GUEST EDITORIAL

What psychiatrists should know about environmental sustainability and what they should be doing about it

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The 2013 report from the Intergovernmental Panel on Climate Change has caused renewed concern among both clinicians and health policy makers. Climate change is continuing at an increasing rate. This guest editorial describes how climate change might affect global mental health and proposes three things that psychiatrists from every country could implement to respond appropriately to this urgent and severe global threat. These responses are mitigation and adaptation strategies for mental health services, and the integration of sustainability into training.

Our planet is warming dangerously, a change that may represent the world's single biggest health threat (Chan, 2008). The Intergovernmental Panel on Climate Change (IPCC) has reported that the past three decades have been successively warmer than any preceding decade since 1850 and that this observed increase in global temperatures is very likely due to anthropogenic greenhouse gas (GHG) production (IPCC, 2013). The IPCC (2013) has forecast that global warming will continue to reduce crop productivity, to increase the risk of both floods and droughts, and to increase sea levels. Other impacts will include longer and hotter heat waves, and more cyclones and forest fires, with tropical forests increasingly lost to savannah. Water availability for human consumption and agriculture is also likely to reduce, and over 75 million people are projected to be exposed to increased water stress by 2020.

Mental health effects of climate change

Attention has been given to the possible effects of climate change on global mental health (Berry *et al*, 2010). These effects are likely to be difficult to detect because, most often, mental health problems come at the end of a long and complex causal chain of events. For example, climate-induced displacement or conflicts arising due to scarcity of resources can expose people to traumatic events, or to loss of family, community and income-producing activity, provoking symptomatic responses (McMichael *et al*, 2010). Increasing drought can put pressure on the social and economic fabric of rural communities, with consequences for mental health (Berry *et al*, 2010).

There are, though, more straightforward links between climate change and mental health. Climate change increases the risk of acute weather-related disasters, such as major fires, floods and cyclones, and these can have direct consequences for mental health (Morrissey & Reser, 2007; Stanke *et al*, 2012; Clemens *et al*, 2013). In addition, suicide rates have been noted to increase during periods of extreme temperature change (Page *et al*, 2007), as well as during periods of drought (Hanigan *et al*, 2012).

Australia is the canary in the world's climate change cage: it has the world's most variable climate, with frequent extreme weather conditions, and is already experiencing significant effects of climate change. It also has to accommodate the needs of people living in very remote locations, far from services and, sometimes, even from other people. As a result, Australia has taken the lead in considering the potential mental health effects of climate change and how best to prepare and respond. An Australian paper (Berry *et al*, 2010) categorised these possible impacts as shown in Table 1.

A paper in the *Lancet*'s 'Global Health' series made the important claim that climate change is 'the biggest threat to global health in the 21st century' (Costello *et al*, 2009), yet, always the Cinderella issue in health, there was little substantive comment on mental health. Given that, by 2030, mental health problems will represent the world's leading burden of disease (Mathers *et al*, 2001), and given the extent of the climate change threat, a serious and coherent response is urgently needed from mental health services and the research community, including psychiatrists. Here, we suggest three areas for immediate focus:

- mitigating the effects of climate change
- preparing effective, achievable, adaptive strategies for mental health services
- equipping present and future psychiatrists with the knowledge and skills to manage the effects of climate change in their clinical settings.

Mitigating the effects of climate change

Healthcare worldwide is big business, a business that consumes vast resources. For example, in Brazil, the healthcare sector has accounted for 10% of national energy consumption, while in England the National Health Service (NHS) is the largest single public-sector emitter of GHGs (Karliner & Geunther, 2011). The NHS has been encouraging clinicians to move beyond conventional service values focused on patients to incorporate a more global vision of health promotion (Karliner &

Table 1
Putative pathways between the effects of weather events and mental health problems

	Acute weather events (e.g. floods, hurricanes and fires)	Chronic weather events (e.g. more heat waves, droughts)
Direct effects on mental health	More frequent exposure to physical danger due to storms or floods leading to elevated rates of acute anxiety disorders	More frequent exposure to chronic stress (e.g. from long periods of extremes of heat or lack of clean water) leading to elevated rates of violence and aggression
Indirect effects on mental health	More frequent and more severe damage to homes and infrastructure, including community buildings (e.g. schools); physical injury to self or significant others; elevated rates of anxiety and mood disorders	More frequent and/or severe physical health impacts and damage to livelihoods and soft social infrastructure (disruption of networks, lack of time to socialise); elevated rates of chronic mood disorders and suicide

Adapted from Berry *et al* (2010).

Geunther, 2011). The World Health Organization (WHO) has a 'Health in the Green Economy' initiative, which focuses on reducing healthcare's climate footprint. Thailand is one country that has prioritised this initiative, creating a 'Green and Clean' hospitals programme that addresses energy and resource use (Astudillo, 2012).

While these top-down approaches are helpful, particularly in setting directions and an appropriate framework for action, engagement at a clinical level is necessary to produce more rapid results. There is evidence that the production and distribution of pharmaceuticals contribute about as much to healthcare's carbon footprint in England as does the total energy consumption of the NHS (NHS Sustainable Development Unit, 2013). Pharmaceuticals contribute around 20% of the total carbon footprint of mental health services, up to 50% of which may be wasted due to poor compliance with medication. A review of prescribing practice could therefore reduce the NHS mental health carbon footprint by up to 10% (NHS Sustainable Development Unit, 2013).

More importantly, as a profession, psychiatrists may be overprescribing, or prescribing in circumstances in which patients may recover equally as well with psychological therapies. There is good evidence for the effectiveness of behavioural activation in cognitive–behavioural therapy (CBT) for depressive disorders, an intervention with a potentially very small carbon footprint. Furthermore, some therapies can reduce relapse rates and therefore further decrease mental health services' carbon footprint by lessening the burden on services. Strong evidence is available that indicates mindfulness-based therapy is associated with a 44% reduction in depressive relapse risk compared with usual care for patients with three or more previous episodes (Williams & Kuyken, 2012). Clinicians could thus modify their routine practice to significantly reduce healthcare's environmental impact and even improve patient outcomes using treatment approaches that are more acceptable because they have fewer unwelcome side-effects.

The Centre for Sustainable Healthcare (Mortimer, 2010) proposes that clinical transformation is required because most of the carbon footprint of healthcare is related to clinical matters such as procurement, medical equipment and pharmaceuticals. It proposes that greater clinical focus is required on principles such as prevention, patient empowerment, lean service delivery and use of low-carbon technologies.

One place to start implementing environmental sustainability principles would be secondary preventive measures. That is, mental health services could provide more options to help patients manage their own mental health. One such option could be web-based platforms that educate and empower patients by offering a range of evidence-based tools such as self-administered CBT, peer-to-peer support networks, educational packages and programmes for the self-monitoring of symptoms. Providing these opportunities would allow mental health services to be more strategic about where and when to intervene. Integrating mental health expertise into primary care settings facilitates the early detection and monitoring of mental illness. The integration of mental health services with primary care and the provision of specialist early intervention for psychosis should be a major focus.

Adaptative strategies

Climate change will affect the *prevalence* of mental health conditions more than their *nature* (Berry *et al*, 2010). Healthcare services must prepare for potentially increased demands, especially in primary care settings, which receive the majority of initial presentations (Blashki *et al*, 2009).

A major effect of climate change on mental health will be through its effect of increasing health inequalities (Costello *et al*, 2009). It is well documented that inequalities are a major source of psychiatric morbidity (Marmot *et al*, 1997). Inequalities are likely to increase everywhere, but mostly (and most damagingly) in low-income countries and in countries particularly vulnerable to the effects of climate change (Berry *et al*, 2010). There are, however, very low levels of mental health service provision in most low-income countries, giving rise to the potential for a crisis in the availability of mental health services following acute weather events.

A first phase of development in adaptive strategies in low-income countries could be to better integrate mental health services into primary care. There is currently little integration between mental and physical health services (Horton, 2007), even though the majority of psychiatric patients first present in these settings. Introducing a mental health needs assessment at primary care

level could improve the identification of mental health conditions in these poorly resourced and vulnerable areas (Herrman, 2001). An example of this is a project in Kenya that trained primary care and community health workers to integrate mental health assessment into their routine work (Jenkins *et al*, 2010).

Principles of health system adaptation have been suggested: flexibility, robustness of services and strategic allocation of resources (Blashki *et al*, 2011). Mental health services will need to prioritise flexibility, as there remains substantial uncertainty about the specific nature, location and timing of climate change effects. Kyrgyzstan has implemented a national healthcare adaptation strategy (United Nations Development Programme, 2013) aimed at improving the flexibility of energy provision for services; it considers options for alternative energy sources following climate change effects.

Robustness refers to services' ability to moderate their capacity with changing needs. Acute weather events can have direct, immediate and sometimes widespread consequences that typically lead to spikes in demand for mental health services. At the same time, services must be able to downscale or relocate rapidly.

Other adaptive strategies could be implemented at a community level. It has been suggested that building community resilience ahead of weather-related disasters forms a crucial part of healthcare adaptation strategies (Berry, 2009). A qualitative study of Sudanese refugees found that religion and wider social support had positive effects on recovery after traumatic experiences (Schweitzer *et al*, 2007). Social capital, networks and support alongside supporting families and parents have been noted as important factors in community resilience in the face of environmental stress (Kirmayer *et al*, 2009). Social capital is enormously protective for mental health (Berry & Welsh, 2010) and is a resource that can also be mobilised before, during and in recovery from disasters (Berry, 2009).

Given the wide range of threats from climate change and the variety of supportive community structures, there is great scope for innovation when adapting healthcare services. More knowledge is needed, though, at a local level about how communities could adapt.

Knowledge and skills

Psychiatrists could play a direct and influential role in designing health-related mitigation and adaptation strategies for climate change. For this reason, education and training in climate change and its likely impacts and responses are important. In Australia, learning objectives for medical students have been created that specifically focus on the health effects of climate change (Green *et al*, 2009). These could be adapted and expanded for continuing education. Sustainable healthcare learning objectives have also been created in the UK as a response to a request from the General Medical Council (Mortimer, 2013).

Educational programmes on the mental health effects of climate change could start during medical training. General concepts could be introduced at medical school through the use of either a problem-based or a case-based learning approach (Green *et al*, 2009). It needs to be realised that a healthy environment and ecosystem are crucial for maintaining health, and that healthcare services have responsibility not only for reducing their impacts on the environment, but also for ensuring that they are ready for the effects of climate change on health (Costello *et al*, 2013).

Developing an understanding of how a phenomenon as complex as climate change can have population-level mental health effects requires specialised psychiatric knowledge and an understanding of health and social policy. Box 1 lists specific learning objectives for postgraduate psychiatric trainees. At increasingly senior levels of practice, there will be broader educational aims, as well as advocacy of broader policy issues.

Conclusions

The mental health effects of climate change are well documented, although evidence for causality is scarce. Psychiatrists can act to address these effects. The profession must develop both mitigation and adaptation strategies in response to these concerns. Psychiatrists also have a responsibility to equip future professionals with knowledge of the effects of climate change on mental health, and the likely impact on future generations of patients. Thinking sustainably in mental health demands a change from an *individual, illness* focus to a *community, health* focus. Decisions made now will affect the resilience of both mental health services and communities in dealing with the effects of climate change on mental health.

Box 1 Environmental sustainability learning objectives for postgraduate psychiatric training

- Understand the existing and potential mental health impacts of climate change in your country and internationally
- Understand the psychiatric sequelae for climate refugees
- Be aware of the mental health conditions that are likely to increase in prevalence following climate change (e.g. adjustment disorder)
- Be aware of characteristics that may make certain individuals or communities vulnerable to the mental health impacts of climate change
- Discuss how the duty of a psychiatrist to protect and promote health is shaped by the dependence of mental health on the local and global environment
- Demonstrate the knowledge and skills needed to improve the environmental sustainability of mental health systems

Adapted from Green *et al* (2009) and Mortimer (2013).

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THEMATIC PAPERS

Training and education in mental health

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The education of our colleagues around the world in the treatment and management of mental ill health is critically important, and the Royal College of Psychiatrists has a leadership role in promoting and supporting such training in many countries. Here we present contributions from three regions, South America, sub-Saharan Africa and the Western Pacific, in which UK involvement has played an important part in developing and sustaining modern approaches to psychiatric care. First, David Jimenez and colleagues discuss SUD World Project, which is a charity devoted to building links between Latin America and Europe for that purpose. At the present time, the focus is on Peru and Ecuador, but there are plans to expand activities throughout the continent. As in so many other countries, not all of them classified as low or middle income, government support for mental