Climate change and public health

The warmest Chinese New Year's day on record, the most intense tropical cyclone (Saomai) to make landfall in China for over 50 years in 2006, species becoming extinct at a rate unprecedented for 65 million years, contracting snow cover—are these events unrelated or are they symptomatic of global warming?

There have always been fluctuations in weather patterns, the sceptics say. In February this year the 4th Intergovernmental Panel on Climate Change summarised findings from over 2500 scientific contributors who had sifted through the mounting evidence. Their conclusion? The rise in atmospheric CO_2 levels is real and can be attributed largely to anthropogenic emissions of greenhouse gases.

The paleoclimatic record of CO_2 concentration, determined by studies on ice core samples, revealed that the background level has varied from 180 parts per million (ppm) to 300 ppm over the past 650 000 years. It is currently 379 ppm, compared to a level of 280 ppm on the eve of industrialisation. Using different models, estimates of temperature increase range from 1.1°C to 6.4 °C by the end of this century.

The medical consequences of extreme weather events are measurable. The 2003 European heat wave produced an excess mortality of 30 000. Daily hospital admissions for diarrhoea in Peru double when the ambient temperature rises 5°C above normal, while floods in Nigeria caused an epidemic of leptospirosis.

Not only will climate change cause morbidity and mortality through heat-related illnesses or coastal flooding, it will also put pressure on a wide range of human activities, leading to water scarcity, desertification, soil salination, biodiversity loss, decreased food production; the list goes on.

Climate change is also expected to produce more complex, knock-on effects that are difficult to quantify. Communicable diseases will become more widespread. Salmonella and cholera proliferate at higher temperatures. The distribution of many tropical diseases involves vectors and reservoir species that are dependent on specific climatic conditions. For example, seasonal transmission and the geographical range of leishmaniasis and mosquito-borne diseases such as malaria, yellow fever, and dengue will increase.

What impact will mass-migrations of refugees displaced by flooding or conflict over resources have on public health systems? What will happen when epidemics strike communities already weakened by the malnutrition caused by reduced crop yields and the disruption of fisheries?

Economic growth and development has brought prosperity to many parts of the world and in China it has lifted hundreds of millions of people from extreme poverty. But it has produced a triple threat to society: climate change, environmental degradation, and depletion of fossil fuels.

It may be too late to stabilise CO_2 at 450 ppm but the Stern report does offer a glimmer of hope by offering concrete and realistic steps to combat global warming. The sense of urgency is conveyed in unequivocal language: "There is still time to avoid the worst impacts of climate change, if we take strong action now." It calls for the commitment of 1% of global GDP over the next 20 years to curbing deforestation and developing emissions trading and low-carbon technologies.

Just as we prepare for a potential avian flu pandemic, we should start thinking about ways to lessen the consequences of climate change. Limiting greenhouse gas emissions in the first place, reducing wasteful practices and energy use in clinics and hospitals is a logical first step.

Domestic households and hospitals contribute a significant proportion of overall carbon emissions. The average local resident generates over 5 tonnes of CO_2 a year.

Health care professionals have always been vocal when promoting public health: supporting anti-smoking legislation or warning of the epidemic of obesity. In the United Kingdom the National Health Service has a procurement policy that includes environmental considerations when purchasing equipment and hospitals are given financial aid to increase energy efficiency and reduce fuel consumption.

Now is the right time for the medical community to advocate change and to set an example.

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