The 2020 COVID-19 journey and its impact on New Zealand

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Ministry of Health

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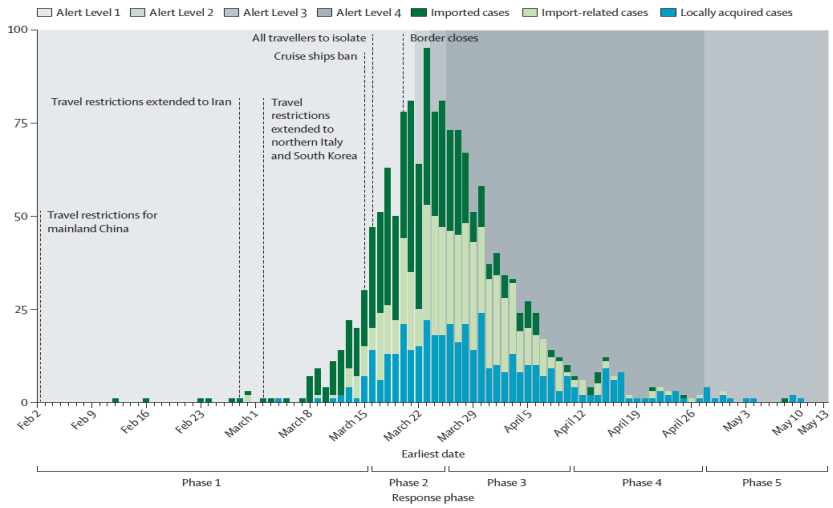
First media statement 6th January 2020

"The Ministry of Health is aware of some cases of pneumonia with an unknown cause being reported in Wuhan City, Hubei Province of China. We are monitoring the situation.

At this stage there appears to be no significant human-to-human transmission. As recommended by the World Health Organization there are currently no travel or border restrictions being put in place. "

Epidemiology - NZ



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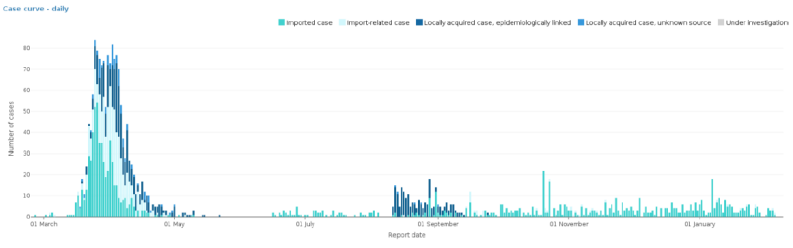
Over the longer term since elimination

Figure 1: Cases of COVID-19 identified in New Zealand by source of infection



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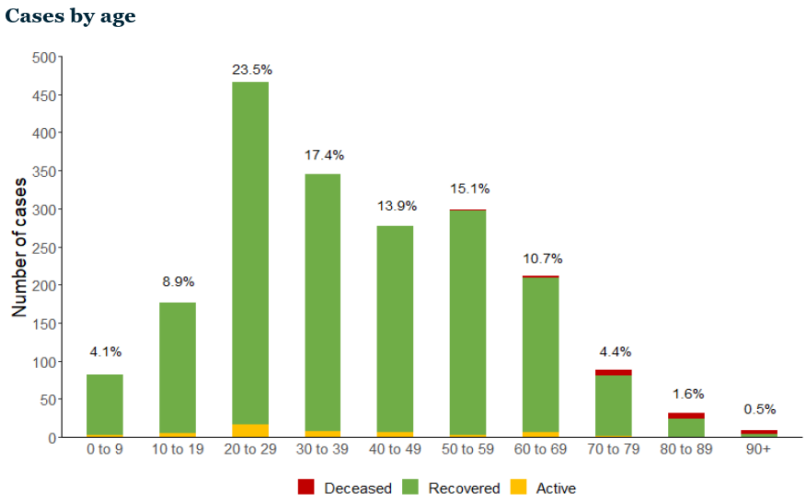
Epidemiology - NZ



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Case Summary February 2021

New Zealand COVID-19 Summary

Table 1: New Zealand COVID-19 Summary as at 0900 13 February 2021

Case status	Active	Recovered	Deceased	Total
Confirmed	45 (+1)	1907 (+1)	20 (-)	1972 (+2)
Probable	0 (-)	351 (-)	5 (-)	356 (-)
Total	45 (+1)*	2258 (+1)*	25 (-)	2328 (+2)*

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Managed Isolation

Imported Cases in Managed Isolation

Table 2a: Total people through and currently in MI&Q facilities as at 2359 6 February 2021

Total number of people through MI&Q facilities since 26 March 2020	Number of people currently in MI&Q facilities
107,892	5,858

Table 2b: Total cases and active cases identified at the border as at 0900 8 February 2021

Total confirmed cases identified at the border	Active Cases in MI&Q facilities
630	62

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Publication in Lancet Public Health

COVID-19 in New Zealand and the impact of the national response: a descriptive epidemiological study

Sarah Jefferies, Nigel French, Charlotte Gilkison, Giles Graham, Virginia Hope, Jonathan Marshall, Caroline McElnay, Andrea McNeill, Petra Muellner, Shevaun Paine, Namrata Prasad, Julia Scott, Jillian Sherwood, Liang Yang, Patricia Priest

Summary

Background In early 2020, during the COVID-19 pandemic, New Zealand implemented graduated, risk-informed national COVID-19 suppression measures aimed at disease elimination. We investigated their impacts on the epidemiology of the first wave of COVID-19 in the country and response performance measures.

Methods We did a descriptive epidemiological study of all laboratory-confirmed and probable cases of COVID-19 and all patients tested for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in New Zealand from Feb 2 to May 13, 2020, after which time community transmission ceased. We extracted data from the national notifiable diseases database and the national SARS-CoV-2 test results repository. Demographic features and disease outcomes, transmission patterns (source of infection, outbreaks, household transmission), time-to-event intervals, and testing coverage were described over five phases of the response, capturing different levels of non-pharmaceutical interventions. Risk factors for severe outcomes (hospitalisation or death) were examined with multivariable logistic regression and time-to-event intervals were analysed by fitting parametric distributions using maximum likelihood estimation.

Lancet Public Health 2020

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See Online/Comment
https://doi.org/10.1016/S2468-2667(20)30237-1

Institute of Environmental Science and Research, Porirua, New Zealand (S Jefferies MD, C Gilkison MPH, G Graham BSci, V Hope MPhil, A McNeill PhD, S Paine MAE, N Prasad MPH,

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The Rise and Rise of Public Health !

- Alert levels based on very simple premises:
  - Physical distancing
  - Hand hygiene
  - Covering coughs and sneezes
  - Stay home if you are unwell
  - Restrictions on regional travel
  - Closing bars and restaurants
  - Limiting size of events

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New Zealand Response – "go hard, go early"

New Zealand COVID-19 **Alert Levels**

Unite against COVID-19

- These alert levels specify the public health and social measures to be taken.
- The measures may be updated on the basis of (i) new scientific knowledge about COVID-19 and (ii) information about the effectiveness of intervention measures in New Zealand and elsewhere.
- The alert levels may be applied at a town, city, territorial local authority, regional or national level.
- Different parts of the country may be at different alert levels. We can move up and down alert levels.
- In general, the alert levels are cumulative, e.g. Level 1 is a base-level response. Always prepare for the next level.
- At all levels, health services, emergency services, utilities and goods transport, and other essential services, operations and staff, are expected to remain up and running. Employers in those sectors must continue to meet their health and safety obligations.

LEVEL	RISK ASSESSMENT	RANGE OF MEASURES (can be applied locally or nationally)
Level 4 - Eliminate Likely that disease is not contained	• Sustained and intensive transmission • Widespread outbreaks	• People instructed to stay at home • Educational facilities closed • Businesses close except for essential services (e.g. supermarkets, pharmacies, clinics) and lifeline utilities • Rationing of supplies and requisitioning of facilities • Travel severely limited • Major reprioritisation of healthcare services
Level 3 - Restrict Heightened risk that disease is not contained	• Community transmission occurring OR • Multiple clusters break out	• Travel in areas with clusters or community transmission limited • Affected educational facilities closed • Mass gatherings cancelled • Public venues closed (e.g. libraries, museums, cinemas, food courts, gyms, pools, amusement parks) • Alternative ways of working required and some non-essential businesses should close • Non face-to-face primary care consultations • Non acute (elective) services and procedures in hospitals deferred and healthcare staff reprioritised
Level 2 - Reduce Disease is contained, but risks of community transmission growing	• High risk of importing COVID-19 OR • Uptick in imported cases OR • Uptick in household transmission OR • Single or isolated cluster outbreak	• Entry border measures maximised • Further restrictions on mass gatherings • Physical distancing on public transport (e.g. leave the seat next to you empty if you can) • Limit non-essential travel around New Zealand • Employers start alternative ways of working if possible (e.g. remote working, shift-based working, physical distancing within the workplace, staggering meal breaks, flexible leave arrangements) • Business continuity plans activated • High-risk people advised to remain at home (e.g. those over 70 or those with other existing medical conditions)
Level 1 - Prepare Disease is contained	• Heightened risk of importing COVID-19 OR • Sporadic imported cases OR • Isolated household transmission associated with imported cases	• Border entry measures to minimise risk of importing COVID-19 cases applied • Contact tracing • Stringent self-isolation and quarantine • Intensive testing for COVID-19 • Physical distancing encouraged • Mass gatherings over 500 cancelled • Stay home if you're sick, report flu-like symptoms • Wash and dry hands, cough into elbow, don't touch your face

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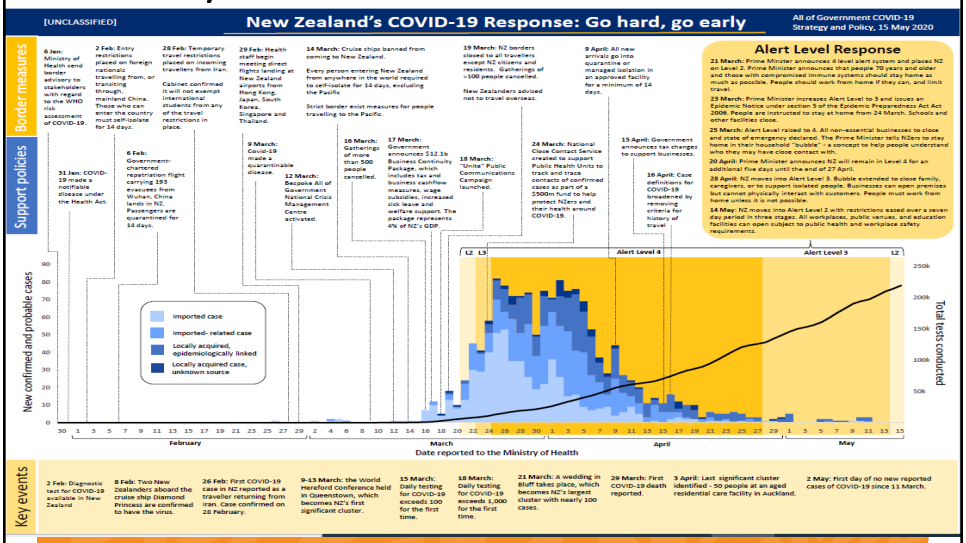
The story so far…



Public Health – The Elimination Strategy

"Our elimination strategy is a sustained approach to keep it out, find it and stamp it out. We do this through: controlling entry at the border; disease surveillance; testing for and tracing all potential cases; isolating cases and their close contacts; physical distancing and hygiene advice and broader public health controls depending on the alert level we are in"

Border Measures

- Keep it out , stamp it out
- Controlled entry – limit the number of returnees
- Use of managed isolation facilities versus self-isolation
- 14 day incubation period
- Testing Day 0/1 and Day 12 prior to release
- Post release self isolation for 5 days and testing on Day 5

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Challenges at the border

- Numbers game:
  - 100,000 + returnees
  - Testing has shown steady stream of positive cases around 0.3% of returnees. Currently 4-8 per day, 100 per month)
  - Identified a number of UK and SA variants
  - Several incursions have occurred but they have been managed effectively and quickly
  - Risks increase when there are larger numbers in a specific facility e.g. Russian seafarers
  - Costing $2.4M per day

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Surveillance and Testing Plans

- Where to look? –where most likely to find – moving to a risk based approach:
  - Symptomatic (case definition)
  - Asymptomatic – only around clusters
  - Border workers including staff in facilities
  - Air crew / maritime crew
  - Any respiratory admissions to hospital
  - Returning travellers
  - Communities at risk

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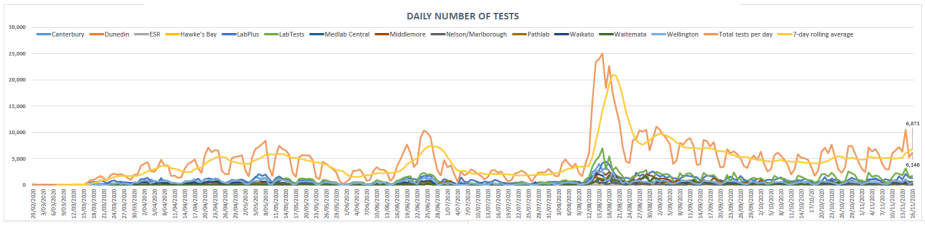
Testing – by the numbers

Summary based on testing completed on:	11/02/2021
Number of tests completed	5,089
Number of tests completed over the last 7 days	27,073
Total number of tests completed to date	1,578,782
7 day rolling average	3,868
Surge Testing Capacity	32,088
Baseline Testing Capacity	12,639
Total tests based on stocks on hand	232,598
Days of tests based on stocks on hand and 7 day rolling average	60.14



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Testing Technologies

- RT-PCR in 12 laboratories around New Zealand
- Role of Environmental Science and Research (ESR):
  - Test development
  - Test validation
  - Rapid and POC tests
- Whole genome sequencing has been a game changer
- Assessing:
  - Antigen tests, saliva testing, wastewater testing, role of antibody testing

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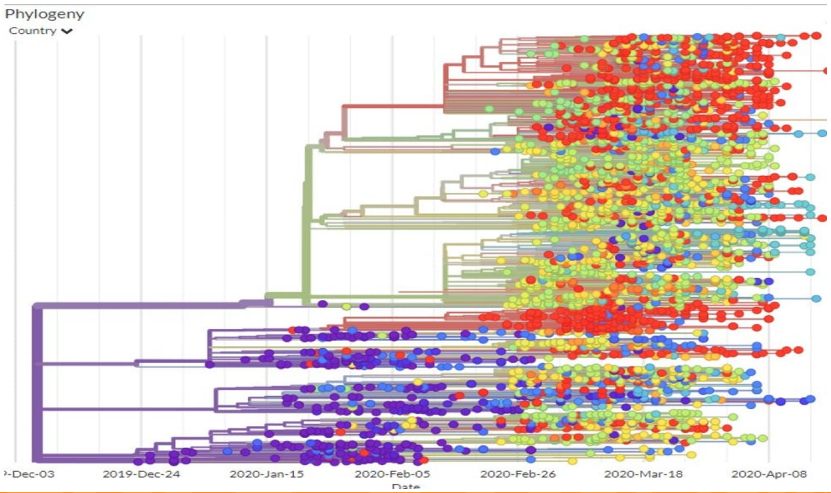
Whole Genome Sequencing



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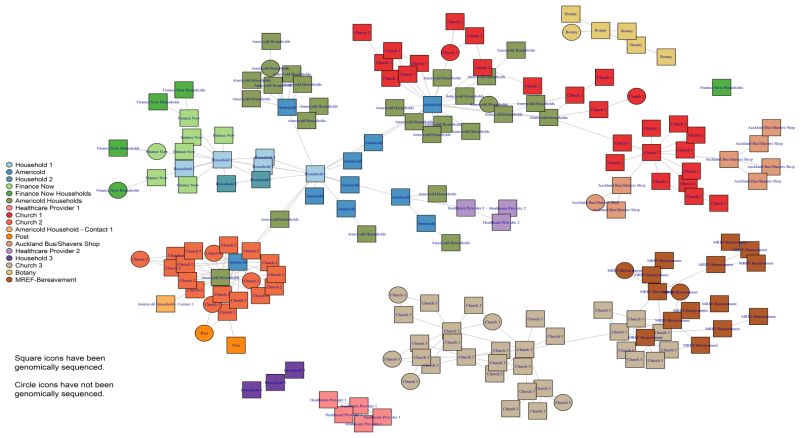
Cluster Mapping



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Infection prevention and control

- COVID-19 has triggered a renaissance for IPC
- As with Public Health more generally, the IPC workforce has been inadequate for some time
- IPC measures have been at the heart of the response
- Hand hygiene
- Personal protective equipment – major issues initially with supply and training

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Infection prevention and control

Challenges for IPC colleagues have included:

- Education for employer groups especially ARC, Border staff
- Need to work alongside unions and non health colleagues in Managed Isolation facilities
- Managing communications – high levels of fear
- Role of masks – main emphasis has been for health care workers rather than the wider public
- Confusion about the role of different sorts of masks, need for fit testing etc
- Aerosol transmission science

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Vaccines

- A global research efforts has been underway for many months
- Collaboration has been a key feature to date
- WHO playing a key role

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Vaccine procurement

- New Zealand is a financial member of COVAX
- We have also 4 signed Advance Purchase Agreements:
  - Pfizer
  - Janssen
  - Astra-Zeneca
  - Novavax
- Immunisation programme to start in February 2021, starting with border workers, then health care and ARC staff.

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Critical issues

- We have eliminated COVID-19 from New Zealand (twice at least!)
- The border remains the key risk area for our future well-being and the economy
- The MIQ approach with 14 days quarantine will be reviewed carefully as may not be sustainable
- Deploying the vaccines or effective therapeutics will be crucial for re-opening the border
- Testing will play a key role in understanding risk profiles – especially old infections and antibody status

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And in Hindsight

- Triumphs have included:
  - A science-led response
  - Strong support from the Prime Minister supported by her Chief Science Advisor Prof Dame J Gerrard
  - Early closure of the border
  - Communications masterclass – PM and DG Health
  - Massive collective effort across our health sector
  - The rise of telemedicine
  - Massive reliance on Healthline (National telephone service)

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Images from 2020

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And in Hindsight

- Things we could have done better:
  - Preparedness – WHO ranking not good
  - Under investment in Public Health
  - PPE supply chain and distribution channels
  - Contact tracing too slow to start with and slow deployment of the NZ COVID Tracing App
  - Communication with Primary Care colleagues
  - Poor quality website design and content
  - Slave to media machine
  - Lack of engagement with Parliamentary opposition figures

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Scenarios for 2021…

- The pandemic continues to grow and there is no effective vaccine:
  - This means that we will need strong border measures for some (considerable) time
- Some countries eliminate the virus and start to open their borders – reciprocal arrangements for the Pacific and Australia:
  - Tourism and business travel may re-start
- In the longer term the impacts of climate change, AMR and new viruses mean that infectious disease become a major ongoing threat .. we are not prepared for that…

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The 2020 COVID-19 journey and its impact on New Zealand
Dr. Ian Town, Ministry of Health, New Zealand
A Webber Training Teleclass

www.webbertraining.com/schedulep1.php	
February 25, 2021	CONTINUOUS ACTIVE ANTI-VIRAL COATINGS Speaker: **Prof. Charles Gerba**, University of Arizona
March 9, 2021	*(FREE European Teleclass)* PROLOGUE: REIMAGINING INFECTION PREVENTION WITH COMPASSION - A POSITIVE LEGACY OF COVID-19 Speaker: **Julie Storr**, S3 Global, Independent Consultant, UK
March 11, 2021	HEATER-COOLERS: MYCOBACTERIAL INTRODUCTION, BEHAVIOR AND DISINFECTION Speaker: **Prof. Joseph O. Falkinham, III**, Department of Biological Sciences, Virginia Tech
March 25, 2021	SAFETY IN THE MEDICAL DEVICE REPROCESSING DEPARTMENT Speaker: **Merlee Steele-Rodway**, Reg. Nurse Educator/Consultant, Canada
April 8, 2021	HEALTHCARE WATER & SANITARY SERVICES - THE PRICE OF POOR DESIGN, CONSTRUCTION, USAGE AND MAINTENANCE Speaker: **Dr. Michael Weinbren**, Sherwood Forest Hospitals NHS Foundation Trust, UK
April 15, 2021	*(FREE Teleclass)* THE GLOBAL VIRUS NETWORK IN THE COVID-19 ERA Speaker: **Prof. Christian Bréchot**, Initiative on Microbiomes, University of South Florida

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