

The 2019 Global Health Security Index (GHSI) and its implications for New Zealand and Pacific regional health security

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ABSTRACT

It is important for all countries to secure themselves against infectious disease threats, including potential global catastrophic biological risks. The Global Health Security Index (GHSI), first published in 2019, is a comprehensive, objective assessment of health security capabilities across 195 States Parties to the International Health Regulations. The GHSI is a broader assessment than the World Health Organization Joint External Evaluation and emphasises public documentation of preparedness as well as sustainable capabilities. New Zealand scored 54/100 on the GHSI (35th in the world). But also worryingly, the range of scores for New Zealand's Pacific neighbours was 19.2–27.8, highlighting potential regional vulnerabilities. Clearly, the New Zealand Government needs to do more to ensure its own optimal preparedness for global biological threats, and document these preparations to assure the international community. But it should also provide additional overseas development assistance (bringing this assistance up to 0.7% of GNI as per UN recommendations) and work with Pacific Nations to enhance health security in the region.

Recent events such as the 2019 measles epidemic in New Zealand and the South Pacific,¹ as well as the emergence of a novel coronavirus in China in 2019 (COVID-19),^{2–4} underscore that all countries must ensure capabilities to prevent, detect and rapidly respond to public health emergencies. Countries need to have a robust health system, be compliant with international norms, and work to improve their risk environment. The GHSI is the first comprehensive assessment and benchmarking of these health security capabilities across 195 States Parties to the International Health Regulations (IHR) 2005 and was published in 2019.⁵ In this viewpoint article, we present New Zealand's GHSI score along with a breakdown of items where New Zealand scored poorly. We also profile the results from Pacific Nations, with the aim of highlighting ways in which New Zealand health policymakers might act to enhance regional health security.

Global catastrophic biological risks (GCBRs)

The GHSI emphasises the importance of addressing global catastrophic biological risks. Catastrophic biological risks have been defined as: “those events in which biological agents—whether naturally emerging or re-emerging, deliberately created and released, or laboratory engineered and escaped—could lead to sudden, extraordinary, widespread disaster beyond the collective capability of national and international governments and the private sector to control. If unchecked, GCBRs would lead to great suffering, loss of life and sustained damage to national governments, international relationships, economies, societal stability or global security”.⁶

Plausible GCBRs include natural pandemics such as non-seasonal influenza, emergence of a new and dangerous zoonotic pathogen, accidental release of a known virus such as

smallpox or a novel bioengineered pathogen, as well as deliberate release of one of the preceding biological agents.

The threat of a major global pandemic is probably growing due to increased human exposure to zoonotic organisms (eg, in animal markets and through deforestation), increased availability of advanced bioengineering methods and synthetic biology, and little oversight of dual-use biotechnologies of concern. However, advances in the biotechnology industry are also likely to be some of our best defences against GCBRs, such as through improving the quality and development timeline for diagnostics, vaccines and treatments for novel pathogen threats.

International action on health security

All WHO members automatically became parties to the IHR (2005), which entered into force on 15 June 2007. However, although every member state has signed on to the IHR, fewer than 20% of countries reported in 2012 that they had fully achieved compliance with the IHR. The Global Health Security Agenda subsequently aimed to address these shortcomings through resource investment. Sixty-seven countries (not including New Zealand) have now signed on to this Agenda. The US has contributed US\$1 billion to this project across five years 2014–19 and has helped over 30 nations.⁷ Finally, the Global Preparedness Monitoring Board was set up in response to the Ebola outbreak of 2014–16, and concluded in their 2019 Annual Report that we live in “A World at Risk” and urged political action on seven recommendations.⁸ The GHSI supplements and benchmarks all these activities.

The Global Health Security Index

GHSI is a broader and more comprehensive measure than existing assessments such as the Joint External Evaluation (JEE), which New Zealand undertook in November 2018 with the World Health Organization (WHO).⁹ The GHSI emphasises that public health capabilities must be regularly exercised and that countries need to be transparent about their capabilities.

To score the GHSI, the evaluators (based at the Nuclear Threat Initiative, Johns Hopkins University and the Economist Intelligence

Unit) used published and publicly available data sources with the idea that this ought to encourage nations to document and publicise their preparations. Unpublished documents were not considered sufficient evidence. Binary, and other scoring methods, were used across 140 variables in 34 indicators across six categories. Advantages of this method are repeatability, objectivity and its aspirational nature. The method prioritises published information, functional systems, testing of systems and appropriate financing.⁵

The analysis shows that collective international preparedness is weak and that political, socioeconomic and environmental vulnerabilities can amplify these deficiencies. These findings have particular implications for New Zealand and the rest of the South Pacific, which we describe below.

Unpacking New Zealand’s GHSI score

New Zealand scored 54.0 out of 100. This relatively low score could be particularly problematic given that one recent analysis indicates that New Zealand is the second most optimal island nation refuge for humanity in the case of pandemics that threaten human extinction.¹⁰

Recent experience suggests that some of the shortcomings in New Zealand’s score are likely to be valid. The second report of the Havelock North Drinking Water Inquiry described a long list of failings,¹¹ including the erosion and fragmentation of New Zealand’s public health institutions.¹² These deficiencies are reflected in New Zealand’s GHSI score and are potentially compounded by even poorer preparations of neighbouring countries such as Fiji (GHSI score 25.7) and the Cook Islands (20.4), as discussed below.

New Zealand performed well in a number of GHSI indicators, although even in the areas that follow there is room for improvement. These include good scores within the Prevention category for ‘anti-microbial resistance’ (83.3/100), which includes good planning, surveillance and testing, as well as high immunisation rates (94.7); good scores in the Detection category for ‘laboratory systems’ (66.7), although the capacity of the laboratory systems

could be improved; good scores in the Rapid Response category for ‘emergency preparedness’ (75) as well as ‘risk communication’ (100), ‘communication infrastructure’ (96.6) and ‘trade and travel restrictions’ (100); good scores in the Health System category for ‘medical countermeasures’ (66.7) and ‘capacity to test and approve new countermeasures’ (75); good scores in Compliance with International Norms for ‘cross-border agreements on public and animal health emergency response’ (100) as well as ‘international commitments’ (100), and finally, good scores for the Risk Environment category, including: ‘political and security risks’ (92.9), ‘socioeconomic resilience’ (97.4), ‘infrastructure adequacy’ (83.3) and ‘public health vulnerabilities’ (74.1).

However, there are also a number of important gaps. Gaps in New Zealand’s capabilities across the 34 indicators of the GHSI are displayed in Table 1. We note that the authors of the GHSI invited countries to respond to draft scores in May/June 2019; however, only 16 countries responded with additional data and references. New Zealand did not respond to this data validation request.

GHSI vs the Joint External Evaluation (JEE)

The New Zealand Ministry of Health undertook a JEE of preparedness for significant health threats in 2018. The JEE assesses a country’s ability across the categories of prevention, detection and responding to a threat. Reporting following this exercise suggests that New Zealand performed reasonably well, demonstrating ‘sustainable capacity’ for 49% of the indicators.⁹ Ideally the New Zealand Ministry of Health website would link to this report.

A critical step following the JEE is to prepare and publish a National Action Plan for Health Security and commit funding to addressing identified gaps. New Zealand has not yet taken this important step, unlike Australia.¹⁸ Key issues emerging from the JEE include a need to focus on strengthening national action around antimicrobial resistance (AMR), enhancing surveillance and

risk assessment, addressing critical human resource needs and building risk communication capacity, as well as supporting sustainable IHR implementation in Pacific Island countries and territories.

Interestingly, the JEE gives New Zealand 5/5 for ‘biosecurity/biosafety’ but the GHSI scored New Zealand at 28/100 for biosecurity and 50/100 for biosafety (biosafety is not represented in Table 1 because the table only lists the categories where New Zealand scored <50/100). These scores suggest that either: (i) substantial preparations by New Zealand have not been described in published documents, or (ii) there are still many ways New Zealand can improve its health security beyond the factors evaluated in the JEE.

The GHSI adds additional assessment in the categories of health system, compliance with international norms and risk environment to the JEE’s foundational assessments of prevention, detection and response. The GHSI is also an involuntary, independent assessment that gives additional weight to capabilities (in addition to capacities), background indicators and government transparency.

New Zealand needs to act locally to enhance its health security capabilities

Where they do not merely reflect a lack of published documentation, some gaps in New Zealand’s GHSI are worrisome and suggest a long-term pattern of under-resourcing and/or neglect. For example, New Zealand is one of the only high-income countries that lacks a field epidemiology training programme, which is reflected in its low score for ‘epidemiology workforce’. This is precisely the workforce that is needed to develop and drive many of the systems required to prevent and manage pandemic threats. Another example is the need to ensure health and surveillance data are not merely collected, but are digitised, standardised, interoperable, shared appropriately (including de-identified public health authority access) and used to inform decisions.

Table 1: New Zealand's GHSI scores by category, with ranking among 195 countries and the 13 (of 34) indicators where New Zealand scores below 50 out of 100, along with the present authors' views of possible mitigating actions New Zealand could take.

GHSI component	Performance	Viewpoint authors' summary of why New Zealand scored poorly on these indicators and suggested potential actions to improve New Zealand's performance (refer to original GHSI data to see scores and detailed evidence considered by the GHSI authors at question-level: https://www.ghsindex.org/report-model/)
Overall score	54.0 (rank 35th)	
Prevention	55.0 (rank 27 th)	
1.3 Biosecurity	28.0 (global average [GA] = 16.0)	Reasons: Inadequate data on dangerous pathogens in New Zealand. Insufficient capacity to test for dangerous pathogens without culturing them (eg, anthrax can only be tested at the national animal laboratory). No evidence of standardised biosecurity training. Inadequate personnel checks, laws and end-user checks when accessing/transporting dangerous pathogens. Potential actions: Develop an integrated national strategy with well-defined agency responsibilities and coordination mechanisms (eg, record dangerous pathogens and inventories, consolidate inventories, legislation that addresses handling and security of dangerous pathogens, ensure PCR diagnostic testing available for key threats, training, vetting, and regulation to control cross-border transfer).
1.5 Dual-use research and culture of responsible science	0 (GA=1.7)	Reasons: Inadequate assessment, regulation and oversight of dual-use research with no agency responsible. Potential actions: Integrated strategy (see biosecurity above).
Detection and reporting	36.7 (107 th)	New Zealand is below the average score for all 195 countries on this domain
2.2 Real-time surveillance and reporting	48.3 (GA=39.1)	Reasons: No evidence of a national commitment to share data, electronic health records not universal or interoperable, no evidence of daily event-based surveillance analysis, though these data are collected. Potential actions: Invest in improved public health surveillance infrastructure, including real-time reporting of hospitalisations and deaths from a range of infectious disease syndromes.
2.3 Epidemiology workforce	25 (GA=42.3)	Reasons: Inadequate numbers of trained epidemiology field staff, no training programme. Comment: We note there is no specific field epidemiology training programme in New Zealand but some such training is part of the specialty training in public health medicine, eg, for future Medical Officers of Health. Potential actions: Establish a New Zealand field epidemiology training programme (albeit this could be in collaboration with an existing New Zealand or Australian programme), ensure integration with animal health professionals/One Health approach.
2.4 Data integration between human/ animal/ environmental health sectors	0 (GA=29.7)	Reasons: Unclear mechanisms for ministries to share animal/human/wildlife surveillance data. Potential actions: Establish a national public health agency to manage surveillance, prevention and control of a wide range of hazards with strong integrating mechanisms with animal health and environmental agencies.
Rapid response	58.1 (21 st)	
3.2 Exercising response plans	0 (GA=16.2)	Reasons: No published evidence of biological-focused IHR exercise with WHO in the past year nor of a bio-focused exercise to identify gaps/ best practices. Potential actions: Conduct more regular multi-agency response exercises to a full range of potential hazards. Annual exercises with the WHO may be over-demanding; however, regular exercise of capability is important.
3.3 Emergency response operation	33.3 (GA=23.6)	Reasons: No evidence that the National Crisis Management Centre (NCCM) or the National Health Coordination Centre are required to conduct public health emergency drills at least once per year, no evidence of activation within 120min of identified emergency/ scenario. Potential actions: Require relevant annual drills and testing of response activation time, publish reports on these.
3.4 Linking public health and security authorities	0 (GA=22.6)	Reasons: No published evidence of joint exercises/procedures for potential deliberate biological events. Potential actions: Implement multiple strategies, including establishing an integrated national public health agency (see above), high-level links with National Emergency Management Agency (NEMA), joint exercises (see above).
Health system	45.2 (32 nd)	

Table 1: New Zealand’s GHSI scores by category, with ranking among 195 countries and the 13 (of 34) indicators where New Zealand scores below 50 out of 100, along with the present authors’ views of possible mitigating actions New Zealand could take (continued).

GHSI component	Performance	Viewpoint authors’ summary of why New Zealand scored poorly on these indicators and suggested potential actions to improve New Zealand’s performance (refer to original GHSI data to see scores and detailed evidence considered by the GHSI authors at question-level: https://www.ghsindex.org/report-model/)
4.1 Health capacity in clinics, hospitals and community care centres	45.7 (GA=24.4)	Reasons: New Zealand has 306 doctors per 100,000 people which converts to an index score of 40.6/100, 280 hospital beds per 100,000 people (19.7/100) and no evidence of a health workforce strategy to address human resource shortfalls. Potential actions: Take real action to address health workforce shortfalls, including planning to designate existing bed capacity (eg, residential care, field hospitals) to cope with surge demand. Demands by the GHSI for high workforce and bed numbers come at a high cost, and potentially there are community-based approaches to activating capacity in a crisis (home testing, hotel beds, a voluntary workforce of recovered and retired individuals).
4.3 Healthcare access	45.8 (GA=38.4)	Reasons: Lack of published evidence for a plan to prioritise protection and care for healthcare workers during an emergency. Potential actions: There is some published New Zealand ethical guidance that supports prioritising the protection of health workers in a pandemic given their special responsibilities ¹³ including vaccination of healthcare workers. ¹⁴ Also the mechanisms for such prioritisation have been built into New Zealand law. ¹⁵ Nevertheless, the lack of detail around the prioritisation in pandemics has been criticised before, ¹⁶ and the latest influenza pandemic plan ¹⁷ still fails to adequately address these issues in our view. Clear prioritisation plans for each phase on pandemic plans need to be developed.
4.5 Infection control practices and availability of equipment	0 (GA=20.8)	Reasons: Lack of published evidence of monitoring healthcare associated infections, also, although there are some stockpiles, there is no published plan to address routine and public health emergency personal protective equipment (PPE) supply issues. Potential actions: Establish an adequately resourced national strategy and clear national leadership (see public health agency above), consider local manufacturing options for PPE to be activated in an emergency if global supply chains fail.
Compliance with International norms	59.4 (39 th)	
5.4 JEE and PVS	0 (GA=17.7)	Reasons: Lack of published evidence for: a published public report on New Zealand’s JEE, completion of a national action plan for health security (NAPHS) or a GHSA roadmap, a completed and published performance of veterinary services assessment (PVS) and associated gap analysis. Note that although New Zealand scores ‘50’ on ‘financing’ there is no evidence of a national budget for addressing gaps in the JEE or PVS. Note: New Zealand’s JEE was undertaken Nov 26–30, 2018. The JEE Mission Report was published in 2019, the same year the GHSI assessment was published. So it is likely that aspects of the JEE were not available to the GHSI assessors who accessed New Zealand evidence sources predominantly in Jan/Feb 2019. New Zealand has not completed a World Organization for Animal Health (OIE) PVS assessment in the last five years, nor requested a PVS evaluation mission. Potential actions: Conduct regular external assessments and reviews of outbreaks/epidemics with accountability for implementing agreed system improvements.
Risk environment	77.2 (23 rd)	
6.4 Environmental risks	32.2 (GA=52.9)	Reasons: Largely urban population, high natural disaster risk Potential actions: Implement multiple strategies, including establishing an integrated national public health agency (see above).

Existing components of the New Zealand health system and security structures could broaden their focus and expand their activities to include aspects of the GHSI. This widening must come with appropriate resourcing. Pandemic planning should consider: threats other than influenza, enhancing vaccine development and manufacturing capabilities, enhancing the biotechnology community through research funding, more rapid responses to sentinel cases, preapproved funding for emergency use, joining up the departments

across government responsible for the ‘bio’ and those responsible for the ‘security’ in biosecurity, considering what kinds of unprecedented threat might require a qualitatively different kind of response (eg, the question of an ‘ordinary pandemic’ versus a GCBR). There are economic and prudential arguments that New Zealand ought to plan for border closure under some scenarios^{10,19,20} and the border control experience with the COVID-19 pandemic needs to be reviewed in a post-pandemic national inquiry.

New Zealand should also regularly host and collaborate on simulation exercises, such as the 2017–18 all of government ‘Exercise Pomare’, because, as the GHSI emphasises, capabilities need to be exercised annually. Simulations and walk-throughs might reveal legal changes or communication channels that are needed, and might identify funding gaps. Simulation exercises need to include 21st Century health security risks such as deliberate biological events.

Additionally, New Zealand’s epidemiological and public health workforce needs surge capacity so that it can manage peaks in demand, and also work on preparation, prevention and enhancing infrastructure at other times. Prior to establishing a New Zealand field epidemiology training programme, New Zealand health workers could be sent to an established field epidemiology programme in Australia or another international location. It would also be important to review the needs for other public health workforce groups that are critical for an effective response, including health protection, health promotion, public health nursing, specialist microbiology, toxicology, public health informatics, emergency management and logistics, and perhaps a volunteer workforce of recovered (infected but now well) and retired individuals.

Given that Australia substantially outperforms New Zealand on the GHSI (scoring 75.5/100), there are likely to be many fruitful opportunities to share knowledge and processes across the Tasman. For example, the discrepancy in biosecurity scores may be partially attributable to the fact that Australia maintains a register of all facilities which handle dangerous pathogens^{21,22} and requires background checks on all persons who have access to sensitive biological materials, including pathogens with pandemic potential.²³ For real-time surveillance improvements, New Zealand could examine the reporting structure of the National Notifiable Diseases Surveillance System (NNDSS) and Communicable Diseases Network Australia (CDNA) and integrate relevant aspects. Similarly, New Zealand could consider an Australasian Inter-Service Incident Management System (AIIMS) equivalent, to ensure standard operating procedures and regular exercises between public health and security authorities, including for deliberate biological events.

GHSI and regional health security in the South Pacific

Turning from New Zealand’s GHSI score to the scores of our neighbours, we note that Pacific Island nations systematically score much lower (Table 2).

Table 2: Global health security index (GHSI) scores of selected Pacific Nations and rank out of 195 countries.

Rank	Sovereign South Pacific nation	GHSI Score
4	Australia	75.5
35	New Zealand	54.0
(85–86)	Global average	40.2
155	Papua New Guinea	27.8
162	Samoa	26.4
165	Vanuatu	26.1
168	Fiji	25.7
171	Tonga	25.1
181	Tuvalu	21.6
182	Nauru	20.8
183	Solomon Islands	20.7
184	Niue*	20.5
185	Cook Islands*	20.4
189	Kiribati	19.2

*Jurisdictions with constitutional links to New Zealand, ie, their citizens are also New Zealand citizens.

The pattern of scoring for sovereign island nations in the Pacific is remarkably consistent with scores ranging from 18–28/100. There is a common pattern. Taking the Cook Islands as a representative example, key gaps in the scores include insufficient evidence of:

- laws requiring a prescription for antibiotic use (animal or human)
- a department/agency, laws or plans for surveillance of zoonotic disease
- significant biosecurity or biosafety measures
- an appropriate epidemiology workforce
- emergency preparedness and response planning
- exercising of response plans

- emergency response operation
- linking of public health and security authorities
- risk communication
- medical countermeasures and personnel deployment
- communications with healthcare workers during a public health emergency
- infection control practices and availability of equipment (which in practice means monitoring healthcare associated infections, and having a plan to address routine and public health emergency PPE supply issues)
- a Joint External Evaluation and Performance of Veterinary Services (PVS) assessment
- financing secured to address gap analysis resulting from JEE/PVS

But GHSI scores may have a glass ceiling

There is a question as to whether low-income nations, especially those with a small population, could ever achieve a full GHSI score (100/100) given the comprehensive nature of the metric. Such a 'glass ceiling' could arise simply because of the lack of resources or expertise available to ensure such things as personnel checks when transporting hazardous materials, or capacity to exercise response plans, or assess dual-use science (if it even takes place in some nations). However, it is also possible that deliberate events could exploit these vulnerabilities.

The authors of the GHSI have made publicly available an interactive spreadsheet where the user can explore various insights and analytics. Although the GHSI authors find a moderate correlation between GDP per capita and overall score ($r=0.45$), the GHSI of the very low-income nations range from GHSI less than 15 to greater than 50. There is obviously more determining GHSI than just finance. There is also little correlation between population size and GHSI ($r=0.15$). It is possible that Global Health Security Agenda aid has played a role here, but this hypothesis would need to be explored further. Nevertheless, there may be a case for a modified GHSI system to be developed for small or low-income jurisdictions in

the future. A realistic regional benchmark could be developed, with input from New Zealand, so that Pacific Island nations can address their GHSI scores within the context of local resources and capabilities. Regional collaborating organisations might also be a viable way for small states to achieve some of the more specialised capabilities (eg, South Pacific Community).

New Zealand's responsibility to the Pacific

New Zealand has special constitutional commitments to three Pacific jurisdictions, two of which were scored in the GHSI (Cook Islands and Niue). Tokelau is likely to exhibit the same gaps in its health security measures as these other Pacific jurisdictions.

A number of other Pacific nations are the origin of large volumes of travel to and from New Zealand. Ensuring health security in places such as Samoa and Fiji would help to strengthen regional health security. Given that infectious diseases do not respect international borders, the New Zealand Government perspective of enlightened self-interest might lead to resources being allocated to help such nations improve their GHSI scores.

The US made a commitment to assist at least 30 countries over five years to achieve the targets of the Global Health Security Agenda (GHSA) by investing more than \$1 billion in resources (7). In each of these countries, the host governments partnered with the US to establish a five-year country roadmap to achieve and sustain each of the targets of the GHSA. New Zealand is not a GHSA contributor but could become one and could emulate this approach in the wider South Pacific, potentially in partnership with resourcing provided by Australia's \$240 million investment (2017–22) in the Indo-Pacific Centre for Health Security. Such a strategy should additionally see Pacific nations empowered to draft their own comprehensive preparedness plans to guide their health security responses during events such as the COVID-19 pandemic.

According to New Zealand's Ministry of Foreign Affairs and Trade (MFAT), the purpose of the country's overseas development assistance (ODA) is to 'develop shared prosperity and stability in the Pacific and beyond'.²⁴ However, although the dollar

value of this ODA has increased since 2011, the ratio between ODA and Gross National Income (GNI) has fallen from 0.52% in 1975 to 0.28% in 2011 and to 0.23% in 2017. This level is in contrast to the UN target of 0.7% of GNI for ODA.²⁵ New Zealand is clearly not donating enough in development assistance, and the GHSI as well as recent measles and COVID-19 health threats now identify a clear target for aid that would benefit everyone.

Without appropriate external assistance, nations such as Samoa are at risk of being afflicted by repeats of the measles epidemic of 2019–2020, for which MFAT has apologised in 2019 (for cases from New Zealand), and the devastation of the 1918–19 influenza pandemic, for which New Zealand Prime Minister Helen Clark apologised.

The Ebola pandemic in West Africa threatened political stability in the affected regions. Pacific regional stability could be similarly threatened. Calculators such as the IHR costing tool can be used to estimate the cost of sustainable capacity development to prevent, detect, and respond to public health threats, as defined by the IHR. New Zealand could target aid in ways that will allow Pacific nations to comply with the IHR and at the same time improve their GHSI. If New Zealand continues to give less and less ODA while its own GNI rises, then this neglect will likely further contribute to regional inequality and poor regional health security.

The Centers for Disease Control and Prevention (CDC) has a Global Rapid Response Team to help ensure global health security. This allows expertise to be deployed as and where needed should emergencies arise.²⁶ New Zealand could set up a similar regional rapid response team to support the capability of smaller nations to respond in maximal fashion as needed. This task could be shared with Australia, potentially through the Australian ARM network.

As well as targeting aid to enhance the indicators where nations score poorly, New Zealand could offer to help implement the following:

- Five-year country-specific roadmaps (for Pacific nations, starting with those New Zealand has special constitutional relations with).

- Assisting Pacific nations to ensure their populations are vaccinated against common threats (some nations have a population of under 20,000 people, which is the equivalent of vaccinating one electorate in New Zealand).
- Establish data sharing agreements for public health surveillance data monitoring with these nations.
- Analyse cost-effectiveness and plan travel restrictions in the event of a catastrophic event. Because it is likely that small island nations are one of the few situations where border closure or extreme limitations on traveller numbers could sometimes be effective in pandemic control.²⁷
- Advance GHSA's mandate to build capacity to prevent, detect and respond to infectious diseases, and thereby contain threats at their source, through community engagement.²⁸

Looking to the future

We should all care about the GHSI. It provides an objective global measure of each country's capacity and capability to enact the IHR, thereby going beyond the more subjective and voluntary JEE. The GHSI also illustrates how the health system, and the approach to international norms and risk environment of each country, could contribute to or prevent harm in a biological catastrophe. As such, the GHSI should be treated as a measuring stick with the aim being to lift New Zealand's score from 54.0 to as near to 100/100 as practically possible. It may be that important international metrics such as the GHSI are the sort of thing that a standalone New Zealand Public Health Agency could oversee.²⁹

The GHSI should also be evaluated following the 2020 COVID-19 pandemic to assess any correlations between countries' scores and the responses they were able to effect, as well as any relationships between scores and local epidemic outcomes. This external validation will be important for the Index. It is already apparent from the response of the country with the highest score (the US), that politicisation of the

event and time critical decisions, such as around which testing kits are authorised for a particular outbreak, can risk undermining strong underlying capability. The implications of this kind of interaction should be further explored.

We recognise that there are a number of barriers to overcome in ensuring health security for New Zealand and the Pacific. We acknowledge that there are pressing immediate issues such as the threat of climate change and sea level rise; the non-communicable disease crisis; and the risk of some nations becoming failed states. But as we have illustrated above, some of the pressing issues (such as the 2019 measles epidemic) could have been prevented by undertaking the measures we suggest here. We also note the focus of New Zealand's ODA on economic and security issues. Health underpins both of these, and major insults to the health of nations can destabilise economies and democratic governments.

The risk of a GCBR means that New Zealand must maximise internal preparation by considering ways to address the gaps identified by the GHSI, but New Zealand as a high-income country also has a moral obligation to assist Pacific nations who may lack the resourcing to ensure robust preparations. Such assistance would protect both ourselves and the region. Agencies tasked with enacting recommendations like those in this viewpoint could turn to the advice published by organisations such as the Cambridge University Centre for the Study of Existential Risk for practical advice on how to incorporate concern for global catastrophe into everyday policy.³⁰ The COVID-19 pandemic needs to be seen as a warning, a dress rehearsal for a future GCBR, and policy needs to be proactive, not reactive. We must realise that in future extreme cases we may not be able to merely 'scale up' existing plans.

Competing interests:

Nil.

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