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Heatwave plan for England

**Supporting vulnerable people before and during a heatwave –
Advice for health and social care professionals**

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Advice for health and social care professionals

Severe heat is dangerous to everyone. During a heatwave, when temperatures remain abnormally high over more than a couple of days, it can prove fatal. Climate change means heatwaves are likely to become more common in England. In one hot spell in London in August 2003, deaths among people aged over 75 rose by 60%.

This factsheet is part of a national programme to reduce the health risks by alerting people to the dangers and encouraging them to plan in advance what to do in the event of a heatwave. Heatwaves can happen with little warning and illness and death can occur within the first couple of days, so it is best to make the following preparations before high temperatures are forecast and ideally these should be complete by the beginning of June.

You should be reading this, and are urged to act on it, if you work, either as a commissioner of health or social care services or as an emergency responder or a professional from health and social care services working in any setting, in the community, care home or in a hospital environment. It offers advice both on caring for people most at risk during a heatwave, and on organising others who provide care. Example advice cards can be found at the end of this leaflet.

Who is at risk?

There are certain factors that increase an individual's risk during a heatwave. These include:

- **older age:** especially those over 75 years old, or those living on their own and who are socially isolated, or in a care home
- **chronic and severe illness:** including heart conditions, diabetes, respiratory or renal insufficiency, Parkinson's disease or severe mental illness. Medications that potentially affect renal function, sweating, thermoregulation or electrolyte balance can make this group more vulnerable to the effects of heat (see **Additional notes** on page 4)
- **inability to adapt behaviour to keep cool:** having Alzheimer's, a disability, being bed bound, too much alcohol, babies and the very young
- **environmental factors and overexposure:** living in a top floor flat, being homeless, activities or jobs that are in hot places or outdoors and include high levels of physical exertion

During severe hot weather, there is a risk of developing heat exhaustion and heatstroke and other heat-related illnesses including respiratory and heart problems. In a moderate heatwave, it is mainly the above high-risk groups that are affected, however, during an extreme heatwave such as the one affecting France in 2003, fit and healthy people can also be affected.

What are the risks? The effects of heat on health

The body normally cools itself using four mechanisms:

- **radiation** in the form of infrared rays
- **convection** via water or air crossing the skin
- **conduction** by a cooler object being in contact with the skin
- **evaporation** of sweat

When the ambient temperature is higher than skin temperature, the only effective heat-loss mechanism is sweating. Therefore, any factor that reduces the effectiveness of sweating such as dehydration, lack of breeze, tight-fitting clothes or certain medications can cause the body to overheat. Additionally, thermoregulation, which is controlled by the hypothalamus, can be impaired in the elderly and the chronically ill, and potentially in those taking certain medications, rendering the body more vulnerable to overheating. Young children produce more metabolic heat, have a decreased ability to sweat and have core temperatures that rise faster during dehydration. Older people appear to be more vulnerable to heat possibly due to having fewer sweat glands, but also because of living alone and at risk of social isolation.

The box on page 4 describes the effects of overheating on the body, which in the form of heatstroke can be fatal.

The main causes of illness and death during a heatwave are respiratory and cardiovascular diseases. A linear relationship between temperature and weekly mortality was observed in England in summer 2006, with an estimated 75 extra deaths per week for each degree of increase in temperature. Part of this rise in mortality may be attributable to air pollution, which makes respiratory symptoms worse. The other main contributor is the effect of heat on the cardiovascular system. In order to keep cool, large quantities of extra blood are circulated to the skin. This causes strain on the heart, which for elderly people and those with chronic health problems can be enough to precipitate a cardiac event.

Sweating and dehydration affect electrolyte balance. For people on medications that control electrolyte balance or cardiac function, this can also be a risk. Medicines that affect the ability to sweat, thermoregulation or electrolyte imbalance can make a person more vulnerable to the effects of heat. Such medicines include anticholinergics, vasoconstrictors, antihistamines, drugs that reduce renal function, diuretics, psychoactive drugs and antihypertensives.

Evidence also exists that links increased ambient temperatures and associated dehydration with an increase in bloodstream infections caused by Gram-negative bacteria, particularly *Escherichia coli*. The risk is greatest in individuals aged over 65, emphasising the importance of ensuring adequate fluid intake in older people during periods of raised temperatures to reduce the risk of infection.

Box 1, heat-related illnesses:

The main causes of illness and death during a heatwave are **respiratory and cardiovascular diseases**. Additionally, there are specific heat-related illnesses including:

- **heat cramps** – caused by dehydration and loss of electrolytes, often following exercise
- **heat rash** – small, red, itchy papules
- **heat oedema** – mainly in the ankles, due to vasodilation and retention of fluid
- **heat syncope** – dizziness and fainting, due to dehydration, vasodilation, cardiovascular disease and certain medications
- **heat exhaustion** – is more common. It occurs as a result of water or sodium depletion, with non-specific features of malaise, vomiting and circulatory collapse, and is present when the core temperature is between 37°C and 40°C – left untreated, heat exhaustion may evolve into heatstroke
- **heatstroke** – can become a point of no return whereby the body's thermoregulation mechanism fails. This leads to a medical emergency, with symptoms of confusion; disorientation; convulsions; unconsciousness; hot dry skin; and core body temperature exceeding 40°C for between 45 minutes and eight hours. It can result in cell death, organ failure, brain damage or death. Heatstroke can be either classical or exertional (eg in athletes)

Additional notes:

Long-term or severe illness

People with long-term or severe illness are likely to be at particular risk, including the following conditions:

- respiratory disease
- cardiovascular and cerebrovascular conditions
- diabetes and obesity
- severe mental illness
- Parkinson's disease and difficulties with mobility
- renal insufficiency
- peripheral vascular conditions
- Alzheimer's or related diseases

Reducing the risk before a heatwave

Heatwaves can happen suddenly, and rapid rises in temperature affect vulnerable people **very rapidly**. Make as much use as possible of existing care plans to assess which individuals are at particular risk, and to identify what extra help they might need.

Health and social care providers need to plan ahead to ensure that care and support for people at risk can be accessed in the event of a heatwave. Anyone in a high-risk category who is living alone is likely to need at least daily contact, whether by care workers, volunteers or informal carers. Older people with long-term or serious illness, mobility problems, or severe mental illness, those who are on certain medications, or those living in accommodation that is hard to keep cool, may need extra care and support.

If you are advising, visiting, supporting or caring for someone in their own home, these are the steps that should be taken **before** the weather gets hot. Where possible, involve their family and any informal carers in these arrangements.

Organisation

- check that extra care and support are available if needed
- check that the person can contact the primary care team if one of their informal carers is unavailable
- check that their care plan contains contact details for their GP, other care workers and informal carers
- check that there are adequate arrangements for food shopping to reduce having to go out in hot weather

Facilities

- check that fridges and freezers work properly
- check that the person has light, loose-fitting cotton clothing to wear
- if you plan to move the person somewhere cooler in the event of a heatwave, consider what equipment or help you might need
- where relevant check that fans and air-conditioning work properly, and replace appliances with energy-efficient models

Environment

Immediate, where required:

- consider the possibility of moving the person to a cooler room – people living in top floor accommodation may be at particular risk as heat rises

More routinely:

- check that the person's home or room can be properly ventilated, without causing any additional health risk, discomfort or security problems

- check that any south facing windows, which let in most sunlight, can be shaded, preferably with curtains with pale, reflective linings; metal venetian blinds and curtains with dark linings absorb heat and may make things worse

Where possible:

- consider using outside shutters, overhead external shade and using reflective paint
- planting trees or leafy plants to provide shade and cool the air around the building – and indoor plants also help keep the environment cool

If a heatwave is forecast for your area

- make sure you have taken the steps outlined above
- monitor the current situation by checking the Heatwave alert level on the internet (www.metoffice.gov.uk) or listening to local weather news
- make sure you know what advice to give people at risk – a public information leaflet with tips on what to do in a heatwave is available from the Public Health England website as part of the suite of materials published with the **Heatwave plan for England**
- suggest that people at particular risk consult their GP about possible changes to their treatment and/or medication (see **Additional notes** on page 4)

During a heatwave

How to keep out the heat:

- keep curtains on windows exposed to the sun closed while the temperature outside is higher than it is inside
- once the temperature outside has dropped lower than it is inside, open the windows – this may require late night visiting and such advice needs to be balanced by any possible security concerns
- water external and internal plants, and spray the ground outside windows with water (avoid creating slip hazards) to help cool the air (however, check local drought water restrictions before using hosepipes)
- advise the person to stay out of the sun, especially between the hours of 11am and 3pm
- advise them to stay in the shade and to wear hats, sunscreen, thin scarves and light clothing if going outside

How to keep body temperatures down:

- ensure that the person reduces their levels of physical exertion
- suggest they take regular cool showers or baths, or at least an overall body wash
- advise them to wear light, loose cotton clothes to absorb sweat and prevent skin irritation
- suggest that they sprinkle their clothes with water regularly, and splash cool water on their face and the back of their neck. A damp cloth on the back of the neck helps temperature regulation
- recommend cold food, particularly salads and fruit with a high water content

- advise them to drink regularly, preferably water or fruit juice, but avoid alcohol and caffeine (tea, coffee, colas)
- monitor their daily fluid intake, particularly if they have several carers or are not always able to drink unaided

Provide extra care:

- keep in regular contact throughout the heatwave, and try to arrange for someone to visit at least once a day
- keep giving advice on what to do to help keep cool
- during extended periods of raised temperatures ensure that persons over the age of 65 are advised to increase their fluid intake to reduce the risk of blood-stream infections caused by Gram-negative bacteria

Be alert:

As well as the specific symptoms of heat exhaustion and heatstroke, watch out for signs that could be attributed to other causes, such as:

- difficulty sleeping, drowsiness, faintness and changes in behaviour
- increased body temperature
- difficulty breathing and increased heart rate
- dehydration, nausea or vomiting
- worsening health problems, especially of heart or respiratory system

Emergency treatment

If you suspect someone has heatstroke, call 999. While waiting for the ambulance:

- take the person's temperature
- if possible, move them somewhere cooler
- cool them down as quickly as possible by giving them a cool shower, sprinkling them with water or wrapping them in a damp sheet, and using a fan to create an air current
- encourage them to drink fluids, if they are conscious
- give them a saline drip and oxygen if they are unwell
- do **not** give aspirin or paracetamol

Medications

The following drugs are theoretically capable of increasing risk in susceptible individuals. It may be worth carefully reviewing the medication such individuals are taking, and assessing the risks and benefits of any changes to their regime.

Medications likely to provoke or increase the severity of heatstroke		
Those causing dehydration or electrolyte imbalance		Diuretics, especially loop diuretics Any drug that causes diarrhoea or vomiting (colchicines, antibiotics, codeine)
Those likely to reduce renal function		NSAIDs, sulphonamides, indinavir, cyclosporin
Those with levels affected by dehydration		Lithium, digoxin, antiepileptics, biguanides, statins
Those that interfere with thermoregulation:	by central action	Neuroleptics, serotonergic agonists
	by interfering with sweating	Anticholinergics – atropine, hyoscine – tricyclics – H1 (first generation) antihistamines – certain antiparkinsonian drugs – certain antispasmodics – neuroleptics – disopyramide – antimigraine agents
		Vasoconstrictors
		Those reducing cardiac output – beta blockers – diuretics
	by modifying basal metabolic rate	Thyroxine
Drugs that exacerbate the effects of heat		
by reducing arterial pressure		All antihypertensives Antianginal drugs
Drugs that alter states of alertness (including those in section 4 (Central Nervous System) of the British National Formulary)- particularly 4.1 (Hypnotics and Anxiolytics) and 4.7 (Analgesics).		

Further information

The Heatwave Plan

The full Heatwave Plan and accompanying documents can be accessed on the Public Health England website at <https://www.gov.uk/government/publications/heatwave-plan-for-england>. It outlines the responsibilities of health and social care organisations at different stages during a heatwave.

NHS Choices

NHS Choices at www.nhs.uk/summerhealth can provide additional advice on heatstroke and other heat-related conditions. We have also recommended that patients and the public can phone NHS 111 or their GP if they are concerned about their health or others.

Information on alert levels

The heatwave alert levels will be triggered by temperature thresholds (see Annex 1 of the Heatwave Plan) set according to regional variations. Therefore, the Met Office website (www.metoffice.gov.uk) will be the first place where the alert level is available. The alert level will also subsequently be displayed on the Department of Health, Public Health England and NHS Choices websites.

Information on air quality

If you would like more information about air pollution in the UK or health advice to those who may be particularly sensitive to air pollution:

- automated freephone recorded information service run by Defra on **0800 55 66 77**, or Defra website (<http://uk-air.defra.gov.uk/>)

These provide regular updates on levels of particulate matter (PM10), sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide in local areas.

Additional information on air quality can be found from:

- BBC Weather Page: www.bbc.co.uk/weather/

Advice to those with respiratory problems is consistent with the advice to all others during a heatwave – to keep windows shaded and closed when outside temperatures are hotter during the daytime to reduce heat (and ozone) entering the home; and opening windows at night or when it is cooler outside, to aid cooling of their home.

Ozone is the main air pollutant that affects respiratory symptoms and has a diurnal variation, peaking during the hottest period of the day and dropping to very low levels at night. Other air pollutants tend to be at lower levels indoors, and therefore the other main advice to those with respiratory problems is to restrict going outside, especially during the hottest period of the day.

Sun protection

Ten ways to minimise Ultraviolet Ray (UVR)-induced skin and eye damage:

- take sensible precautions to avoid sunburn, particularly in children
- remember that a suntan offers only modest protection against further exposure – it is not an indication of good health
- limit unprotected personal exposure to solar radiation, particularly during the four hours around midday, even in the UK
- seek shade, but remember sunburn can occur even when in partial shade or when cloudy
- remember that overexposure of skin and eyes can occur while swimming and is more likely when there is a high level of reflected UVR, such as from snow and sand
- wear suitable head wear, such as a wide-brimmed hat, to reduce exposure to the face, eyes, head and neck
- cover skin with clothing giving good protection - examples are long-sleeved shirts and loose clothing with a close weave
- sunglasses should exclude both direct and peripheral exposure of the eye to UVR, ie be of a wraparound design
- apply sunblock, or broad-band sunscreens with high sun protection factors (at least SPF 15) to exposed skin. Apply generously and reapply frequently, especially after activities that remove them, such as swimming or towelling
- Remember that certain individuals have abnormal skin responses to UVR and may need medical help. Certain prescribed drugs, medicines, foods, cosmetics and plant materials can also make people more sensitive to sunlight.

Annexes

Advice templates: examples

The advice cards which follow should be read in conjunction with the main Heatwave plan.

The Heatwave plan describes the **heatwave alert service** 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 heatwave alert service (also known as “heat-health watch”) comprises five main levels (Levels 0 to 4). Level 0 is year round long-term planning, so that long-term actions are taken to reduce the harm to health of severe heat, when it occurs. Levels 1 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. Details of individual regional thresholds are given in **Annex 1** of the Heatwave plan.

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.

Level 1: heatwave and summer preparedness and long-term planning: 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% chance of temperatures being high enough on at least two consecutive days to have significant effects on health. This will normally occur two to three 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. 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).

Annex 1: card for commissioners of health and social care (all settings) and Directors of Public Health

(to be used in conjunction with the guidance elsewhere in this factsheet and in the Heatwave plan)

Level 0: long-term planning – all year

Working with partner agencies, incorporate into JSNA's/HWS's long term plans to prepare for, and mitigate, the impact of heatwaves, including:

- how to identify and improve the resilience of those individuals and communities most at risk
- engaging the community and voluntary sector to support development of local community emergency plans
- making progress on relevant Public Health Outcomes Framework indicators
- ensuring that a local, joined-up programme is in place covering:
 - housing (including 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).

Level 1: heatwave and summer preparedness – 1 June to 15 September

- work with partner agencies, providers and businesses to co-ordinate 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 (e.g. prisons, schools) are aware of heatwave guidance
- ensure organisers of large events take account of possible heat risks

Level 2: heatwave is forecast – alert and readiness 60% risk of heatwave in two to three days

- 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 plans

Level 3: heatwave action – temperature reached in one or more Met Office National Severe Weather Warning Service regions

- media alerts about keeping cool
- support organisations to reduce unnecessary travel
- review safety of public events
- mobilise community and voluntary support

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 and if requiring coordinated multi-agency response.

Continue actions as per Level 3 unless advised to the contrary.

Annex 2: card for health and social care staff in all settings (community, hospitals and care homes)

(to be used in conjunction with the guidance elsewhere in this factsheet and in the Heatwave plan)

Level 0: long-term planning – all year

Professional staff (all settings):

- develop systems to identify and improve resilience of high-risk individuals
- request a housing health and safety rating assessment from environmental health officers for clients at particular risk
- encourage cycling/walking where possible to reduce heat levels and poor air quality in urban areas
- have training plans in place to brief staff on the principles and core elements of the national Heatwave plan

Care homes and hospitals:

- 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

Level 1: heatwave and summer preparedness – 1 June to 15 September

Professional staff (all settings):

- be familiar with the principles and core elements of the national Heatwave plan
- identify high-risk individuals on your caseload and raise awareness of heat illnesses and their prevention among clients and carers
- raise awareness of patients to the potential dangers of heat on health
- 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)

Care homes and hospitals:

- 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

Level 2: heatwave is forecast – alert and readiness 60% risk of heatwave in two to three days

Professional staff (all settings):

- 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

Care homes and hospitals:

- 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 plans

Level 3: heatwave action – temperature reached in one or more Met Office National Severe Weather Warning Service regions

Professional staff (all settings):

- visit/phone high-risk people
- reconfirm key public health messages to clients
- advise carers to contact GP if concerns re health

Care homes and hospitals:

- 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

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 and if requiring coordinated multi-agency response:

- continue actions as per Level 3 unless advised to the contrary - during extreme conditions, it is not only high-risk groups that may be at risk. Therefore, further risk appraisals should be made as to how the wider population is likely to be affected
- receive and utilise community volunteers
- situation reports might be requested more frequently than once a day by emergency planners, who will be reporting to major incident partners

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
www.gov.uk/phe
Twitter: [@PHE_uk](https://twitter.com/PHE_uk)

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