

**Climate Change Adaptation Response**  
**Public Health**

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# Climate Change Adaptation Response

## Public Health

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## Executive summary

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Adaptive responses to climate change include measures to cope with unavoidable impacts and emerging threats of climate change. This can be done by assessing what the potential health and non-health impacts might be, and developing public health approaches for dealing with them. Approaches need to reflect key areas that contribute to the wellbeing agenda and quality of life of the people and communities of Hampshire.

Hampshire County Council has an important role in adaptation, both via its direct activities and in terms of its ability to influence the wider community, as described in the 2006 Local Government White Paper '*Strong and Prosperous Communities*'. Public health and health bodies can play an important part in their role as partners of local government in Local Strategic Partnerships, and as key communicators and influencers for the public in their areas.

It is important to be aware that climate models simulate climate change, and do not provide a definitive prediction of what climate will be like at a particular time in the future. Current trends suggest that the probability of heatwaves and ozone levels are projected to increase into the 21<sup>st</sup> century. Although, these are future extrapolations, the Stern Review makes a clear case for action now to tackle climate change and improve sustainability. Its key finding is that 'the benefits of strong, early action on climate change outweigh the costs.' These costs include health and wellbeing costs.

Prerequisites for the 'Climate Change Commission of Inquiry' to reduce health risks and instability, include the following key recommendations:

- Taking a lead in mainstreaming climate change, advocating simple changes in lifestyle and the health benefits and financial savings of producing less carbon
- Adopting the sustainability principles outlined in the '*Sustainable Community Strategy for Hampshire*' and the '*Community Strategy for Hampshire - Shaping Our Future Together, 2004-2007*' and,
- Working with partner organisations to learn from best practice, particularly reviewing purchasing, land use, the natural environment, waste management, food and water resources, building, local employment and community engagement, travel and energy policies.

The risk of not acting now threatens the widening of health inequalities, whereas the benefits of strong and early action results in potential gains to health improvement.

## 1. Introduction

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Climate change has been a matter for scientific and political concern since the 1980s. But it has gained special prominence in the UK following the release of the Stern Review on the Economics of Climate Change and the recent scientific reports of the Intergovernmental Panel on Climate Change (IPCC), which together provide decisive evidence of the role of human activities in changing the climate, the potential impacts on our society and ecosystems and the urgent need to take action to reduce greenhouse gas emissions, and adapt to these impacts. The risk of not acting now threatens the widening of health inequalities, whereas the benefits of strong and early action results in potential gains to health improvement.

If not addressed, climate change will impact negatively on health, countering the dramatic improvements in health and life expectancy achieved so far. Some of the measures taken to reduce Green House Gas (GHG) emissions are themselves likely to have a positive impact on health for e.g. promoting active transport resulting in improved physical health and reduced obesity, improvements in air quality leading to reduced respiratory illness.

## 2. The main impacts of climate change on health

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Climate change poses major and unfamiliar challenges. It is likely to have the following potential impacts on human health in addition to wider societal impacts:

- **Heatwave-related health problems:** Heatwaves are projected to become more frequent resulting in increased heat and pollution-related illness (cardio-respiratory) & deaths as a result of hotter, drier summers. The very old & young, chronically ill, poor and vulnerable communities are most susceptible to heat related illness. Hampshire has already experienced the August 2003 heatwave. Impacts of this heatwave were the greatest in the southern half of England. The additional deaths in summer will not be offset by fewer deaths during warmer winters
- **Air pollution:** Air quality is worse at certain times of the year and under certain weather conditions (such as still, sunny days in summer). Projected increases in dry, sunny weather in summer over the south-east will therefore favour the production of higher amounts of street level air pollutants (ozone). Any decline in air quality could pose serious health problems for asthmatics.
- **Cold-related illness & deaths:** Cold-related illness, falls and deaths are likely to decline due to warmer, wetter winters<sup>1</sup>.

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<sup>1</sup> The IPCC "Climate Change 2007: The Physical Science Basis" policy states that based on current model simulations, it is very likely that the Meridional Overturning Circulation (MOC) of the Atlantic Ocean will slow down during the 21st century. But, It is very

- **River, Coastal Flooding & Flash Floods:** The risk of major flooding disasters caused by severe winter gales, heavy rainfall and coastal erosion is likely to increase contamination of drinking water, increase waterborne infections and exposure to toxic pollutants, accompanied with psychological consequences, disruption, injuries and deaths. Later effects of flooding include stress and mental health problems. River floods or storm surges, which can be forecast several days in advance, have fewer casualties compared to flash floods where there is no prior warning.
- **Infectious diseases:** Cases of food poisoning (Campylobacter infections, Salmonellosis) and water borne disease (Cryptosporidiosis) linked to warm weather are likely to increase.
- **Vector-borne diseases:** (Ticks-Lyme disease) may present local problems due to changes in eco-systems leading to changes in vector-pathogen-host relationships, but the increase in their overall impact is likely to be small
- **Sunburn, skin cancer and cataract:** are likely to increase as people are going to sunbathe more because of the warmer weather. Rates of skin cancer are projected to show an upward trend in the coming years. It is difficult to know how much of this is related to global climatic change but it is not inconceivable that such change might make the upward trend even steeper.
- **Water & Food shortages:** Drought may increase the risk of infectious diseases due to reduced public and personal hygiene and increased risk of water contamination. There may be an increase in cases of dehydration due to inadequate water intake. There is the chance of increased mental health problems due to anxiety caused by loss of water supply and introduction of emergency measures. Sea level rises may salinate coastal areas leading to impaired crop yields.
- **Allergic conditions:** The pollen and hay fever season may be prolonged.
- **Possible ancillary health benefits:** such as increased physical activity due to extended warm weather, but outcomes could be worse due to extreme heat. Possibly healthy eating if sustainable farming and food policy are adopted.
- **Extreme weather-related events** (natural disasters- hurricanes): leading to social disruption, injuries, deaths, disability, migration and food shortages.

Within the UK, the South Eastern regions will see the most pronounced impacts of climate change over this century and this would also reflect the health impacts.

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unlikely that the MOC will undergo a large abrupt transition during the 21st century. Longer-term changes in the MOC cannot be assessed with confidence. Currently, this can be regarded as a high impact-low probability event, with the potential consequence of the temperature over the UK lowering by 6-10°C. Any such weakening would have the effect of slowing warming rather than leading to cooling.

### 3. Suggested adaptation measures

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DEFRA through the UK Climate Impacts Programme (UKCIP) is the main source of advice on preparing for climate change. It is developing an 'Adaptation Policy Framework' to ensure that adaptation policies across government sectors are developed in a coherent way. For health, the framework would potentially include the adaptation measures mentioned below. In some areas, adaptation is being considered, but has not yet been actively incorporated into long term planning and decision making, whereas in other areas such as the *National Heatwave Plan* there is an active plan in place.

#### a. Research

- **Scoping studies:** In order to determine the impacts of climate change, scoping studies have been produced for most regions. For the South East region, a scoping study, '*Rising to the Challenge - Impacts of Climate Change in the South East in the 21st Century*', 1999, set the agenda for addressing climate change. '*Meeting the Challenge of Climate Change, 2003/04*<sup>2</sup> provided an update and took a more detailed look at the scope for adaptation to climate change in key sectors. Another key document is the '*Climate Change Mitigation and Adaptation Implementation Plan, March 2007*' which is a regional plan that sets out actions required by different organisations to mitigate and adapt to the forecast effects of climate change in the South East. Based on these reports some of the impacts are:
  - An increased frequency of overtopping of coastal defences and river flooding
  - The challenge of meeting water supply demands and dilution of effluent from sewage treatment works, following drought periods
  - Increased risk of saline intrusion at coastal boreholes due to sea level rise that will have implications for water treatment and drinking
  - Agricultural changes with longer growing seasons and the potential to grow new crop types such as grain maize and soya. Potential for increased incidence of crop and livestock pests, diseases and pathogens.
  - Increased opportunities for outdoor leisure activities, particularly water-based activities.

#### **Health sector.**

Quantitative estimates of the possible impacts of climate change on health in the UK have been addressed by a department of health expert group in a 2001/02 report - '*Health Effects of Climate Change in the UK*', which has been updated in 2007.

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<sup>2</sup>Meeting the Challenge of Climate Change - Summary of the South East Climate Threats and Opportunities Research Study (SECTORS) Project: A Study of Climate Change Impacts and Adaptation for Key Sectors in South East England, 2004

- **Health impact/adaptation assessment** of the impacts of climate change on health, including the identification of vulnerable groups in order to target adaptation. For example, assessing the health impacts of predicted changes in ozone concentrations, by estimating changes in attributable deaths and emergency respiratory hospital admissions.
  
- **Climate scenarios** UKCIP provides scenarios that show how our climate might change. It has published a set of climate change scenarios for the UK (to be updated as UKCIP08<sup>3</sup>) to be used in impact assessments. Based on the most recent scenario (UKIP02), the South East is likely to face:
  1. Hotter drier summers
  2. Milder wetter winters
  3. A significant decrease in soil moisture content
  4. More frequent extreme high temperatures
  5. More frequent extreme winter precipitation
  6. Increased storminess and wind speeds in winter
  7. Net sea level rise and increase in sea storm surge height
  
- **Risk assessment** Risk assessments provide a structured approach to assist understanding the relative significance of different risks. Both current and future climate and non-climate risks need to be considered i.e. scenario-based risk assessment, using various types of predictive modeling. For example, there is a need to implement flood health risk assessments, to gauge the full effect on health, in terms of indirect deaths and illness due to infectious disease, mental health and injuries.

## ***b. Data collection and monitoring***

- **Surveillance & monitoring climate impacts:** are needed to
  - Provide early warning systems and trend data
  - Assess the magnitude of the impacts
  - Provide research data on climate variables, social conditions & health indicators
  - Improve predictive models to suggest vulnerable regions
  - Evaluate adaptation strategies

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<sup>3</sup> 'UK 21st Century Climate Scenarios (2008)' or 'UKCIP08' for short

## Examples of possible surveillance and monitoring systems

Health impact	Data requirements & programmes
Heat-related-sunburn, skin damage, heat stress Cold related data	Solar radiation monitoring, Ozone depletion Daily mortality and morbidity (chronic cardio-respiratory) data Primary care data (GP based surveillance) Hospitals (acute data) Public Health Observatories (admissions) PCTs (public health information)
HPA infections	Communicable disease surveillance Enhanced surveillance of Enteric Fevers, Emerging infections Notifications of Infectious Diseases (NOIDs)
Air pollution	Daily counts of deaths and hospital admissions for treatment of respiratory diseases Committee on the Medical Effects of Air Pollutants (COMEAP) & Medical Research Council (MRC)
Cancer Registry	Cancer incidence
Drought	Surveillance of water-related infections
Environment agency/Met Office	Meteorological data -Temperature/Precipitation/Sea-level rise/Storms Effective flood forecasting and warning. Data on impacts of disasters
Sea-level rise	Ground water quality
Mental health	Diarrhoeal disease surveillance Data on mental health morbidity

### c. *Changing/developing regulations, standards, codes & plans*

Consider changes in infrastructure (e.g. design buildings that stay cool in hot weather, are flood-resilient, provision of post-flood support, appropriate land use and transport planning)

- Develop new buildings<sup>4</sup> with high levels of energy efficiency.
- Spatial planning<sup>5</sup>
- Planning<sup>6</sup>
- Incorporating renewable energy technologies so as to minimise carbon footprint

<sup>4</sup> Environment Agency report 'Building a better environment - A guide for developers' -This new publication provides practical advice on making sure that new development contributes to long-term environmental quality, while take account of the increasing impacts of climate change. It includes pointers for building sustainable, cost-effective homes, with examples of sites where relevant good practice has already been applied.

<sup>5</sup> The ESPACE Project (European Spatial Planning: Adapting to Climate Events) is a multi-partner project led by Hampshire County Council. It began in 2003, with a focus on increasing awareness of the need for spatial planning systems to adapt to the impacts of climate change and to begin to provide some of the necessary policy guidance, tools and mechanisms to incorporate adaptation into planning systems and processes.

<sup>6</sup> The recently published report by the Town & Country Planning Association (TCPA) communicates the importance of adapting to some degree of inevitable climate change and illustrates how adaptation can be integrated into the planning, design and development of new and existing communities. With the appropriate policies in place, spatial planning and urban design are vital tools for ensuring that the UK is well adapted in the face of a changing climate. The guide aims to help planners, developers, architects and urban designers in the public and private sectors develop better understanding of climate risks, demonstrate effective climate adaptation strategies and consider the role of the planning system, communities, other stakeholders and delivery bodies.

- Plans/guidelines for handling extreme weather events include:
  - **The Heatwave Plan for England** – The arrangements outlined spell out what needs to be done by health and social care services and other bodies to raise awareness of risks relating to severe hot weather and what preparations both individuals and organisations should make to reduce those risks. The plan also spells out the responsibilities at national and local level for alerting people once a heatwave has been forecast, and advising them what to do during a heatwave<sup>7</sup>.
  - **Flooding**
    - **HPA guidelines, November 2000**<sup>8</sup> – These cover the public health implications of flooding which include general advice on protecting against infection, and specific advice about returning to a flooded home, electricals, drinking water, food preparation and storage.
    - **Flood and coastal defense, April 2004**<sup>9</sup> - a DTI Foresight report on future flooding identified the biggest health impacts as being from pollutants, foul water and mental health.
    - **Making space for water, July 2004**<sup>10</sup> - a DEFRA approach to flood prevention, management and adaptation strategies to reduce the impact of flooding. It includes sections on flood warning/emergency responses raising awareness of flooding and how to make properties more flood resilient but does not address health
    - **Planning Policy Statement 25 (PPS25) Development and Flood Risk**<sup>11</sup>- DEFRA guidance designed to provide updated climate change impacts policy guidance to operating authorities such as the Environment Agency and local authorities, as part of the development of public-funded flood and coastal management plans, programmes and projects.

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<sup>7</sup> See appendix for summary heatwave plan

<sup>8</sup> [http://www.hpa.org.uk/infections/topics\\_az/flooding/guidelines.html](http://www.hpa.org.uk/infections/topics_az/flooding/guidelines.html)

<sup>9</sup> [http://www.foresight.gov.uk/Previous\\_Projects/Flood\\_and\\_Coastal\\_Defence/One\\_Year\\_Review/Review.html](http://www.foresight.gov.uk/Previous_Projects/Flood_and_Coastal_Defence/One_Year_Review/Review.html)

<sup>10</sup> Making Space for Water: Taking forward a new Government strategy for flood and coastal erosion risk management in England <http://www.defra.gov.uk/enviro/fcd/policy/strategy.htm>

<sup>11</sup> [http://www.communities.gov.uk/pub/955/PlanningPolicyStatement25DevelopmentandFloodRisk\\_id1504955.pdf](http://www.communities.gov.uk/pub/955/PlanningPolicyStatement25DevelopmentandFloodRisk_id1504955.pdf)

▪ **Strengthening public health programmes**

Health impacts	Adaptation responses
Heatwave-related health problems	Ensure: <ul style="list-style-type: none"> <li>▪ Compliance with the “<i>National Heatwave Plan</i>”</li> <li>▪ Adequate shade and cooling available.</li> </ul>
Air quality	<ul style="list-style-type: none"> <li>▪ Monitor air and water quality for climate related changes (atmospheric ozone levels)</li> </ul>
Cold-related illness & deaths	<ul style="list-style-type: none"> <li>▪ Keep a watching brief/winter planning</li> <li>▪ Ensure compliance with “<i>Keep Warm, Keep Well</i>” campaign</li> </ul>
Sunburn/skin cancer	<ul style="list-style-type: none"> <li>▪ Consider health promotion programmes on the risk of skin cancer / sun burn and ways to increase awareness of dangers of exposure</li> <li>▪ Provide more shade in public recreational areas.</li> </ul>
Vector borne illness	<ul style="list-style-type: none"> <li>▪ Vaccination/prophylaxis programmes for diseases such as tick borne encephalitis and raising awareness of protective behaviour such as wearing of suitable clothing for outdoor activities and self-inspection afterwards for the early removal of ticks – would have to be reinforced.</li> <li>▪ Environmental measures to control vector distribution</li> <li>▪ Strengthen surveillance eg Leishmaniasis, Malaria, Hantavirus, West Nile fever</li> </ul>
Infectious diseases	<ul style="list-style-type: none"> <li>▪ Work with environmental health to consider ways of increasing awareness of food hygiene practices and revise best practice</li> <li>▪ Adoption and enforcement of legislation, particularly on storage and refrigeration, can help prevent salmonellosis cases associated with climate change.</li> </ul>
Health services capacity	<ul style="list-style-type: none"> <li>▪ Climate proofing plans, policies and strategies</li> <li>▪ Identify need for additional health facilities</li> <li>▪ Refurbishing publicly owned buildings</li> <li>▪ Renewable energy capacity at public sector sites</li> <li>▪ Provide information and raise awareness of health impacts</li> <li>▪ Awareness raising and education; Training for health professionals</li> <li>▪ Promote healthier lifestyles</li> <li>▪ Strengthen public health infrastructure including disaster and emergency preparedness</li> <li>▪ Ensure that climate change is incorporated into Joint Strategic Needs Assessments, Integrated Assessments and Sustainability Appraisals</li> </ul>

**d. Organisational development**

Climate change cannot be approached as an isolated, stand-alone issue, but rather as part and parcel of overall sustainable development. Aspects of sustainable development contain the solution to addressing climate change. Additionally, promoting sustainable development has the potential to improve overall health and well being, for example by increasing active transport helps to reduce obesity.

Health needs to:

- Push for concepts such as ‘**Sustainable Development**’ on the health agenda. The Sustainable Development Commission’s (SDC) **Healthy Futures** team works with health to spread sustainability good practice and includes tools and publications on *Sustainable development opportunities for the NHS, Sustainable development and Food, Buildings, Transport, Good Corporate Citizenship and Natural Environment and Well Being*.

- Get organisational sign up; identify a '**Carbon Champion**'. Conduct **Energy Audits** for buildings by linking with the Carbon Trust's NHS Carbon Management (NHSCM) Programme. Identify practical energy efficiency measures based on audit findings and set a target for becoming carbon neutral. Consider Total Waste Management units and Sustainable Procurement. Lead by example and share good practice
- Ensure that policies, programmes and plans are climate risk assessed to take into account the impacts that unavoidable climate change will have on them. UK Climate Impacts Programme produces a number of tools to help organisations do this.
- Make the case for reducing obesity & accidents, increasing exercise levels, improving air quality, well-being and a healthier local population through sustainable development
- Persuade health professionals/the public to alter behaviour patterns that contribute to climate change e.g. teleconferencing instead of air travel for international medical conferences, promote active transport and public transport
- Include climate change in the curriculum for health care professionals

### ***e. Partnership working***

Active cooperation between cross disciplinary working/private/voluntary sector/community/primary care/acute trust/ambulance/local authority/Met Office/veterinary services is essential to detect early signs of climate-induced changes. Joint working between health and social care professionals is integral. Strengthening collaboration, sharing good practice across sectors and teamwork between health and climate professionals are prerequisites for effective health/climate policy-making.

### ***f. Accepting impacts & loss/risks***

Health policy needs to include climate risk and costs. Overarching national drivers, competing priorities, financial constraints, historically low investment in public health, health inequalities, culture and values (short-termism v/s longer, silo working v/s partnership, local v/s global), are some of the potential pressures and challenges facing public health.

### ***g. Exploiting opportunities***

Successful adaptation can reduce health inequalities by building on and strengthening existing coping mechanisms and targeting climate change vulnerability with specific measures. By promoting local employment and community development it has a positive impact on the labour market. Efficient supply management and sustainable funding have wider beneficial environmental impacts. Adaptation would also result in ancillary health benefits.

### **3. Hampshire County Council's role in an adaptation response**

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Hampshire County Council has an important role in adaptation, both via its direct activities and in terms of its ability to influence the wider community, as described in the 2006 Local Government White Paper '*Strong and Prosperous Communities*' (which has an annex devoted to what local authorities can do on climate change) and forthcoming guidance pursuant to the *Climate Change & Sustainable Energy Act*. Public health and health bodies can play an important part in their role as partners of local government in Local Strategic Partnerships, and as key communicators and influencers for the public in their areas. The Council has addressed adaptation actions through the sustainability principles outlined in the '*Sustainable Community Strategy for Hampshire*', the '*Community Strategy for Hampshire - Shaping Our Future Together, 2004-2007*' and its '*Local Area Agreement*'. These actions need to be adopted.

### **4. New threats that may arise and appropriate responses**

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Political will and support for public health approaches is a prerequisite to reducing health risks and instability arising from climate change.

Emerging environmental risks posed by climate change include extreme events such as heatwaves and floods. Ensuring health systems' preparedness and ability to respond, providing early warning systems and information and advice to citizens can help to reduce mortality. This can also lead to a greater sense of security and control and result in improved population health. Threats posed by new or re-emerging infectious diseases (Leishmaniasis, Malaria, Hantavirus, West Nile fever) that might be introduced into the UK, are identified and assessed by the Microbial Risk Assessment (MRA) group at the Health Protection Agency - Centre for Emergency Preparedness and Response, who undertake horizon scanning activities.

## 5. The impact of timescales

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It is important to be aware that climate models such as those used in the construction of the UKCIP scenarios simulate climate change according to a particular set of assumptions and do not provide a definitive prediction of what climate will be like at a particular time in the future. Research conducted on behalf of the Department of Health concluded that climate change would mean that by 2050 there would be:

- Substantial declines in cold-related winter deaths
- Increased heat-related summer deaths. Extrapolation of current data showed the probability of a nine day heatwave averaging 27<sup>0</sup>C in South-East England as one in forty each year by 2012, or of one in four (25%) at some time during the ten years from mid 2007.
- Increased cases of food poisoning
- Possible increases in vector-borne and water-borne diseases, but of a smaller impact
- Possible re-establishment of indigenous malaria
- Significant increases in the risk of major disasters caused by gales and coastal flooding
- Possible decline in the effects of air pollutants on health, but effects of summer ozone may increase. Ozone levels increase steadily over the period to 2030. On the longer timescale, ozone is projected to increase throughout the 21<sup>st</sup> century.

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- Securing the Future March'05 - the Government's Sustainable Development Strategy for the UK
- Sustainable Development Commission Healthy Futures
  - Sustainable development opportunities for the NHS
  - Food and sustainable development
  - Buildings and Sustainable Development
  - Are you a good corporate citizen?
  - Sustainable Transport and Active Travel
  - The Natural Environment, Health and Well-being
- cCASHh - Climate Change and Adaptation Strategies for Human Health in Europe
- Climate change affects health now. WHO Regional Office for Europe calls on the health sector for immediate action

## Appendix

### Box 1 The Heatwave plan for England - protecting health and reducing harm from extreme heat and heatwaves (2007)

The plan was published in response to concerns that climate change will increase the frequency of heatwaves. It details a '**Heat-Health Watch**' that operates from June 1 to September 15. Based on regional threshold temperatures (ranging between 28-32°C at day and 15-18°C at night), **4 Levels** of response are defined.

- **Summer Preparedness and Long-Term Planning** – Joint planning, awareness and background preparedness.
- **Alert and Readiness** – Triggered when forecasts for threshold temperatures will be exceeded at least 3 days ahead in any region/an 80% chance of extremely high temperatures for 2 consecutive days. Ensure readiness and swift action
- **Heatwave Action** – Triggered when threshold temperatures are reached in any region. Specific actions are targeted at high risk groups
- **Emergency** – Reached when a heatwave severity threatens the integrity of, or extends beyond, the health and social care systems.

**Physiology of heat-related illness:** Thermoregulation is controlled by the hypothalamus, and the body's natural response to heat stress is to return core body temperature to a normal range. Heat related illness occurs when the brain fails to control its own "thermostat". The elderly, chronically ill (e.g. heart conditions, diabetes, respiratory or renal insufficiency, Parkinson's or serious mental illness) and certain medications (e.g. drugs that cause dehydration/electrolyte imbalance, reduce renal function & arterial pressure, interfere with thermoregulation and alter alertness) affect the body's natural response to heat stress.

#### **Heat related illness:**

The main causes of illness and death during a heatwave, are due to increased respiratory and cardiovascular diseases. Part of the increased respiratory disease may be attributable to worsened air pollutant (O<sub>3</sub> & PM<sub>10</sub>) levels. Increased cardiovascular disease occurs because the heart is put under strain, with extra blood circulated to the skin in large volumes in order to cool the body.

- **Heat cramps** - are caused by fluid and electrolyte imbalances, often exertional
- **Heat exhaustion** – is milder, more common than heat stroke. It occurs both as water or sodium depleted types, with non specific features of malaise, vomiting, and circulatory collapse. Core temperature is between 37-40°C. Left untreated, heat exhaustion may evolve into heatstroke.
- **Heat stroke** – can become a point of no return where the body's thermoregulation mechanism fails. This becomes a medical emergency with symptoms of confusion, disorientation, convulsions, unconsciousness, hot dry skin and core body temperature exceeds 40°C. It can result in organ failure, brain damage or death.

#### **At risk groups:**

- Older people: especially women over 75 years old and/or living on their own or a care home
- Chronic and severe illness. Medications can make this group more vulnerable
- Inability to adapt behaviour to keep cool: having Alzheimer's, a disability, being bed bound, too much alcohol, babies and the very young, a previous heat stroke
- Environmental factors and over exposure: Living in a top flat, homelessness, Urban Heat Islands, activities/workplaces that produce heat and include high levels of physical exertion

#### **Advice and information:**

##### **Individual behaviour:**

- Stay out of the heat especially from 11:00am-3:00pm, stay in the shade, wear a hat & light loose fitting cotton clothes, sprinkle clothes with water, limit physical activity & include rest periods
- Drink plenty of water; frequent cool showers/ baths, use of a cold compress on the neck
- Eat cold foods, particularly salads and fruit, which contain water. Avoid alcohol and caffeine
- Check on older people and children

##### **Primary care trusts, acute trusts, care homes, voluntary sector and local authorities:**

- Aim to create cool rooms or areas below 26°C by increasing external shading e.g. vegetation or solar shading, increase internal shading e.g. curtains, shutters, increase ventilation e.g. open windows at night to cool buildings. Cool individuals as suggested above
- Raise awareness and cascade updated guidance & leaflets, vigilance for heat illnesses identifying individuals at risk and directing protective measures, check resilience, surge capacity and emergency responses

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_074539](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074539)