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NZ should prepare for a potentially severe global coronavirus pandemic

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In this blog we briefly summarise our assessment of the highly uncertain new coronavirus threat. Given its potential to become a severe and prolonged global pandemic, a precautionary response now means activating all components of our pandemic plan, with a particular focus on 'keep it out'. NZ has many natural and institutional advantages in managing this major health and economic threat. Now is the time for maximum proactivity.

There is much we still don't know about the threat posed by this new coronavirus. It appears to be highly transmissible and is spreading rapidly in China with a doubling time of about a week, as reported on 31 January [1]. It also has a concerning case fatality risk (CFR) of perhaps a few percent (albeit less than SARS). However, the exact risk for people currently infected will not be known for weeks to months because of uncertainties in both the numerator (fatalities from this infection) and denominator (those infected, including some who may be asymptomatic).

Of particular relevance to NZ is its epidemiology outside of China – where we still have extremely limited data. That is there is no definitive evidence yet of uncontrolled outbreaks in the 20+ countries outside mainland China with laboratory-confirmed cases (but there is an emerging concern about lines of transmission for an infected person in South Korea who had visited Thailand [2]). For infectious diseases where mild or asymptomatic cases may be the majority, 'silent transmission' can potentially occur for prolonged periods before a local outbreak is apparent (even with an exponential rise in cases, number are small at first). In this group of out-of-mainland-China jurisdictions (ie, including Hong Kong, Macao and Taiwan) the CFR as of 5 February was 2/191 = 1.0% (95% confidence interval = 0.3% to 3.7%). But this risk is for typically relatively healthy travellers – so the true CFR would be higher in the community and certainly if healthcare services became overwhelmed. Also more of these cases who are currently hospitalised could die – again pushing up the true CFR. On the other hand the true denominator of cases (including mild cases that are not diagnosed) in these countries could also be higher – so the true CFR could actually be lower than this 1% estimate.

The spread of this novel coronavirus (2019-nCoV) already qualifies it as a pandemic (ie, "an epidemic occurring over a very wide area, crossing international boundaries, and usually affecting a large number of people" [3]). With pandemics that may spread to infect much of the world's population, severity obviously becomes hugely important. The last major pandemic (H1N1 influenza in 2009) spread globally but had a mortality risk similar to seasonal influenza (which disease modelling shows still kills about 500 people a year in New Zealand, a mortality risk of approximately 0.01% of the population [4]). In NZ that pandemic infected 18% of New Zealanders [5] and was reported to have hospitalised 1,122 people with 102 admitted to ICUs, and 49 deaths [6]). Following that pandemic, the World Health Organization met and concluded that the pandemic definition based on spread was appropriate, but that it was important to have a robust system for assessing severity [7]. With a pandemic, any mortality risk that approaches even 0.1% (1 in a thousand) means that it will have severe effects on global health.

Strengths of the NZ response to date

Firstly, NZ was reasonably well prepared with a relatively advanced pandemic plan [8] – and one that had been tested in a number of simulation exercises. (Nevertheless, the plan is still far from optimal, as we discussed in a previous blog on NZ's preparations which scored poorly at 51/100 and ranked only 35th in the world in a recent global study [9].)

Secondly, the Government has acted wisely in our view to take a precautionary approach with imposing some travel restrictions relating to travel from China. We note that like many other countries, NZ's new travel restrictions do not fit with current World Health Organization (WHO) advice. Yet the NZ position is probably justified as WHO advice is very broad and does not differentiate between types of countries. For example, NZ as an island nation, does not have a problem with people illegally crossing land borders. This country is therefore in a much better position than most countries to benefit from travel restrictions and other border control measures. On the other hand, tourism is a key export industry for NZ so the Government needs to take the economic impact into consideration and be ready to quickly remove travel restrictions if there is emerging evidence that the health risks from this new coronavirus are relatively small. Fortunately the International Health Regulations recognise that states may implement additional health measures such as travel restrictions at borders – though these states are obliged to send WHO the public health rationale and justification.

Thirdly, the NZ scene has had reasonably sensible cross-political party commentary on the topic of the coronavirus response. Nevertheless, there is still no apparent attempt by the Government to form a cross-party working group so that the risk of political point scoring in the future is minimised if the threat level increases.

These strengths also build on natural advantages for New Zealand eg, it being a high-income remote island nation (indeed it ranked 2nd in the world in a recent study on prioritising island nations for surviving extreme pandemic scenarios [10]). Also, by chance, it is fortunate that it is now summer in NZ – since along with seasonal influenza, other human coronaviruses tend to circulate the most in winter months (at least as per this USA study [11]).

Opportunities to 'ramp-up' NZ's response

The immediate priority is to strengthen the 'keep it out' components of our pandemic response. NZ is still allowing entry to NZ of travellers from areas where the new coronavirus is being transmitted very actively, notably China. These classes of travellers include NZ citizens, permanent residents and their immediate families, but requiring them to practice 'self-isolation' for 14 days (technically a form of 'quarantine'). The nature of this quarantine and adherence with it needs urgent review, monitoring and evaluation to ensure it is adequate to minimise the risk of disease transmission. The level of health worker supervision of such quarantine may need to be markedly increased.

Other border controls will need to be considered, including reducing the range of people allowed entry, and expanding the range of countries covered as the pandemic spreads. There is also the need to consider exit screening measures to protect other countries who are receiving travellers from NZ, notably Pacific Island nations.

Government agencies can now justifiably leverage this crisis by starting to prepare the population for a massive upgrade in protective practices in case border control fails and there is uncontrolled spread of this new coronavirus in NZ. Health officials have wisely mentioned hand hygiene and respiratory hygiene – but this messaging should be far more prominent (and involve paid mass media efforts). Also officials should be talking more about the critical importance of staying home when sick and for being prepared to work from home in some situations. Health facilities should also be rolling out alcohol dispensers at all their public entrances to facilitate improved hand hygiene. Our previous NZ studies show that there is very large scope for New Zealanders to improve both hand hygiene [12-14] and respiratory hygiene [15].

In summary – there are strengths in the NZ Government response to date but also substantial opportunities to enhance health protection for New Zealanders (just as we detailed in our review of the 2009 influenza pandemic [6]). Fortunately there is still time to upgrade the weaker aspects of the response and to maximise the chance of protecting the population if border control fails in the future. We are also in the position of being able to adjust our pandemic control efforts, particularly as we learn more about its likely severity.

Competing interests: Nil. Nevertheless, we note that both authors have given technical advice to the Ministry of Health on the coronavirus pandemic and Prof Baker is on a Technical Advisory Group. But this work is non-remunerated.

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