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# Editorial

# Health effects of global warming

We are now well into a period of global warming. There is still uncertainty about the cause but the pattern of temperature change together with the four record breaking years for average world temperature since 1983 have convinced many researchers that the greenhouse effect is to blame. Most of the predictions concerning climactic changes have emphasized geographical events such as flooding and altered rainfall and wind patterns. However, there are bound to be effects on health and these have been highlighted in a recent WHO report.[1]

The major hazards described in the report are the effects of heat stress, air pollution, increased communicable diseases (especially vector borne diseases such as malaria) and undernutrition due to crop failures caused by drought. Overcrowding, with its attendant tensions and civil strife can be expected to follow large scale environmental migration. What is the geriatrician to make of all this? Observation of famine stricken areas show that it is always the elderly and young children who come off worst but environmental stresses will not be confined to those living in the third world but will also be seen in industrialized countries.

Heat stress has been recognized for some time as being a particular threat to the elderly.[2] It occurs mainly in tropical and subtropical regions but we also see it in temperate climates during heatwaves. Cardiovascular disease, impaired thermoregulatory function (which is discussed further by Collins in this issue) and drugs such as diuretics producing dehydration and electrolyte disturbance are all risk factors. Indeed, chronic disease of any kind is commonly noted in the victims of heat illness. Clinical symptoms may be few, sometimes consisting of nothing more than confusion and it is important to have a high degree of suspicion.

The parallels with hypothermia are strong. For years in Britain hypothermia has been a convenient stick with which to beat politicians into parting with increased funding for health and social service programmes. In fact, we now recognize that of the forty thousand or so excess deaths that occur each winter in England and Wales only 300 are due to hypothermia and the rest are caused by coronary and cerebral thrombosis and respiratory disease.[3] This excess cold weather mortality affects even those elderly people who live in centrally heated accommodation since they still expose themselves to cold out of doors and indulge the peculiar

British penchant for sleeping in unheated bedrooms with the windows open. Moving from a warm room to a cold room may be sufficient cold stress to trigger circulatory changes such as increases in platelet and red cell counts, blood viscosity and arterial pressure.[4] In short, it seems that rapid changes in temperature, humidity and wind speed are particularly hazardous to frail old people.

One thing we can be sure of with global warming is unpredictability and indeed in the last ten years some parts of the world such as north east Canada, have actually been getting colder. This fits with some computer predictions of the first phase of global warming caused by the greenhouse effect. We should also remember that malnutrition can cause hypothermia even when the environmental temperature remains above 16°C.[5] This just highlights that thermoregulatory failure is common in critically ill elderly patients even in warm weather and the two most important contributory factors are infection and hypoproteinaemia.[6]

Other consequences of climatic change include an increase of skin cancers in the elderly. Over the last forty years the incidence of malignant melanoma has doubled every ten years but much of this increase is due to sun bathing rather than holes in the ozone layer and could in theory be reduced just as rapidly by a change in lifestyle. However, we still have a harvest to reap. Actinic keratoses for example are almost universal in Australians over the age of 50 and one per cent will progress to invasive cancer.

The rise in asthma deaths in the last ten years has been attributed to increased atmospheric pollution and higher levels of house dust mite encouraged by warmer houses. Arguments continue about whether bronchodilator therapy (or lack of it) contributes to these deaths but no one has yet claimed that the chlorofluoro carbons (CFCs) present in bronchodilator aerosol inhalers have added significantly to the greenhouse effect. Nonetheless, breath activated inhalers in powder form are undoubtedly 'greener' and may be more effective since patients find them easier to use.

Advice and information on preventing hypothermia has unfortunately had little effect[7] and the same fate may befall well meaning recommendations on preventing the foreseeable health problems associated with global warming. At root the problem is mainly an economic one. The elderly are vulnerable whenever there are harsh changes in the environment. We may not be able to directly influence events in Chad or Bangladesh but we are likely to find in the first world that our patients are being adversely affected by climatic change. Any reductions in greenhouse gas emission we can win from local political pressures are our best hope for international benefit.

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