Climate Change, Risk and Resilience: Lessons for Health and Social Care

Cross-Sector Symposium

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Adaptation and Resilience to a Changing Climate Network and the Social Care Institute for Excellence*

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“It is clear that the one thing we must not sacrifice is health. We will risk doing just that if we neglect to build considerations of the impacts of our changing climate into the design of future health and social care services.”

Gerry Acher, Chair, London Climate Change Partnership

Key messages
- A cross-sector, multi-scalar approach is required to address the challenges of climate change on health and social care.
- While the government’s localism agenda presents opportunities for strengthening local action on climate change, we must consider the information and guidance provided to local agencies and communities, to support capacity building.
- Changes in health and social care delivery present a number of challenges for the mainstreaming of climate change adaptation strategies. They also have implications for emergency response procedures.
- Developing appropriate health and social care services will require strong partnerships between formal service providers and informal carers.
- Both short-term and long-term planning for climate change and extreme weather events are required. It is important to ensure that health and other social inequalities are not created or exacerbated as a result of climate change hazards and risks. Services should be planned and delivered with this in mind.
1. Introduction
Climate change presents significant challenges for human health and wellbeing. However, while the links between climate change and human health are well known (see, for example, Costello et al. 2009; McMichael et al. 2003), less attention has been given to the impact of climate change on the delivery of health and social care and how the risks associated with climate change are managed. While there is agreement that a cross-sector approach to address these issues is required, these discussions come at a time of budget cuts, significant changes in the structure of the NHS, and the introduction of the localism agenda which sees a move away from top-down governance and centrally mandated guidance. While this is aimed at moving decision-making closer to service users, there is a danger that informal service provision might be overwhelmed by the complex demands imposed upon local capacity (Dominelli, 2012).

This event, hosted jointly by the Institute of Hazard, Risk and Resilience, Durham University, the School of the Built Environment, Heriot-Watt University, the Adaptation and Resilience to a Changing Climate (ARCC) Programme, the Social Care Institute for Excellence (SCIE), and the Interdisciplinary Cluster on Energy Systems, Equity and Vulnerability (InCluSEV) brought together experts from a wide range of sectors including health, social care, planning, security, transport and the insurance industry. Taking two major research projects as the starting point, we explored responses to risk in general and climate change in particular.

- What are the risks posed by climate change to health and social justice, and how widely are they understood?
- Do the scale and timeframe of climate change lead to paralysis instead of action?
- What changes are necessary to infrastructure, systems design and behaviour to respond adequately to these risks?
- Are differing attitudes to risk a barrier to successful adaptation?
- What can we learn from risk management strategies in different sectors and how can we share this learning?

2. Examples of research in this area
The Engineering and Physical Sciences Research Council (EPSRC) is funding a major research programme on Adaptation and Resilience to a Changing Climate (ARCC). Two of the projects funded are concerned with climate change adaptation and human health:

**Built Infrastructure for Older People’s Care in Conditions of Climate Change (BIOPICCC)**
The BIOPICCC project is developing strategies to help ensure that the infrastructures and systems supporting the health and social care for older people (aged 65 and over) are sufficiently resilient to withstand the impacts of climate change up to 2050. The research is being conducted by a multidisciplinary team based at Durham University and Heriot-Watt University with expertise in climate modelling, engineering and health and social care research (BIOPICCC Team, 2011). Beginning with a national-scale hazard and vulnerability mapping exercise, the study has identified areas in England projected to see a significant increase in the number of older people and the occurrence of extreme weather events including heatwaves and floods (Oven et al. 2011). The study has also highlighted the importance of preparing for extreme cold following the severe winters of 2009/10 and 2010/11. The preliminary findings from local level consultations with older people, their carers and service providers highlight the importance of local domiciliary care teams and the informal care sector which often fills a gap in service provision when transportation links are disrupted during extreme weather events (Wistow et al., 2011).

**Design and Delivery of Robust Hospital Environments in a Changing Climate (DeDeRHECC)**
The DeDeRHECC project is investigating economical and practical strategies for the adaptation of the NHS estate to increase its resilience to climate change whilst meeting agreed emissions targets. Eighteen months of measured data have been gathered within a representative sample of spaces in ‘type’ hospital buildings on sites operated by the project’s partner NHS Trusts. The data have yielded...
insights into the current resilience of representative building types and facilitated the calibration of predictive models to investigate likely future performance on the basis of the appropriate UK Climate Projections (UKCP09) datasets. Out of these diagnostic exercises, detailed adaptive re-engineering schemes are being devised and costed. Papers illustrating options for two of the building types are currently in press with Buildings Services Engineering Research and Technology (BSERT) and Building and Environment; further papers are in progress. A film is being made; a trailer can be seen by clicking here: ‘Robust Hospitals’.

In addition to the ARCC Programme, there are examples of cross-sector planning and development partnerships in the UK. Examples include the London Climate Change Partnership which has undertaken research on the impact of climate change on health and social care; and the Social Care Institute for Excellence which has been commissioned by the Department of Health to lead an innovative programme of work bringing together adult social care, health and sustainable development with the aim of promoting sustainability and adaptation to climate change across the health and social care sector.

3. Cross-cutting themes emerging from the discussion

3.1 Building capacity nationally and locally to address hazards, vulnerabilities and risks
Defra is undertaking the first national UK Climate Change Risk Assessment (CCRA), a requirement of the Climate Change Act 2008. The risk assessment aims to: understand the level of risk (including opportunities as well as threats) posed by climate change for the UK; compare the risks posed by a changing climate with other pressures on the government; prioritise adaptation policy. Work has included detailed examination of the risks and adaptive capabilities of specific sectors, including health. Due to be published in January 2012, the CCRA will be updated every 5 years to include advances in our scientific understanding of climate change.

While national scale research is important, policy makers and practitioners must also consider the local level and avoid a one-size-fits-all approach to climate change adaptation. Hazards (potentially harmful events e.g. heatwaves and floods) and vulnerabilities (the characteristics of people, infrastructure or systems that create the potential for harm or ability to recover following a hazard (Cutter et al. 2008)) will vary across the UK. It is therefore important that we define these locally. For example, threshold temperatures for a heatwave potentially affecting care needs for certain population groups will vary depending on prevailing average conditions in different parts of the UK. It is anticipated that developing locality specific responses will resonate elsewhere.

While the government’s localism agenda presents opportunities for strengthening local action on climate change, we must consider the support provided to local authorities (LAs), local voluntary and private sector organisations and communities themselves. As summarised in a recent report on localism and climate change by the Green Alliance, LAs have received very little guidance on how to deal with the challenge of climate change. This reflects the underlying principle of localism that the central government does not want to tell LAs how to act. However, the LAs participating in the BIOPICCC project feel they would benefit from opportunities to share examples of good practice and case studies of work being undertaken by other LAs, particularly with regard to cross-sector planning. One way forward might be to identify a platform to share information (e.g. from the Government’s Committee on Climate Change, Defra and the Department of Health), resources to support local activities (e.g. the BIOPICCC toolkit) and examples of networking and good practice from LAs across the UK.

We also need to consider the role of the independent sectors (voluntary and private sector agencies) and the implications of the costs of climate change adaptation in the tendering process for contracts on the sector as a whole. Otherwise, individual agencies including these costs unilaterally could price
themselves out of the market. This raises important questions regarding the regulation of contracts by local and national level governments to ensure collective action on climate change adaptation. Examples of good practice in this area include Bristol City Council which has embedded environmental impact assessments into health and social care contracts1. Agencies in the voluntary sector itself are also taking the initiative and exploring what climate change means for their work (see Section 3.2 and the National Council for Voluntary Organisation’s (NCVO’s) work, for example). Service providers as well as commissioners could therefore be a source of innovation in this area.

3.2 Fostering cross-sector working
At the national and local level we have tended to work in our own particular sectors. New partnerships are forming at the national level to address the complex challenges presented by climate change. Examples include the Department of Health, the Welsh Assembly and the Met Office (Heat-Health Watch); Health Protection Agency, Met Office and the Department of Health (Cold-Weather Plan for England); Defra and the Department of Health (e.g. Heatwave Plan which is updated yearly based on the latest available evidence; and Health Technical Memorandum 07/07 on ‘Sustainable health and social care buildings: planning, design, construction and refurbishment’); and the Environment Agency with the Red Cross (to develop a guide to help communities protect themselves from flooding). Organisations such as NCVO are helping other voluntary and community organisations supporting vulnerable people in England to explore the implications of climate change for their work and beneficiaries.

At the local level, cross-sector working is moving at a slower pace. While there are umbrella organisations, e.g. Local Resilience Forums, which bring together representatives from different sectors, the government has withdrawn performance indicators (e.g. NI 188 – Planning to Adapt to Climate Change) designed to help mainstream climate change planning and adaptation across the different sectors within a LA. Exactly what will replace this, and the precise guidance LAs will receive from central government, remains unclear. As outlined in Section 3.1, examples of good practice are required to promote cross-sector working at the local level.

3.3 Targeted approaches to climate change adaptation: Identifying the most vulnerable and addressing inequalities
There is growing evidence that certain groups in the UK will be more at risk from climate change than others (see, for example, research funded by the Joseph Rowntree Foundation and for international examples the IPCC SREX Report). These groups include children and older people, people with existing health conditions, people on low incomes and those who are less mobile. A targeted approach to identify the most vulnerable to climate change was considered important. It was recognised that some groups of vulnerable people are ‘harder to reach’ than others, particularly individuals not known to health and social care departments e.g. members of the gypsy or travelling community and new immigrants arriving into the UK. However, this presents a significant practical challenge. There may be multiple lists of vulnerable people compiled and held by different agencies at the local level, including diverse partners in local government, and these are not always up-to-date. The Health and Social Care Integration Programme (HSCIP) (which is supporting the Department of Health to deliver better services by improving information sharing between the NHS, local government and other agencies involved in providing social care) might help by giving a shared collective responsibility. However, for the LAs present, there were concerns that the Personalisation of health and social care coupled with ‘care closer to home’ may mean more informal care arrangements are made with little scope to regulate care delivery or record this information, resulting in fewer pooled lists of vulnerable people.

1 See: http://www.scie.org.uk/adults/sustainablesocialcare/bristol.asp
Some of these concerns were echoed in a recent report prepared by the LGiU ‘Risk and reward: Local government and risk the new public realm’ which highlights the challenges of risk management when services are commissioned by, rather than being provided by councils directly. However, while councils can embed their own risk management processes across the providers they commission e.g. Bristol City Council demand severe weather planning by all service providers, personalisation presents different challenges regarding risk management due to the difficulty of regulation and the placing of the onus of making the specific arrangements needed on the individual service user. Some of these issues are raised by Simon Evans in his ICL-UK/British Society for Gerontology Think Piece.

Issues of health and environmental inequalities and ‘environmental injustice’ were also raised, as those who are more disadvantaged socially and economically are also more likely to be located in places of environmental risk. The same groups are the least mobile and least able to take precautionary measures, such as paying for flood insurance. It was envisaged that some groups could become more isolated and more vulnerable, as those with greater resources and awareness of climate-related risks start to move to safer, more desirable locations.

3.4 Long-term and short-term planning for climate change
The large scale and long timeframe of climate change, and the uncertainty associated with climate change models, could lead to paralysis instead of action. Government departments and LAs have more immediate and pressing concerns including welfare cuts, restructuring of the National Health Service and planning for major events such as the 2012 Olympic Games. The challenges around climate change adaptation are, in many ways, of a similar kind to those faced in public health promotion. The impact of a public health interventions with respect to the ‘wider determinants of health’ may not be seen for 20 years or more. There are also cost-benefit implications associated with the challenge of upfront investment for uncertain return. Defra are undertaking an Adaptation Economic Assessment of the costs and benefits of adaptation at national scale, which may be relevant here.

However, it was agreed that climate change is not just an issue for the future; extreme weather events are happening now. Examples include the severe winters of 2009/10 and 2010/11 across the country, the 2007 floods in the East Riding of Yorkshire, and the 2003 and 2006 heatwaves in Southern England. Building resilience to extreme weather now will mean individuals, communities and sectors will be better prepared to deal with climate change in the long-term. We need to focus on both the short-term (e.g. measures recommended in the recently published Heatwave and Cold weather plans and local dissemination of information for self-help measures during heat and cold waves, disseminated by Age UK) and long-term (e.g. ensuring the health care buildings and other infrastructure we are constructing now are resilient to the potential impacts of climate change – see Section 3.5 below).

The emerging LA-led Health and Wellbeing Boards (HWBs) could provide a forum for considering the health impacts of climate change and how these should best be tackled through commissioning and service design. The role with respect to climate change of HWBs and other parts of the new health and social care infrastructure is considered in Changing Climate, Changing Conversations - Climate Change and Health Reforms, a report prepared by the Local Government Association and the Social Care Institute for Excellence.

3.5 Resilience trade-offs and high-tech versus low-tech solutions for built infrastructures
Vulnerability and resilience are not always two sides of the same coin. It is possible to increase resilience to a particular hazard but for this to leave people vulnerable to others. For example, new super-insulated and sealed carbon zero homes designed to perform well in cold, continental climates may not perform well in UK summers, particularly given the projected increase in heatwave activity. Focusing on the NHS Estate, while Trust Boards are keen to save energy, whether to reduce energy
costs or to meet national carbon reduction targets, the guidance on temperatures in hospitals recommends 28 deg C dry bulb temperature as the absolute maximum. Understandably risk-averse NHS organisations, and the industry providers of new buildings, are minded to introduce mechanical cooling as a result, with potentially significant financial and carbon penalties when applied at the scale of the NHS Estate, 30 million m$^2$ in England alone.

Demand reduction should precede investigation into the appropriateness of renewable energy technologies. Order of magnitude savings can be achieved by manipulating the physical ‘stuff’ of a building: e.g., its basic configuration and orientation. Reducing the scale of the energy problem is key (by e.g. mitigating solar gains and admitting daylight more uniformly) before attempting to address the supply side. The mechanical supply and conditioning of internal air consumes large amounts of energy in fans and pumps. Techniques for achieving passively driven but controlled natural ventilation and cooling are now well established, but not in the health sector.

The DeDeRHECC team has demonstrated the basic viability of a passive low-energy new-build hospital (Short and Al-Maiyah, 2009) and adaptive refurbishment options (Short et al. 2010). In the case of the latter, Northwick Park Hospital Maternity Wing has been studied. It currently has significantly over-glazed elevations, leading to problems with winter heat losses, summer solar gains, and excessive day lighting adjacent to the windows. The hospital could however be wrapped in an ‘overcoat’ – a ‘thick’ elevation that would contain the stacks and ducts needed to serve a passively driven natural ventilation system and which would, by virtue of its thickness, shade the remaining windows to minimise glare and gains. Modelling suggests the significant energy savings and improved internal environment that would result.

Current work on the Ward Tower at Addenbrooke’s Hospital, Cambridge, shows that the building is resilient into future changing climates, but largely because the building leaks air to a prodigious extent. Its energy use could be dramatically reduced: an adapted Passive House or ‘PassivHaus’ type strategy would halve building energy use by sealing and mechanically ventilating the building, but sealed strategies may not add much resilience to warmer summers. Options with fewer mechanical devices would result in still greater energy savings, though from the 2040s some cooling would have to be installed to restore performance current comfort criteria. Hybrid schemes, or schemes that allow future cooling to be installed, may well be the best bet. This work is to be published shortly as two papers in *Building and Environment*.

The Bradford Royal Infirmary’s ‘Nightingale’ wards, the quintessential open dormitories of the pre-NHS hospital, demonstrate particular resilience – perhaps unsurprisingly given their heavy masonry construction and large windows allowing cross-ventilation. Nonetheless, they can be given added resilience by restoring (with appropriate safeguards) the larger window opening areas of the original fenestration (reduced in recent years out of concern for patient safety). This work is forthcoming in *BSERT*. Interesting results are emerging from the potential use of patient operated slow-moving ceiling fans in reducing perceived air temperatures.

4. **Summary and ways forward**

- Increasing attention is being given to the impacts of climate change on health and social care. The need for a cross-sector, multi-scalar approach to address these challenges is recognised.
- While the government’s localism agenda presents opportunities for strengthening local action on climate change, we must consider the support and guidance provided to LAs, local voluntary and private sector organisations and communities themselves.
- Changes in health and social care delivery, including the commissioning of services through the private and voluntary sectors, ‘personalisation’ and ‘care closer to home’ schemes, present a number of challenges for the mainstreaming of climate change adaptation
strategies. They also have implications for emergency response procedures and the ways that services are made available before, during and after extreme weather events.

- Both short-term and long-term planning for climate change and extreme weather events are required.
- It is important to ensure that health and other social inequalities are not created or exacerbated as a result of climate change hazards and risks, and services should be planned and delivered with this in mind.

Ways forward:

- Identify one or more knowledge sharing platforms for the exchange of information, resources and examples of good practice from LAs, and the private and voluntary sectors across the UK.
- Consider building ‘climate change resilience’ measures into criteria for commissioning and tendering for service provision.
- Incorporate into design and commissioning adaptation measures, as well as mitigation strategies, to make built infrastructure more sustainable under conditions of climate change.
- Recognise local and individual variability in ‘vulnerability’ to climate change effects and planning for environmental justice.
- Include local communities, especially service users and carers in planning, designing and maintaining the mitigation and adaptation services required to enable people to cope with and survive extreme weather events.

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We welcome any further comments. Please email Dr Katie Oven: k.j.oven@dur.ac.uk

References


