



Emerging Infectious Diseases

New Zealand College of Public Health Medicine Policy Statement

Policy Statement

The New Zealand College of Public Health Medicine (NZCPHM) recognises the likelihood for the global issue of emerging infectious diseases (EIDs) to severely affect the health of New Zealanders and the peoples of the Pacific.

Historically Aotearoa New Zealand has suffered substantially from pandemics, such as the pandemics of influenza in 1918 and COVID-19 more recently. Colonialist policies established from the arrival of Pākehā settlers through to the present day have caused societal conditions that promote the spread of infectious disease in Māori and Pacific communities to a greater degree than among Pākehā. This inequity endangers all of society and limits the state's capability to effectively control outbreaks of emerging and re-emerging pathogens.

The risks of EIDs and pandemics persist. Aotearoa New Zealand is an island nation with experience in effective border and social strategies for eliminating EIDs and preventing their re-introduction. As such, Aotearoa New Zealand is relatively well-placed to protect itself or to at least use strategies to buy as much time as possible to prepare a response such as by developing vaccines and therapies.

In large part, the NZCPHM supports the policies taken by the New Zealand government in response to the COVID-19 pandemic. The NZCPHM welcomes the Royal Commission of Inquiry into COVID-19 Lessons Learned.

However, Aotearoa New Zealand was poorly prepared for this pandemic. It might have mitigated the health, economic and social effects of COVID-19 even more effectively had adequate resourcing been dedicated to preparedness before the outbreak.

The NZCPHM supports the Public Health Agency's current work programme on pandemic preparedness. It further calls for the establishment of a permanent pandemic preparedness and response function within the New Zealand government, with a remit across both human and animal health in Aotearoa New Zealand and the wider Pacific region, and with protected funding and legislated obligations that avoid the typical panic–neglect cycle.^{1,2}

The objective of a government pandemic preparedness and response function would be to ensure a rigorous and coordinated approach to EIDs. The approach would involve an all-of-government response, as well as clinical and public health services, veterinary health services, researchers, businesses and communities.

The NZCPHM also supports the Independent Panel for Pandemic Preparedness and Response's main report, *COVID-19: Make It the Last Pandemic*.⁶

Key messages

- Emerging infectious diseases pose a serious threat to the wellbeing of people in Aotearoa New Zealand and globally.
- Aotearoa New Zealand's initial response to COVID-19 was largely successful. Lessons learned during this pandemic should be widely applied and embedded in preparation for future EIDs.
- Aotearoa New Zealand needs a dedicated government-led pandemic planning, preparedness and response function, with sustained resourcing and a broad, cross-sector scope embedding te Tiriti o Waitangi principles and practice.

The context of public health and NZCPHM policy statements

Public health is the art and science of preventing disease, prolonging life and promoting health through the organised efforts of society.⁷

Public health has historically been the biggest driver of improved health for people.⁸ Advances in public health in the last 100 years, such as vaccination, control of infectious diseases through clean water and improved sanitation, and the recognition of tobacco use as a health hazard, have led to improvements in health and wellbeing, and a substantial increase in life expectancy.⁹

The NZCPHM represents the medical speciality of public health medicine in Aotearoa New Zealand. Public health medicine is defined as the branch of medicine concerned with the epidemiological analysis of the health and health care of populations and population groups. It involves assessing population health and health care needs, developing policy and strategy, undertaking health promotion activities, controlling and preventing disease, and organising services. Public health medicine specialists use the tools of epidemiology and other frameworks such as health-promoting environments, Health in All Policies, Te Pae Mahutonga, Te Whare Tapa Whā and the Ottawa Charter to inform partnerships and structure public services to support thriving communities. These approaches are grounded in the societal,ⁱ economic and environmental determinants of health.¹⁰⁻²²

Doctors and other health professionals in general have a responsibility to act as advocates for health for everyone in society.²⁰ Public health medicine specialists have a particular focus on preventing disease and supporting good health, achieving health equity across ethnic, socioeconomic, age, ability, gender, sexual identity and cultural groups, and promoting environments in which everyone can be healthy.²¹

ⁱ Societal determinants of health include commercial, political, governance, economic, cultural and even religious determinants. Together these societal structures help create the conditions for health and disease. Each of them eventually impacts on a person's health in a positive or negative way.

In Aotearoa New Zealand, health professionals have a specific responsibility to act in ways that achieve the best health outcomes for Māori. Māori are signatories, along with the Crown, to te Tiriti o Waitangi (te Tiriti). For this reason, the NZCPHM advocates for and supports evidence-informed,²² equity-enhancing²³ policy on EIDs for health and wellbeing that accords with te Tiriti and the United Nations Sustainable Development Goals.¹¹

Further information is available on the [NZCPHM website](#).

Background

Emerging infectious diseases are “infections that have newly appeared in a population or have existed but are rapidly increasing in incidence or geographic range”.²⁴ The term describes the dynamic, often rapid changes in the pattern, distribution and key characteristics of infectious diseases affecting humans and domestic and wild animals.²⁵⁻²⁶ Such situations include:

- entirely new infectious diseases occurring in humans, which often arise from domestic or wild animals, via zoonotic infections²⁷ (e.g. COVID-19, avian influenza, Nipah virus spread by fruit bats);
- the spread of infectious diseases internationally or into new areas where they have not been present previously, causing large epidemics (e.g. Zika virus in South America 2015–2016)
- changes in the infectiousness or seriousness of existing infectious diseases (e.g. cholera pandemics, Tuberculosis in the Pacific);
- changes in the pattern of infectious diseases as a result of changes in agriculture, food processing or related factors (e.g. the emergence of verotoxigenic *E. coli*);
- re-emergence of diseases previously under control (e.g. polio in Afghanistan); and
- the spread of disease vectors such as mosquitoes because of land-use or climate change, international travel or over-use of insecticides.

The emergence and spread of resistance to antimicrobials is a closely related issue and of growing international and national concern.

Preventing EIDs globally

A number of important underlying factors contribute to EIDs. These include:

- land-use changes, occurring with the expansion of human habitation and agriculture, and clearance of forests, which bring humans, animals, vectors (such as mosquitoes) and micro-organisms into new patterns of contact;
- agricultural and food industry practices and changes;
- international travel, economics and commerce, which make the spread of EIDs and their vectors faster and wider;
- war, conflict and complex disasters;
- climate and ecological change, which affects distribution of animal vectors as well as human settlement and migration patterns;
- human demography, migration and behaviour;
- inadequacy of health services and public health control measures, which can allow EIDs to spread widely and quickly (e.g. Ebola in West Africa);

- changes in ecology and biology resulting from human activity, which apply biological selection pressures that favour the emergence of new or changed pathogens (e.g. the inappropriate use of insecticides favours emergence of resistant insects);
- antimicrobial over-use and misuse in humans and domestic animals; and
- technological advancement and increasing accessibility of tools to modify or create biological hazards.

The emergence of new infectious diseases (e.g. SARS) and the re-emergence of others (e.g. Ebola) are some of the more recent threats facing the global health sector. More established threats include influenza pandemics, which usually occur several times each century. The 1918 influenza pandemic caused over 8,000 deaths in Aotearoa New Zealand.²⁸

With developments in synthetic biology, a further concern is that new pandemic agents will be developed (possibly as biological weapons – some of which could reach Aotearoa New Zealand).^{29,30} Such diseases can potentially impact on Aotearoa New Zealand directly (by harming health) and/or indirectly (potentially from disruptions to tourism and food exports).

Mitigating EIDs globally

Responses to EIDs need to be grounded in a broad understanding of the epidemiology, microbiology, ecology, and human and animal health factors affecting infectious disease patterns. Economic, social, ethical and political factors need to be considered. Limits to understanding also need to be acknowledged and addressed through research. Planning, coordination and response need to occur at all phases of the time continuum, from the emerging infective diseases phase, to the pre-pandemic phase, to the pandemic control phase. Global equity in access to equipment, technology and pharmaceuticals (anti-viral and vaccines) is essential to reduce both transmission and mutation of viruses.

Globally the role of public health needs to be strengthened. There has been a failure of global health response mechanisms to support services to respond quickly with appropriate public health measures. Including primary prevention (e.g. vaccines) and appropriate management and treatment (e.g. adequate ventilation and sanitation and appropriate therapeutic medications). Adequate resourcing is required if health services are to be able to manage the spread of infectious diseases effectively and reduce health inequities.

Aotearoa New Zealand's approach to EIDs needs to be based on the following actions.

- Take a broad approach to thinking about both preventing and controlling emerging infectious disease threats, using frameworks such as the Global Health Security Agenda. Under this framework, health security requires both collective health security from measures such as the International Health Regulations, and individual health security through access to safe health services, products and technologies.
- Cross-sector collaboration. For example, the One Health initiative (from the World Health Organization and the World Organisation for Animal Health) recognises the important links between animal and human health and the environment. One Health aims to bring together medical, veterinary and environmental sciences, economics, community agencies, farmers, health professionals and government agencies to understand the factors affecting EIDs and means of prevention and response.

- Undertake surveillance of infectious diseases in animals and humans, vectors, and conditions that could affect disease transmission and development. The aim of this work is to detect changes in the pattern of disease early enough to implement action.
- Prepare for dealing with EIDs, including through training and planning, both in Aotearoa New Zealand and in the Asia-Pacific region. For example, Massey University's Veterinary and Public Health schools have developed a World Bank–sponsored Master of Veterinary Medicine / Master of Public Health (MVM/MPH) programme for Asian countries focusing on One Health and EIDs.
- Respond promptly when EID situations develop.
- Support research into EID prevention, detection and control.

Aotearoa New Zealand needs to provide assistance rapidly to other countries to help when major emerging threats occur, for example, the emergence of Ebola in West Africa in 2014. It is better to stop such diseases with pandemic potential at source rather than to have to address a global pandemic.

With rapid advances in synthetic biology and persisting conflicts around the world, biological weapons remain a concern. Further international diplomatic efforts are needed to upgrade international treaties relating to the control of such weapons (e.g. by strengthening the Biological Weapons Convention³¹).

Mitigating EIDs in Aotearoa New Zealand

Colonialist policies have historically, and continue to, spread infectious diseases among Māori and Pacific peoples at higher rates than among Pākehā. This harm has been significant as Māori and Pacific populations have experienced high mortality rates.

Partnership with Māori in the governance of EID response is a necessity for fulfilling te Tiriti. The Waitangi Tribunal found numerous breaches of te Tiriti associated with the government's COVID-19 response, in large part stemming from a failure to establish effective partnership and a failure to consider the effects of policies on Māori. Improved ethnicity data collection and analysis is also a key requirement for an EID response that complies with te Tiriti.³² To ensure effective partnership with Māori, the government should undertake a co-governance process to refresh and broaden the scope of the New Zealand Influenza Pandemic Plan.

In all planning and response activities, consideration should also be given to other priority groups with the potential to experience disproportionate harm (either from disease or from control measures). These groups include Pacific peoples, children, elderly people, people living with disability, people experiencing housing instability, immunosuppressed people, pregnant people and health care workers.

The public health management of pandemics is largely directed by the provisions of the Health (Protection) Amendment Act 2016.³³ However, such measures should also align with ethical principles; for example, they should be proportional, voluntary where possible (except where treatment is backed by court orders) and time limited, and should have appropriate standards of confidentiality.^{34,35}

Planning should consider extraordinary measures to respond to extreme threats, such as temporarily closing New Zealand borders, instituting border quarantine procedures and facilities, and restricting travel between internal borders (e.g. between the North and South Islands and offshore islands). Clear

information about the anticipated benefits and trade-offs of such policies should be researched in advance and provided to decision-makers. Plans should also cover major disruptions to health care, civil defence and emergency services and critical infrastructure (e.g. drinking water, public transportation) due to widespread sickness and/or changes in population behaviour to avoid exposure. Aotearoa New Zealand needs to be prepared to deal with all of these challenges, and to do so in ways that are equitable, in accordance with te Tiriti, and have as many co-benefits (or as few negative consequences) for health as possible.³⁶

The application of non-pharmaceutical interventions (NPIs), such as mask-wearing, stay-at-home orders and contact tracing, should be evidence-based (acknowledging a certain degree of uncertainty) and as targeted and minimally restrictive as possible to achieve the desired outcomes. Public health should have strong oversight of these measures and significant input in advice provided to government.³⁷ A flexible framework for the appropriate application of NPIs to risk levels should be developed, accompanied by a clear communication strategy to help meet the public's need for information. This communication strategy should be co-designed with the community as part of a strategy designed to build trust and social cohesion in a crisis.

Planning also needs to recognise and act on evidence that well-functioning health services may cost-effectively save lives during a pandemic, as was reportedly seen in Aotearoa New Zealand in 2009.³⁸ This means that early in the pandemic response phase, it may be necessary to rapidly shift resources away from elective procedures, such as by phasing down elective surgery in hospitals.³⁹

A continuous improvement approach can be used to apply lessons learned in previous pandemics and epidemics. Just as cholera outbreaks led to the advent of improved sanitation measures, research on effective ways of mitigating the spread of airborne diseases such as measles and COVID-19 should be incorporated into preparedness and mitigation planning. This could be achieved, for example, through normalising mask-wearing and implementing measures to improve air quality, particularly in vulnerable and society-critical settings such as aged residential care facilities, schools and workplaces. Building design and regulation, particularly for public facilities, should aim to incorporate science on filtration and air exchanges to prevent or mitigate transmission of airborne and droplet-spread pathogens indoors. Changes to the Building Code are a potential avenue to achieve this, as is guidance around operational building systems and practices. These measures would have co-benefits by mitigating transmission of established and endemic diseases as well.

Recommendations

Implications and recommendations for central government

- Central government agencies, including the Ministry of Health, Ministry for Primary Industries (MPI), Ministry for the Environment, Ministry of Education, Ministry of Business, Innovation and Employment and the Department of Conservation, need to maintain high awareness of EIDs and biosecurity issues. They should also actively enhance connections between themselves and relevant international organisations.
- Central government needs to adequately fund the preparation for, surveillance of and response to EID and biosecurity threats, which includes funding the capacity and capability for rapid expansion in response to EID situations.
- The New Zealand Influenza Pandemic Plan should be urgently refreshed, in partnership with Māori and Pacific communities, to incorporate the lessons learned in the COVID-19 pandemic. Trust in government policies has been eroded and it is only through developing relationships with leaders and communities that the relationships can be restored.

- Pandemic response capacity needs to be regularly rehearsed and tested through national response exercises, addressing any identified deficiencies.
- The organisational arrangements, responsibilities, capacity and resourcing of key national agencies involved in EID surveillance and response should be periodically assessed for adequacy and improvement. This includes assessing the Ministry of Health, MPI and their associated national laboratories and investigational resources, notably the Institute for Environmental Science and Research (ESR) and the Animal Health Laboratory (AHL) at Wallaceville.
- National pandemic planning should include guidance on measures in response to extreme threats, such as national border closure and border quarantine in the face of a severe pandemic threat, including legal and ethical considerations related to such measures.
- Appropriate public health measures that reduce the vulnerability of populations to infectious threats (e.g. addressing the obesogenic environment, providing high-quality and culturally appropriate housing, reducing poverty) should be employed to mitigate severe disease.
- Assistance with major emerging threats should be provided rapidly to other countries.
- International diplomatic efforts should be enhanced to upgrade international treaties relating to the control of biological weapons.
- An appropriate border quarantine capacity should be maintained, based in facilities designed to contain transmission of disease through all major routes (airborne, droplet, bodily fluids, insect vectors and faecal/urinary).

Implications and recommendations for public health services

- Public health services need to include EIDs in their emergency planning, surveillance programmes and training, and in their linkages with primary and secondary clinical services and laboratory services.
- Public health services should maintain links and shared planning with other government functions involved in EID response, such as welfare, police, civil defence and local authorities.

Implications and recommendations for human health clinical services

- Health services need to actively plan for EIDs, including by maintaining stockpiles of high-grade personal protective equipment, budgeting for surge staffing, and upgrading laboratory facilities to enable high-throughput diagnostic services, including rapid genomics capacity.
- Health services should be strengthened by ensuring adequate staffing to absorb system shocks of increased demand and workforce becoming unwell.
- Infection prevention control training and capacity building alongside occupation health services need to be prioritised.
- Antimicrobial stewardship needs to be an important part of clinical practice and training, alongside other antimicrobial resistance strategies.

Implications and recommendations for the agriculture sector

- Awareness, surveillance and action on EIDs need to happen in the animal health sector, including animal health services, MPI operations, laboratory services, agricultural education and technical support services.
- Non-therapeutic use of antimicrobials must be curtailed.

Implications and recommendations for research and training organisations

- The Health Research Council, Ministry of Health, Ministry of Business, Innovation and Employment, and other research and training funding agencies should consider including EIDs explicitly in their funding priorities, and promote research and training opportunities related to EIDs.
- Aotearoa New Zealand's responses to pandemics and 'near misses' need to be rigorously evaluated and reported in the scientific literature, so that lessons learned can be acted on and revisited during future events.
- Universities, technical institutes and professional organisations such as medical colleges need to incorporate EID-related topics into training and research.

Links with other NZCPHM policies

Antimicrobial Resistance
Immunisation
Health Equity
Housing
Climate Change

Acknowledgement

This policy statement was developed by the NZCPHM Policy Committee, NZCPHM members and staff. Authorship or review is recorded in the list of policy statement main authors on the College's Policy Statements webpage at <https://nzcphm.org.nz/Policy-Statements/10944/>.

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