondary care. Therefore, data related to health service use under a medium and high scenario will not be possible.
30. Surveillance and intelligence analysis by using proxy data and analysis from sources such as social media, workforce capacity and laboratory capacity will be highly prone to bias and variation due to the lack of systematic collection.
31. As a result, surveillance activities will undercount cases and potentially introduce significant bias when evaluating trends and indicators, impacting epidemiology in this pandemic. Interpretation of the trends observed in the epidemic curve and other figures will need to be more carefully reviewed. We may be unable to conduct some analyses, so we may need to be more reliant on data and evidence from other countries to support planning and decision making.
32. Work is already underway to support additional or modified surveillance activities under medium and high scenarios.
33. The objectives of surveillance will continue to focus on an equitable response and on protecting and minimising impact on marginalised groups and priority populations.

## Next Steps

34. The COVID-19 Science and Insights group is continuing to monitor the situation and assess how to respond most effectively in the case of a community outbreak of the Omicron variant. As numbers fluctuate and we work to effectively mitigate varying data quality, you will be kept informed of any significant changes in reporting or assumptions moving forward.

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## Recommendations

It is recommended that you:

1.	Agree	Implement probabilistic reporting when outbreak management moves to the 'flatten the curve' stage of the Omicron Strategy	Yes/No
2.	Note	The timely and automatic provision of information on who has been hospitalised and the level of care they are receiving is critical to COVID-19 reporting and ongoing surveillance.	Noted ✓
3.	Note	An automated way for hospitals to report admissions, especially NHI numbers, to the Ministry of Health is being prioritised, but there will be delays in implementation.	Yes/No
4.	Agree	Establish a clear process for streamlining in the health system, how death as a result of COVID-19 infection, is reported across all stages of the Omicron Strategy.	Yes/No
5.	Note	With high case counts, data will be less detailed and consequently daily situational reports will provide more high-level, general detail.	Noted ✓
6.	Agree	For reporting, Daily SitReps will continue assuming NHI numbers continue to be available.  Case/Outbreak Investigation Reports will only be provided while the outbreak is relatively small (i.e., below 10 cases), simple (no more than three clusters) or a potential super-spreader event.  The Trends and Insights Report will move to one every three days when we respond to Omicron in the community (i.e., on a 3-day rotating roster).  The Surveillance Report will move to monthly summarising all of the above and including other surveillance related reporting.	Yes/No

Signature *Gill Hall*

**Gill Hall**

**Group Manager, Science and Insights**

**COVID-19 Health System Response**

Date:

*I think this would benefit from external review & input re our approach to reporting & ongoing surveillance.*

Signature \_\_\_\_\_

**Dr Ashley Bloomfield**

**Director General of Health**

Date: *27/1/22*

# Memo

## COVID-19 Reporting: Phase 2 of the Omicron Strategy

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**Date:** 15 February 2022

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**To:** Dr Ashley Bloomfield, Director General of Health

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**Copy to:** Dr Caroline McElnay, Director of Public Health  
Dr Ian Town, Chief Science Advisor  
Bridget White, Deputy Chief Executive, COVID-19 Health System Response  
Robyn Shearer, Deputy Director General, District Health Board Performance and Support  
Shayne Hunter, Deputy Director General, Data and Digital  
Brent Quin, Group Manager Response and Coordination, COVID-19 Health System Response  
Chrystal O'Connor, Group Manager Contact Tracing, COVID-19 Health System Response  
Toby Regan, Group Manager, National Public Health Operations, COVID-19 Health System Response  
Michael Dreyer, Group Manager and Chief Technology Officer, National Digital Services

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**From:** Gill Hall, Group Manager, Science and Insights, COVID-19 Health System Response

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**For your:** Approval

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### Purpose of report

1. You have previously received memos on this matter, *Adapting COVID-19 Surveillance, Intelligence and Contact Tracing Reporting and Data Manager for Omicron* (27 January 2022) and *Update: Adapting COVID-19 Surveillance, Intelligence and Contact Tracing Reporting and Data Manager for Omicron* (3 February 2022).
2. This memo responds to your recent feedback and provides further clarity on how the Science and Insights Group will report on COVID-19 as we move through the phases of the Omicron Strategy.
3. We recommend you discuss the contents of this memo with Hon Chris Hipkins, Minister for COVID-19 Response and Hon Dr Ayesha Verrall, Associate Minister of Health.



## Context

4. The 'January Omicron Outbreak' has triggered the need for a new approach to reporting and data collection. On 26 January 2022 the Government announced its three-phase public health response to Omicron; 'stamp it out,' 'slow the spread or 'flatten the curve' and 'manage the impact.' This phased approach will include changes to both testing and isolation approaches as New Zealand responds to increasing case numbers.

## Reporting during Phase 2 of the Omicron Strategy

5. As New Zealand moves through to Phase 2 and case numbers rise, we are likely to see an incomplete picture in terms of some key metrics.
6. The incompleteness of data will be gradual through phase 2 and we will signal clearly to you, ministers' office and the public, any gaps or caveats in reporting metrics.
7. There are a number of actions underway to improve completeness of data. These are outlined below.

### Situation Report (Sit Rep)

8. Daily reporting will continue via the SitRep and will include key metrics.
9. The most significant change to note here is the reduced ability to provide detailed cluster reporting.
10. Due to the recent significant increase in case numbers, there is currently a lag in the case records created in EpiSurv. A digital fix is currently being finalised to change this manual case creation process to an automated one, which will result in little or no delay. This fix is scheduled to take effect from Friday 18 February. In the meantime, case counts, and details will be taken from the National Contact Tracing Solution (NCTS) for a fuller picture of the case numbers. The NCTS automatically creates a case record when a positive lab result is notified and therefore requires no manual entry for case creation. This autocreation is the fix being implemented for EpiSurv. When the automation work is completed reporting will switch back to using EpiSurv. ✓

### Trends and Insights Report

11. The Trends and Insights report will be published more frequently, every three days. This report will include demographic trends and richer analysis than that of the SitRep.
12. Each report is reviewed by a Principal Epidemiologist who will have the "controlling mind" on this report, supported by other subject matter experts in the group. ✓
13. Changes to the Trends and Insights report will be consulted with the Office of the Director of Public Health and the Chief Science Advisor.
14. The report will include trends such as regional epi-curves, test positivity, demographic trends, forecast of cases and narrative information about clusters and exposure events of concern, (when this is available).

### Key Metrics

15. The following table provides an overview of the key reporting metrics and how they will change over time.
16. There are a range of agreed metrics and a dashboard from Care in the Community of which elements will be reported in the Sit Rep. ✓

Key metric	Current Data Source	As we move through Phase 2 and 3	Comments
<b>Cases</b>	NCTS/EpiSurv	<p>As case counts rise and the shift to the self-management pathway (&gt;5000cases/day) data will be less complete</p> <p>We will use methods to estimate under ascertainment of cases to supplement data and infer case numbers (e.g., test positivity, WGS, wastewater, possible infection survey).</p>	<p>Will shift to this soon when we no longer have an accurate picture of case numbers</p>
<b>Deaths</b>	From IMT / EpiSurv	<p>As deaths are likely to increase, we will use mortality data –</p> <ol style="list-style-type: none"> <li>1. Death within 28 days of positive test</li> <li>2. Deaths where C19 cause</li> <li>3. Deaths where C19 contributed</li> <li>4. The number of 1 where cause of death is under investigation</li> </ol> <p>(Note: metrics 2 &amp; 3 are not a subset of metric 1 as COVID-19 can be the cause of death more than 28 days after a positive test)</p>	<p>Able to do this as soon as we move to Phase 2. This approach is consistent with Australia and UK</p> <p>Deaths – with limited information – <u>will be reported every day</u>, and detailed information will be provided as frequently as possible while maintaining individual privacy</p> <p>(Note: this is estimated to be every 2 weeks)</p>
<b>Hospitalisations</b>  Admission and capacity	IMT & electronic feed using NHI (via Snowflake) from Northern Region and capacity data via a survey carried out daily	<p>A number of actions are underway to provide automated nationwide hospitalisation data</p> <p>Granular inpatient and ED activity data submitted twice a day (minimum). This will provide the list of people who are admitted to and discharged from tertiary and metro hospitals so that we can provide the number of cases who have been hospitalised with COVID-19, as well as the proportion of patients in a hospital with COVID-19. There will be a further matching process with data from the National Minimum Data Set (NMDS) to determine who was hospitalised with COVID-19 as the primary diagnosis.</p>	<p><b>Action</b></p> <p>Underway and estimated availability for all tertiary hospitals around mid-March (until then it <u>will be a manual process</u>). Northern Region hospitals are estimated to have data at the end of February.</p> <p><b>Owner:</b>            Ministry's Data &amp; Digital team/COVID-19 (Esther Lim/Chris Knox)</p>



		<p>Live or near-live views of operational data from the different Patient Administration Systems (PAS) from selected DHBs. The PAS data will include data about bed and ED utilisation.</p>	<p><b>Action:</b> Underway and first pipeline of data (admission data) for Hawkes Bay, Mid Central, Auckland, Waitemata – expected end of April</p> <p><b>Owner:</b> Ministry's Data &amp; Digital team (Jon Herries)</p>
		<p>ICU/Hospital capacity will utilise the Critical Health Resource Information System (CHRIS) ✓</p> <p>*Note, for further information refer to Memo dated 14 February 2022, titled <i>CHRIS System for Critical Care Reporting</i>.</p>	<p><b>Action:</b> Underway and complete for by end of February. Relies on manual entry at hospital end.</p> <p><b>Owner:</b> Ministry's Data &amp; Digital team (Hayden Luscombe)</p>
Primary care and community services data	In development	Care in the Community metrics focus on the journey from test, notification assessment, care and support through to release. Some of the data needed for metrics are already available and some are subject to development. There will also be an opportunity to report on a range of new metrics as data become available following technology releases across active, and self-management pathways.	<p><b>Action:</b> Working with HSII to access national primary care activity data and agree with Care in Community Critical metrics</p> <p><b>Owner:</b> Care in the Community / Health System Improvement and Innovation (HSII) / COVID19</p>
Testing numbers	Éclair	<p>Éclair captures nasopharyngeal (NP) and saliva samples - which will be largely hospital &amp; essential worker results</p> <p>(Note, supervised RAT results are included in Éclair, but are not reported currently)</p>	
		'RAT Catcher' – RAT test results – largely community results	<p><b>Action:</b> Week beginning 7 February 2022</p> <p><b>Owner:</b> Ministry's Data and Digital (Gerard Keenan)</p>
Wastewater	ESR	Quantification of samples from sites nationwide to track growth or decline of outbreak, and also as part of sentinel surveillance	Ready to shift testing/reporting when required
Whole genome sequencing (WGS)	ESR	Identification of variant of concern in high-risk settings/people at risk of poor outcome: Hospital Admissions Border cases	Ready to shift testing/reporting when required

Thanks  
 Can I have a time for this please.

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## Recommendations

It is recommended that you:

1.	Approve	The shift in COVID-19 reporting and key metrics for phase 2 of the Omicron Strategy	Yes/No
2.	Discuss	The content of this memo with Hon Chris Hipkins, Minister for COVID-19 Response and Hon Dr Ayesha Verrall, Associate Minister of Health	Yes/No
3.	Note	Actions are underway across the Ministry's Science and Insights, Data and Digital and Care in the Community groups	Noted ✓
4.	Note	You will receive further updates on the RAT Catcher project from Gerard Keenan (Data and Digital)	Noted ✓

Signature

Gill Hall

**Group Manager, Science and Insights  
 COVID-19 Health System Response**

Date:

15/2/2022.

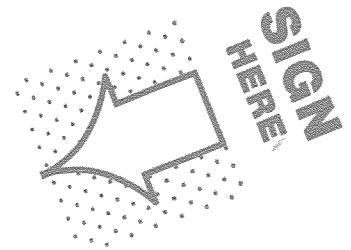
Signature

Dr Ashley Bloomfield

**Director General of Health**

Date:

16/2/22



Thanks all.

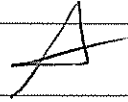
Please provide a clean copy of the memo to Ministers H & V for discussion next week as an item (Mott only) with Ministers @ the Minister H meeting next week. A.



# Memo

## COVID-19 Hospitalisation Rate and Mortality Data

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<b>Date:</b>	18 March 2022
<b>To:</b>	Dr Ashley Bloomfield, Director-General of Health 
<b>Copy to:</b>	Bridget White, Deputy Chief Executive, COVID-19 Health System Response Robyn Shearer, Deputy Chief Executive Sector Support and Deputy Director-General DHB Performance and Support Dr Robyn Carey, Chief Medical Officer Shayne Hunter, Deputy Director-General, Data and Digital
<b>From:</b>	Gill Hall, Group Manager, Science Surveillance and Insights Chris Knox, Team Leader, Data and Analytics
<b>For your:</b>	Information and Action

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### Purpose of report

1. This memo provides information on reporting of hospitalisation rate and mortality data for the Omicron outbreak. In particular, this memo canvasses:
  - a. An international comparison of calculating hospitalisation rates,
  - b. The robustness of the current method used in New Zealand for calculating hospitalisation,
  - c. A reconfirmation on how we report deaths, and
  - d. A summary of the decisions made to reconcile the mortality data when we switched methods.
2. We recommend you discuss the contents of this memo with Hon Dr Ayesha Verrall, Associate Minister of Health and Associate Minister of COVID-19 Response.

### Background

3. The January Omicron Outbreak triggered the need for a new approach to reporting and data collection. On 26 January 2022 the Government announced its three-phase public health response to Omicron; 'stamp it out,' 'slow the spread' and 'manage the impact.' This phased approach included changes to both testing and isolation approaches as New Zealand responded to increasing cases numbers.

4. As indicated in a previous memo<sup>1</sup>, surveillance reporting and intelligence analysis would be affected as we move from low, to medium, to high case numbers. Data quality and timeliness issues would also occur more often as New Zealand progressed nearer to and surpass, the 'flatten the curve' stage of outbreak management.
5. The COVID-19 Protection Framework (CPF) settings and Public Health Risk Assessments (PHRAs) rely on the use of expertise and data to inform a robust assessment of the evolving COVID-19 situation, public health risk, as well as the capacity and capability of the health system to respond.

### Omicron Variant

6. Omicron, also referred to as the B.1.1.529 strain, was first identified in mid-November 2021. Due to the increased infectiousness in late 2021 New Zealand began to prepare for increased case numbers and re-evaluate border settings and public health measures, as well as encourage adult booster and child vaccinations.
7. New Zealand has, in many ways, followed international trends when it comes to Omicron infectiousness and severity. Whilst Omicron does not appear to result in as many people being hospitalised, because it can cause so many infections over a short period of time, the number of people going to hospital each week has risen. In addition, Omicron can still cause severe illness and death, especially in people who are at risk of severe outcome.

## Data and Reporting

### Hospitalisation rate

8. As we progress through this Omicron outbreak, hospitalisation data is a useful way to examine the impact of vaccination and variant on severity.
9. The Ministry has reported the total number of cases in hospital each day since the start of the year and more recently by region. To date, the national hospitalisation data was manually collected upon request to the respective DHBs (except for the Northern region) and confirmed through updates at IMT.
10. The Northern Region Health Coordination Centre (NRHCC) captures more detailed information across their hospital network. To date, they have provided updates on:
  - a. Hospitalisation modelling
  - b. Demographic information for patients admitted, including admissions to ICU
  - c. Hospitalisation information including:
    - i. Hospitalisation rates by ethnicity
    - ii. Average length of stay
    - iii. Average age
  - d. Vaccination status of those admitted
  - e. Māori and Pacific specific analyses

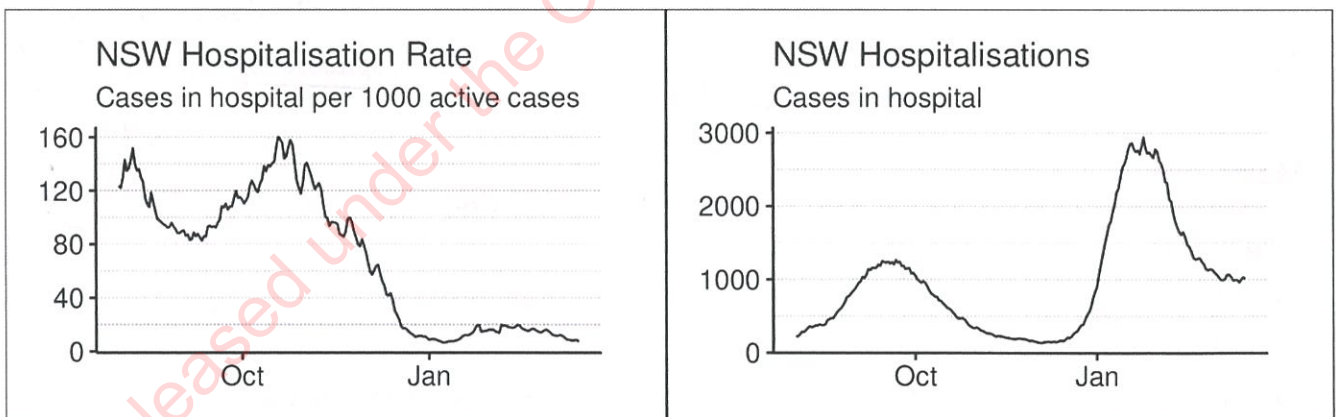
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<sup>1</sup> Adapting COVID-19 Surveillance, Intelligence and Contact Tracing Reporting and Data Management for Omicron' (27 January 2022).

11. This Ministry has defined the hospitalisation rate as the number of cases in hospital per 1000 active cases. This has been calculated at the national, regional, and District Health Board (DHB) level and included in the daily SitRep.

#### International Comparison

12. An initial analysis of New South Wales (NSW) and United Kingdom (UK) hospitalisation data has been undertaken and compared with the New Zealand data.
13. Key points from the initial review of common practice and definitions include:
- The UK include anyone with a positive test within 28 days of hospitalisation. They have had some issues with this and are capturing a large number of 'with' COVIDs/incidental admissions. They are now triangulating with other data. The UK also calculates a hospitalisation rate versus the entire population.
  - NSW has moved from 28-day definition (same as UK) to 14 days PLUS anyone still in hospital (even if greater than 14 days from test) as the definition of active cases. NSW does not publish a hospitalisation rate.
  - The Ministry has calculated the hospitalisation rate used in New Zealand for New South Wales data. This shows the utility of this metric, it captures the difference between NSW's Delta and Omicron outbreaks and it also reflects the lagged nature of COVID-19 hospitalisations. The rate takes longer to decrease than actual hospitalisations due to cases remaining in hospital even after case numbers have dropped. However, the NSW example also suggest that the hospitalisation rate should not be considered in isolation from the actual hospitalisation numbers.



#### What challenges have we encountered?

14. In comparing the international approaches, the denominator used to calculate the case hospitalisation rate in New Zealand (cases hospitalised/total cases in the past 10 days) is contingent on the specific testing strategy and stage in the pandemic. Albeit our methods similar, this is an important difference.
15. Currently the national hospitalisation data is predominately manually collected upon request to the respective DHBs. Granular inpatient and ED activity data will be submitted twice per day from the end of March. This provides the list of people who are admitted to and discharged from tertiary hospitals. This can be cross-referenced with case data to identify the number of cases who have been hospitalised with COVID-19 as well as the proportion of

*just tertiary - what about secondary (this would exclude most of the smaller hospitals & ?)*



patients in a hospital with COVID-19. There will be a further matching process with data from the National Minimum Data Set (NMDS) to determine who was hospitalised for COVID-19.

16. Live or near-live views of operational data is underway, initial data provided by DHBs is being validated and the complete pipeline is expected by end of March. This will be gathered from the different Patient Administration System (PAS) from selected DHBs and will include data about bed and ED utilisation.
17. ICU and overall hospital capacity data is now captured through the Critical Health Resource Information System (CHRIS). This is in operation, but currently relies on manual entry at the hospital end.

#### *What you can expect to see*

18. Analysis will centre on the total number of people currently hospitalised per 1000 active cases. ✓ agree
19. In addition, hospitalisations per DHB population will be provided this will help triangulate the situation in other DHBs relative to the Auckland DHBs.
20. This will be reported in the daily SitRep. The weekly Trends and Insights Report will provide more detail, commenting on modelling projections of hospitalisation as well as proportion of cases in hospital by region and day.

#### *Our next steps for capturing COVID-19 Hospitalisation rates*

21. As noted above, the Ministry is working to create an automated system for capturing centralised, hospitalisation data.
22. Additional analysis of the data will be required to understand who is admitted because of COVID-19 and those admitted for another cause by also have COVID-19. ← we are getting some useful info from prospective audits.
23. The Ministry is also moving forward to improve the capture of hospitalisation rates by DHB and this be reported by the end of March 2022. Not sure if needs further work by our team?

#### **Mortality**

##### *What we have recorded up till now*

24. The World Health Organisation identifies that COVID-19 deaths are a key indicator in tracking the evolution of the pandemic.
25. Deaths have been reported via verbal updates from DHBs because until the Omicron outbreak New Zealand has maintained a very low mortality rate from COVID-19.
26. From 9 March 2022, the Science, Surveillance and Insights Group began reporting on deaths, delineated by those whose primary cause of death was COVID-19, and those who cause of death was something else, but the individuals also happened to have a COVID-19 infection.
27. This data is collated from the Ministry's mortality database.

##### *International Comparison*

28. Countries use different processes to test and report COVID-19 deaths, thus making international comparisons of data difficult.
29. However, our current approach to capture and report mortality, is consistent with that of both Australia and the United Kingdom.

30. The United Kingdom reports on deaths that occur within 28 days of testing positive for COVID-19.
31. Australia does not appear to have a clearly defined definition of deaths that occurred with COVID-19. The Australian Bureau of Statistics (ABS) provides a lot of detail on COVID-19 deaths but there is a significant lag. Only 2,639 of 5,639 deaths are included in the ABS data.

*What challenges have we encountered?*

32. Coding to support the collation of mortality data in Snowflake (reporting tool), took longer than initially expected. This necessitated manual collation for a short period of time, which increased the risk of error (noting inaccuracy reported in media on 10/03/2022). The coding for the use of mortality data and reconciliation of data sources are now complete. ✓
33. Establishing a timely, but rigorous protocol with sufficient detail for providing initial information from DHBs to the Ministry took some time. This process provides a way for the Ministry to be informed about, and then announce, COVID-19 related deaths, but it does not replace formal death reporting systems. ✓
34. Understanding which variant an individual was infected with upon death can be challenging as this requires a polymerase chain reaction (PCR) test conducted in a laboratory. The majority of COVID-19 deaths will occur in hospital, so will largely be covered by whole genome sequencing (WGS) testing. But there are aged-care, coroner, community deaths, for example, other deaths that are not easily captured by WGS. ✓
35. Advice is being sought on whether post-mortem COVID-19 testing is advisable. *Timing? Keep to see this when through.*
36. You have received separate information on the 'Operationalisation of Whole Genome Sequencing Prioritisation' [15 March 2022]. ✓✓

*What you can expect to see going forward*

37. Reported daily in the Situation Report are the overall death total, and those cases who have died within 28 days of being reported as a case. This is accompanied by Table 1, which outlines the demographic detail of new deaths reported in the previous 24 hours as at 0900 on the day of report.
38. Deaths, with limited information, will be reported every day and detailed information is provided as frequently where possible whilst maintaining individual's privacy. ✓✓
39. Where applicable, reporting will also include deaths where the cause remains under investigation.

*Our next steps for capturing COVID-19 mortality data*

40. The daily Situation Report will continue to note the deaths the Ministry has been notified of over the past 24-hour period. In addition, the 28-day and announced count are published on the website and in media statement. A more detailed breakdown was added to the SitRep and the website on 16 March 2022.

**Excess Mortality**

41. Excess mortality is defined as the difference in the total number of deaths in a crisis, compared to those expected under normal conditions. COVID-19 excess mortality accounts for both the total number of deaths directly attributed to the virus as well as the indirect impact, such as disruption to essential health services. *or specific time period / situation*



42. The global excess mortality has been estimated by the World Health Organisation (WHO). While 1,813,188 COVID-19 deaths were 'officially' reported in 2020, the recent WHO estimation suggests that there is a global excess mortality of at least 3 million.
43. At present the Ministry has crude mortality rates over time and these can be stratified to some extent to provide an immediate estimate of excess mortality
44. The Ministry is also working with 'Stats NZ' to determine New Zealand's excess mortality. This work will indicate to what extent New Zealand is seeing greater mortality compared to other years before COVID-19. This will provide an analysis of deaths that COVID-19 caused or contributed to, compared to those who also had the infection at their time of death.
45. 'Stats NZ' are currently developing a system to enable adjusting for age, gender and ethnicity to evaluate excess mortality compared to other years.
46. Once we have the estimates of Excess mortality we will include in the upcoming Surveillance Report. Published monthly, the next iteration will be disseminated on 8 April 2022 or weekly Trends and Insights if it can be done that frequently.
47. We will request formally a response from Stats NZ what is feasible on weekly or monthly basis.

*I think monthly is reasonable.  
There is likely to be too much variation  
on a weekly basis - but if can be done  
(and worthwhile) that's good. A*



## Recommendations

It is recommended that you:

1.	Agree	To discuss the contents of this memo with Hon Dr Ayesha Verrall.	Yes/No
2.	Note	Contents of the memo	Noted ✓

Signature \_\_\_\_\_ Date:

Gill Hall

**Group Manager, COVID-19 Science Surveillance and Insights**  
**COVID-19 Health System Directorate**

Signature \_\_\_\_\_ Date:

Dr Ashley Bloomfield

**Te Tumu Whakarāe mō te Hauora**  
**Director-General of Health**

Date: 21 / 3 / 22

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