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EDITORIAL

It's Time for Doctors to Speak Out on Climate Change

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There is no doubt now. Climate change is the biggest threat to human health this century (1). Initially it is the poor who are suffering most, but even wealthy nations are not escaping the consequences. The air we breathe, the water we drink, the weather we experience, and even the depth and acidity of the oceans are changing. Climate change is increasing the incidence of weather-related disasters and acting as an amplifier for many diseases. Action to reduce anthropogenic green house gases (GHG) is urgent, especially because the full effects of the present levels have yet to work their way fully through the global system. Even if we reduce GHG levels now we will still experience considerable global temperature rises, but if we fail to act then we face global climatic catastrophe. Carbon dioxide is the most important green house gas and latest figures from the Mauna Loa observatory in Hawaii (2) confirm that the global CO_2 level continues its inexorable rise.

The heat gain in the 20th century was 0.76 °C and is now accelerating. The International Panel on Climate Change (IPCC) reported in 2007 that they were unable to predict the effect of glacial and polar ice melt on the sea level rise (3). With this proviso the IPCC warned that a sea level rise of 18–59 cm could be expected by 2100 by thermal expansion of the oceans. The expected rise for 2008 had been 1.8 mm, but actual measurement showed a rise of 3.1 mm, so in March 2009 the prediction of sea level rise was revised to 28–79 cm by 2100 (4). Even this scenario seems optimistic. The observations on temperature, ice melt and sea level rise have been consistently at the high end of the predicting models. A sea-level rise of 1 m in the Bay of Bengal would put 17% of the coastal land of Bangladesh underwater, creating many millions of climate refugees (5).

According to Munich Re, the multinational insurance company, the number of great weather-related disasters increased from an average of less than two a year in 1950 to more than six in 2007 (6). Increasingly powerful storms and typhoons wreak havoc. In wealthy countries the effect is not as catastrophic initially as in poorer countries. Compare for example Hurricane Ike in September 2008 with Cyclone Nargis in the same year. The death toll from Ike was 194 dead and 43 missing, but from Cyclone Nargis the final death toll was approximately 140 000 with 2.5 million made homeless. Whilst no one storm can be specifically blamed on climate change the increasing frequency and severity of storms can be. If it is the carbon-emitting nations who have caused the problem, it is the poor who are bearing the brunt of the consequences and are suffering now. Increasingly, sudden floods and mudslides are taking a huge toll, especially in poorer areas. The loss of fresh water sources is becoming a major problem for coastal dwellers because of the salination and depletion of aquifers; and for the millions who rely on glacial melt waters as glaciers dwindle.

Previous progress in reducing global malnutrition has gone into reverse in the last year. According to the Food and Agriculture Organisation of the United Nations (FAO) in 2007 about 800 million people had calorie-deficient diets. In June the projected number exceeded 1 billion (7). Whilst the rise in food price has been partially attributed to the switch to bio-fuels in the USA and unstable oil prices, another major component has been unpredictable weather such as the drought in Australia. Continuing growth in the world's human population (1.5 million people each week) is another pressure on the global carbon footprint and food supplies.

Human beings are steadily displacing other species with our voracious appetite for limited resources. Species extinctions are running at about 1 000–10 000 times the natural background rate (8). Much of our pharmacological knowledge is derived from other animal and plant species. The rapid destruction of species-rich rainforest for cropping not only releases more carbon dioxide; it has been described as the equivalent of burning our best pharmacological library after only reading a few of the books.

There is some reduction from cold deaths in temperate countries as temperatures rise, but this is outweighed by heat wave deaths. Heat islands—

the phenomenon of localized areas of extreme heat due to the surface characteristics of the built environment in cities—tend to worsen air pollution by the addition of the dangers of ground level ozone to airborne particulate matter as experienced in haze conditions. Particulate matter and ozone are associated with increases in mortality and admissions from respiratory, cardiovascular, cerebrovascular and allergic diseases. Vector-borne and infectious diseases will alter their range. Malaria, dengue and Chikungunya are among those that will extend their frequency and range as temperatures increase. Malaysia recorded 24 543 cases of dengue in the first six months of 2009 with 62 deaths (9). It is known that Stegomyia aegypti is very sensitive to humidity, temperature and cloud cover and it is suggested that by 2080 about 6 billion people in the world will be exposed to risk of dengue compared with 3.5 billion if the climate had remained unchanged (10).

Doctors must not remain silent. The medical profession is a trusted bridge between science and humanity and so doctors have a key role in communicating the dangers of climate change and the urgency of action to both patients and politicians. There are four main areas to address: mitigation, adaptation, education and research. A first and simple act is to read and sign the pledge at http://www.climateandhealth.org/. This will give the politicians meeting at the United Nations Climate Change Conference ('COP15') in Copenhagen in December 2009 the support for the challenging decisions they face.

The medical profession should be leading mitigation at personal, corporate and community levels. The personal example involves adopting lower carbon lifestyles. Generally the medical profession is well paid and has choices that may not be available to others in eco-friendly living. Secondly doctors should help our hospitals, clinics and communities identify carbon reduction strategies. Much investment is offset by savings in energy consumption and expensive waste management. There is already a great body of shared experience from across the world available on the internet.

As climate changes threaten, we need to consider what adaptive strategies in health care will be needed. Education inside and outside the health community is urgent, and this will include the continued empowerment of women with education and access to good contraception. There is a need to engage in our faith communities whose critical role is encouraging commitment to the stewardship of God's creation for our neighbours and future generations. Finally, as ever, more research is needed. The World Health Organisation has clear priorities for research into climate change, (11) and certainly our knowledge of the health effects is still in its infancy.

It would be an irony if the medical profession contributed to a major deterioration in the health of the global community by its own carbon emissions and inactivity in the face of this global challenge.

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