

Eliminate the pandemic virus causing COVID-19 or risk an animal reservoir

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Elimination has been an effective strategy for New Zealand in the management of the COVID-19 pandemic virus (SARS-CoV-2). Most other countries have not pursued this goal and are ignoring the opportunity even now. SARS-CoV-2 is not manageable by the influenza playbook; its longer incubation period makes tracing and isolation more practicable and puts elimination within reach. There is one additional argument in favour of elimination: the longer the highly infectious SARS-CoV-2 virus circulates in the human population, the greater is the likelihood that it will find a host among other animal species and that these will become a reservoir capable of transmission back to humans.

Elimination has been an effective strategy in the management of the COVID-19 pandemic virus (SARS-CoV-2) in Aotearoa/New Zealand. The COVID-19 pandemic began in Wuhan, China late in 2019. The first case occurred in New Zealand on 28th February 2020. With

strong and heeded scientific input¹⁻⁴ under effective leadership and with widespread consent and support from a community that rapidly grasped what was at stake and how to deal with it, New Zealand went into a phased approach to elimination. This began with a four-week lockdown, subsequently re-emerging through a series of increasingly less stringent stages of physical distancing and shutdown of public places, travel, and the economy, while ramping up, then maintaining, widespread testing and contact tracing. New Zealand is now at Level 1, with essentially all activities at normal levels; the major exception is that the border is closed to almost all except returning New Zealand citizens and residents, with quarantine measures in place. All known active cases are recently returned travellers and in quarantine.

New Zealand had a number of factors in its favour in pursuing the elimination strategy. Two have already been identified above: decisive, evidence-informed leadership and a population that understands team sports and how to play by the rules. Other advantages include a small population, a general lack of overcrowding (including on public transport), an island nation that is not a major transit hub, and rapid awareness and acceptance of the implications of the growing numbers worldwide.

Other countries have largely ignored the elimination option and chosen – or stumbled into – other approaches. The nature of this coronavirus (relatively stable, highly infectious, an order of magnitude more lethal than most annual influenza outbreaks) should have made it clear that the influenza playbook was not the relevant one. Further, the longer incubation period associated with SARS-CoV-2 makes tracing and isolation of contacts much more practicable than is the case with influenza – and thus puts elimination within reach.

Only now are we beginning to hear wider discussion – outside New Zealand – of the elimination option – even then there are not a lot of voices^{5 6}. There is much to be said for its implementation^{1 2 7}, even at this mature stage of the pandemic (see here).



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There is one additional argument: the longer the highly infectious SARS-CoV-2 virus circulates in the human population, the greater is the likelihood that it will find, and adapt to, a non-human host that is capable of transmission back to humans. How the virus emerged is still contentious⁸⁻¹⁰ but its ability to infect cats¹¹, dogs¹², ferrets¹³, and farmed minks¹⁴ – in addition to wild hosts¹⁵ – suggests that there is a major risk that human companion animals could become a reservoir¹⁶ and a source of regular additional outbreaks. In addition to the health of animals, there is a human-centred reason why cattle are kept free of Mycobacteria (the cause of tuberculosis). Coronaviruses have also been detected in captive and wild Pacific harbour seals as well as other captive marine mammals¹⁷. Seal CoV is closely related to feline, canine, swine, and ferret CoVs¹⁸.

The possibility of an animal reservoir needs to be rapidly factored into any discussion of future management strategies of SARS-CoV-2. In New Zealand, we can improve our current elimination strategy by undertaking a risk assessment around the potential of SARS-CoV-2 in sewage from people in isolation facilities posing any risk to marine mammals. For many other countries – especially those with chaotic responses – there may be a time window beyond which elimination becomes impossible and an animal reservoir increasingly likely.

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