

# CAN BRISTOL'S MEDICO CHIRURGICAL SOCIETY INFLUENCE CLIMATE CHANGE & ITS HEALTH CONSEQUENCES?

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## **Forecast**

Climate change forecasters of the International Panel on Climate Change (IPCC)<sup>1</sup> and from the University of East Anglia, who contribute to the draft Health Effects of Climate Change in the UK, DoH, 2007,<sup>2</sup> predict increasing annual mean temperatures from a 1961-1990 base of 0.5 – 1.38 by 2020, 0.89 – 2.44 by 2050, and 1.13 – 3.47°C by 2080. Rainfall may increase in winter and droughts extend in the summers. Precipitation may be heavy and short and leading to flooding. Wind speeds are uncertain, but may be very high in Wales and the North.

## **Effects on Health**

For citizens in the UK, and, in the short- mid term, climate change may have limited impact on our health.

Cold temperature related mortality in E&W has declined by 33% from 1971 to 2003<sup>2</sup>. People have adapted to warmer temperatures and cold related deaths are predicted to decline further from around 80,000 in 1990 to 60,000 in 2050 (Donaldson, 2001)<sup>3</sup>. At the same time heat waves, continuing temperatures of 27°C or more will become more common, especially in SE England. It is estimated that in the decade centered on 2012, there will be a 25% chance of heat waves lasting nine days or more, causing 3000 immediate deaths and another 6000 heat-related deaths, mainly in older people<sup>2</sup>.

Flooding and storm damage are likely to cause few deaths. The volume of injury caused by floods and storms is not well documented, nor damage and access to the NHS. Likewise ill-health from infections and mental stress is not well measured. The Bristol-based psychiatrist, Glin Bennett, has been one of the few to estimate mental stress caused by floods- those in Bristol in 1968 (Bennett, 1970)<sup>4</sup>. Flooding may also allow chemical and other pollutants to enter drinking water supplies.

The Pitt Review<sup>5</sup> of flood damage in 2007 estimated qualitatively some of the health problems. There was clear contamination from toilets and sewers. There was loss of drinking water supplies with bowser and bottled replacements. Vulnerable and disabled people depended on the goodwill of neighbours to carry supplies. Some arguments over water scarcity were recorded. Power loss meant that some people had increased disability

as well as no means of heating food. The Review recommends the possession of 'flood kits', which include first aid materials and antimicrobial wipes.

Sir David King, the Government's Chief Scientist, estimates<sup>6</sup> that flood risk to 2080 exceeds current flood defence policies. He estimates that by present policies 2.3 to 3.6 million people will be at risk yearly by 2080. An extra 700-900, 000 people will experience urban floods due to drains being overwhelmed. These figures could fall to less than 1.6 million and 200,000 respectively if carbon emissions could be held at no more than 550ppm.

Air pollution will be increased by climate change, especially in the summer, and the degree depends on interactions with the levels of vehicle emissions. Ozone levels from sunlight reacting with vehicle emissions are expected to rise and a 15% increase in attributable deaths and hospital admissions is predicted by 2020 for the UK<sup>2</sup>.

Malaria seems unlikely to become endemic in England and individual cases are expected to be treated speedily. Ticks, especially *Ixodes ricinus*, may become more common with those infected with the bacteria *Borrelia burgdorferi* causing Lyme's disease in bitten people. Ticks live in rough pastures frequented by deer and sheep, so that a combination of changed outdoor pursuits, agricultural practice and warmer temperatures may cause more exposure.

Increasing warmth will lead to larger populations of flies, midges, fleas, bees and wasps with mainly minor consequences to human health.

Food-poisoning pathogens, which may survive better and increase in numbers at warmer temperatures will only cause more disease if hygiene fails. Private supplies of water may become infected through contamination after flooding or drought.

The pollen season starts earlier in Spring, but the added allergic effects are uncertain. Ragweed pollen and its more severe allergies occur in mid-late summer, but this plant remains rare in the UK, at present. More UV light exposure risks higher numbers of skin malignancies, but such risk has yet to be balanced with deficiency of vitamin D, which contributes to osteoporosis and possibly other chronic diseases.

### **Responding**

Coping with the impact of climate change depends on the twin approaches of mitigation and adaptation. Current greenhouse gases in the atmosphere were released about 30 years ago and continuing raised emissions demands action now. The means of mitigation are well-rehearsed in the scientific literature and by the media – more energy efficiency, less use of fossil fuels, increased renewable energy sources. Change in behaviours to drive these requirements challenges our current addiction to over-consumption.

Interestingly, Cuba's energy crisis caused by an oil-boycott in 1989-2000 resulted in reduced per capita energy intake ( 3000cals. falling to 1800cals.), increased physical

activity ( 30% increasing to 67%), sustained population weight loss ( 1.5 reduction in BMI) and obesity falling from 14% to 7%. A follow-up study by John's Hopkin's School of Public Health (Franco M, 2007)<sup>5</sup> found, in the period 1997-2002, falls in deaths from diabetes of 51%, CHD 35%, stroke 20% and all causes of 18%. There was some increase in diagnoses of neuropathies and deaths in older people. Necessary adaptations to artificially imposed mitigation led to health benefits.

The DoH has plans to assist adaptation to heat waves. Guidance by PCTs will follow broadcast warnings of heat waves. Ventilation and temperature management at home will attempt to keep internal temperature below those outside. Water cooling to aid evaporation and increased water intake should help most people. Patients in nursing homes and hospitals will be more prone to heat stress and may need to be transported to communal cool rooms. Widespread use of air-conditioners will bring comfort only at the expense of not-mitigating more global warming.

### **The Global Impact**

To a large extent, we in the UK may not sustain major ill-health from the effects of climate change, at least for the first half of the 21<sup>st</sup> century. Our islands however do not exist in isolation. Our lifestyles and energy use make us a major polluter of the global environment, along with the rest of Europe and N America (UK emits 2.5 tonnes of carbon per person: India 0.3t per person)<sup>6</sup>. In 2000, it has been estimated that 150,000 deaths and 5.5 million Disability Adjusted LifeYears (DALYS) were lost worldwide through the effects of climate change (Campbell-Lendrum, 2003)<sup>7</sup>. In Africa and Asia, larger numbers of people are suffering ill-health through insufficient food and water, flooding, and alteration of infectious diseases related to climate change, as well as population growth. Displacement of people and death will become more common.

### **The Society's Influence**

Sir Crispin Tickell<sup>8</sup>, a retired UK diplomat, stated that major change of living of the order required by climate change comes about through leadership by institutions and individuals, public pressure and useful catastrophic events.

Through our professional lives in Bristol, we have the good fortune to be inter-connected with most countries of the world, through health sciences, research, teaching, training and service delivery.

Institutions like the Royal Colleges and BMA, in which many of members are representatives, are now promoting climate change and its health consequences into their agendas. As individuals in the NHS, the carbon footprints of our routines and facilities should be modified in more thrifty directions.

Medact ([www.medact.org](http://www.medact.org)), a national charity of doctors and health workers with a branch in Bristol, campaigns against war, poverty and environmental damage, which compromises health and health care globally. Medsin ([www.medsin.org](http://www.medsin.org)) also a national and local charity of medical students campaigns similarly.

The Society hears the best of student electives, which often illustrate aspects of the poverty of health services elsewhere. An intercalated B Sc course in International Health for medical students has been launched recently in the University of Bristol.

The proximity of severe flooding in Gloucestershire is a useful prompt to understand the disruption caused by this increasing feature of climate change.

There are many ways through which members individually can be informed and active. There is much to do!

Ian Baker

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