

EDITORIALS

On New Zealand's weak, strong and muddled management of a COVID-19 epidemic

New Zealand has mobilised after an almost complete social lockdown. This was imposed to try to eliminate the SARS-CoV-2 virus that causes COVID-19. The experience should inform both pandemic planning and current practice. The good news is that the epidemic appears controllable until a vaccine and/or treatment allows a relaxation of borders. The bad news is that a lockdown became necessary, and the associated economic harm, together with inevitable high unemployment rates, will result in disease. This burden will be in addition to that incurred by lockdown-delayed and -deferred medical care. The relevant context is that the New Zealand health system is already characterised by significant access and outcome inequity.¹ This will inevitably worsen.

The economic consequences of the virus leave us very vulnerable to another pandemic, which could be worse. Fiscal policy has rightly been used to 'cushion' the impact on jobs and incomes. However, it will take more than a decade for the 'fiscal cushion' we had to be rebuilt, even on relatively optimistic growth and future constrained spending assumptions.

That timeline might be fine if we believe this is a 1:100-year event, although that appears optimistic given that pandemics seem more frequent and given the growth in international travel and trade. Even then, prudence dictates that we learn from recent experience in order to reduce our vulnerability during a period when our fiscal room to manoeuvre has shrunk.

What are the lessons we should take from this experience to reduce our exposure? We may well have been better than most at containing this virus, but that is not the point and invites an unhelpful complacency. Rather than casting ourselves as 'best in show', we need relentlessly to search for ways of doing better at protecting both our health and our livelihoods. Indeed, New Zealand had and has much to learn from other countries. Although the local lockdown worked well in suppressing the incidence of COVID-19, Australia was essentially able to match this using a more relaxed, and hence less economically punitive, process because of superior contact tracing. Taiwan has shown better quarantine and isolation measures, and countries such as Germany and Iceland have a much greater insight into COVID-19 prevalence. It is worth noting that, in contrast to New

Zealand, all of these country exemplars have been quick adopters of technology.²

This is not a hindsight criticism of our response to COVID-19; our options were constrained by a lack of prior planning and low levels of both public health investment and capability.^{3,4} This has been an expensive lesson. We need to be much better prepared to execute a plan that allows both earlier and more effective border control, along with much stronger testing and contact tracing capability, and that can be quickly ramped up for the next pandemic.

Using the biblical Great Flood as an analogy, New Zealand took refuge in several million arcs. We will separate our comments into those before and during the flood – which matter for future pandemics – and those after the flood – which should also inform current practice.

Before the flood

In 2006, the New Zealand Ministry of Health (MOH) produced a pandemic planning guide.⁵ As far as we can see, the only plan that resulted was specifically for influenza and lacks tactical specificity.⁶ The guide identifies geography as a key national asset but overestimates the capacity of the New Zealand health system. A decade later, funding reforms to address identified shortfalls in the public health and intensive care workforces, among others,⁷ were not supported by either the MOH or District Health Boards and failed. In 2020, then, the national pandemic readiness was: constrained by limited intensive care unit (ICU) beds (about one-third of that in Australia on a *per capita* basis), along with low numbers of ventilators and extracorporeal membrane oxygenation (ECMO) machines; a shortage of both intensivists and public health workers; poorly resourced and performed Public Health Units (PHU),^{3,4} with consequent effects on surveillance and case-tracking capacity; and both logistical and command and control problems in the event of a national emergency, which are inevitable in a devolved governance system. The only relevant strength was geographical isolation. It is our opinion that this latter advantage was not properly exploited. As a result, we were figuratively 'caught with our pants down'.

By mid-February, when our Asian neighbours were actively managing their borders, New Zealand's borders remained open; the first restrictions were announced for China-related travel on 6 February 2020. Using MOH and Institute of Environmental Science (ESR) data on relevant flight arrivals and SARS-CoV-2 virus subtypes,^{8,9} the first case appears to be a traveller from Iran who arrived in New Zealand on 23 February and was reported on 28 February. Between 35 and 39 people then introduced approximately 35 SARS-CoV-2 virus subtypes during the last week of February and the first 2 weeks of March. The drying up of new subtypes after a high-trust soft border closure on 19 March suggests that this was effective.

The World Health Organization (WHO) described the problem as a global emergency on 1 February 2020 and eventually declared a pandemic on 12 March. During the week it took from that declaration to New Zealand's border closure, we estimate that about 40% of the eventual subtypes of SARS-CoV-2 virus entered the country. Given this delay, and the nature of the pandemic in Asia, Europe, North America and the Middle East at the time, the claim that the period from the first case to border closure in New Zealand was relatively the quickest is misleading – instead, the reality is that the border closure was late.

The key lesson for future pandemic planning arises from the answer to the question of what contributed to this late border closure. We identify four major factors.

First, there was an understandable concern about the logistics of any form of border closure.

Second, this logistical concern arose in the context of a general lack of planning, public health investment and readiness. Public health thinking was focussed on influenza epidemics, and PHU were under-resourced, dislocated and poorly performed.^{3,4} Unlike the Asian nations that were ready and mobilised quickly, New Zealand had no experience of either severe acute respiratory syndrome (SARS) or Middle East respiratory syndrome-related coronavirus (MERS). Finally, the MOH was neither resourced for nor practised in command and control functions.

Third, there was understandable anxiety about both the effect on trade and the overall economy of border closure, and especially on the import of essential goods and on tourism.

Fourth, both then and now, New Zealand showed a reliance on the WHO. At a time when a pandemic was obvious, the WHO was reluctant to declare it as such and, until relatively late, continued to argue against travel restrictions. This acted as a confirmation of a 'wait-and-see' approach with regard to the border. A similar reticence now exists with regard to requiring

masks to be worn in high person-density environments such as public transport.¹⁰

The flood

As the epidemic developed, the overall strategy changed from 'flatten the curve' (i.e. keep the disease incidence low enough for the health system to cope) to 'keep it and stamp it out'.¹¹ Given how hard the country had to work to 'stamp it out', it is clear that border management failed to 'keep it out'.

Unlike the border closure, New Zealanders took to their arcs in a timely and effective fashion. A 5-week-plus level 4 lockdown was declared by the government in response to lobbying by epidemiologists, prominent New Zealanders such as Sir David Skeggs and Sir Peter Gluckman and also apparently in response to social media.^{12,13} There was explicit and clear communication to 'go home and stay home', resulting in excellent community compliance. Minor criticisms include inconsistencies in what businesses could operate, suggesting a 'policy on the hoof' approach, whereas a major criticism was inhumane policy related to being born and dying.

In addition, the shortcomings of the New Zealand health system manifest as logistical problems with personal protective equipment (PPE), nasopharyngeal swabs and influenza vaccine supply and distribution – and in the time taken to achieve minimum acceptable standards in contact tracing and isolation measures.

Key data, such as that for community transmission rates, were presented in a misleading fashion and, perhaps most pointedly, similar performance in disease suppression was achieved in Australia with fewer social restrictions because of better contact tracing there.

After the flood

The figurative dove returned with reports of disease 'elimination', and people ventured out from their arcs – albeit 2 m apart and engaging in strict hygiene measures. It is too soon to evaluate the social recovery but, to date, the 'loosening' of conditions has been somewhat muddled. For example, there have been confusing messages. An example is the use of the word elimination in an epidemiological sense compared to common usage. The consequent confusion resulted in some undesirable but understandable community behaviour. Indeed, a shift through 2 weeks of level 3 and onto level 2 and then 1 became unavoidable because of civil disobedience.

There has been a slow uptake of essential technologies for tracking and tracing and disease surveillance and for limiting contagion. There is also real concern about both the burden of delayed procedures and treatment and an

imminent epidemic of physical and mental health problems that will arise from financial hardship and unemployment, which must exaggerate extant inequities.¹

We make the following recommendations.

Governance and oversight measures

First, form a bipartisan political and expert lay oversight group to ensure we learn from our experience, so we are much better placed to protect both our health and our livelihoods from the next pandemic.

That means developing a plan that allows for earlier and more effective border control along with much stronger testing and contact tracing and identifying the capabilities needed to execute it. This will require an evaluation of imminent and recent health reform recommendations, highlighting those that will help ensure a more responsive, effective and less-fragmented health system response.

Bipartisanship and a national public health agency will facilitate a more confident response when the stakes are high, and a rapidly evolving situation creates uncertainty about the right course of action.

Managing the social recovery

Second, ensure common usage of language in communications and make raw data available for academics and others to interpret and advise as no one has a mortgage on good ideas.¹⁴

Third, adopt a continual improvement process and messaging that encourages learning over complacency. While we have much to be proud of, we also have much to learn. Probably the biggest risk to our ability to learn from recent experience is a tendency to keep telling ourselves how well we have done.

Fourth, the Levels system is widely used but appears clumsy and administration heavy. It worked well in level 4 when the message and rules were reasonably clear but broke down as we started to move down levels and the messaging and rules were more confusing and people understandably more restless. Empowering guidelines may well be preferable.

Fifth, identify clear standards for quarantine, 'low trust' isolation, testing and tracing, so we know what capacity and capability we need to build to give us the

best chance of both 'keeping and stamping it out' (e.g. all case contacts identified and managed within 48 h).

Sixth, mobilise community, social and tribal networks, especially in rural areas, to facilitate tracing and tracking and surveillance and quarantine.

Seventh, obtain and use the best available technologies, both high (e.g. phone applications) and low tech (e.g. masks).^{2,10} Antibody testing should be used as soon as the tests have appropriate sensitivity and specificity and are available both cheaply and for field use.

Eighth, be clear about exactly what standards need to be met before we can start selectively to ease border controls, especially in a way that helps create jobs and bolster incomes. For example, what needs to be done to ensure that our quarantine capabilities are good enough to allow foreign students to return without risking a resurgence of the virus? Similarly, what standards need to be met before we can expand the virtual border to include countries with matched or superior performance?

Innovative health service delivery

Ninth, because conventional services provided by conventional providers in conventional ways will not suffice, use tight-loose-tight funding approaches to generate innovative health service delivery.¹⁵ This must include community and home-based measures to prevent or at least mitigate physical and mental health problems, using e-health, virtual health teams and community health workers who are trained for this purpose and micro-credentialed.

Summary

New Zealand's recovery from COVID-19 will be long and difficult. Best practice, both invented and borrowed, is essential. An explicit pandemic plan, which recognises the country's contextual strengths and weaknesses, and a national public health agency are essential.

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