



Public Health
England

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Heatwave plan for England

Protecting health and reducing harm from
severe heat and heatwaves



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Glossary of abbreviations

CCGs	clinical commissioning groups
CCS	Civil Contingencies Secretariat
CO	Cabinet Office
MHCLG	Ministry of Housing, Communities and Local Government
DHSC	Department of Health & Social Care
EH	environmental health
EPRR	emergency preparedness, resilience and response
HHSRS	housing health and safety rating system
HWB	Health and Wellbeing Boards
HWS	Health and Wellbeing Strategy
JSNA	joint strategic needs assessment
LA	local authority
LHRP	Local Health Resilience Partnership
LRF	Local Resilience Forum
OGD	other government department
PHE	Public Health England
RED	Resilience and Emergencies Division, MHCLG

Foreword



Professor Dame Sally C Davies
Chief Medical Officer
Department of Health & Social Care

Although many of us enjoy the sunshine, as a result of climate change we are increasingly likely to experience extreme summer temperatures that may be harmful to health. For example the temperatures reached in 2003 are likely to be a ‘normal’ summer by 2040, and indeed globally, countries have already experienced record temperatures. We do not know whether or not there will be severe heat over the course of this summer, but we do want to make sure that everyone takes simple precautions to stay healthy during periods of hot weather and when in the sun.

The Heatwave plan for England remains a central part of the Department of Health & Social Care’s support to the NHS, social care and local authorities, providing guidance on how to prepare for and respond to a heatwave which can affect everybody’s health, but particularly the most vulnerable people in society.

The purpose of this heatwave plan is to reduce summer deaths and illness by raising public awareness and triggering actions in the NHS, public health, social care and other community and voluntary organisations to support people who have health, housing or economic circumstances that increase their vulnerability to heat. Communities can also help their neighbours, friends and relatives to protect against avoidable harm to health this summer.

This plan builds on many years of experience of developing and improving the ability of the health sector and its partners to deal with significant periods of hot weather. It is up to each locality to consider the actions in this plan and to adapt and incorporate them in local plans as appropriate to the local situation.

We know that the Heatwave plan for England has successfully helped individuals, communities and authorities better prepare and plan for severe summer temperatures. We want people to enjoy the summer and to reduce the harm from heatwaves to those most at risk, for now and in the future.

A handwritten signature in black ink that reads "Sally C Davies". The signature is written in a cursive, flowing style.

Professor Dame Sally C Davies
Chief Medical Officer
Department of Health & Social Care

Executive summary

The Heatwave plan for England is a plan intended to protect the population from heat-related harm to health. It aims to prepare for, alert people to, and prevent, the major avoidable effects on health during periods of severe heat in England.

It recommends a series of steps to reduce the risks to health from prolonged exposure to severe heat for:

- the NHS, local authorities, social care, and other public agencies
- professionals working with people at risk
- individuals, local communities and voluntary groups

The heatwave plan has been published annually since 2004, following the devastating pan-European heatwave in 2003. This year's plan builds on many years of experience of developing and improving the ability of the health sector and its partners to deal with significant periods of hot weather.

The heatwave plan was significantly re-shaped in 2012 from previous years. There have since been changes to reflect the changes in the health care and public health landscape, to align the heatwave plan more closely with its sister Cold weather plan and to link planning for severe heat with the Public Health Outcomes Framework.

The plan continues to be underpinned by a system of heatwave alerts, developed with the Met Office. The heatwave plan describes the **heat-health watch system** which operates in England from 1 June to 15 September each year. During this period, the Met Office may forecast heatwaves, as defined by forecasts of day and night-time temperatures and their duration.

The heat-health watch system now comprises five main levels (Levels 0-4), from long-term planning for severe heat, through summer and heatwave preparedness, to a major national emergency. Each alert level should trigger a series of appropriate actions which are detailed in the heatwave plan.

The plan is a good practice guide and the actions denoted within it are illustrative. It is a collaborative plan supported by NHS England to protect and promote the health of the population. There are three key messages we recommend to all local areas, particularly in view of recent structural changes:

1. All local organisations should consider this document 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.
2. NHS and local authority commissioners, together with multi-agency Local Resilience Forums and Local Health Resilience Partnerships, should satisfy themselves that the distribution of **heat-health watch alerts will reach those that need to take action**, especially in light of recent structural changes.
3. NHS and local authority commissioners, together with multi-agency Local Resilience Forums, should satisfy themselves that **providers and stakeholders take appropriate action** according to the heat-health watch alert level in place and their professional judgements.

Chapter 1

Why this plan is needed

Bright, hot summer days are what many of us look forward to for the rest of the year – especially in cold, wet England!

However, while we're enjoying the balmy days of summer, we should not forget that the temperature can get too high, that it can become uncomfortably hot, and for some, it can become dangerously hot.

The evidence about the risks to health from heatwaves is extensive and consistent from around the world. Excessive exposure to high temperatures can kill. During the summer heatwave in Northern France in August 2003, unprecedentedly high day- and night-time temperatures for a period of three weeks resulted in 15,000 excess deaths. The vast majority of these were among older people.

In England that year, there were over 2,000 excess deaths over the 10 day heatwave period which lasted from 4 to 13 August 2003, compared to the previous five years over the same period.

The first Heatwave Plan for England was published in 2004 in response to this event. Since that time we have had a significant heatwave in 2006 (when it was estimated that there were about 680 excess deaths compared to similar periods in previous years). In 2009 there were approximately 300 excess summer deaths during a heatwave compared to similar periods in previous years.

Excess deaths are not just deaths of those who would have died anyway in the next few weeks or months due to illness or old age. There is strong evidence that these summer deaths are indeed 'extra' and are the result of heat-related conditions.

In contrast to deaths associated with cold snaps in winter, the rise in mortality as a result of very warm weather follows very sharply – within one or two days of the temperature rising.

This means that:

- by the time a heatwave starts, the window of opportunity for effective action is very short indeed; and therefore
- advanced planning and preparedness is essential.

We know that effective action, taken early, can reduce the health impacts of exposure to excessive heat. Most of these are simple preventive measures which to be effective, need to be planned in advance of a heatwave.

The aim of this plan is to raise public awareness of the dangers of excessive heat to health and to ensure that health, social care and other voluntary and community organisations and wider civic society is prepared and able to deal with a heatwave when it comes so as to protect the most vulnerable.

1.1 Making the case: the impact of heat on health – now and in the future

We continue to focus the plan itself on actions with the supporting material in a separate companion volume entitled, "[Making the case: the impact of heat on health – now and in the future](#)".

As in previous years, the heatwave plan is also supported by a series of Information Guides published [online](#) which aim to provide an authoritative source of additional information about the effects of severe hot weather on health for:

- looking after yourself and others during hot weather (for Individuals, families and carers)
- supporting vulnerable people before and during a heatwave: advice for health and social care professionals
- supporting vulnerable people before and during a heatwave: advice for care home managers and staff
- looking after children and those in early years settings during heatwaves: guidance for teachers and professionals

These supporting documents were previously updated to reflect the changing responsibilities as a result of the Health and Social Care Act (2012).

1.2 The heatwave plan – a plan to protect health from heat-related harm

The heatwave plan sets out what should happen before and during periods of severe heat in England. It spells out what preparations both individuals and organisations can make to reduce health risks and includes specific measures to protect at-risk groups.

The arrangements describe what needs to be done by health and social care organisations and other bodies to raise awareness of the risks relating to severe hot weather and what preparations both individuals and organisations should make to reduce those risks.

The plan provides good practice and advice on how to respond and what to do once severe hot weather has been forecast. It also explains the responsibilities at national and local level

for alerting people once a heatwave has been forecast, and for advising them how to respond and what to do during a heatwave.

The plan is primarily for health and social care services and other public agencies and professionals who interact with those most at risk from excessive heat during heatwaves.

At-risk groups include older people, the very young and people with pre-existing medical conditions as well as those whose health, housing or economic circumstances put them at greater risk of harm from very hot weather. For example, some medications make the skin especially sensitive to sunlight with potential harm caused by ultraviolet rays. (See Section 1.2 in the accompanying document, *'Making the Case'*, for more information).

The plan is also intended to mobilise individuals and communities to help to protect their neighbours, friends, relatives, and themselves against avoidable health problems during spells of very hot weather. Broadcast media and alerting agencies may also find this plan useful.

The plan focuses on the effects of severe hot weather on health and wellbeing, however, severe and extended heatwaves can also cause severe disruption to general services. For this reason, multi-agency **Local Health Resilience Partnerships and Local Resilience Forums** will have a critical role in preparing and responding to heatwaves at a local level, working closely with **Health and Wellbeing Boards** on longer term strategic planning.

1.3 The heatwave plan and new arrangements

The implementation of the Health and Social Care Act 2012 has seen the abolition of Primary Care Trusts and Strategic Health Authorities and the creation of a number of new bodies including Public Health England (PHE), NHS England and clinical commissioning groups (CCGs). At a local level, responsibility for public health has transferred to local authorities.

The **Department of Health & Social Care** (DHSC) is responsible for strategic leadership of both health and social care systems, but no longer has direct management of most NHS systems. **NHS England** provides national leadership for improving health care outcomes, directly commissions general practice services, some specialist services, and oversees **clinical commissioning groups**. CCGs now commission planned hospital care, rehabilitative care, urgent and emergency care, most community health services and mental health and learning disability services. **Directors of Public Health** in local authorities are responsible for population health outcomes, supported by **Public Health England** (PHE), which provides national leadership and expert services to support public health.

Responsibility for preparing and publishing the Heatwave plan for England has passed to PHE. PHE will seek to ensure that the heatwave plan is widely communicated using a variety of channels to ensure maximum publicity.

PHE will make advice available to the public and health and social care professionals in affected regions, in preparation for an imminent heatwave, via NHS Choices, and the websites of the Met Office, PHE and DHSC.

The NHS website (www.nhs.uk) continues to provide reliable advice and guidance throughout the year on how to keep fit and well. It includes information on how to stay well in hot weather (www.nhs.uk/live-well/healthy-body/heatwave-how-to-cope-in-hot-weather).

The heatwave plan builds on existing measures taken by DHSC, the NHS and local authorities to protect individuals and communities from the effects of severe heatwaves and encourage community resilience. It outlines the key areas where public, independent and voluntary sector health and social care organisations should work together to maintain and improve integrated arrangements for planning and response in order to deliver the best outcomes possible during a heatwave during the summer. It is the responsibility of each local area to ensure that preparedness and response plans are drawn up and tested.

At local level emergency planning arrangements run by local government and the NHS are brought together in the **Local Resilience Forum** (LRF), which has many years of experience of the heatwave plan and heat-health watch alert system. **Local Health Resilience Partnerships** (LHRPs) have been established to bring together local health sector organisations to support strategic planning.

Health and Wellbeing Boards act as forums for commissioners across the NHS, social care and public health systems and are responsible for joint strategic needs assessments and Health and Wellbeing Strategies to inform commissioning. Engagement of these boards in the long-term strategic preparation for heatwaves and other aspects related to climate change adaptation is critical in order to reduce the risks and harness opportunities to improve health. **Councillors**, especially those with portfolio responsibility for health, have important strategic overview and scrutiny functions, as well as community engagement and decision-making roles.

1.3.1 The core elements of the plan

The heatwave plan depends on having well co-ordinated plans in place for how to deal with severe hot weather before it strikes. It builds on our own experience in England and on expert advice from the WHO and the EuroHEAT project (Section 4 of companion document 'Making the case') in developing other national heatwave plans. The core elements of the plan are:

1.3.2 Strategic planning

The climate is changing and current analysis in the national [UK climate change risk assessment](#) suggests that summers are going to get hotter in the future (see [‘Making the case’](#)). Long-term planning now is essential to support:

- co-ordinated long-term planning between agencies to protect people and infrastructure from the effects of severe hot weather and thus reduce excess summer illness and death;
- long-term multi-agency planning to adapt to and reduce the impact of climate change, including ‘greening the built environment’, building design (eg increasing shading around and insulation of buildings), increasing energy efficiency (eg reducing carbon emissions); and transport policies

We strongly recommend that this is considered by Health and Wellbeing Boards and included in joint strategic needs assessments (JSNAs) and Joint Health and Wellbeing Strategies (JHWSs), in order to inform commissioning.

1.3.3 Alert system (advance warning and advice over the summer)

The following systems are in place:

- a heat-health watch alert system operates from 1 June to 15 September, based on Met Office forecasts and data. This will trigger levels of response from the NHS, government and public health system, and communicate risks.
- advice and information for the public and for health and social care professionals, particularly those working with at-risk groups. This includes both general preparation for hot weather and more specific advice when a severe heatwave is forecast

1.3.4 Heatwave and summer preparedness

The following elements also need to be in place:

- agreement on a lead body at local or sub-national level is required to co-ordinate multi-agency collaboration and to direct the response. This may be for example, NHS-England whose role, in collaboration with CCGs, will be to ensure that local providers of NHS commissioned care have the capacity and capability to deliver their functions as laid out in this plan - NHS England will hold the providers of NHS commissioned care to account for implementation, in co-ordination with CCGs as appropriate
- other elements which local NHS, public health and social care organisations will oversee:
 - action to reduce indoor heat exposure (medium and short term)
 - particular care for vulnerable population groups
 - preparedness of the health and social care system – staff training and planning, appropriate healthcare and the physical environment

1.3.5 Communicating with the public

Working with the media to get advice to people quickly, both before and during a heatwave:

- the Civil Contingencies Act 2004 provides a duty on category 1 responders to warn and inform the public before, during and after an emergency
- there should be a local heat-related health information plan – specifying what is communicated, to whom, when and why
- this should raise awareness of how excessive exposure to severe heat affects health and what preventive action people can take, both throughout the year and during heatwaves to stay cool
- attention should especially be given to ensuring that key public health messages (box 1, section 3.2) reach vulnerable groups and those who care for them (eg caregivers of the chronically ill, parents of infants) in a suitable and timely way

1.3.6 Working with service providers

The following is required:

- advising hospitals and care, residential and nursing homes to provide cool areas and monitor indoor temperatures to reduce the risk of heat-related illness and death in the most vulnerable populations
- helping GPs and district nurses and social workers to identify vulnerable patients and clients on their practice lists by providing them with heatwave information and good practice
- ensuring that health and social care organisations and voluntary groups implement measures to protect people in their care and reduce heat-related illness and death in those most at risk
- recommending health visitors and school nurses provide advice to parents and childcare providers and schools and young people respectively regarding behaviours to protect health during hot weather (eg fluid intake, reducing excessive sun exposure, avoiding diving into cold water)
- working with registered providers of housing to encourage wardens/caretakers to keep an eye out for vulnerable tenants during heatwaves, and to consider measures to promote environmental cooling such as tree planting on their estates and building design
- supporting staff to remain fit and well during spells of hot weather

1.3.7 Engaging the community

The following is required:

- providing extra help, where possible, to care for those most at risk, including isolated older people and those with a serious illness or disability. This could come from local authorities, health and social care services, the voluntary sector, communities and faith groups, families and others. This is determined locally as part of the person's individual care plan and will be based on existing relationships between statutory and voluntary bodies
- additional help to ensure that people are claiming their entitlements to benefits should be signposted

1.3.8 Monitoring/evaluation

The following is required:

- real-time surveillance and evaluation, such as that provided by PHE (see Chapter 5)

Chapter 2

The heat-health alert service

A heat-health watch alert system will operate in England from 1 June to 15 September each year. During this period, the Met Office may forecast heatwaves, as defined by forecasts of day and night-time temperatures and their duration.

The heat-health watch system comprises five main levels (Levels 0 to 4) outlined in Figure 2.1 and described in further detail below.

Level 0 is year round long term planning, so that longer term actions (such as those linked to spatial planning and housing) are taken to reduce the harm to health of severe heat when it occurs. Level 1 encourages organisations to plan for the summer while Levels 2 to 3 are based on threshold day and night-time temperatures as defined by the Met Office. These vary from region to region, but the average threshold temperature is 30°C during the day and 15°C overnight. Level 4 is a judgement at national level made as a result of a cross-government assessment of the weather conditions, and occurs when the impacts of heat extend beyond the health sector. Details of individual regional thresholds are given in **Annex 1**. **Annex 2** shows the core messages to be broadcast as official PHE warnings alongside national and regional weather forecasts at different heatwave alert levels. They may be expanded or otherwise refined in discussion with broadcasters and weather presenters.

While heat-health watch is in operation, PHE will routinely monitor outputs from real-time syndromic surveillance systems. PHE will also produce three key mortality outputs for heatwave monitoring in the event of a heatwave and share these as internal reports to DHSC. Further detailed information on these outputs in line with the heat health levels can be found in Chapter 5.

Level 0: Long-term planning to reduce risk from heatwaves

Long-term planning includes year-round joint working to reduce the impact of climate change and ensure maximum adaptation to reduce harm from heatwaves. This involves influencing urban planning to keep housing, workplaces, transport systems and the built environment cool and energy efficient. Long-term heatwave planning is a key consideration highlighted in [the second National Adaptation Programme \(NAP\)](#), which sets out actions to address the risks identified in the [UK Climate Change Risk Assessment](#).

Figure 2.1: Heatwave Alert levels

Level 0	Long-term planning - All year
Level 1	Heatwave and Summer preparedness programme - 1 June – 15 September
Level 2	Heatwave is forecast – Alert and readiness - 60% risk of heatwave in the next 2 to 3 days
Level 3	Heatwave Action - temperature reached in one or more Met Office National Severe Weather Warning Service regions
Level 4	Major incident – Emergency response - central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health

Level 1: Heatwave and summer preparedness

Summer preparedness runs from 1 June to 15 September when a Level 1 alert will be issued. The heatwave plan will remain at Level 1 unless a higher alert is triggered. During the summer months, social and healthcare services need to ensure that awareness and background preparedness are maintained by implementing the measures set out in the heatwave plan.

Level 2: Alert and readiness

This is triggered as soon as the Met Office forecasts that there is a 60 per cent chance of temperatures being high enough on at least two consecutive days to have significant effects on health. This will normally occur 2 to 3 days before the event is expected. As death rates rise soon after temperature increases, with many deaths occurring in the first two days, this is an important stage to ensure readiness and swift action to reduce harm from a potential heatwave.

Level 3: Heatwave action

This is triggered as soon as the Met Office confirms that threshold temperatures have been reached in any one region or more. This stage requires specific actions targeted at high-risk groups.

Level 4: National emergency

This is reached when a heatwave is so severe and/or prolonged that its effects extend outside health and social care, such as power or water shortages, and/or where the integrity of health and social care systems is threatened. At this level, illness and death may occur among the fit and healthy, and not just in high-risk groups and will require a multi-sector response at national and regional levels.

The decision to go to a Level 4 is made at national level and will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat (Cabinet Office).

2.1 Met Office heatwave warnings

Heatwave warnings will:

- be colour-coded to indicate more easily the National Severe Weather Warning Service (NSWWS) regions affected by a change from one Heatwave Warning level to another (eg from Level 2 to Level 3) – this will help responders to clarify what actions in turn need to be taken
- published and sent by the Met Office at 09:00 rather than 10:00 to aid planners
- indicate which local resilience forum (LRF) is situated within the NSWWS region, in order to help responders
- include a link to Met Office and weather pattern maps
- use social media (e.g. Twitter/Facebook). The alerts are already backed up by tweets, linking to the alert webpage through the Met Office twitter feed. You can subscribe to this feed by following: [@metoffice](https://twitter.com/metoffice).

Figure 2.2: Met Office service and notifications

Service	Purpose	Distribution	Timing
Heatwave warning	To provide early warning of high temperatures. The alert levels have been set with thresholds known to cause ill health from severe hot weather. They are to help ensure that healthcare staff and resources are fully prepared for hot weather periods that might impact on health and to raise awareness for those individuals who are more vulnerable to hot weather conditions.	E-mail	Alert issued as soon as agreed threshold has been reached and when there is a change in alert level. Issued between 1 June and 15 September
Heatwave planning advice	To provide advice throughout the summer period relating to high temperatures.	E-mail	Twice a week (9am each Monday and Friday from 1 June to 15 September)
National Severe Weather Warning Service (NSWWS)	To provide warnings of severe or hazardous weather that has the potential to cause danger to life or widespread disruption. These warnings are issued to: <ul style="list-style-type: none"> • the public, to prompt consideration of actions they may need to take • emergency responders, to trigger their plans to protect the public from impacts in advance of an event, and to help them recover from any impacts after the event 	Email, web, SMS, TV, radio	When required
General weather forecasts	To enable the public to make informed decisions about their day to day activities	Web, TV, radio	Every day

Figure 2.2 summarises the Met Office service and notifications. A dummy alert for illustration purposes is given in Figure 2.3, and Figure 2.4 illustrates how heatwave alert messages should be cascaded by e-mail throughout the local community and nationally as appropriate. Local Resilience Forums, Local Health Resilience Partnerships, and health and social care organisations will want to develop this into a specific cascade system that is appropriate for their local area.

Figure 2.3: Example of a Heat-Health Watch Alert

Heatwave Warning
Tel: 0870 900 0100 www.metoffice.gov.uk

NHS (Ref: MO43)
Forecast issued on Saturday, 18 August 2012 at 09:00

Heat-Health Watch

Level 2 - Alert & Readiness
<http://www.metoffice.gov.uk/public/weather/heat-health/#?tab=hotWeatherAlert>

The probability of heatwave conditions in part of England between 0900 on Sunday and 0800 on Wednesday is 60%

An update will be issued when the alert level changes in any region. Alerts are issued once a day by 0900 if required and are not subject to amendment in between standard issue times. Note that the details of the forecast weather are valid at the time of issue but may change over the period that an alert remains in force. These details will not be updated here unless the alert level also changes, the latest forecast details can be obtained at the following link:
<http://www.metoffice.gov.uk/public/weather/forecast/#?tab=map>

Regional Risk Assessments For Occurrence of Heatwave Conditions between 0900 Local Time on Sunday and 0800 Local Time on Wednesday.

The areas that are likely to be affected are:

Region	Risk	Comments
North East England	40 %	Cooler near coasts.
North West England	60 %	Cooler near coasts.
Yorkshire and the Humber	50 %	Cooler near coasts.
West Midlands	60 %	
East Midlands	60 %	Cooler near Lincolnshire coasts.
East of England	70 %	Cooler near coasts.
Southeast England	80 %	Cooler near coasts.
London	90 %	
Southwest England	60 %	Cooler near coasts.
Wales	60 %	Cooler near coasts.

General Comments:- High pressure over Scandinavia will allow very warm air to spread in from the continent. The warmest conditions will be across Southeast England, up into the Midlands and into eastern Wales. Maximum temperatures of between 32 and 39C are likely in these areas, with minima in the order of 20C in London and 18C in the Midlands. Sea breezes will moderate the temperatures near coasts, particularly in east as easterly flow increases.

Organisations providing health and social care should be aware of the advice and guidance set out in the Public Health England's Heatwave Plan, and the Heatwave Plan for Wales, as to the actions necessary before and during a Level 2 or Level 3 heatwave. Specific advice to be followed by health care professionals, and the managers and staff of residential and nursing homes in the event of a heatwave is available from Public Health England's website <https://www.gov.uk/government/publications/heatwave-plan-for-england-2013> and the Welsh Government website <http://wales.gov.uk>.

These alerts are sent to the CE of every provider of NHS commissioned care, Local Authority and Social Care Organisation in England, and to Health Board CEs and Local Authority Directors of Social Services in Wales. If you would like to add a colleague to receive these alerts we would be grateful if you could set up an internal cascade within your organisation. If this is not possible, or you feel you are receiving this message in error please contact:
For England: summer_heatwave_alerts@dh.gsi.gov.uk
For Wales: Health.Protection@wales.gsi.gov.uk

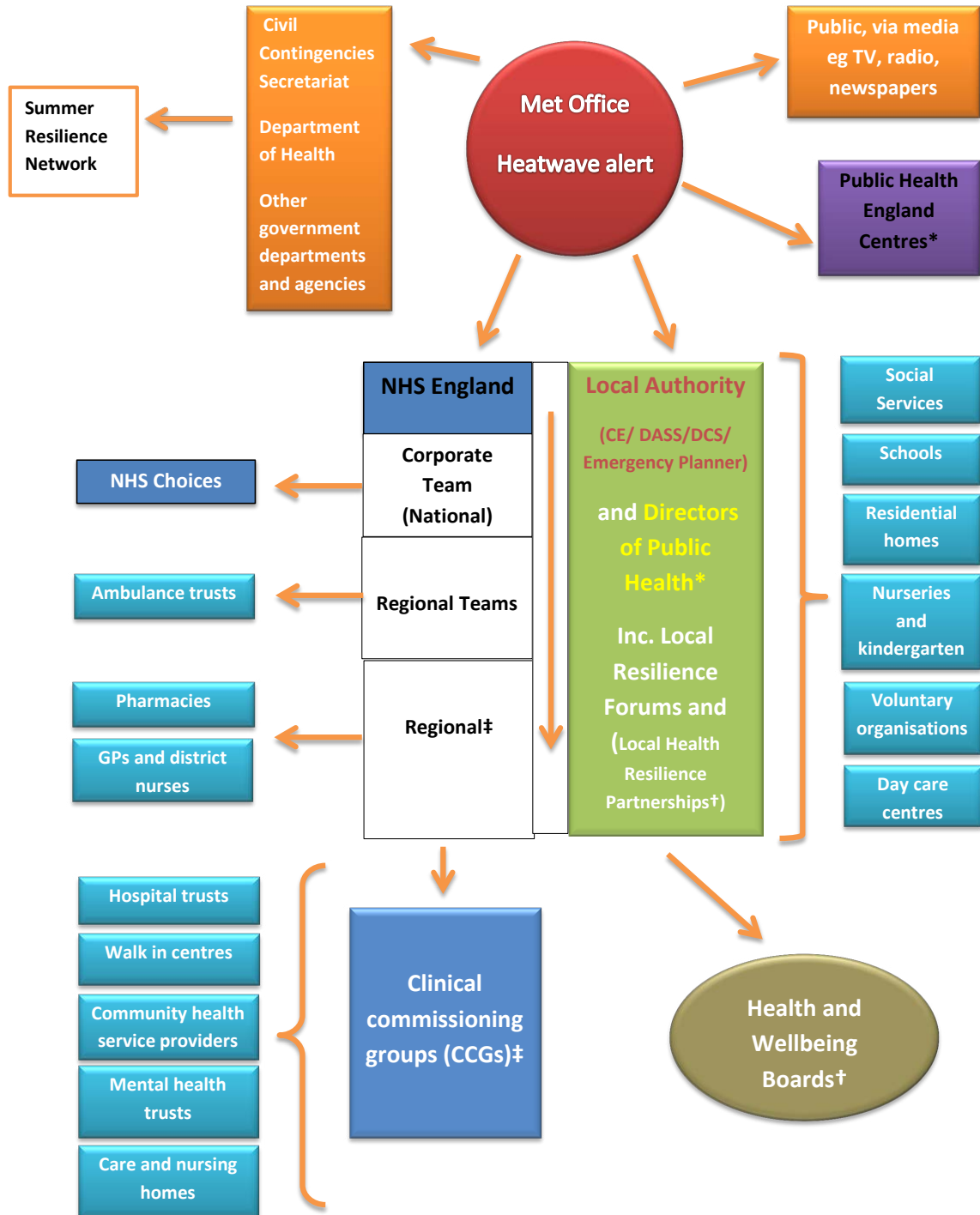
To aid local planning, listed below are the Local Resilience Forum (LRFs) matched against their regions.

NHS Region	NSWWS Region	Local Resilience Forum
North	North East England	Durham and Darlington Northumbria Cleveland
	Yorkshire and the Humber	Humber North Yorkshire West Yorkshire South Yorkshire
	North West England	Cumbria Greater Manchester Lancashire Merseyside
Midlands	West Midlands	Staffordshire Warwickshire West Mercia West Midlands
	East Midlands	Derbyshire Leicestershire Lincolnshire Northamptonshire Nottinghamshire
	East of England	Bedfordshire Cambridgeshire Essex Hertfordshire Norfolk Suffolk
South	South East England	Sussex Kent Surrey Thames Valley Hampshire and Isle of Wight
	South West England	Avon & Somerset Devon, Cornwall & Isle of Scilly Dorset Gloucestershire Wiltshire and Swindon
London	London	London
Wales	Wales	Dyfed Powys Gwent North Wales South Wales

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Figure 2.4: Typical cascade of heatwave alerts



Notes

‡NHS England Regional and CCGs should work collaboratively to ensure that between them they have a cascade mechanism for heatwave alerts to all providers of NHS commissioned care both in business as usual hours and the out of hours period in their area.

*PHE Centres would be expected to liaise with Directors of Public Health to offer support, but formal alerting would be expected through usual local authority channels.

†LHRPs and HWBs are strategic and planning bodies, but may wish to be included in local alert cascades.

Chapter 3

Summary of heatwave plan levels and actions

As noted above, the issue of a heatwave alert should trigger a series of actions by different organisations and professionals as well as the general public. The tables that follow summarise the actions to be taken by different organisations and groups from the previous section in order to respond to the alert level, be it preparing for, or responding to, an actual episode of severe hot weather.

3.1 Using the action tables

The actions outlined in the tables are illustrative. Local areas should consider these as guides when developing local heatwave preparedness arrangements. The heatwave plan for England is a broad framework and local areas need to tailor the suggested actions to their local situation and ensure that they have the best fit with wider local arrangements.

The tables emphasise the importance of joint working across agencies including the voluntary and community sector, and highlight one of the aims of the plan, which is to ensure that there is an integrated response to severe heat events across sectors. Local areas will need to consider those actions indicated in the tables which will need to be taken jointly across organisations and sectors.

Local organisations are asked to consider the action tables and to recast the suggested actions in ways that are most appropriate for them. NHS, local authorities, Local Health Resilience Partnerships and Local Resilience Forums should assure themselves that heatwave response plans are in place for the coming summer as part of wider preparedness and response plans to extreme climate events. Chapter 6 highlights the overarching next steps which NHS and local authorities should take to ensure that the heatwave alerts are being disseminated and acted upon locally.

It is also worth reiterating:

- the actions for each alert level are not intended to be an ‘all or none’ situation – we would expect staff and organisations to develop action plans which make sense to them using these as a broad template; we would also expect staff to exercise professional judgement in a ‘clinical’ setting with a patient or client and respond appropriately to that patient’s needs

- we are asking staff to be much more aware of the effects of severe heat on health and when they notice a client or patient at risk of overheating, for example, from living in a home that is too hot, that they know what immediate actions to take to ensure safety and that there are clear guidelines for them to make other necessary arrangements (eg addressing housing issues) in the immediate and longer term
- we strongly support a system-wide approach to assessing the nature of the problem and addressing these across organisations locally that makes most effective and efficient use of resources – local areas may also wish to refer to an earlier DHSC toolkit [How to reduce the risk of seasonal excess deaths systematically in vulnerable older people at population level](#). – this is designed to help local communities to take a systematic approach to reduce the risk of seasonal excess deaths in older people

Please refer to the glossary of abbreviations on page 2 and note that both NHS England and PHE have sub-national arrangements for liaison; communication, coordination and response during emergency events and how they in turn work with local providers of NHS commissioned care and local authorities.

In 2012, the Royal College of General Practitioners published a factsheet based on the Heatwave Plan to provide advice for GPs and their teams.

Figure 3.1: Commissioners of health and social care (all settings) and local authority Directors of Public Health

Level 0	Level 1	Level 2	Level 3	Level 4
<p>Long-term planning All year See accompanying document ‘Making the Case’ for more detail</p>	<p>Heatwave and summer preparedness programme 1 June to 15 September</p>	<p>Heatwave is forecast – alert and readiness 60% risk of heatwave in the next 2 to 3 days</p>	<p>Heatwave action Temperature reached in one or more Met Office National Severe Weather Warning Service regions</p>	<p>Major incident – emergency response Central Government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</p>
<p>Working with partner agencies, incorporate into JSNA’s/HWS’s long term plans to prepare for, and mitigate, the impact of heatwaves, including:</p> <ul style="list-style-type: none"> • how to identify and improve the resilience of those individuals and communities most at risk • ensuring that a local, joined-up programme is in place covering: • housing (inc loft and wall insulation and other plans to reduce internal energy use and heat production) • environmental action: (eg increase trees and green spaces; external shading; reflective paint; water features) • other infrastructure changes (eg porous pavements) • engaging the community and voluntary sector to support development of local community emergency plans • making progress on relevant Public Health Outcomes Framework indicators 	<ul style="list-style-type: none"> • work with partner agencies, providers and businesses to coordinate heatwave plans, ensuring vulnerable and marginalised groups are appropriately supported • work with partners and staff on risk reduction awareness (eg key public health messages – box 1), using a variety of methods to maximise dissemination • ensure care homes and hospitals are aware of the heatwave plan and are engaged in preparing for heatwaves • continue to engage the community and voluntary sector to support communities to help those most at risk • ensure other institutional establishments (eg prisons, schools) are aware of heatwave guidance • ensure organisers of large events take account of possible heat risks 	<ul style="list-style-type: none"> • communicate public media messages – especially to ‘hard to reach’ vulnerable groups • communicate alerts to staff and make sure that they are aware of heatwave plans • implement business continuity • increase advice to health and social care workers working in community, care homes and hospitals 	<ul style="list-style-type: none"> • media alerts about keeping cool • support organisations to reduce unnecessary travel • review safety of public events • mobilise community and voluntary support 	<p>National emergency Continue actions as per Level 3 unless advised to the contrary</p> <p>Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health and if requiring coordinated multi-agency</p>

High-risk groups

Community: over 75, female, living on own and isolated, severe physical or mental illness; urban areas, south-facing top flat; alcohol and/or drug dependency, homeless, babies and young children, multiple medications and over-exertion

Care home or hospital: over 75, female, frail, severe physical or mental illness; multiple medications; babies and young children (hospitals).

*Because Level 2 is based on a prediction, there may be jumps between levels. Following Level 3, wait until temperatures cool to Level 1 before stopping Level 3 actions.

** Level 4: A decision to issue a Level 4 alert at national level will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat

Figure 3.2: Providers – health and social care staff in all settings (community, hospitals and care homes)

Level 0	Level 1	Level 2	Level 3	Level 4
<p>Long-term planning All year See accompanying document ‘Making the Case’ for more detail</p>	<p>Heatwave and summer preparedness programme 1 June to 15 September</p>	<p>Heatwave is forecast – alert and readiness 60% risk of heatwave in the next 2 to 3 days</p>	<p>Heatwave action Temperature reached in one or more Met Office National Severe Weather Warning Service regions</p>	<p>Major incident – emergency response Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</p>
<p>Professional staff (all settings):</p> <ul style="list-style-type: none"> develop systems to identify and improve resilience of high-risk individuals request an HHSRS assessment from EH for clients at particular risk encourage cycling/walking where possible to reduce heat levels and poor air quality in urban areas <p>Care homes and hospitals:</p> <ul style="list-style-type: none"> work with commissioners to develop longer term plans to prepare for heatwaves make environmental improvements to provide a safe environment for clients in the event of a heatwave prepare business continuity plans to cover the event of a heatwave (eg storage of medicines, computer resilience, etc) work with partners and staff to raise awareness of the impacts of severe heat and on risk reduction awareness (key public health messages – box 1) 	<p>Professional staff (all settings):</p> <ul style="list-style-type: none"> identify high-risk individuals on your caseload and raise awareness of heat illnesses and their prevention among clients and carers (see key public health messages – box 1) include risk in care records and consider whether changes might be necessary to care plans in the event of a heatwave (eg initiating daily visits by formal or informal care givers for those living alone) <p>Care homes and hospitals:</p> <ul style="list-style-type: none"> ensure business continuity plans are in place and implement as required; ensure appropriate contact details are provided to LA/NHS emergency planning officers to facilitate transfer of emergency information identify or create cool rooms/areas (able to be maintained below 26°C) install thermometers where vulnerable individuals spend substantial time 	<p>Professional staff (all settings):</p> <ul style="list-style-type: none"> check high-risk people have visitor/ phone call arrangements in place reconfirm key public health messages to clients check client’s room temperature if visiting <p>Care homes and hospitals:</p> <ul style="list-style-type: none"> check indoor temperatures are recorded regularly during the hottest periods for all areas where patients reside ensure cool areas are below 26°C review and prioritise high-risk people ensure sufficient cold water and ice consider weighing clients regularly to identify dehydration and rescheduling physio to cooler hours communicate alerts to staff and make sure that they are aware of heatwave plans ensure sufficient staffing implement business continuity 	<p>Professional staff (all settings):</p> <ul style="list-style-type: none"> visit/phone high-risk people reconfirm key public health messages to clients advise carers to contact GP if concerns re health <p>Care homes and hospitals:</p> <ul style="list-style-type: none"> activate plans to maintain business continuity – including a possible surge in demand check indoor temperatures are recorded regularly during the hottest periods for all areas where patients reside ensure staff can help and advise clients including access to cool rooms, close monitoring of vulnerable individuals, reducing internal temperatures through shading, turning off unnecessary lights/equipment, cooling building at night, ensuring discharge planning takes home temperatures and support into account 	<p>National emergency Continue actions as per Level 3 unless advised to the contrary</p> <p>Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health and if requiring coordinated multi-agency response</p>

High-risk groups

Community: Over 75, female, living on own and isolated, severe physical or mental illness; urban areas, south-facing top flat; alcohol and/or drug dependency, homeless, babies and young children, multiple medications and over-exertion

Care home or hospital: over 75, female, frail, severe physical or mental illness; multiple medications; babies and young children (hospitals).

*Because Level 2 is based on a prediction, there may be jumps between levels. Following Level 3, wait until temperatures cool to Level 1 before stopping Level 3 actions.

** Level 4: A decision to issue a Level 4 alert at national level will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat

Figure 3.3: Community and voluntary sector and individuals

Level 0	Level 1	Level 2	Level 3	Level 4
<p>Long-term planning All year See accompanying document ‘Making the Case’ for more detail</p>	<p>Heatwave and summer preparedness programme 1 June to 15 September</p>	<p>Heatwave is forecast – alert and readiness 60% risk of heatwave in the next 2 to 3 days</p>	<p>Heatwave action Temperature reached in one or more Met Office National Severe Weather Warning Service regions</p>	<p>Major incident – emergency response Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</p>
<p>Community groups:</p> <ul style="list-style-type: none"> develop a community emergency plan to identify and support vulnerable neighbours in event of a heatwave assess the impact a heatwave might have on the provision and use of usual community venues support those at-risk to make sure they are receiving the benefits they are entitled to <p>Individuals:</p> <ul style="list-style-type: none"> make environmental improvements inside and outside the house which reduce internal energy and heat install loft and wall insulation identify cool areas in the house to use in the event of a heatwave of on medications, ensure that these can be stored at safe levels in a heatwave 	<p>Community groups:</p> <ul style="list-style-type: none"> further develop community emergency plan support the provision of good information about health risks especially with those vulnerable groups and individuals (see key public health messages – box 1) <p>Individuals:</p> <ul style="list-style-type: none"> find good information about health risks and key public health messages to stay healthy during spells of severe heat (see key public health messages box 1) look out for vulnerable neighbours 	<p>Community groups:</p> <ul style="list-style-type: none"> keep an eye on people you know to be at risk stay tuned into the weather forecast and keep stocked with food and medications check ambient room temperatures <p>Individuals</p> <ul style="list-style-type: none"> stay tuned into the weather forecast check ambient room temperatures – especially those rooms where disabled or high risk individuals spend most of their time keep an eye on people you know to be at risk – ensure they have access to plenty of cool liquids look out for vulnerable neighbours 	<p>Community groups:</p> <ul style="list-style-type: none"> activate community emergency plan check those you know are at risk <p>Individuals</p> <ul style="list-style-type: none"> follow key public health messages check those you know are at risk 	<p>National emergency Continue actions as per Level 3 unless advised to the contrary</p> <p>Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health and if requiring coordinated multi-agency response</p>
<p>High-risk groups Community: Over 75, female, living on own and isolated, severe physical or mental illness; urban areas, south-facing top flat; alcohol and/or drug dependency, homeless, babies and young children, multiple medications and over-exertion Care home or hospital: over 75, female, frail, severe physical or mental illness; multiple medications; babies and young children (hospitals).</p>				
<p>*Because Level 2 is based on a prediction, there may be jumps between levels. Following Level 3, wait until temperatures cool to Level 1 before stopping Level 3 actions. ** Level 4: A decision to issue a Level 4 alert at national level will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat</p>				

Figure 3.4: National Level: NHS England, PHE, DHSC, Met Office, Other Government Departments

Level 0	Level 1	Level 2	Level 3	Level 4
<p>Long-term planning All year</p>	<p>Heatwave and summer preparedness programme 1 June to 15 September</p>	<p>Heatwave is forecast – alert and readiness 60% risk of heatwave in the next 2 to 3 days</p>	<p>Heatwave action Temperature reached in one or more Met Office National Severe Weather Warning Service regions</p>	<p>Major incident – emergency response Central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</p>
<ul style="list-style-type: none"> the Cabinet Office will take the lead on coordinating and working across government to prepare for severe heatwave and other associated extreme climate events - individual government departments will work with their partners on such preparations national implementation of the National Adaptation Programme will continue, improving protection from severe weather events DHSC, PHE and NHS England will look to improve monitoring and analysis of heat-related illness and deaths and evaluate the heatwave plan PHE and NHS England will issue general advice to the public and professionals and work closely with the NHS, OGDs and other national organisations that produce advice on staying healthy and ensuring service continuity during periods of prolonged severe heatwaves 	<ul style="list-style-type: none"> preparations are the overall responsibility of PHE in collaboration with the Met Office, NHS England, DHSC and local bodies PHE and NHS England will make advice available to the public and professionals NHS England will ensure national guidance is cascaded to local services, and identify organisations most vulnerable to heatwaves heat-health watch alerts will be sent by the Met Office to the agreed list of organisations and Category 1 responders as noted in Figure 2.4 – PHE and NHS England will cascade the alerts to sub-national units within their organisations DHSC will liaise with CO and OGDs to ensure agreed responses are mobilised as required –MHCLG will share info with LRFs PHE will routinely monitor syndromic and mortality surveillance 	<ul style="list-style-type: none"> a Level 2 alert will be sent by the Met Office to the agreed list of organisations and Category 1 responders as noted in Figure 2.4 central government departments, which should then cascade the information through their own stakeholder networks and front-line communication systems DHSC will ensure OGDs, particularly MHCLG RED are aware of the change in alert level and brief ministers as appropriate PHE will make advice available to the public and professionals in affected regions via NHS Choices, NHS England, DHSC (GovNet), and Met Office websites NHS England will hold health services to account for taking appropriate actions to prepare for a heatwave PHE will continue to monitor syndromic and mortality surveillance 	<ul style="list-style-type: none"> as per Level 2 arrangements Met Office will continue to monitor and forecast temperatures in each area, including the likely duration of the period of the heatwave, the likely temperatures to be expected and the probability of other regions exceeding the Level 3 threshold NHS England will muster mutual aid when requested by local services PHE will continue to monitor syndromic and mortality surveillance and produce a weekly report for inclusion within a weekly PHE heatwave output 	<p>Level 4 alert issued at national level in light of cross-Government assessment of the weather conditions, coordinated by the CCS based in the CO. Implementation of national emergency response arrangements by central government. Response likely to involve:</p> <ul style="list-style-type: none"> national government departments executive agencies public sector, including health sector voluntary sector <p>PHE will continue to monitor syndromic and mortality surveillance and produce a weekly report for inclusion within a daily PHE heatwave output</p>

High-risk groups

Community: Over 75, female, living on own and isolated, severe physical or mental illness; urban areas, south-facing top flat; alcohol and/or drug dependency, homeless, babies and young children, multiple medications and over-exertion

Care home or hospital: over 75, female, frail, severe physical or mental illness; multiple medications; babies and young children (hospitals).

*Because Level 2 is based on a prediction, there may be jumps between levels. Following Level 3, wait until temperatures cool to Level 1 before stopping Level 3 actions.

** Level 4: A decision to issue a Level 4 alert at national level will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat

3.2 Box 1 – key public health messages¹

Stay out of the heat:

- keep out of the sun between 11am and 3pm
- if you have to go out in the heat, walk in the shade, apply sunscreen and wear a hat and light scarf
- avoid extreme physical exertion
- wear light, loose-fitting cotton clothes

Cool yourself down:

- have plenty of cold drinks, and avoid excess alcohol, caffeine and hot drinks
- eat cold foods, particularly salads and fruit with a high water content
- take a cool shower, bath or body wash
- sprinkle water over the skin or clothing, or keep a damp cloth on the back of your neck

Keep your environment cool:

- keeping your living space cool is especially important for infants, the elderly or those with chronic health conditions or who can't look after themselves
- place a thermometer in your main living room and bedroom to keep a check on the temperature
- keep windows that are exposed to the sun closed during the day, and open windows at night when the temperature has dropped
- close curtains that receive morning or afternoon sun, however, care should be taken with metal blinds and dark curtains, as these can absorb heat – consider replacing or putting reflective material in-between them and the window space
- turn off non-essential lights and electrical equipment – they generate heat
- keep indoor plants and bowls of water in the house as evaporation helps cool the air
- if possible, move into a cooler room, especially for sleeping
- electric fans may provide some relief, if temperatures are below 35°C²

¹ Adapted from: [WHO Europe public health advice on preventing health effects of heat](#)

² NOTE: Use of fans: at temperatures above 35°C fans may not prevent heat related illness. Additionally fans can cause excess dehydration ([Cochrane Review](#)). The advice is to place the fan at a certain distance from people, not aiming it directly on the body and to have regular drinks. This is especially important in the case of sick people confined to bed.

(Longer-term)

- consider putting up external shading outside windows
- use pale, reflective external paints
- have your loft and cavity walls insulated – this keeps the heat in when it is cold and out when it is hot
- grow trees and leafy plants near windows to act as natural air-conditioners (see 'Making the Case')

Look out for others:

- keep an eye on isolated, elderly, ill or very young people and make sure they are able to keep cool
- ensure that babies, children or elderly people are not left alone in stationary cars
- check on elderly or sick neighbours, family or friends every day during a heatwave
- be alert and call a doctor or social services if someone is unwell or further help is needed

If you have a health problem:

- keep medicines below 25 °C or in the refrigerator (read the storage instructions on the packaging)
- seek medical advice if you are suffering from a chronic medical condition or taking multiple medications

If you or others feel unwell:

- try to get help if you feel dizzy, weak, anxious or have intense thirst and headache; move to a cool place as soon as possible and measure your body temperature
- drink some water or fruit juice to rehydrate
- rest immediately in a cool place if you have painful muscular spasms (particularly in the legs, arms or abdomen, in many cases after sustained exercise during very hot weather), and drink oral rehydration solutions containing electrolytes.
- medical attention is needed if heat cramps last more than one hour
- consult your doctor if you feel unusual symptoms or if symptoms persist

3.3 Guidance for those looking after schoolchildren and those in early years settings during heatwaves

Outdoors:

- on very hot days (ie where temperatures are in excess of 30°C) children should not take part in vigorous physical activity
- children playing outdoors should be encouraged to stay in the shade as much as possible
- loose, light-coloured clothing should be worn to help children keep cool and hats of a closed construction with wide brims should be worn to avoid sunburn
- thin clothing or sunscreen should be used to protect skin if children are playing or taking lessons outdoors for more than 20 minutes
- children must be provided with plenty of cool water *and encouraged to drink more than usual when conditions are hot
*the temperature of water supplied from the cold tap is adequate for this purpose

Indoors:

- windows and other ventilation openings should be opened during the cool of early morning or preferably overnight to allow stored heat to escape from the building – it is important to check insurance conditions and the need for security if windows are to be left open overnight
- windows and other ventilation openings should not be closed, but their openings reduced when the outdoor air becomes warmer than the air indoors – this should help keep rooms cool whilst allowing adequate ventilation
- use outdoor sun awnings if available, or indoor blinds, but do not let solar shading devices block ventilation openings or windows
- keep the use of electric lighting to a minimum during heatwaves
- all electrical equipment, including computers, monitors and printers should be switched off when not in use and should not be left in ‘standby mode’ – electrical equipment, when left on, or in ‘standby’ mode generates heat

Which children are likely to be most affected by high temperatures?

Children’s susceptibility to high temperatures varies; those who are overweight or who are taking medication may be at increased risk of adverse effects. Children under four years of age are also at increased risk.

Some children with disabilities or complex health needs may be more susceptible to temperature extremes. The school nurse, community health practitioner, family health visitor or the child’s specialist health professional may be able to advise on the particular needs of the individual child. Schools need to provide for children’s individual needs. Support staff should be made aware of the risks and how to manage them.

Further information is available in the PHE leaflet: [Looking after children and those in early years settings during heatwaves: guidance for teachers and professionals](#).

3.4 Other considerations for summer preparedness

3.4.1 Heatwaves and large public events

Summer is a time for people to get outside and enjoy themselves. Large scale public events, such as music and arts festivals; sports events; and national celebrations are held up and down the country every summer providing enjoyment to millions of people.

Local agencies are generally well equipped to plan and deal with such events. There is well-trying and tested guidance, especially from the Health and Safety Executive '*Events Safety Guide*' (see Annex 3). However, the effects of excessive heat and sun exposure are sometimes not highlighted enough.

Large public events increase exposure to heat and direct sunlight and can make organisational responses more difficult. Individual behaviours often change (for example, people may be reluctant to use the toilet facilities due to the long queues and so purposely reduce fluid intake). At many large events, people get into a good position to see the event and then reduce fluid intake and heat avoidance behaviours so as not to lose their spot. This can lead to heat-related illness, dehydration and/or collapse.

3.4.2 Ramadan

Box 2 heat health advice during Ramadan

Many members of the Muslim community may be fasting during the daylight hours in the month of Ramadan. All local areas should familiarise themselves with the dates of Ramadan each year and build appropriate actions into their local plans if it falls during the summer months. It is common to have one meal just before sunrise and an evening meal after sunset during Ramadan. During hot weather, dehydration is a common and serious risk. It's important to balance food and fluid intake between fasts and especially to drink enough water.

If you start to feel unwell, disoriented or confused, or collapse or faint, advice is to stop fasting and have a drink of water or other fluid. This is especially important for older adults, those with poorly controlled medical conditions such as low/high blood pressure, diabetes and those who are receiving dialysis treatment. The Muslim Council of Britain has confirmed that breaking fast in such conditions is allowable under Islamic law. Also make sure to check on others in the community who may be at greater risk and keep an eye on children to ensure they are having a safe and healthy Ramadan.

Guidance has been produced to help ensure that members of the Muslim community have a safe and healthy Ramadan – [Ramadan Health Guide: A guide to healthy fasting produced in association with the NHS](#).

Chapter 4

Anticipated impacts for other sectors during a Level 4 heatwave

Declaring a Level 4 alert indicates a major incident. The government will decide whether to go to Level 4 when there is a very severe heatwave which will last for a considerable period of time and will also affect transport, food and water, energy supplies and businesses as well as health and social care services.

The decision to issue a Level 4 alert is made at national level and will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat (Cabinet Office). A Level 4 alert is not triggered automatically by a greater than four day period of severe hot weather.

In the event of a major incident being declared, all existing emergency policies and procedures will apply. All Level 3 responsibilities will also continue.

4.1 Heatwave – cross-government response:

- the decision to issue a Level 4 alert at national level will be taken in light of a cross-government assessment of the weather conditions, co-ordinated by the Civil Contingencies Secretariat
- in undertaking this assessment, the Civil Contingencies Secretariat would consult with a range of interested departments/agencies, including the DHSC emergency planning functions, the Met Office, the Department for Transport, the Ministry of Housing, Communities and Local Government and others as required
- in line with its approach to all major national incidents, in the event of a Level 4 emergency being declared, the Cabinet Office will nominate a lead government department to coordinate the central government response machinery as necessary. This is most likely to be the Department of Health & Social Care as a prolonged heatwave would primarily be a public health issue
- PHE will continue to monitor routine surveillance systems for any increases in heat-related morbidity or mortality. For further details on output frequency see Chapter 5
- while other issues are likely to arise as part of any heatwave emergency, such as power failures and transport disruption, these would be dealt with by the departments concerned as part of a coordinated response unless they became the overriding concern, in which case the overall central government department lead may transfer responsibility

- response arrangements will need to be necessarily flexible, in order to adapt to the nature of the challenge and other circumstances at the time while applying good practice, including lessons from previous emergencies

Anticipated risks and responses during a heatwave Level 4, according to different sectors, are summarised below.

The previous pages have highlighted the risks to public health from a heatwave. The risks to other important areas of life from four or more days where temperatures have reached threshold values during the day and overnight are equally important and will have an impact on health and the ability of health services to respond. These wider risks, which have the potential to generate disruption at a national, regional and local level, include the following:

4.2 Transport infrastructure:

- road surfaces are susceptible to melting under extreme or prolonged temperatures; however, as the surface temperature may not be dependent on the air temperature, melting is more likely to be as a result of direct sunlight
- traffic congestion leading to delays on motorways or trunk roads has potentially serious consequences for those stranded in vehicles, particularly vulnerable people such as the elderly or young children
- the rail network will be susceptible to rails warping or buckling under extreme or prolonged temperatures and this will vary according to specific local factors including local geography and the maintenance status of the track. As a very approximate guide, staged preventative measures begin to be applied when air temperatures reach 22°C. The most extreme precautions would only cut in at air temperatures of 36°C (which is likely to give a railhead temperature of over 50°C).
- extreme temperatures on the London Underground network could lead to a range of health and safety challenges. London Underground network operations monitor Met Office weather forecasts, and if temperatures are forecast not to fall below 24°C for three days running they will get ready to implement plans to deploy hot weather notices and bottled water supply, as well as measures to prevent track buckling

4.3 Power supplies:

- at a time when energy companies traditionally maintain power stations for the winter by standing units down over the summer, rising temperatures increase the demand for supply due to the use of air-conditioning units and reduce the power-carrying capacity of the system, as it is harder to cool conductors – this will restrict the ‘maintenance window’ available and could ultimately require greater redundancy on the system to permit maintenance

- rising temperatures cause cooling problems for power stations as they are unable to cool components. This effect has been experienced in France, but not yet to a serious extent in the UK
- high air temperatures are more of a problem and nuclear reactors can trip out at above 40°C, although this has never yet been reached at any site (38°C being the record)
- rising temperatures lower power station efficiency – this effect is of lower concern than the two effects above

4.4 Environmental pollution:

- air quality – smogs typically accompany heatwaves as these often occur during periods of limited dispersion and/or easterly continental air masses arriving in the UK – as a result pollutants are less well spread or added to a higher background concentration which can lead to high concentrations of nitrogen dioxide and particulate matter. Heatwave conditions often lead to increased ozone levels following interactions of other pollutants with sunlight. Information on the latest pollution levels and the air quality forecast can be found on the [UK-Air](#) website (Defra)
- water quality – prolonged sunshine can accelerate the growth of blue-green algae, which can cause problems for aquatic life, including fish, as well as toxic algal blooms, causing problems for public recreational water activities
- a prolonged heatwave may cause increased health and environmental problems including odour, dust and vermin infestation, increasing public nuisance and complaint – additional measures would be necessary to mitigate these problems, including more frequent refuse collections and enhanced pollution control measures at landfills and other waste treatment facilities

4.5 The potential for wildfires:

The risks during a heatwave can be greater because the vegetation will be that much drier than usual. The smoke and other risks from wildfire can cause the closure of motorways and contributes to local and regional air pollution.

4.6 Animal welfare:

- rising temperatures would require the increase of ventilation requirements for animals temporarily housed at farms, markets and slaughterhouses
- rising temperatures lead to changes in transport, markets and temporarily housed animal stocking densities
- delays on transport have the potential to lead to increased distress and suffering of animals and increase the number of deaths of animals in transit

- slaughterhouses' killing throughput may be affected due to reduced working hours at slaughterhouses and the transport of a lower number of animals
- there is the potential for an increase in the number of pet fatalities due to irresponsible owners leaving them in restricted enclosures with poor ventilation (eg dogs in cars)

4.7 Water shortages:

- water companies have plans in place to deal with failure in the supply of mains water or sewerage services – these plans are regularly reviewed and tested by the water companies and are independently certified every year
- in the event of a reduced mains supply, water companies would introduce water saving measures such as reducing water pressure or limiting 24/7 supply. In the event of a loss of mains supply, water companies are required to supply water by alternative means, such as in static tanks or bottled water. There is a requirement to provide not less than 10 litres per person per day, with special attention given to the needs of vulnerable people, hospitals and schools
- where an interruption to the piped water supply exceeds five days, the minimum requirement rises to 20 litres per person per day
- strong demand during a heatwave has the potential to jeopardise the availability of water supplies, particularly in southern and some other parts of the UK, and could lead to local hose-pipe restrictions if high temperatures persist

4.8 Children's sector:

Some schools have had to close classrooms where conditions are too hot. Please refer to PHE guidance: [Looking after children and those in early years settings during heatwaves: guidance for teachers and professionals.](#)

4.9 Crops:

- horticulture is very sensitive to rising temperatures, as crops start to experience stress due to heat and water shortage, and will die if prolonged
- crops may not be harvested at appropriate times and may be lost or quality and nutritional value may be reduced
- high temperatures may mean crops cannot be sown at appropriate times or need more water
- flowering and pollination may be affected, reducing fruit and grains
- it may become difficult to store crops such as potatoes at the appropriate temperature as machinery has to work harder

Chapter 5

Monitoring and surveillance

5.1 The public health outcomes framework: Level 0

The public health outcomes framework sets out desired outcomes and indicators to help us understand how well public health is being improved and protected. A number of outcome framework indicators can be linked to long-term planning for severe heat and heatwaves (see companion document Making the Case). PHE will publish data in an [online tool](#) that allows local authorities to compare themselves with other authorities in the region and benchmark themselves against the England average.

5.2 Real time monitoring and surveillance: Levels 1-4

PHE, in collaboration with other agencies provides both information on excess mortality and morbidity due to heatwaves. Much of this is recorded in as near ‘real-time’ as possible to provide agencies with a source of intelligence on how health is affected by a spell of hot weather. The frequency of outputs at each heatwave level are given below.

Level 1: heatwave and summer preparedness: PHE will routinely monitor outputs from real-time syndromic surveillance systems including calls to NHS 111, GP in hours and out of hours consultations and emergency department attendances (on a daily basis, week days only), for the impact of heat-related morbidity using a range of syndromic health indicators. Information on heat-related illness will be included in [routine weekly surveillance reports](#) published on the PHE website; these will provide a source of intelligence on how severe the effects are and how well services are responding.

PHE will continue to provide heatwave mortality surveillance, producing weekly excess all-cause mortality estimates based on ONS weekly data during the summer and publish outputs once a fortnight on the PHE website in the [PHE mortality report](#).

Level 2: alert and readiness: PHE will continue to monitor routine syndromic surveillance systems for any increases in heat-related illness including calls to NHS 111, GP in hours and out of hours consultations and emergency department attendances (on a daily basis, week days only). It will continue to provide information on heat-related illness in routine weekly surveillance reports.

PHE will continue to produce weekly excess all-cause mortality estimates based on weekly ONS data during the summer and publish outputs once a fortnight on the PHE website in the PHE mortality report. In addition, PHE will request release of daily deaths data and monitor

daily any increase in excess summer deaths based on available data. Daily monitoring will continue up until one week after return to level 1.

Level 3: heatwave action: PHE will continue to monitor any increases in heat-related illness reported in calls to NHS 111, GP in hours and out of hours consultations and emergency department attendances (on a daily basis, week days only) and will produce an additional single weekly heat wave syndromic surveillance report, in addition to the routine weekly surveillance outputs, for incorporation into a weekly PHE heatwave output. This additional report will provide a source of intelligence on how severe the reported effects are including further information on the impact on existing regions and age groups.

PHE will continue to monitor any increase in mortality based on available daily and weekly data.

Level 4: emergency: PHE will continue to monitor any increases in heat-related illness reported in calls to NHS 111, GP in hours and out of hours consultations and emergency department attendances (on a daily basis, week days only), providing a daily (weekday only) syndromic surveillance report on heat-related illness in the community, for incorporation into a daily PHE output.

Mortality will be monitored as per level 3.

5.3 Evaluation

PHE will work together with the DHSC to prepare an annual review of the Heatwave Plan which takes place each spring.

Chapter 6

Recommended next steps for the NHS and local authorities

We have stressed that the *Heatwave plan for England* is a good-practice document and the actions denoted are illustrative. It is up to each local authority and their NHS partners to consider the actions in this plan; adapt them and incorporate them as appropriate to the local situation, as a component of wider heatwave planning and other climate change adaptation arrangements. Local teams from NHS England and PHE are there to support, to advise, and to coordinate these arrangements as required.

In light of the guidance and good practice recommendations made in the *Heatwave plan for England*, there are three key messages we would like to recommend to all local areas:

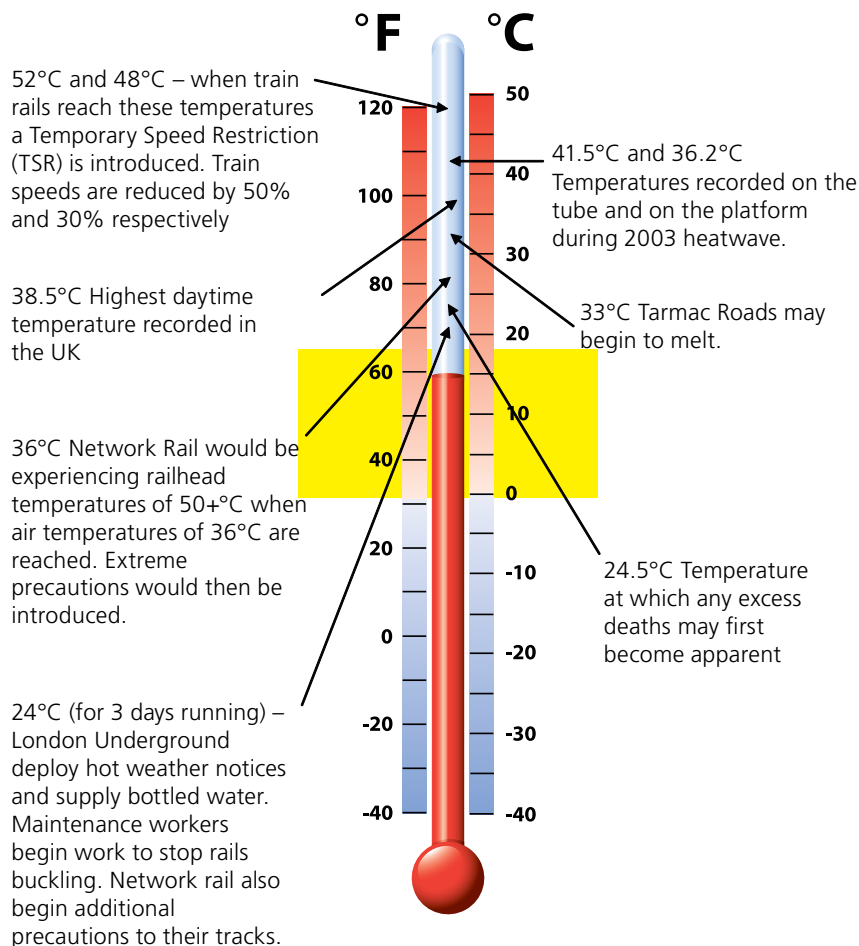
1. All local authorities, NHS commissioners and their partner organisations should consider the *Heatwave plan for England* and satisfy themselves that the suggested actions and the heatwave alert service are understood across their locality. Local heatwave and climate change adaptation plans should be reviewed in light of this plan.
2. NHS and local authority commissioners, together with Local Resilience Forums, should review or audit the distribution of the heatwave alerts across the local health and social care systems to satisfy themselves that the alerts reach those that need to take appropriate actions, immediately after issue. Figure 2.4 is an illustrative diagram showing a cascade of a heatwave alert message. Local areas need to adapt these to their particular situations and ensure themselves that the cascades are working appropriately. We would ask that particular care is taken to ensure independent care homes and hospitals and healthcare providers are made aware of the plan, and for care homes, of the specific risks associated with residents of homes and of the specific advice directed at care home managers and staff.
3. NHS and local authority commissioners, together with Local Resilience Forums, should seek assurance that organisations and key stakeholders are taking appropriate actions in light of the heatwave alert messages. The actions identified in Chapter 3 are based on the best evidence and practice available, but are illustrative. It is for local areas to amend and adapt this guidance and to clarify procedures for staff and organisations in a way which is appropriate for the local situation. As ever, it is for professionals to use their judgement in any individual situation to ensure that they are doing the best they can for their patient or client.

Annex 1

Key trigger temperatures

Figure 4 summarises the key trigger temperatures during a heatwave. Although excess seasonal deaths start to occur at approximately 25°C, for practical reasons the health heatwave alert system is based upon temperature thresholds where the odds ratio is above 1.15 to 1.2 (a 15 to 20% increased risk). The different trigger temperatures for local areas are summarised below with regional variations due to relative adaptation to heat, however, a significant proportion of excess summer deaths occur before the health heatwave alert is triggered, which emphasises the importance of long-term planning actions by local authorities and the health sector.

Figure 4. Trigger temperatures



Local threshold temperatures

Threshold maximum day and night temperatures defined by the Met Office National Severe Weather Warning Service (NSWWS) region are set out below.

Maximum temperatures (°C)

NSWWS Region	Day	Night
London	32	18
South East	31	16
South West	30	15
Eastern	30	15
West Midlands	30	15
East Midlands	30	15
North West	30	15
Yorkshire and Humber	29	15
North East	28	15

Annex 2

Public health core messages

These are the core messages to be broadcast as official PHE warnings alongside national and regional weather forecasts. They may be expanded or otherwise refined in discussion with broadcasters and weather presenters.

Level 1: summer preparedness and long-term planning

No warning required unless there is a 60 per cent probability of the situation reaching Level 2 somewhere in the UK within the next three days, then something along the lines of:

“If this does turn out to be a heatwave, we’ll try to give you as much warning as possible. But in the meantime, if you are worried about what to do, either for yourself or somebody you know who you think might be at risk, for advice go to the NHS website at www.nhs.uk/live-well/healthy-body/heatwave-how-to-cope-in-hot-weather. Alternatively ring NHS 111.

Level 2: alert and readiness

The Met Office, in conjunction with PHE, is issuing the following heatwave warning for [regions identified]:

“Heatwaves can be dangerous, especially for the very young or very old or those with chronic disease. Advice on how to reduce the risk either for yourself or somebody you know can be obtained from the NHS website at www.nhs.uk/live-well/healthy-body/heatwave-how-to-cope-in-hot-weather, NHS 111 or from your local chemist.”

Level 3 and 4: heatwave action/emergency

The Met Office, in conjunction with PHE, is issuing the following heatwave advice for [regions identified]:

“Stay out of the sun. Keep your home as cool as possible – shading windows and shutting them during the day may help. Open them when it is cooler at night. Keep drinking fluids. If there’s anybody you know, for example an older person living on their own, who might be at special risk, make sure they know what to do.”

Annex 3

Heatwave advice and mass gatherings

The attached list provides a quick heat-health checklist that can be used when planning large scale public events (mass gatherings). This should be used in conjunction with other more detailed planning advice (e.g. [Health and Safety Executive's 'Events Safety Guide'](#)).

Heat-health risk	Actions to consider:
Increased exposure to heat	<ul style="list-style-type: none"> • provide temporary shaded areas at event locations (umbrellas, tents) • reduce the need to queue (efficient check in, additional staffing, or staggered ticket entry) • provide a water spray/mist area/spraying (showers, garden hose) • make available a map of local public air-conditioned spaces where people can have respite from the heat (consider extending opening hours of these venues) • divert strenuous activities for cooler days or cooler periods of the day and provide an alternative, less strenuous program for hot days
Communication barriers	<ul style="list-style-type: none"> • prepare advice for tourists and distribute around hotels, money exchanges and transport hubs • produce and distribute heat-health advice printed onto free fans or caps (can be used to fan/protect against sun while containing information on protecting against and recognising heat-related illnesses, and provide emergency phone number in case of identified heat related illness) • inform your audience and/or your members about the health risks and possible preventive measures through digital screens/speakers/announcements
Reduced access to water	<ul style="list-style-type: none"> • distribute water bottles or temporary water dispensers • ensure an adequate supply of drinking water – on hot days it is advisable to provide free drinking water

Heat-health risk	Actions to consider:
Severe heat emergency	<ul style="list-style-type: none"> • consider moving date, location or cancel event in extreme heat alert (especially at a Level 4 alert) • ensure adequate immediate relief for people in emergency and ensure their transport to the first aid/health unit
Medical needs	<ul style="list-style-type: none"> • remember that people with asthma, heart disease and/or other additional chronic conditions are additionally health sensitive to ozone and/or heat • keep in mind that alcohol and some (prescription) drugs can worsen effect of heat • ensure adequately trained personnel who notify authorities as soon as there are incidences of heat illness observed
Food needs	<ul style="list-style-type: none"> • provide water-rich foods such as salads, yogurt and ensure that food is kept cool to prevent contamination

Adapted using best practice advice from:

1. Lowe D, Ebi K, Forsberg B *Heatwave Early Warning Systems and Adaptation Advice to Reduce Human Health Consequences of Heatwaves*. *Int. J. Environ. Res. Public Health* **2011**, 8, 4623-4648
2. Plan Nacional de Actuaciones Preventivas de los Efectos del Exceso de temperaturas Sobre la Salud (Spain). Available online: https://www.mscbs.gob.es/ciudadanos/saludAmbLaboral/planAltasTemp/2019/docs/Plan_Nacional_de_Exceso_de_Temperaturas_2019.pdf
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4. Dianne Lowe (Personal Communication)
5. Outputs from Discussions at Heatwave Seminar 2012

Acknowledgements

We particularly wish to acknowledge the work of the Steering Group* and advice of a wider Reference Group in helping us prepare the Heatwave Plan:

Angie Bone, PHE*; Yvonne Doyle, PHE*; Carl Petrokofsky, PHE*; Graham Bickler, PHE*
Katie Carmichael, PHE*; Virginia Murray, PHE*; Louise Newport, DHSC*; Kevyn Austyn, DHSC*; Paul Dickens NHS England*; Viv Bennett PHE; Simon Williams, London Borough of Merton

Glen Mason, DHSC (Social Care); Kate Head, MHCLG; Mervyn Kohler, Age UK; Rob Hitchen, Defra; Stephen Barnes, Cabinet Office; Yolanda Clewlow, Met Office; Stephen Groves, NHS England; Tim Young, NHS England; Paul Ogden, Local Government Association; Alexandra Alerte, PHE; Simon Stockley, RCGP; Jonathan Graves, DHSC

We acknowledge the many individuals and organisations that have offered their advice and support in developing the plan. In particular, we would like to acknowledge the strong support given to the publication of this plan by Anh Tran, Aileen Kitching, Jo Wallace, Chris Blake, Joseph Lovell, Daniel Waterman, Robert Vaughan, Alex Elliot, Gillian Smith, Richard Pebody, Helen Green and colleagues who participated in the annual Heatwave Seminar.

References

A selection of key references may be found in section 4 of 'Making the Case'.

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Published May 2018
PHE publications gateway number: 2015049



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