Department of Health
An Roinn Sláinte
Männystrie O Poustie
www.health-ni.gov.uk

Heatwave Advice

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

Adapted from the Heatwave Plan for England (Public Heath England)

Contents

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 the UK. In one hot spell in England in August 2003, deaths among people aged over 75 rose by 60%.

The purpose of this factsheet is 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.

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; 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 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.

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.

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 (e.g. 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
- 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 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.

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. Information on what to do in a heatwave is available from NI Direct, The Public Health Agency and DoH.
- 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.
- 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; 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 (colchicine, antibiotics, codeine)	
Those likely to reduce renal function		NSAIDS, sulphonamides, indinavir, cyclosporine	
Those with levels affected by dehydration		Lithium, digoxin, antiepileptics, biguanides, statins	
Those that interfere with theromregulation:	By central action	Neuroleptics, serotoninergic agonists	
	By interfering with sweating	Anti-cholinergics	• atropine, hyoscine • tricyclics • H1 (first generation) antihistmines • certain antiparkinsonian drugs • certain antispasmodics • Neuroleptics • disopyramide • antimigraine agents
		Vasoconstrictors	
		Those reducing cardiac ouput	• 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

- Check the weather forecast and any high temperature warnings at:

  Met Office Weather page : http://www.metoffice.gov.uk/

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

- Log on to NI Direct at www.nidirect.gov.uk for advice about hot weather.

Information on air quality

In 2013 a new SMS text messaging service called 'Air Aware' was launched by DOE in conjunction with the DoH The primary purpose of the service is to allow individuals**,** who could benefit from air pollution alerts, to sign up to receive a text message alert about air quality to their mobile phone. The alert notifies subscribers when air pollution levels are HIGH (or VERY HIGH) or forecast to be HIGH (or VERY HIGH), so they can choose whether they need to adjust their daily routine.

Signing up to the 'Air Aware' text messaging service is easy. It is available via the NI Direct 66101 number, by texting the word **'Air'** to **66101**. The initial text message to register with the service is charged at the standard network operator's messaging rates. Alerts are received free of charge for UK mobiles. Should individuals wish to opt out they can do so by texting STOPAIR to 66101.

If you would like more information about air pollution in NI:

- Updates on levels of particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide are available on the DOE website: http://www.airqualityni.co.uk and a freephone helpline (0800 556677) provides a regularly updated air pollution bulletin service.

- Additional information on air quality can also be found from the weather websites above.

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, i.e. 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.

You can get advice on protecting your skin during hot weather from the Cancer Research UK SunSmart campaign website at www.cancerresearchuk.org/sunsmart/ or the Ulster Cancer Foundation ‘Care in the Sun’ website at http://www.ulstercancer.org/campaigns/