



Public Health
England

NHS
England

Protecting and improving the nation's health



Heatwave plan for England

**Supporting vulnerable people before and during a heatwave –
advice for care home managers and staff**

Contents

Advice for care home managers and staff	2
What are the risks? The effects of heat on health	3
Information card for heat-health alert system	6
Further information	11

Advice for care home managers and staff

Severe heat is dangerous to everyone, **especially older and disabled people, and those living in care homes**. During a heatwave, when temperatures remain abnormally high for longer than a couple of days, it can prove fatal. In one hot ten day period in southeast England in August 2003, there were nearly 2,000 extra deaths. The biggest increase in risk of death was among those in care homes. The latest UK government risk assessment on climate change suggests summers are going to get hotter in the future.

This factsheet uses the information detailed within the Heatwave plan. It builds on our own experience in England and on expert advice from the WHO and the EuroHEAT project in developing other national heatwave plans. It is part of a national programme to reduce the health risks by advising people what to do in the event of a heatwave, before it happens.

You should be reading this if you work in or manage a care home, where people are especially at risk during a heatwave. You are strongly urged to make the preparations in this factsheet **before** a heatwave is forecast. The effects of heat occur rapidly, and to be effective preparatory action has to be taken **before the beginning of June**. This fact sheet contains action cards outlining the roles and responsibilities required at each level. They can be found on p6 of this document.

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. 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.

Box 1 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 long-term 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 2 shows those groups who are at higher risk of heat-related illness.

Whatever the underlying cause of heat-related symptoms, the treatment is always the same – move the person to somewhere cooler and cool them down.

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)

Box 2: at-risk groups

- **older people**, especially those over 75 years old, or those living on their own and who are socially isolated, or in a care home
- those with **chronic and severe illness**, including heart conditions, diabetes, respiratory or renal insufficiency, Parkinson's disease, or severe mental illness
- those on medications that potentially affect renal function, sweating, thermoregulation or electrolyte balance
- those who are unable to adapt their behaviour to keep cool, including those with Alzheimer's, disabilities, or who are bed bound

Note

The information card which follows should be read in conjunction with the main Heatwave plan.

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 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 temperature 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 per cent 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).

Information card for heat-health alert system

Level 0: long-term planning (All year):

- 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 programme – advance preparations

Buildings and surroundings:

- check that windows can be shaded, preferably by curtains with pale, reflective linings rather than by metal venetian blinds and curtains with dark linings, which can make conditions worse – if these are fitted, check that they can be raised
- check that there are no problems opening windows while acknowledging security considerations
- increase outside shading, in the form of shutters, shades, trees or leafy plants; reflective paint can also assist in keeping the building cool. Increase outside greenery, especially in concreted areas, as it increases moisture content and aids cooling as a natural air conditioner
- cavity wall and loft insulation help to keep the building warm in winter and cooler in the summer – contact your local authority's energy efficiency officer or your energy company to see what grants are available
- create cool rooms or cool areas. High risk groups that are vulnerable to the effects of heat, physiologically find it hard to cool themselves efficiently once temperatures rise above 26°C. Therefore, every care, nursing and residential home should be able to provide a room or area that maintains a temperature at 26°C or below
- cool areas can be developed with appropriate indoor and outdoor shading, ventilation, the use of indoor and outdoor plants and, if necessary, air conditioning
- ensure that staff know which rooms are the easiest to keep cool and which are the most difficult, and review the distribution of residents according to those most at risk

- indoor thermometers should be installed in each room in which vulnerable individuals spend substantial time (bedrooms and living and eating areas) – during a heatwave, indoor temperatures should be monitored regularly
- electric fans may provide some relief, if temperatures are below 35°C (note, use of fans: at temperatures above 35°C fans may not prevent heat-related illness. Additionally fans can cause excess dehydration; the advice is to place the fan at an appropriate 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)

Working arrangements:

- ensure business continuity plans are in place and implement as required (sufficient staff must be available so that appropriate action can be taken in the event of a heatwave)
- get extra help from relatives of residents and volunteers
- provide an email address to local authority/NHS emergency planning officers, to facilitate the transfer of emergency information
- identify cool areas in the care home
- increase awareness of staff to heat-related illness and health protection measures

Facilities:

- check that you have an adequate supply of fans and water sprays – install thermometers
- check that water and ice are widely available – ensure that you have a supply of oral rehydration salts, orange juice and bananas to help maintain electrolyte balance for those on diuretics
- arrange for cold drinks to be distributed regularly in the event of a heatwave
- plan to adapt menus to cold meals (preferably with a high water content, such as fruit and salads) in consultation with residents

Residents:

- make sure you know who is most at risk (see **Box 2**) – ask primary care staff if you are unsure and record it in their individual care plans
- ensure that you have protocols to monitor residents most at risk and to provide additional care and support (room temperature, body temperature, pulse rate, blood pressure and dehydration will need to be monitored)
- ask the GPs of at-risk residents about possible changes in treatment or medication in the event of a heatwave and review residents on multiple medications
- check that residents have light, loose-fitting cotton clothing to wear
- be aware that plastic pads and mattresses can be particularly hot during a heatwave

Level 2: 60% risk of heatwave in two to three days:

- identify high-risk residents/patients
- if temperatures exceed 26°C, high-risk individuals should be moved to a cool area that is 26°C or below – for patients who can't be moved, or for whom a move might be too disorienting, take actions to cool them down (eg liquids, cool wipes) and enhance surveillance
- check local weather forecasts on the radio, news, websites (eg www.metoffice.gov.uk) or paper
- check that staff, and others such as volunteers, know what to do during a heatwave
- suggest that all residents consult their GP about possible changes to their treatment and/or medication; consider prescribing oral rehydration salts for those on high doses of diuretics
- check indoor temperatures are recorded regularly during hottest periods in all areas where patients reside
- communicate alerts to staff and make sure they are aware of heatwave plans
- prepare cool areas and provide regular wet towels and cool foot baths
- ensure sufficient staffing

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

Try to keep the care home as cool as possible:

- ensure you have taken the steps outlined above in Levels 1 and 2
- activate plans to maintain business continuity – including a possible surge in demand for services
- increase outside shading – spraying water on the ground outside helps to cool the air (avoid creating slip hazards, check local drought water restrictions before using hosepipes)
- keep curtains and windows closed while the temperature outside is higher than it is inside
- once the temperature outside has dropped lower than the temperature inside, open the windows - this may not be until very late at night or the early hours of the morning
- discourage residents from physical activity and going out during the hottest part of the day (11am to 3pm)
- check indoor temperatures are recorded regularly during the hottest periods for all areas where patients reside
- ensure staff can help and advise clients and patients

- make the most of cooler night-time temperatures to cool the building with ventilation
- reduce internal temperatures by turning off unnecessary lights and electrical equipment
- consider moving visiting hours to mornings and evenings to reduce afternoon heat from increased numbers of people

Monitor residents:

- check body temperature, heart and breathing rates, blood pressure and hydration levels
- watch for any changes in behaviour, especially excessive drowsiness
- watch for signs of headache, unusual tiredness, weakness, giddiness, disorientation or sleeping problems

Reduce the health risks of heat:

- encourage residents to remain in the coolest parts of the building as much as possible
- move residents so that each spends time in the cool room/area (below 26°C) – give priority and extra time to high-risk residents or any showing signs of distress (including increased body temperature); for patients who can't be moved, or for whom a move might be too disorienting, take actions to cool them down (eg liquids, cool wipes) and enhance surveillance
- monitor residents' fluid intake, providing regular cold drinks, particularly if they are not always able to drink unaided; remember the importance of increasing fluid intake during periods of high temperature to reduce the risk of blood stream infections caused by Gram-negative bacteria. Oral rehydration salts may be suggested for those on high doses of diuretics; bananas, orange juice and occasional salty snacks can also help replace salts lost due to sweating
- advise residents to avoid caffeine (coffee, tea, colas), very sweet drinks and alcohol
- encourage residents to wear light, loose cotton clothes to absorb sweat and prevent skin irritation
- regularly sprinkle or spray cool water on exposed parts of the body – a damp cloth on the back of the neck helps with temperature regulation
- arrange cool showers or baths if possible

Level 4: national emergency

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. **All existing emergency policies and procedures will apply. All Level 3 responsibilities will continue.**

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
- do **not** give them aspirin or paracetamol

Further information

The Heatwave plan

The full Heatwave plan 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 in 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, advice on ways to minimise ultraviolet ray-induced skin and eye damage can be found on NHS Choices website:

www.nhs.uk/Livewell/skin/Pages/SunSAFE.aspx

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

© Crown copyright 2015

Re-use of Crown copyright material (excluding logos and third party images) is allowed under the terms of the Open Government Licence, visit:

www.nationalarchives.gov.uk/doc/open-government-licence/version/3/
for terms and conditions.

PHE publications gateway number: 2015049

Published: May 2015



Corporate member of
Plain English Campaign
Committed to clearer communication

339