TOI TE ORA
PUBLIC HEALTH
Bay of Plenty + Lakes Districts

Medical Officer of Health Report
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Covid-19 – Navigating the next years

Having weathered the first wave of the Covid-19 pandemic, New Zealand has settled into the new normality of Alert Level 1 – a brief respite of unknown duration. The last reported case acquired in the community from an unknown source was a distant 80 days ago. Single digit cases are reported sporadically from highly managed quarantine facilities for New Zealanders returning from countries around the world where this pandemic is raging, mostly out of any control. The World Health Organization (WHO) has praised our response, holding New Zealand up as an example of a country that *"followed WHO guidance on isolation, contact tracing and testing, and successfully eliminated community transmission of Covid-19,"* also noting that *"testing, contact tracing & clear communication to the public are hallmarks of the country's successful response."*

We remain aware of the economic costs, closed borders, lack of international tourism and impact of the loss of life, however, life in New Zealand seems now to be normal. We are aware that it could change in an instant but there is a sense that we have got through, even beaten Covid-19, at least for now – and so it can become difficult to keep the fact foremost in our minds that we and the rest of the world are in the grip of a devastating pandemic that will likely last many years.

Yes, we have done incredibly well so far with a world class response and the effort of the 'team of five million'. Clear and decisive leadership, public health capacity and expertise, deference to experts and scientific expertise, and excellent communication and have all been instrumental in this success. There is a justifiable consensus publicly, politically and scientifically that decisions to date have broadly been the right ones, at the right times, and well implemented.

Countries around the world have differed markedly in their responses, but most recognising the key pandemic management principle of slowing spread to 'flatten the curve' so that health services are better able to cope and achieve the best possible outcomes for those with more severe illness. New Zealand with some natural advantages (such as being geographically remote, having lower population densities); good leadership; good preparedness, management and response capability; and, a degree of good luck, has been able to go a step further and achieve elimination, for now. And while we are held up as a success story, with time when we have more complete knowledge of this disease and its health and economic impacts, and that of our responses (maybe in three to five years' time) we may be better able to judge our strategy.

But more important right now is the question of how we should maximise what is an early advantage that we have gained and avoid any pitfalls of complacency. This requires astute situational awareness - a clear appreciation of the dangers and risks. While we have seen the devastating sequelae in some other countries that under-estimated or down-played the severity of Covid-19 and the dynamics of a pandemic, we are at similar risk now, with Covid-19 seemingly distant, the pressure to get on with business-as-usual, and the allure of the idea that we have perhaps beaten it.

A metaphor can be useful here to compare countries' strategies, appreciate pandemic dynamics, and scenarios of what may happen next, and what we should be preparing for. As in a white-water rafting journey the pandemic stretches ahead like unmapped, unknown, long and dangerous rapids and each country suddenly finds itself like a raft caught in the head waters staring down the treacherous course, turbulent waters, whirlpools and deadly standing waves.

Sweden's strategy, maybe partly unwittingly, has seemed to be based on the assessment that the rapids and the harm they may do may not be too severe. It has recommended the voluntary donning of some safety gear such as life jackets and helmets, and gone with the river, maybe edging towards a less turbulent stream where possible but not resisting nature, and accepting the inevitability of the river, knowing that it will come out of the end of the rapids into calmer waters where there is sufficient herd immunity and a declining epidemic curve. The unknowns are how long it will take? Maybe two years. What will the economic cost be? Unknown but hopefully less than the costs of lockdowns and stringent control measures. And most importantly, what will be the loss of life? For a population of approximately 10 million, and with 0.65% of those infected (symptomatic and asymptomatic) dying[1], and at least 60% of the population needing to be infected before sufficient herd immunity starts to slow transmission, this cost in life to reach the other side of the epidemic curve is likely to be in the order of 39,000 lives. This is significantly higher than the 6,000 if it were a 0.1% infection fatality rate as may have been initially assumed by Sweden when it set out on its strategy of soft controls and letting the pandemic runs its course to herd immunity. If 39,000 deaths are indeed the price of herd immunity for Sweden the current death toll of approximately 5,600 indicates that about 85% of the pandemic is still ahead for them, suggesting a duration of at least a couple of years. Reaching herd immunity this way and without a vaccine comes with a high price[2].

From our vantage point the United States raft looks in disarray with division and a degree of mayhem, civil dissent and self-sabotage as it is hurled out of control and violently down the river, into the largest waves and vortices, capsizing, gear and crew scattered, but inevitably to eventually wash up in the calmer waters of herd immunity and the distant shores of the waning side of the epidemic curve. With haphazard and inconsistent controls and compliance it may even get there sooner than others - with loss of life more or less in proportion to the inevitable dictates of the epidemiology as above, but with Covid and non-Covid deaths likely more than could have been because of outcomes being exacerbated by the turbulent, uncontrolled and overwhelming course. If it is an accelerated course, it's possible that any arrival of a vaccine will be at a relatively later point in the country's overall epidemic curve where a relatively smaller proportion (the remaining non-immune) will benefit.

New Zealand, recognising the danger early and with a well-trained and resourced crew and courageous leadership, dug deep and paddled hard and with incredible team work managed to reach a dry rocky outcrop and haul out before getting caught in the first, more powerful eddies and waves of no return down the rapids. We were at first somewhat surprised that we did this – the odds seemed impossible. Our losses are less compared to others and we seem to have, at least temporarily, escaped the ravages of the river as we see other rafts go by, some floundering, some overwhelmed, others bailing frantically, some temporarily on safe ground and then losing their tenuous grip and being swept back into the turbulence of another wave. We have spent much of our reserves but for now our position looks good and our rocky outcrop island sanctuary is envied by others – and we risk getting comfortable. However, our success means we are stranded at the top end of the rapids with the full extent of the white water still awaiting us downstream. What happens next?

It is likely that we have three options or fates, or combination thereof:

1. The helicopter rescue of an effective Covid-19 vaccine and airlift out of the river and the harms of the rapids;
2. The parachuting in of survival suits that will limit the harm going through the rapids – such as a new antiviral drug effective against Covid-19;

[1] 0.65% is the current estimate of the Infection Fatality Rate according to the Centre for Disease Control (CDC) (https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html)

[2] See commentary by epidemiologist, Prof Rod Jackson:
https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12335221

3. Using our hard-won time advantage and our relatively safe staging post to prepare and train, upskill and equip, and navigate a safer route down the river, maybe going from one safer eddy or outcrop to the next.

The helicopter rescue is the best hope of the elimination strategy. Unfortunately, it remains an unknown. We have proven technology to produce influenza vaccines, and so planning for an influenza pandemic confidently includes the reasonably predictable production of a pandemic strain flu vaccine. However, a coronavirus vaccine has never been made. Early signs are promising, but six months into the pandemic is still early in the vaccine development process and we expect that this rescue and escape from the fate of the rapids is possibly two years away, maybe a lot longer, and at least a small possibility of never.

The discovery of an effective antiviral drug is the other hope that will allow us to ride the pandemic rapids to herd immunity while reducing the cost in terms of lives lost. Unfortunately, there is little promise of an antiviral agent that would meaningfully reduce the case fatality rate and the impact of the pandemic.

Meanwhile the river is flooding, waters are rising, waves are washing up on our islet at the head of the rapids, threatening to dislodge us and throw us back in the river. It's a false sense of security on our island as we know it's likely only a matter of time before our perimeter defences are breached by the rising flood waters, we lose our footing, and are propelled into the inevitability of the rapids again.

In practice, the third way is likely the most realistic one, and it requires concerted focussed preparation while we have that opportunity. There is a remote possibility of keeping our tenuous grip on dry ground awaiting the angel wings of the helicopter rescue but it's more likely that we will have to endure and survive a lot more of the waves and turbulence of the rapids before any winch rope reaches us, or any others.

We need to be acutely aware of our current position and predicament. We need to prepare as much as possible to be expert and capable and have the necessary resources and equipment to ride out and control waves, control our direction, navigate safer routes, find slower waters and temporary safe-havens as we edge our way through, staying in control of the river and not being overwhelmed - staying out of the most dangerous parts and maximising the chances of rescue arriving before having to endure all of it. The reality is that we haven't beaten it, without a vaccine there is no beating it, only limiting and controlling the damage sustained before we get enough immunity. We have won a temporary reprieve that has cost us dearly and so we need to use it to maximum effect as we prepare for more to come. In all scenarios there is a long course ahead and we will be in a pandemic response footing for several years to come.

Recognising that the most and the worst is likely still ahead, we must ensure that we use this hiatus to continue to prepare and respond in every way possible and keep the focus on maintaining and developing the capacity, expertise, systems, structures, resources, equipment and supplies needed across public health, primary care, secondary care and ICU. We must keep as a primary objective the ability to implement control measures to minimise the number of cases in a second and subsequent waves, and the capacity to provide optimal care for those that have severe illness.

Dr Neil de Wet
Medical Officer of Health
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