Pacific Northwest / Canada heatwave

Health Impacts

Kristie L. Ebi, Ph.D., MPH
University of Washington
Factors affecting human thermoregulation and the risk of heat illness

- **Factors affecting behaviour**
  - Physical or cognitive impairment
  - Psychiatric illness
  - Infants

- **Increased heat gain**
  - Exercise
  - Outdoor activity
  - Medications

- **Factors influencing cardiac output**
  - Cardiovascular diseases
  - Medications

- **Factors reducing plasma volume**
  - Diarrhoea
  - Pre-existing renal or metabolic disease
  - Medications

- **Factors affecting sweating**
  - Dehydration
  - Ageing
  - Diabetes, Scleroderma
  - Cystic fibrosis
  - Medications

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**Behavioural control**

- 32–37 °C Skin temperature
  - (Tskin - Tamb)
  - Radiation
  - Conduction
  - Convection
  - Evaporation (Sweating)

**Core temperature**

- 36.3–37.1 °C

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Source: WHO Regional Office for Europe, in press.
Fig. 2. Possible flow of information between lead agency and other actors in heat-health action plans

- **Lead body** (for example national/regional health authority)
- **Real-time surveillance system**
- **Accurate and timely alert system: national meteorological services**
- **Media**
- **General public, vulnerable population groups**
- **Health sector** (hospitals, care homes, general practitioners, pharmacies, etc.)
- **Local government**
- **Social services**
- **Retirement homes**
- **Schools and kindergartens**
- **Civil protection**
- **Transport**
- **Energy**
- **etc.**
Core elements:

- Strategic planning
- Alert system
- Heatwave and summer preparedness
- Communication plan
- Working with service providers
- Engaging the community
- Monitoring, evaluation, and learning
Heatwave Plan for England

Figure 2.4: Typical cascade of heatwave alerts

- Civil Contingencies Secretariat: Department of Health, Other government departments and agencies.
- Met Office: Heatwave alert.
- Public, via media: eg TV, radio, newspapers.
- Public Health England Centres.
- NHS England:
  - Corporate Team (National)
  - Regional Teams
  - Regional
- Local Authority:
  - (CET/DASS/DCS/Emergency Planner)
  - and Directors of Public Health*
  - Inc. Local Resilience Forums and (local health resilience partnerships)
- Clinical commissioning groups (CCGs):
- Health and Wellbeing Boards:

- NHS Choices
- Ambulance trusts
- Pharmacies
- GPs and district nurses
- Hospital trusts
- Walk in centres
- Community health service providers
- Mental health trusts
- Care and nursing homes
- Social services
- Schools
- Residential homes
- Nurseries and kindergarten
- Voluntary organisations
- Day care centres
### Figure 2.1: Heatwave Alert levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Level 0</td>
<td>Long-term planning - All year</td>
</tr>
<tr>
<td>Level 1</td>
<td>Heatwave and Summer preparedness programme - 1 June – 15 September</td>
</tr>
<tr>
<td>Level 2</td>
<td>Heatwave is forecast – Alert and readiness - 60% risk of heatwave in the next 2 to 3 days</td>
</tr>
<tr>
<td>Level 3</td>
<td>Heatwave Action - temperature reached in one or more Met Office National Severe Weather Warning Service regions</td>
</tr>
<tr>
<td>Level 4</td>
<td>Major incident – Emergency response - central government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</td>
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### Heatwave Plan for England

#### Figure 3.1: Commissioners of health and social care (all settings) and local authority Directors of Public Health

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<th>Level 2</th>
<th>Level 3</th>
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<tr>
<td><strong>Long-term planning</strong>&lt;br&gt; All year&lt;br&gt; See accompanying document ‘Making the Case’ for more detail</td>
<td><strong>Heatwave and summer preparedness programme</strong>&lt;br&gt; 1 June to 15 September</td>
<td><strong>Heatwave is forecast – alert and readiness</strong>&lt;br&gt; 60% risk of heatwave in the next 2 to 3 days</td>
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<td><strong>Major incident – emergency response</strong>&lt;br&gt; Central Government will declare a Level 4 alert in the event of severe or prolonged heatwave affecting sectors other than health</td>
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**Working with partner agencies, incorporate into JSNA/FM3’s long term plans to prepare for, and mitigate, the impact of heatwaves, including:**
- how to identify and improve the resilience of those individuals and communities most at risk
- ensuring that a local, joined-up programme is in place covering:
  - housing (incl loft and wall insulation and other plans to reduce insolation 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 community emergency plans
  - making progress on relevant Public Health Outcomes Framework indicators

**High-risk groups**
- Community: over 75, female, living on own and isolated, severe physical or mental illness, urban areas, south-facing top flat; alcohol and/or drug dependency, homeless, babies and young children, multiple medications and over-excitation
- Care home or hospital: over 75, female, frail, severe physical or mental illness, multiple medications, babies and young children (hospitals)

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<tr>
<td><strong>Working with partner agencies, providers and businesses to coordinate heatwave plans, ensuring vulnerable and marginalised groups are appropriately supported</strong></td>
<td><strong>Work with partners and staff on risk reduction awareness (eg key public health messages – box 1), using a variety of methods to maximise dissemination</strong></td>
<td><strong>Communicate public media messages – especially to “hard to reach” vulnerable groups</strong></td>
<td><strong>Media alerts about keeping cool</strong></td>
<td><strong>National emergency</strong>&lt;br&gt; Continue actions as per Level 3 unless advised to the contrary</td>
</tr>
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<td><strong>Engaging the community and voluntary sector to support development of local community emergency plans</strong></td>
<td><strong>Ensure care homes and hospitals are aware of the heatwave plan and are engaged in preparing for heatwaves</strong></td>
<td><strong>Communicate alerts to staff and make sure that they are aware of heatwave plans</strong></td>
<td><strong>Support organisations to reduce unnecessary travel</strong></td>
<td><strong>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</strong></td>
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<td><strong>Making progress on relevant Public Health Outcomes Framework indicators</strong></td>
<td><strong>Continue to engage the community and voluntary sector to support communities to help those most at risk</strong></td>
<td><strong>Implement business continuity</strong></td>
<td><strong>Review safety of public events</strong></td>
<td></td>
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Heat is an all-of-society problem

**PEOPLE**

Heat exacerbates risks of:
- Social inequity,
- Illness and death

**ENVIRONMENT**

Heat exacerbates risks of:
- Fires; poor air quality;
- Water scarcity and drought; cyclones;
- UV radiation

**INFRASTRUCTURE**

Heat exacerbates risks of:
- Urban heat islands;
- Emergency and power service disruptions;
- Poor quality housing

**Requiring action from:**
- Public health;
- Labour; social sectors; physiology;
- Medicine; sports; etc.

**Requiring action from:**
- Environment;
- Meteorology;
- Climatology; etc.

**Requiring action from:**
- Architecture,
- Engineering,
- Urban planning; etc.
Thank you