

What health services could do about climate change

They must embrace sustainable development and reduce their ecological footprints

Analysis and comment
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Advocates for action on climate change face two main challenges. The first is to make everyone aware of the enormity of the problem. The second is to persuade anyone that anything can be done about it. Ignorance is bad enough, but inertia—induced by despair, denial, or the hope of a miraculous technical fix—is even more dangerous.

Climate change, as Robin Stott argues in this week's *BMJ*,¹ poses grave risks to health.² It threatens the essentials of life. It brings drought, floods, storms, and extremes of heat and cold that can lead to famine, homelessness, dislocation, destruction of communities, the spread of disease, and even mass migrations and armed conflict as people vie with each other for land, water, food, and energy. And let's not forget the effects on mental health of anxiety, insecurity, and a sense of powerlessness as we watch the grass wither and the ice-caps melt.

If medicine is about saving lives, not just by last ditch interventions but by trying to avert illness, then working to alter patterns of behaviour that contribute to climate change could arguably become a priority for clinicians—as an urgent preventive measure. Debating the health implications of climate change may also be the best way to get the general public to take the problem seriously. Concepts such as “sustainable development” and “global warming” can strike the average person as either too daunting to consider or too distant to concern them. But we can all relate to the idea of risks to health that may affect ourselves, our children, and grandchildren. So there are good reasons to put climate change at the heart of the health agenda.

Likewise, the climate change debate belongs at the heart of health service management. The institutions of health care have enormous power to do good or harm to the natural environment and to increase or diminish carbon emissions. This applies particularly to the NHS, with its sheer bulk—still growing year on year. In 2006-7 the annual NHS budget in England is expected to be £83bn (€121bn, \$156bn), with a total UK health expenditure of £97bn.^{w1} NHS purchasing power is estimated at £17bn a year.^{w2} It is one of the largest employers in the world, beaten only by the likes of Wal-Mart and the Chinese army. It employs more than 1.3 million people^{w3} and runs 259 NHS trusts.^{w4}

Consider the huge amounts of food; furniture; medical, cleaning, and office equipment; road vehicles; and building materials the NHS has to buy—directly or

indirectly—to keep itself going. Consider the great expanses of land it occupies, the vast amounts of energy and water it consumes, and the mountains of waste it produces every year. Ideally, an organisation committed to safeguarding health would deploy its powers and resources in ways that help reduce carbon emissions. In truth, most decisions are made with scarcely a nod to the needs of the natural environment. The Royal Society for Nature Conservation has assembled the evidence on the NHS's consumption of energy, materials, and water; generation of waste; and travel (see details on bmj.com).^{w5 w6}

There are some exceptions. For example, hospitals in Cornwall have set up a project to purchase food from local suppliers; Addenbrooke's Hospital in Cambridge has a “green travel plan” that encourages walking, cycling, and using public transport; a trust in North Glamorgan has cut carbon emissions and saved money by creative energy management. Such examples are chronicled in a web based guide on good corporate citizenship recently launched by the Department of Health to help doctors and managers in the NHS use their resources more wisely.^{3 4}

But good practice still depends on highly committed individuals innovating against the odds. Meanwhile, the largest capital development programme in the history of the NHS has brought on a rash of largely unsustainable building. By 2010, more than £11bn is expected to have been spent on 100 new hospitals and more than £1bn on new primary care buildings.^{w7 w8} Most of the new hospitals will have large car parks and energy intensive air conditioning, heating, and lighting. They will often involve costly demolitions of buildings that might have been adapted at less cost in financial and environmental terms. Many will encroach on green field sites beyond urban centres, where access depends heavily on private cars. They will routinely use construction materials from unrenovable sources. They will produce almost unimaginable amounts of waste. And they may not ultimately be necessary, as demographic, technological, and policy changes alter the patterns of health care.^{w9}

The truth is that, despite an impressive array of official guidance,^{w10-w12} incentives in the NHS run in the opposite direction. “Efficiency” is what matters most, and it is still defined as what works best for the financial bottom line. “Value for money” is a limited concept that

does not yet recognise virtue in farsightedness. NHS targets are geared towards improving clinical performance and cutting waiting times. No one gets fired for failing to reduce the carbon footprint of a hospital or clinic.

And so, in the name of health care, gargantuan sums of public money continue to be spent in ways that are careless of the physical and mental wellbeing of future generations. A longer term perspective suggests that this makes poor sense, not only for population health, but also for the business of running a national health service.

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Competing interests: None declared.

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Switching statins

Using generic simvastatin as first line could save £2bn over five years in England

Statins are one of the great success stories of preventive medicine. Extensive evidence, excellent safety, and high efficacy have resulted in an exponential rise in prescriptions for statins, currently increasing at 30% a year in England. Statins represent the largest drug cost to the NHS (£738 million (€1.1bn; \$1.4bn) in 2004).¹

Around 85% of all statin prescriptions in England are for simvastatin and atorvastatin, in roughly equal proportions, usually at moderate or low doses (98% of simvastatin is prescribed at ≤ 40 mg, 85% of atorvastatin at ≤ 20 mg). In May 2003 the UK simvastatin patent expired and the cost reduced eightfold for the 40 mg dose and 20-fold for the 20 mg dose. The maximum price of simvastatin 40 mg is now up to six times cheaper than atorvastatin (£3.89, £18.03, and £24.64 respectively for simvastatin 40 mg, atorvastatin 10 mg and 20 mg),² and simvastatin 40 mg can cost less than £1 per patient per month when purchased in bulk by hospitals. This price fall alone will save the NHS £1bn over the next five years. Atorvastatin remains on patent until 2011.

Guidelines this year from the National Institute for Health and Clinical Excellence (NICE) recommend statins for people with a cardiovascular disease risk of $\geq 20\%$ over 10 years.³ This increases the number of people considered to need statins in England by 3.4 million to 5.2 million (14% of the adult population). If, as NICE estimates, half will be prescribed statins,⁴ 26 000 cardiovascular events a year will be prevented.

However, this will cost an extra £250m per year if prescribing patterns noted in 2004 continue (atorvastatin comprised 40% of all statins prescribed, simvastatin 45%, fluvastatin 2%, pravastatin 8%, and rosuvastatin 3%). If generic simvastatin was universally prescribed, as NICE proposes (in spreadsheet TA094 of the guidelines), costs would fall by £185m a year. Is there any justification to continue to prescribe atorvastatin 10 mg or 20 mg?

Strong clinical evidence for the effectiveness of atorvastatin 10 mg in patients with hypertension and diabetes comes from the ASCOT-LLA (Anglo-Scandinavian cardiac outcomes trial-lipid lowering arm)^{w1} and CARDS (collaborative atorvastatin diabetes study)^{w2} studies and for simvastatin 40 mg in patients with increased cardiovascular risk and after myocardial infarction from the HPS (heart protection study)^{w3} and 4S (Scandinavian simvastatin survival study)^{w4} studies. A head to head

comparison of atorvastatin and simvastatin, although underpowered, showed no difference between the drugs.⁵ No trial directly supports the effectiveness of atorvastatin 20 mg: the only study, which was conducted with diabetic patients receiving haemodialysis, did not find any benefit.⁶ Our own meta-analysis of clinical trials using simvastatin 40 mg and atorvastatin 10 mg showed no significant differences in mortality, death from coronary heart disease, or stroke.⁷

Dose for dose, atorvastatin is more potent than simvastatin at blocking the target enzyme, HMGCoA; this effect is overcome by using a higher dose of simvastatin. In controlled dosing studies, simvastatin 40 mg and atorvastatin 10 mg and 20 mg are equally effective.⁸⁻⁹ Simvastatin 40 mg lowers plasma concentrations of low density lipoprotein (LDL) cholesterol by 3% more than atorvastatin 10 mg and 4% less than atorvastatin 20 mg. Simvastatin 40 mg raises high density lipoprotein (HDL) cholesterol 0.8% more than atorvastatin 10 mg and 1.5% more than atorvastatin 20 mg. Epidemiological studies indicate that these beneficial effects on HDL cholesterol may be as important as those on LDL cholesterol.

Atorvastatin and simvastatin are safe at these doses.¹⁰ They are both metabolised the same way (by the cytochrome P450 mixed function oxidase system CYP3A4) and have the potential for the same drug interactions. Numerous studies show that tolerability, compliance, and the incidence of adverse events are the same.

For every new patient treated with simvastatin 40 mg rather than atorvastatin 10 mg or 20 mg the NHS saves £921-£1352 over five years—which means that 5-6 times as many people in primary care or 18-24 times as many people in hospital could be treated for the same cost. The only important difference between atorvastatin 10 mg and 20 mg and simvastatin 40 mg is cost. Changing the million patients who currently take atorvastatin 10 mg or 20 mg to simvastatin 40 mg should have no effect on health but would save £1.1bn over five years, and using simvastatin for the 1.6 million new prescriptions required to comply with the new NICE guidelines would save a further £950m over five years: a total saving of £2bn.

References w1-w4 are on bmj.com



BMJ 2006;332:1344-5