Climate change and human health: recognising the really inconvenient truth

Anthony J McMichael and Colin D Butler

Climate change is weakening Earth’s life-support systems

Despite current evidence, such as the marked ecosystem changes and accelerated ice losses in the Arctic, human-driven climate change is still at an early stage; excessive greenhouse gas emissions will continue for (at least) decades, and the full realisation of their effect on climate will be drawn out over time.8 The momentum of change in the climate system is huge and protracted, especially for sea level rise. Hence, most current climate “mitigation” actions will have limited immediate effect, and further delay and attenuation of emission reduction targets by governments will invite disaster. Adverse impacts on human health can be expected to rise over coming decades — particularly in vulnerable populations in low-income and poorly resourced countries, such as Bhutan and Nepal, and in geographically exposed locations, such as river delta populations, and small island states, and south-eastern Australia.

Meanwhile, the unequivocal detection of climate-related health impacts at this early stage presents a research challenge. The health effects of climate change coincide with various non-climate-related causal factors — so, for example, an upwards trend in excess deaths during heatwaves may also be due to population ageing and a greater prevalence of underlying cardiovascular disease. Further, human vulnerability (unlike that of all other species) is typically cushioned by culture, technology, trade and aid. However, this difference in vulnerability between Homo sapiens and other living organisms is less than we might imagine. The natural environment, the biosphere, furnishes all of Nature’s processes and the products upon which our health and survival depend: food, fresh water and fibre (including timber, firewood and cotton), natural constraints on pathogens, access to natural medicines and a relatively stable climate. These things, rather than hospitals, doctors, genetic testing and dietary advice, are the true foundations of population health.

Climate risks to health are both direct and indirect. Direct risks include deaths and physical injury from extreme events, such as increasingly frequent and intense bushfires, cyclones and floods; and deaths and hospitalisations from extreme heat. Indirect risks include changes in the range and seasonality of various infectious diseases, and impaired food system productivity on both land and sea, productivity in the latter being compounded by oceanic acidification due to greater uptake of carbon dioxide. Mental and physical health problems can result from the social disruption and dislocation caused by weather extremes that are bringing drought and long-term regional drying out to parts of rural Australia. A likely increase in the flow of climate refugees, here and elsewhere, will also have consequences for health and health care systems.

Climate change will act primarily by amplifying and extending the rates and ranges of existing health problems. Hence, to minimise climate change impacts, it is crucial to reduce the high background rates of poor health in vulnerable populations. Many low-income countries are already struggling to meet the UN's
Milennium Development Goals. Their populations face great health threats from climate change, including exacerbations of infectious disease (including water-, food- and vector-borne disease); higher rates of maternal and child mortality (particularly if basic health services are disrupted by environmental stresses); and undernutrition, with impairment of children’s physical and intellectual development.

This year has seen a heightened awareness of the significance of the health risks from climate change. In May, the cover of the *Lancet* announced that “Climate change is the biggest global health threat of the 21st century” — a bold statement, but consistent with the emerging evidence. In that same month, the congress of the Royal Australasian College of Physicians devoted a full plenary session to the topic, as did the 2009 annual conference of the Health Ministers of Commonwealth countries in Geneva. In September, leaders of 18 national bodies of medicine, from low- and high-income countries, published a letter in both the *Lancet* and the *BMJ* stressing the potential for a worldwide health disaster from climate change.

Health professionals, as citizens, will have concerns in relation to climate change as communities increasingly seek an effective policy response. Meanwhile, the specific professional challenges for medical practitioners include:

- reducing the carbon footprint of clinics, clinical practice and the overall health care system;
- providing appropriate public education via the clinical setting;
- setting personal examples (eg, bicycles rather than BMWs);
- assisting research that elucidates the health risks posed by climate change; and
- contributing, via professional organisations, to public education and to policy advocacy.

We are now all participants in the world’s most important debate on the primary determinants and sustainability of population health.

Author details

Anthony J McMichael, FAFPHM, MB BS, PhD, NHMRC Australia Fellow
Colin D Butler, BMed, MSC, PhD, Associate Professor
National Centre for Epidemiology and Population Health, Australian National University, Canberra, ACT.
Correspondence: tony.mcmichael@anu.edu.au

References