6. Ecological healthcare for tomorrow's doctors – new imperatives for medical educators

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Human lifestyles have produced unprecedented changes to global and local ecosystems and a burgeoning epidemic of chronic illness.[1] With climate change purported to be 'the biggest global health threat of the 21st century'[2], high-carbon healthcare systems are undermining the building blocks that sustain human health, through high-resource consumption, emissions and waste, and a lack of preventive focus.

The 2008 Climate Change Act tasks the Secretary of State with the duty to ensure reduction in the UK's net carbon account by at least 80% by 2050 (compared to the 1990 baseline carbon emissions). In line with government targets, the NHS is also committed to reduce its carbon footprint by 80% by 2050. This is already starting to change the way medicine is practised.[3]

Ecological health systems

Rather than overwhelming healthcare systems[4], current ecological and health challenges present opportunities to refresh healthcare services and, moreover, medical education. There is a growing body of evidence that reducing greenhouse gas emissions and waste can confer health 'co-benefits'; actions to protect the environment can also protect public health.[5] For example, promoting or taking up active transport instead of private motor vehicles reduce fuel consumption and emissions. Meanwhile, increased physical activity and time spent in green spaces during walk or cycling brings multiple physical and mental health benefits.

Ecological health systems will benefit patients too. The NHS is responsible for a quarter of England's public sector carbon emissions. The largest part (59%) of the NHS carbon footprint comes from the procurement of goods and services, of which pharmaceuticals contribute 37%.[6] An ecological health system could focus more on prevention of disease, minimise unnecessary investigations and treatment (e.g. repeat investigations or investigations that will not change management), support patients to manage their own care closer to home, and use lower carbon technologies and practices (e.g. telephone consultations instead of home visits, where appropriate).[7] These measures could minimise discomfort and cost (e.g. of travel) for patients, save health service funds and reduce environmental resource consumption and waste.

Educational leadership

Medical educators in the UK occupy an unusually privileged position. In the UK, support to introduce teaching on the 'greening' of medicine comes both from legislation at the national level (UK Climate Change Act) and from an NHS policy framework (NHS Carbon Reduction Strategy, 2009 [4]). The Royal Colleges have issued position statements encouraging teaching on the links between health, healthcare and climate change.[8] The Higher Education Funding Council for England (HEFCE) and the Higher Education Authority have asked universities to include sustainability and carbon reduction concepts in curriculum and practice (and there will be financial penalties for not doing so). Finally, students, drawn to the medical profession by concern for fairness and social justice, have themselves been instrumental in pushing both global health and sustainable healthcare curricula (see Medsin's Healthy Planet website www.healthyplanetuk.weebly.com). From policy drivers to student demand, the field is ripe for educational leadership.

Just as yesterday's doctors led the campaigns against smoking by example and advocacy, tomorrow's doctors can lead by example: living active, low-carbon lifestyles; informing patients; and transforming a wasteful, consumptive and incoherent health service into a sustainable health system.[3] Medical schools have a vital role to play in preparing students to address the predicted impact of environmental change on the health and wellbeing of the populations they serve. Why have some medical schools not yet taken this on?

Key educational challenges

With many subjects competing for time in undergraduate curricula, finding space for what seems to be a new, add-on, or faddish topic can be difficult.

Although uncertainties remain about the specifics of future health scenarios, a stream of new research is emerging to identify effective strategies for rolling out sustainable clinical practice and ecological public health. Innovative service-based projects, such as the Green Nephrology programme, are being evaluated.[9] We know that the adaptations required of lifestyles and social systems offer public health gains, and clear evidence exists about the health benefits of eating less red meat, using active transport and insulating homes, for

example. Extensive research has been carried out in the social sciences on effective approaches to communicating health and sustainability messages.

Such research can underpin development of new curricula. Furthermore, there are links between ecological perspective on health and other key curriculum topics. We need to develop effective educational strategies to inculcate these concepts into teaching, in keeping with recommendations from professional bodies[7] and the World Health Organisation.[10]

A further challenge is that new topics require resourcing, and many schools lack faculties with the confidence to address these topics.[11] Experience in medicals schools that are teaching an ecological perspective has shown that educators do not require an in-depth knowledge of climate science; indeed students need only understand the core underlying principles and how they relate to practice, not details. As the body of medical knowledge expands, competent practice increasingly involves knowing where to find information and guidelines, rather than learning by rote.[12]

Finally, in some schools, teaching about the social determinants of health is given low priority, indicating an apathy about 'upstream thinking' generally.[13] Some are persuaded by 'moral offset' – the notion that healthcare providers already contribute significantly to society and are therefore exempted from further demands. What we know, however, is that environmental challenges to health are here to stay and set to grow, especially without strong individual and policy action. There are many reasons why health professionals have a key role to play in addressing apathy towards ecological harms to health; not least the scale of the local and global health impacts resulting from resource-intensive practices, and the significant impact of the NHS (both as a proportion of the UK carbon footprint and as an exemplar of good practice).[14]

The Sustainable Health Education Network

Medical education is evolving in tandem with the health service to meet these challenges. In 2009, the Sustainable Healthcare Education network (SHE) brought together educationalists, clinicians and students to share experiences, strategies and materials for teaching on the links between health and sustainability. SHE has developed teams in eight medical schools across the UK. SHE teams are incorporating sustainability concepts into core teaching and assessment (including in Bristol, East Anglia and Leeds) and student selected components (including in Cambridge, Sheffield and York). Many more schools deliver teaching as part of global health or public health.

The ultimate challenge is to integrate a sustainability perspective across the curriculum. A broader understanding of the links between health and the environment is likely to encourage a preventive focus to healthcare and the use of fewer technical interventions. SHE network members working in general practice, public health and global health have developed several schemas for clarity of curricular purpose and content in this area (see Box 1), are working with the General Medical Council to develop links between sustainability and core medical curricula in line with *Tomorrow's Doctors* 2009. They will be conducting a national consultation on their proposals in 2013.

Box 1: Priority learning outcomes in sustainable healthcare education, from Sustainable Healthcare Education network curriculum development working group.[15]

Conclusion

For any educator looking to incorporate sustainability into teaching at their medical school, we make three suggestions. First, forge connections with others by joining the SHE network – harnessing student enthusiasm can help overcome logistical challenges. Medical students are often passionate advocates for more teaching on environmental sustainability. The student organisation Medsin has a Healthy Planet project (see above) with members across the country helping to design student selected components, scheduling additional lectures and lobbying course directors for core teaching.

Secondly, find opportunities to incorporate sustainability into your own subject area. No area of medicine is untouched by the effects of ecosystem change, and the Centre for Sustainable Healthcare provides useful resources to explore links between your specialty and sustainability.[16] Resources to support the delivery of lectures, small group teaching, and student selected components and can be found at: http://sustainablehealthcare.org.uk/sustainable-healthcare-education

Thirdly, work towards realistic goals. An initial goal might be to establish one core lecture (during induction or public health modules) and one SSC on sustainability and healthcare. SSC's are an excellent way for educators to develop confidence in teaching and inspire the most engaged students. For example, Bristol enables learning through debate, discussion and interactive demonstrations (such as pushing a car up a hill to illustrate the embodied energy of fossil fuels). In East Anglia and Sheffield students

make 'Dragon's Den' pitches for practice change to address the 'triple bottom line' of people, planet and profit (or care, carbon and cost).

Sustainable healthcare education – like sustainable healthcare and ecological public health – is fast-evolving. The new challenges of the 21st century offer opportunities for new approaches to medical education[17] and research to identify their impacts. Reconciling the (sometimes unnecessarily) carbon-costly consequences of current medical practice and the need for social and environmental responsibility is both an ethical and a practical challenge. Such challenges will touch all areas of medical practice, and medical educators increasingly have the opportunity to contribute to the teaching, research and policy development that will enable tomorrow's doctors to locate their own position and role in promoting healthy, sustainable people and populations.

References:

1   Lang T, Rayner G. Ecological public health: the 21st century's big idea? *British Medical Journal* 2012;345: e5466

2   Costello A, and University College London-Institute for Global Health and Lancet Commission. Managing the health effects of climate change. *Lancet*, 2009;373: 1693-1733.

3   Naylor C, Appleby J. *Sustainable Health and social care; Connecting environmental and financial performance.* March 2012, Kings Fund. Available at: http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/sustainable-health-social-care-appleby-naylor-mar2012.pdf, [accessed 7 Oct 2012].

4   McMichael, *A. Climate Change and Health: Policy Priorities and Perspectives.* Briefing Paper, Chatham House, December 2011, available at: http://www.chathamhouse.org/publications/papers/view/180439 [accessed 14 Mar 2012].

5   McMichael AJ, Friel S, Nyong A, Corvalan C. Global environmental change and health: impacts, inequalities, and the health sector. BMJ 2008, 336: 191-194.

6   NHS SDU. Saving Carbon; Improving Lives, *NHS carbon reduction strategy. 2009*. Available at: http://www.sdu.nhs.uk/publications-resources/3/NHS-Carbon-Reduction-Strategy/, [accessed 9 Mar 2012].

7   Mortimer F, The Sustainable Physician. *Clinical Medicine* 2010;10(2): 110-11.

8   *Royal College of Physicians. How doctors can close the gap, Tackling the social determinants of health.* Policy paper, 2009. London: RCP.

9   Connor A, Mortimer F, Tomson C. Clinical Transformation – the Key to Green Nephrology. *Nephron Clinical Practice* 2010;116(3):201-206.

10 *WHO work plan on climate change and health*, 2008. Available at: http://www.who.int/globalchange/health_policy/who_workplan/en/index.html, [accessed 7 Oct 2012].

11 *SHE Survey of UK Medical Schools*, unpublished, 2010. Available at: http://sustainablehealthcare.org.uk/sustainable-healthcare-education/resources/2012/02/teaching-sustainable-healthcare-english-medical-s, [accessed 12 Oct 2012].

12 *Global Consensus for Social Accountability of Medical Schools*, December 2010, available at: http://globalhealtheducation.org/resources_OLD/Documents/Both%20Students%20And%20Faculty/Global_Consensus_for_Social_Accountability_of_Med_Schools.pdf [accessed 9 Mar 2012].

13 Gillam S, Bagade A. Undergraduate public health education in UK medical schools – struggling to deliver. *Medical Education*, 2006,40: 430–436.

14 Walpole SC, Rasanathan K. Keeping a place for health; the role of health professionals. Medicine, Conflict and Survival, 2011, 27(2): 77-83.

15 Sustainable Healthcare Education network's curriculum development working group. Curriculum Recommendations for the General Medical Council. 2012. Available from the authors on request.

16 Centre for sustainable healthcare. Principles of sustainable healthcare. Available at: http://sustainablehealthcare.org.uk/clinical-transformation, [accessed 13 Mar 2012].

17 Frenk J et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet* 2010,375 (9721).