



The climate change challenge for general practice in New Zealand

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Abstract

Climate change is one of the greatest public health challenges of our time. Despite some inherent uncertainties in making predictions about climate change, there is wide scientific consensus that global warming is occurring; that it is largely due to manmade greenhouse gas emissions; and that it will have substantial health implications for the future.

The predicted health impacts of climate change are now clearer for New Zealand, and general practitioners can take action to mitigate these impacts and adapt to the future environment.

Actions required involve a combination of 'top-down' and 'ground-up' approaches; effective leadership and policy from our health institutions and, importantly, individual practice initiatives that transform these goals into practical outcomes.

Climate change—the science

There is wide consensus amongst leading scientific bodies around the world that climate change is occurring and that it is very likely the result of human activity contributing to an enhanced greenhouse effect.¹⁻⁴

Anthropogenic (manmade) influences on the natural carbon cycle include increased greenhouse gas emissions, release of sequestered fossil carbon, and deforestation. The evidence has been well described in leading scientific and medical journals internationally,⁵⁻⁸ and the conclusions of the Intergovernmental Panel on Climate Change (IPCC)⁹ remain robust despite a small number of errors that have now been acknowledged to exist in the 2007 report (for example the melting rate of Himalayan glaciers).¹⁰

There is now more carbon dioxide (CO₂) in the atmosphere than at any time during human civilisation¹¹ and we know that this increased CO₂ has been unlocked from fossil fuels¹² as a result of human industry since the 19th Century. We know that the planet's average global temperature is climbing,¹³ that sea levels are rising,¹⁴ and that overall, glaciers are retreating.^{15,16}

Given the high likelihood that climate change is going to cause major global health problems for the future, it is prudent for the medical profession to comprehensively engage with this issue. General practitioners (GPs) are well placed to promote both mitigation and adaptation strategies and incorporate environmentally friendly practice into New Zealand primary health care.

Environmental and health impacts

Consistent with global climate trends, temperature data from around New Zealand shows a warming of 0.7–1.0°C over the 20th Century,¹⁷ and this trend has continued over the decade 2000–2010.¹⁸ Other changes include more rain in the southwest, less rain in the northeast,¹⁹ and an annual sea level rise of 1.6 mm.²⁰ There has been reduced frost frequency, retreat of Southland/Fiordland glaciers and a reduction in alpine snow mass.²¹

Relative to 1990, projected temperature increases for New Zealand range between 0.2–2.0°C by 2040, and 0.7–5.1°C by 2090 with best estimates 0.9°C and 2.1°C respectively.²¹ These projections have been derived from an aggregate of global climate models and the best estimates have been assigned a moderate degree of confidence by scientists at the National Institute of Water and Atmospheric Research (NIWA).²¹

NIWA scientists are very confident that New Zealand will continue to experience rising sea levels (0.18–0.59m by 2090),²² increasing the risk of coastal erosion and saltwater intrusion.²³ More frequent extreme weather events such as droughts, storms and floods are anticipated,⁵ and hotter summers are likely to bring increased risk of heat stress, fires and infectious diseases.¹⁴

The most vulnerable areas for New Zealand are natural ecosystems, water security and coastal communities. By 2050, agriculture, horticulture and forestry are likely to be reduced over eastern New Zealand due to increased droughts and fire risk.¹⁴ Any initial benefits of a warmer climate to New Zealand are expected to be lost by 2030 with the most vulnerable areas likely to be Northland to Bay of Plenty (sea level rise and storms), eastern lowland regions (water security and droughts), and alpine zones (flooding, erosion and landslides).²⁴

Table 1 provides a summary of the likely health impacts climate change will bring to New Zealand.

Mitigation

Despite some uncertainty about the precise rate and extent of climate change, the potential health risks are very severe (see Table 1) and the precautionary principle dictates that we should act now to mitigate those risks.

International collective action to limit climate change through reduced greenhouse gas emissions is not yet a reality and although it is required to achieve real global benefits, action at a local level is also critical.

Local measures are essential in gaining momentum for national (and international) changes in policy. In addition, many of the strategies designed to reduce greenhouse gas emissions have considerable health co-benefits, and these benefits alone should be enough to gain support within general practice for a groundswell of action. For example, the shift from car use to more active forms of transport and public transport leads to increased physical activity (reducing obesity, cardiovascular disease, cancer and depression), safer roads and reduced air pollution.²⁹ Affordable, accessible and environmentally cleaner forms of public transport will be necessary for this to be successful.

Table 1. Summary of potential health impacts in New Zealand from climate change

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| <p>Physical injury</p> <ul style="list-style-type: none"> • Death and injury from extreme weather events—flash floods (drowning), landslides, fires and potentially more severe storms. |
| <p>Heat waves</p> <ul style="list-style-type: none"> • Increases in heat-related deaths and morbidity (hyperthermia, dehydration, respiratory illnesses, increased cardiac deaths etc) particularly in the elderly, although winter-related deaths may decline due to better home insulation and warmer temperatures. |
| <p>Infectious diseases</p> <ul style="list-style-type: none"> • Rates of infectious diseases such as gastroenteritis will rise due to both warmer temperatures (campylobacter, salmonella) and threats to water security (cryptosporidium) such as failure of drainage/sewerage systems from frequent flooding, erosion etc. |
| <p>Skin cancer</p> <ul style="list-style-type: none"> • Rates of skin cancer are expected to continue to rise with warmer temperatures promoting increased outdoor sun exposure and climate change may contribute to a delayed recovery of the ozone hole.²⁵ |
| <p>Mental health</p> <ul style="list-style-type: none"> • Increased rates of depression²⁶ related to loss of livelihood (e.g. farmers with drought, lost crops, flood damage, enforced reattribution of land usage). • Post-traumatic stress disorder seen in victims of environmental disasters (loss of homes, communities, loved ones). • Psychological impacts on young people who may suffer anxieties about potential catastrophic climate change not unlike those experienced by children growing up amidst the fear of nuclear war.²⁷ |
| <p>Water security</p> <ul style="list-style-type: none"> • Salt water intrusion in low lying coastal areas from rising sea levels and storm surges. • Regional droughts and shortages. • Contamination of drinking water from storms and flash flooding. |
| <p>Food security</p> <ul style="list-style-type: none"> • Warmer temperatures are likely to bring an increased range and incidence of pests and diseases to both animal stock and crops. • Overall food security in New Zealand is not considered to be at high risk due to our large capacity for production and comparatively low population.¹⁴ However New Zealand food prices tend to rise in tandem with global prices, and this could impact on those from lower socioeconomic groups leading to poorer nutrition and associated health problems. |
| <p>Vector-borne disease</p> <ul style="list-style-type: none"> • Parts of the North Island are likely to become environmentally suitable for the major dengue vector in the latter part of this century.²⁸ Australian mosquito-borne arboviruses, such as Ross River Fever, also pose a potential threat. Adaptation measures to prevent the accidental introduction and proliferation of new mosquito vectors will be vital to ensure that these diseases do not become established in New Zealand. |
| <p>Environmental refugees</p> <ul style="list-style-type: none"> • Low-lying atolls such as Tuvalu and Kiribati are at greatest initial risk, but all Pacific Islands have high vulnerability and low adaptation capacity to rising sea levels, more frequent severe storm surges and other impacts of climate change on their health and economy. • It is likely that environmental refugees from the Pacific will migrate to New Zealand, but there may also be high numbers of refugees from other regions. Migrant primary health care will require increasing resources. |
| <p>At-risk groups</p> <ul style="list-style-type: none"> • The elderly and the poor will have increased vulnerability to both the direct and indirect effects of climate change on health. With an ageing population this will become even more pronounced. • Māori and Pacific Island New Zealanders are particularly vulnerable to early impacts of climate change due to their lower average socioeconomic status, and poorer health outcomes. Māori also have high economic investment in areas that are particularly susceptible to climate change including fisheries, agriculture, forestry and tourism. |

Insulated homes are not only more energy efficient and warmer, but in addition occupants of insulated households have been shown to suffer from less respiratory illness.³⁰ Insulation therefore provides improved health equity for lower socioeconomic groups.³¹

Reduced population intake of red meat can reduce the greenhouse gas emissions from intensive farming and at the same time lead to improved rates of cardiovascular disease and bowel cancer.³²

Measures to reduce carbon emissions can also lead to better business outcomes with improved supply chain efficiency, energy management, and waste minimisation all leading to reduced expenses and improved business profit.

Greening your practice

Individual general practices can make low-carbon sustainable changes in the day-to-day running of their business that are cost-saving or cost-neutral from a financial viewpoint and have the potential to provide enormous environmental returns.³³ Triple-bottom-line reporting is now commonplace in business: accounting for the social, ecological as well as financial performance of an organisation.

General practice has traditionally focussed on social and financial outcomes. We now need to introduce environmental sustainability as an integral component of our business planning.

Some suggestions for reducing the carbon footprint of your medical centre are included in Table 2. Please note that these sustainable business practices are not unique to general practice and can be implemented across the wider healthcare industry.³⁴

Table 2. Tips for greening your general practice

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| <p>Energy use</p> <ul style="list-style-type: none"> • Choose an electricity supplier that has sustainable generation sources (hydro/wind) • Use low-energy lighting and switch off when not required • Turn off computers, photocopiers and other appliances at the end of the day • Choose efficient appliances (e.g. fridges) • Ensure efficient practice heating and air conditioning • Insulate your premises |
| <p>Supply chain sustainability</p> <ul style="list-style-type: none"> • Source supplies from local suppliers, minimise packaging and use recycled materials where available • Streamline orders to reduce frequency of deliveries • Encourage suppliers to use a packaging exchange system (e.g. polystyrene bins) |
| <p>Waste minimisation</p> <ul style="list-style-type: none"> • Minimise medication wastage by prudent prescribing, especially when initiating a new medication • Computerise your notes, use electronic referrals, print double-sided where possible • Discontinue unnecessary incoming mail e.g. paper duplication of results, unwanted junk mail, pharmaceutical advertising • Encourage staff to minimise wastage of single-use items such as swabs, dressings etc and return to sterilising/cleaning reusable equipment where possible • Fit aerators to taps, fix leaks, use dual-flush toilets |

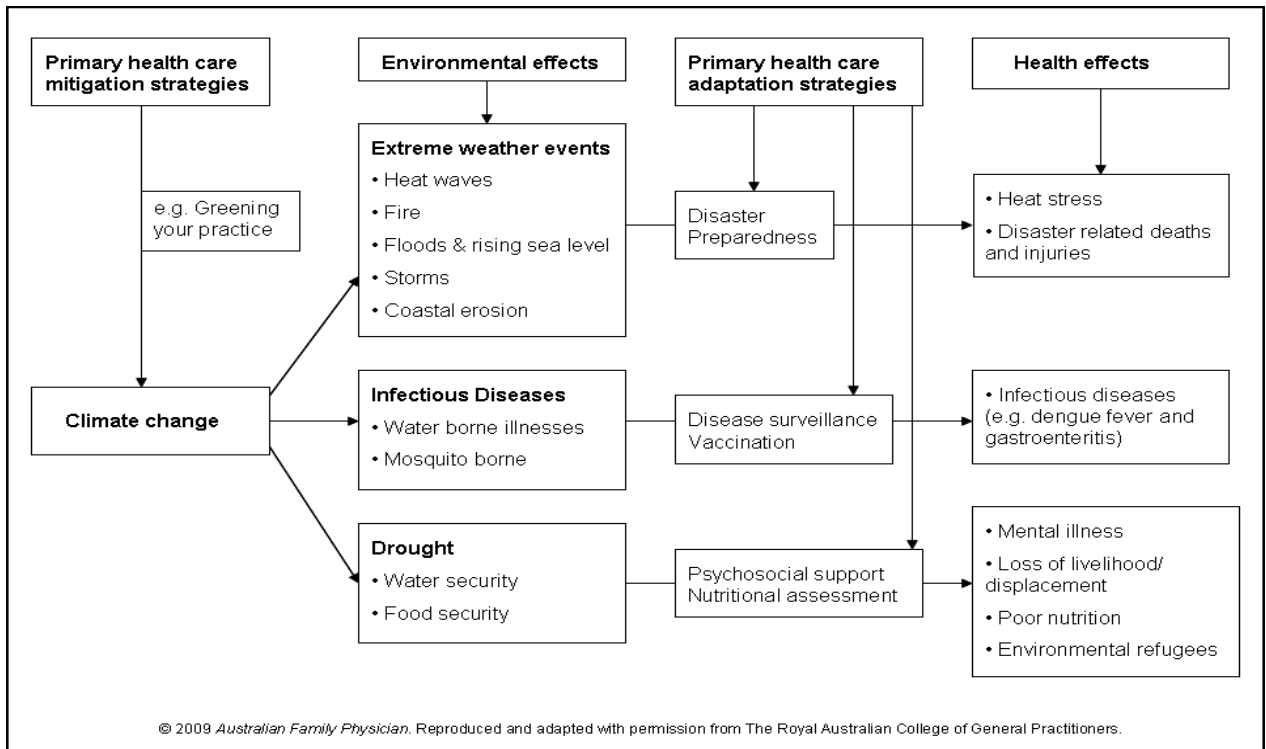
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| <p>Recycle and reuse</p> <ul style="list-style-type: none"> • Pick up by council service/local recycler • Buy recycled office supplies, printing paper, toilet paper, hand towels etc |
| <p>Promote green and healthy lifestyles to staff and patients</p> <ul style="list-style-type: none"> • Encourage walking/cycling/public transport • Consider car pooling • Assist eligible patients to gain subsidised home insulation |
| <p>Other ideas</p> <ul style="list-style-type: none"> • Compost food scraps (e.g. Bokashi bench-top composter) • Offset the carbon emissions you cannot avoid (e.g. plant more shrubs/trees around your practice) • Make ethical business investments (investments that consider both the profit potential and the impact on society and the environment) |

Adaptation strategies

Adaptation is about identifying and reducing vulnerabilities to climate change. Due to the backlog of existing emissions, even if the world eliminated all greenhouse gas emissions today, it is estimated that there would still be an increase in global average temperatures of 0.6°C by 2100.²⁴ It is therefore imperative that we look towards adaptation strategies for primary health care in order to best be prepared for the predicted health impacts of climate change.

GPs have a role in health promotion, primary disease prevention, disaster preparedness, and building resilience at a community level (see Figure 1).

Figure 1. Climate change and primary healthcare strategies



Source: Adapted from Blashki et al.³⁵

Summary

If temperature rises of 3–4°C do occur (the upper range predicted by 2080)¹⁴ adaptation measures will not be sufficient to deal with the effects of climate change on our society's infrastructure.

It is therefore vital that climate change issues continue to be mainstreamed into health policy, planning and strategic development.

It is a combination of approaches—both 'top-down' policy leadership and 'grassroots-up' individual practice initiatives—that will protect New Zealand from devastating health consequences in the future.

Table 3. Actions general practitioners can take today

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| <ul style="list-style-type: none">• Educate yourself• The Greening Your Practice Toolkit has been developed for New Zealand GPs (and other medics) and is available in .pdf/CD format (contact: greeningyourpractice@gmail.com)• Reduce your demand on consumables and lower your personal and business carbon footprints• Join with other health professionals concerned about climate change (e.g. OraTaiao: NZ Climate & Health)• Provide public education (posters in waiting rooms)• Preventive programmes (e.g. educate on food hygiene, nutrition, improve your immunisation rates)• Remain alert to mental health impacts• Disaster preparedness (develop service continuity plans)• Request the support of professional organisations such as Independent Practice Associations (IPA), Primary Health Organisations (PHO) and District Health Boards (DHB) in policy development. |
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Useful websites:

- Ministry for the Environment <http://www.mfe.govt.nz/issues/climate/index.html>
- National Institute of Water and Atmospheric Research <http://www.niwa.co.nz>
- OraTaiao: New Zealand Climate and Health <http://www.orataiao.org.nz>
- Doctors for the Environment Australia www.dea.org.au
- Intergovernmental Panel on Climate Change www.ipcc.ch

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