

heatwave[☀] PLAN FOR ENGLAND 2012

SUPPORTING VULNERABLE PEOPLE
BEFORE AND DURING A HEATWAVE

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 per cent.

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. 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, whether as an individual or part of a team, in primary care or social services or are a home care provider. 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 in Annex on page 12.

Who is at risk?

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

- **older age:** especially women 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; and
- **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 infra-red rays;
- **convection** via water or air crossing the skin;
- **conduction** by a cooler object being in contact with the skin; and
- **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 women appear to be more vulnerable to the effects of heat than older men, possibly due to having fewer sweat glands and being more likely to live on their own.

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

However, 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.

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; and
- **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:

Chronic or severe illness

People with chronic 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; and
- 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, especially older women, people with chronic 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.

Environment

- Plant trees or leafy plants to provide shade and cool the air around the building. Indoor plants also help keep the environment cool.
- Check that any southfacing 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.
- Consider outside shutters, overhead external shade and using reflective paint.
- Check that the person's home or room can be properly ventilated, without causing any additional health risk, discomfort or security problems.
- 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.

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.
- Check that fans and air-conditioning work properly, and replace appliances with energy-efficient models.

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.

If a heatwave is forecast for your area

- Make sure you have taken the steps outlined above.
- Monitor the current situation by checking the Heat-Health Watch 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 GP practices, pharmacies, NHS walk-in centres, hospitals, care homes, benefit offices and voluntary organisations.
- 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 11.00am and 3.00pm.
- 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.

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; or
- 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; and
- 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 <ul style="list-style-type: none"> – 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 4.4 of the British National Formulary)		

Further information

The Heatwave Plan

The full *Heatwave Plan and accompanying documents* can be accessed on the Department of Health website at <http://www.dh.gov.uk/health/category/policy-areas/public-health/>. It outlines the responsibilities of health and social care organisations at different stages during a heatwave.

NHS Choices

NHS Choices at www.nhs.uk can provide additional advice on heatstroke and other heat-related conditions.

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, Health Protection Agency 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**;
- Defra website (<http://uk-air.defra.gov.uk/>); or
- follow UK-AIR on Twitter: @DefraUKAIR.

These provide regular updates on levels of particulate matter (PM₁₀ and PM_{2.5}), sulphur dioxide, nitrogen dioxide and ozone across the UK.

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

You can get advice on skin protection during hot weather from the Cancer Research UK SunSmart campaign website at www.cancerresearchuk.org/sunsmart.

ANNEXES

Advice templates: examples

Annex 1: Advice card for district nursing/health visiting leader

Annex 2: Advice card for district nurse/health visitor

Annex 3: Advice for emergency planners

Note

The Advice Cards which follow should be read in conjunction with the main Heatwave Plan at <http://www.dh.gov.uk/health/category/policy-areas/public-health/>

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 four main levels (Levels 1-4). Levels 1-3 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. Details of individual regional thresholds are given in **Annex 1 of the Heatwave Plan**.

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. Long-term planning includes year-round joint working to reduce the impact of climate change and ensure maximum adaptation to reduce harm from heatwaves.

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 2–3 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. 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 district nursing/health visiting leader

This additional action card is to be used in conjunction with the guidance elsewhere in this factsheet and in the Heatwave Plan

Level 1 Long term planning AND Heatwave and summer preparedness

- Brief district nurses and health visitors (DNs/HVs) on the principles and core elements of the national Heatwave Plan.
- Identify a list of clients at risk during a heatwave.

Level 2 – 60 per cent risk of heatwave in 2–3 days

- Continue all level 1 actions
- Contact DN/HVs and instruct them to prioritise their current list of clients at risk.
- Identify what nonessential activities could cease.
- Make provision for surge capacity.
- Be prepared to attend a meeting of the heatwave subcommittee or Local Resilience Forum.

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

- Continue all level 2 actions.
- Use all available resources to maximise frontline DN/HV capacity. If this is not sufficient, notify emergency planning.
- Require DN/HVs to make daily contact with clients at risk and make a daily situation report.
- Collate situation reports and forward summary to emergency planners.
- Be prepared to receive and utilise community volunteers.

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

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.

- Continue all level 3 actions.
- 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.

Annex 2: Card for district nurse/health visitor

This additional action card is to be used in conjunction with the guidance elsewhere in this factsheet and in the Heatwave Plan.

Level 1 Long term planning AND Heatwave and summer preparedness

- Be familiar with the principles and core elements of the national Heatwave Plan.
- Be familiar with the client heatwave advice leaflet and give copies to your clients as appropriate.
- As clients come onto your caseload and are assessed, consider their vulnerability to adverse weather conditions, add them to your at-risk list and consider referring them to the local authority environmental health practitioner for an assessment on their health and housing, (HHSRS).

Level 2 – 60 per cent risk of heatwave in 2–3 days

- Continue all level 1 actions.
- If notified by the district nursing or health visiting leader that level 2 conditions exist:
 - construct a prioritised list from your caseload of those who will require daily contact in the event of a heatwave. Some clients, especially the elderly, may be visited by more than one agency. During emergencies, when staff are stretched, agree where possible to avoid duplicate contact/visits; and
 - determine what non-essential activities could cease.

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

- Continue all level 2 actions.
- If notified by the district nursing or health visiting leader that a heatwave has been declared:
 - stop non-essential activities;
 - commence daily contact with clients at risk; and
 - make daily situation reports.

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

- Continue all level 3 actions.
- Continue to do your best for your caseload.
- Provide situation reports upwards, as requested, and raise any concerns you may have.

Annex 3: Card for emergency planners

This additional action card is to be used in conjunction with the guidance elsewhere in this factsheet and in the Heatwave Plan

Level 1 Long term planning AND Heatwave and summer preparedness

- Work with partner agencies to develop long term plans to prepare for, adapt to, and mitigate the impact of future heatwaves, including:
- 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 issues such as:
 - 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 (neighbourhood) community emergency plans
 - Work with partner agencies and businesses to co-ordinate heatwave plans
 - Work with partners and staff on risk reduction awareness (eg storage of medications), information and education
 - 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 that heatwave alerts are disseminated widely and appropriate responsive action can be taken

Level 2 – 60 per cent risk of heatwave in 2–3 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.
- Increase advice to health and social care workers and other community staff.

Level 3 – Heatwave 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 – 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

- Continue all level 3 actions.
- Establish a multiagency control group if one has not already been established.
- Obtain regular situation reports from frontline healthcare leads.
- Public Health to advise partners of wider health risks to the population.
- Provide updates, and report any concerns to national resilience teams.



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