Implementing extreme weather event advice and guidance in English public health systems

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Abstract

Background: Extreme Weather Events (EWEs) can significantly impact on mortality and morbidity in the UK. The extent to which EWE guidance is disseminated and filters across health and social care systems, to the local, operational level, is not well understood.

Methods: This study develops tools and resources to assist local stakeholders to cascade national 'all weather' EWE guidance across local systems. These resources are also used to evaluate the local interpretation and implementation this advice and guidance within three local authority areas. In total five discussion group meetings were held and 45 practitioners took part in the study. A thematic analysis was conducted.

Results: The main themes emerging from the analysis related to: awareness of PHE guidance for EWE preparedness; data sharing feasibility; community engagement; specific conditions in remote rural areas; capacity of frontline staff.

Conclusions: The relative difficulty in finding where the study 'best fits' on local stakeholders' agendas suggests that year-round and preparedness planning for EWEs may not have been considered a high priority in participating areas. This study adds to the relatively limited evidence internationally concerning the practical implementation at local level of national adaptation advice and guidance and potential barriers to achieving this.

Key words: Extreme weather events; public health; policy implementation

Background

Extreme Weather Events (EWEs), including heatwaves, cold weather and flooding, can significantly impact on mortality and morbidity in the UK[1-6]. Since 2002-03 there have been on average 26,500 excess winter deaths a year in the UK, approximately twice the rate of excess deaths occurring in Finland, and severe winter weather has caused significant disruption to services in recent years[7]. The 2003 heatwave caused approximately 2,000 excess deaths in England, with heat also associated with other health hazards such as air pollution[4]. Floods are known to cause significant harm to mental health, and may, more rarely, be associated with drowning, infectious diseases and carbon monoxide poisoning[6]. All population groups are affected, but certain groups are particularly vulnerable to the risks of EWE hazards[4-6]. Table 1 provides details of those identified as the most 'vulnerable' in relation to each of the three weather events focused on here.

(insert table 1 roughly here)

Under the 2004 Civil Contingencies Act in the UK, there is a duty to warn and inform the public before, during and after an emergency. Public Health England (PHE), which is an executive agency of the Department of Health, publishes annual heatwave and cold weather plans[4,5] which aim to prepare for, alert people to, and prevent, the major avoidable effects on health during periods of severe heat or cold in England. The heatwave and cold weather plans provide end users (the NHS, local authorities, social care, and other public agencies; professionals working with people at risk; individuals, local communities and voluntary groups) with a series of alerts giving guidance about what action to take when a heatwave or extreme cold event is expected or occurring. These alerts range from level 0 (year-round planning) to Level 4 (major incident – emergency response). Research reported here focused on the implementation of the advice and guidance provided for year-round and preparedness planning (levels 0 and 1 respectively). This is based on the expectation that by improving resilience and preparedness the adverse health effects of EWEs will be reduced[4,8,9].

The extent to which EWE guidance is disseminated and filters across health and social care systems, to the local, operational level, is not well understood. The Intergovernmental Panel on Climate Change[10(p.97)] concluded that, 'most assessments of adaptation have been restricted to impacts, vulnerability, and adaptation planning, with very few assessing the processes of implementation or the effects of adaptation actions.' There is a demand in local public health systems for knowledge and advice on extreme event management[11,12]. It is important that iterative risk management approaches are developed[10] and that the place-based nature of resilience is acknowledged, being

'rooted in linked social, economic and environmental systems that are always in some ways unique to a particular place'.[13(p.723)] The PHE[4] advice and guidance adopts just such an approach stating that, 'all local organisations should consider this document [the Heat Wave Plan (HWP)] and satisfy themselves that the suggested actions and Heat-Health Watch Alerts are understood across the system, and that local plans are adapted as appropriate to the local context.'

Methods

- **Study design**

Two studies[14,15] cited in an overview in *The Lancet* [3] highlight that institutions and social norms of behaviour and expectation will play a significant part in how new weather patterns impact health. Consequently, a relational approach to research, associated with a strong emphasis on stakeholder perceptions[16] provides valuable insights into how institutions and individuals understand, interpret and implement advice and guidance about preventing negative health impacts resulting from EWEs. This study responds to these institutional and methodological imperatives by, firstly, developing tools and resources to assist local stakeholders to cascade national guidance across local systems and, secondly, to use these tools to evaluate the interpretation and implementation of the advice and guidance about EWE within local authority areas. In so doing the project sought to address the following gaps in understanding: to what extent PHE guidance is cascaded across local systems; how it is interpreted and used at different levels of policy and practice locally; potential barriers to implementation; and how preparedness planning can be incorporated into existing routine health and social care practice. This builds on research[8,12,17] that suggests adapting health and social care provision to EWEs requires incorporating knowledge and action from a range of stakeholders at different locations and levels in local systems.

Local policy makers, and especially frontline practitioners, may have limited time available to consider policy initiatives, such as planning extreme weather resilience, due to competing priorities for routine care provision. Consequently, we expected that at the local level it would be easier for service managers to work with a single guidance document. Therefore, separate guidance notes provided by PHE[4-6] and the Environment Agency in the National Flooding Emergency Framework[19], on preparedness for cold, heatwave or floods, were merged to produce 'all weather' generic guidance in a simplified format. This 'all weather' EWE advice and guidance has been summarised in different formats to suit the needs of managers (see table 2) and practitioners (see table 3) operating at different levels of the system.

(Tables 2 and 3 roughly here)

The aim was to offer materials that could be easily incorporated once or twice a year as a brief agenda item in routine team meetings. The following questions were intended to provide a short assessment tool to be used alongside the summarised all-weather advice and guidance outlined in tables 2 and 3:

1. Are you aware of guidance (from, for example, PHE, EA and Defra) for extreme weather events?

2. How much of the guidance are you undertaking?

    a. Has it changed the way you do things?

    b. Did you feel you had the tools to assist your local practice?

3. Do you perceive any barriers to implementing the kinds of actions for year round planning and preparedness listed on the front page (i.e., table 2 or 3)?

4. In addition to, or instead of, the guidance outlined, are you undertaking different/additional actions?

Taken together tables 2 and 3 and the questions listed above provide a resource for localities to assess (and promote) local awareness and implementation of EWE advice and guidance, while providing the researchers with tools to evaluate local implementation.

- **Sample**

The research was undertaken in three local authority areas in the north of England between spring and autumn, 2014. Two of these were largely rural and one was largely urban. Cold weather and flooding were the most common types of recent EWEs to cause disruption in these areas. Given that this was an exploratory study with limited resources, we focused the research on local authorities as key actors, initially approaching Directors of Public Health and, with their agreement, contacting staff and teams most likely to include those working in relevant roles identified in the national guidance. Table 4 provides details of the types of meetings and roles the research team sought to engage with. In all of the participating local authority areas it took longer than originally expected to identify groups/teams willing to take part in the research. This relative difficulty in finding where this project 'best fitted' within local organisations became an important finding in its own right (discussed below). However, once access to the appropriate groups was approved and arranged, the study design described above and in table 2 was 'trialled' with 'middle managers'. While demand

was expressed among some managers for the version designed for frontline staff (table 3) it was not possible for the researchers to trial this (as discussed below).

(Table 4 roughly here)

In total five discussion group meetings were held with staff across the three study localities and 45 practitioners participated in these meetings. Members of staff taking part in the study ranged from senior managers in social care, policy and communications, and emergency planning to middle managers in public health, adult social care, highways and street maintenance, and civil contingencies.

- **Data collection and analysis**

A variety of approaches were used for data collection, reflecting the type of meetings accessed by the research team. Detailed notes were taken by the interviewer at three meetings with senior managers, at the request of participants. One discussion group was digitally recorded and transcribed and the final meeting, which involved multiple break-out groups, was recorded through detailed notes taken by the researchers and by participants. A thematic analysis was conducted to identify themes from the qualitative data. Thematic analyses are one of the most common approaches to qualitative data analysis[20] and have been used in previous research around EWE planning[21]. Our approach adopts techniques such as: looking for repetition and similarities or differences in the data; triangulating interpretations by more than one analyst; employing theory-related material (i.e., through the discussion group schedule) that uses social scientific concepts about policy implementation as springboards for themes[22]. Both researchers familiarised themselves with the transcripts. The lead researcher created a preliminary list of themes and met with the second researcher to discuss, refine and incorporate additional concepts. This process was repeated until final agreement on interpretation of the data was reached.

- **Ethics**

Ethical issues were carefully considered and the research was approved by a departmental ethics committee in the host University and a local Director of Public Health in a regional research governance role. All participants read information sheets about the study prior to taking part and had the opportunity to ask the researchers any questions before signing consent forms allowing anonymised information to be used for the study.

Results

The main themes emerging from the analysis related to: awareness of PHE guidance for EWE preparedness; data sharing feasibility; community engagement; specific conditions in remote rural areas; capacity of frontline staff.

- **Awareness of the guidance**

Senior and middle managers were familiar with the national guidance and reported that a wide range of the recommended action was being undertaken in their localities. Versions of the national guidance are tailored for local services and circulated out from the centre in the form of locally adapted extreme weather protocols/severe weather plans. Some participants stated that the adaptation of guidance has helped in local practice, especially in providing tools to assist in a more preventative and proactive approach. This year-round planning tends to be led by community resilience and emergency planning officers but may also build in knowledge and actions from local health and social care managers, public health departments, service users, informal carers and third parties (e.g. service users' family members, and neighbours) and community representatives at a smaller locality scale. Those involved may, for example, use bespoke decision trees to determine their actions, and they place emphasis on the development of informal networks and providing good communication links with the 'grassroots'. Concerns and alerts are fed back to the 'centre' (e.g., local service managers or emergency planning directors).

A number of respondents described diverse actions which they considered to be different from those covered in the guidance, but were in fact in line with formal guidance, for example, flexible and joint working and risk assessments as part of ongoing care and support. This suggests that some respondents are not as fully aware as was claimed of the advice and guidance, but are developing good practice responses, nevertheless.

- **Sharing information about vulnerability**

Discussions about sharing data across relevant service providers and agencies stressed the need for an up-to-date, centralised list shared in advance of EWEs, to support effective multi-agency working. However, it was also recognised that these are sensitive data and to which access is controlled and should only be available on a 'need to know' basis and in real time, given the requirement for privacy and protection of sensitive personal data. It was also acknowledged that, at the frontline level, a combination of information held by service providers and local community intelligence would need to come into play.

- **Community engagement**

Some participants perceived that there was a lack of interest and/or awareness among service users and members of the public in the guidance being discussed. It was argued that local communities can be 'over-reliant' on public services to 'step-in' during EWEs, which makes the implementation of preparedness guidance particularly challenging. The ongoing shift to commissioning, rather than providing, care services through Adult Social Care has fragmented local knowledge and engagement among a more diverse range of agencies, as day-to-day interactions with service users are increasingly carried out by independent care providers.

- **Rural areas**

Local variations in conditions, e.g., rural vs. urban settings appeared to be significant for the implementation of the guidance and the issues faced by stakeholders varied between these settings. In geographically extensive, sparsely populated local authorities, clients are often in very remote, isolated locations, and frontline workers may not live close to service users. The scale of the road infrastructure makes it costly to keep passable in extreme weather and presents challenges for preparedness as it can be difficult to predict which particular roads will be blocked during an EWE. Consequently, 4x4 vehicles need to be widely accessible and available to negotiate snow drifts and floods. Further issues in rural areas included: the sometimes limited availability of emergency services; utility failures and network problems and limited coverage for IT and mobile communications (including telecare 'going down' if electricity and phones go off). It was considered particularly important in rural areas that frontline staff should have an awareness of preparedness planning, highlighting issues specific to their local area, since they are more likely to need to act independently during an EWE. The higher density of staff in urban areas helps to ensure that contact with clients is more easily maintained (even if this means a reduced number of visits) as it is simpler for staff to work flexibly across different neighbourhoods.

- **Capacity of frontline staff**

In two areas, senior adult social care managers questioned the extent to which frontline staff had the capacity to embed awareness of year-round planning within their working practices. It was argued that given the 'hundreds of agendas' that may have some relevance for their practice there is not capacity to consider preparedness planning at a frontline level. Consequently, it was argued that frontline staff response to EWE must be reactive rather than anticipatory. However, their practice may be influenced by preparedness planning from those in managerial roles in the organisation, who

need to ensure that when severe weather seems likely, timely directives based on prior planning begin to cascade down to frontline staff.

Discussion

- **Main findings**

The relative difficulty in finding where the study 'best fits' on local stakeholders' agendas suggests that year-round and preparedness planning for EWEs may not have been considered a high priority in participating areas. In particular, the difficulty in engaging frontline practitioners in the research is consistent with the notion that EWE planning takes 'second place' alongside competing priorities[8] that may limit the scope of frontline workers to engage with this agenda. Participants suggested this is compounded by the lack of interest/awareness among service users and members of the public in the guidance. While further research has reported members of the public characterising state intervention in this field as uncalled for, intrusive, patronising and infringing upon individuals' independence[24]. Against this backdrop, developing preparedness plans for potentially vulnerable populations is particularly challenging and further exacerbated by the contingent and fluctuating characteristics of vulnerability[22]. In this respect our findings, in common with other research[17,22] indicated that combining information held by service providers and local intelligence was important for responding to the shifting needs and vulnerability of people.

A recent review of the international literature[3] argues, 'effective adaptation requires institutional collaboration across levels, integrated approaches, appropriate long term funding, and institutions flexible enough to cope with changing circumstances and surprise.' The findings about competing agendas and conflicting accounts of levels of awareness among policy makers suggest this vision, although necessary, will be challenging to embed across institutions. However, it should also be recognised that many agendas overlap (e.g., ageing, social isolation, cold/hot homes) and that 'event specific' approaches can be integrated alongside, rather than in competition with these.

- **What is already known**

Limited research has been carried out into the implementation of the EWE advice and guidance in England. Existing work focuses mainly on heat waves. Some research suggests that disaster risk knowledge is provided from the national level through the HWP and seems to harmonize local heatwave planning approaches in London[11]. However, two studies[8,22] found that the HWP was a low priority among the frontline staff and managers they interviewed. Furthermore, raising awareness

among frontline health and social care staff about the HWP may be needed for the guidance to be fully implemented[8].

- **Limitations**

The study was relatively small-scale, focusing on action taken to implement national guidance in three local authority areas in one part of England, and engaging with managerial level local authority and public health staff. Consequently, we cannot assume that these findings are generalisable across local authorities or sectors in England. It was also beyond the scope of this study to evaluate whether the local implementation of the guidance was effective during EWEs.

- **What the study adds**

The Lancet Commission[3] has called for public health authorities to enhance preparedness planning for extreme events, emphasising that a public health perspective has the potential to unite all actors behind a common cause – the health and wellbeing of our families, communities, and countries. Similarly adaptation and resilience planning have been identified as an opportunity for broad-based participation by a wide-range of stakeholders with 'co-benefits' of improved relationships and communication structures across diverse groups[13]. These complement a growing movement in England to 'rethink the public health workforce' and widen the role to anyone who has the opportunity or ability to improve public health[4]. Furthermore, the IPCC[10] asserts that, 'the complexity of adaptation actions across scales and contexts means that monitoring and learning are important components of effective adaptation.' This study addresses these points, firstly, by providing a series of tools to assist in local implementation. Secondly, the results add to the relatively limited evidence internationally about what is known about the implementation of EWE advice and guidance and potential barriers to achieving this.

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