Severe Weather Contingency Plan: Heatwave

Documents to read alongside this Procedure

- Health and Safety at work Act 1974
- Civil Contingency Act 2004
- Heatwave Plan for Wales 2012
- UHB Major Incident Plan 2013

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<table>
<thead>
<tr>
<th>Version Number</th>
<th>Date of Review Approved</th>
<th>Date Published</th>
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<td>02/06/2011</td>
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<td>02/08/2012</td>
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<td>Aims enhanced to reflect multi agency cooperation and resilience.</td>
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<td>Clarifies Civil Contingency Act (2004) requirement to pre identify vulnerable groups, and promote partnership working with other category 1 and 2 responders in advance of a heat wave.</td>
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<td>Identifies hazards to infrastructure and the requirement of Capital Planning teams to “design out” risks associated with excessive heat.</td>
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<td>Control and command structure aligned to UHB Major Incident Plan.</td>
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<td>Specific trigger points for activation of function Gold command clarified.</td>
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</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>1</th>
<th>Purpose</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Scope</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Aims and objectives</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Definition</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Roles and responsibilities</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Chief Executive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Executive Directors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chief Operating Officer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clinical Board triumvirates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead Nurses / Heads of Department / Service team leaders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary care services and General Practitioners</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Hazards to human health</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Symptoms of excessive heat exposure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conditions which increase the risk of dying in a heat wave</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reducing the risk</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hazards to infrastructure</td>
<td>11</td>
</tr>
<tr>
<td>8</td>
<td>Information / Alerts</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>Alert levels</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Communication and coordination</td>
<td>13</td>
</tr>
<tr>
<td>11</td>
<td>Training</td>
<td>13</td>
</tr>
<tr>
<td>12</td>
<td>Post incident</td>
<td>14</td>
</tr>
<tr>
<td>13</td>
<td>References</td>
<td>14</td>
</tr>
</tbody>
</table>

## APPENDACIES

| 1 | A proactive approach by GPs – What GPs should know and do | 15 |
| 2 | Urban Heat Islands | 16 |
| 3 | Housing health and safety rating system (HHSRS) | 17 |
| 4 | Alert levels | 18 |
| 5 | Communication and coordination flowchart | 19 |
1. **Purpose**
This plan has been developed to assist managers and staff to deal with a heat wave event that impacts on the normal operating (business continuity) of the Cardiff and Vale University Health Board (CVUHB) and its community.

Climate change will increase the frequency and the intensity of heat waves, and a range of measures, including improvements to hospital designs, management of chronic diseases, and institutional care of the elderly and the vulnerable, will need to be developed to reduce health impacts.

The Climate Change Act 2008 now makes it a requirement for all statutory sectors, including the health sector, to have robust adaptation plans in place.

2. **Scope**
The plan forms part of the Health Board’s strategy for minimising the risk to its business and its statutory duty to comply with the requirements of the Civil Contingencies Act 2004.

The development of this plan has been based upon the findings of the risk assessments as set out in the South Wales Local Resilience Forum (SWLRF) Community Risk Register, in conjunction with ‘lessons identified’ from past severe weather events.

This plan should be read in conjunction with the [Heat wave Plan for Wales (2012)](#).

3. **Aims & objectives**
The aim of this plan is to enhance resilience in the event of a heat wave and to reduce the risks to health associated with extreme heat by alerting health, social and other care agencies and members of the public (especially vulnerable groups) to the dangers of excessive heat.

Concurrently, to maintain either the normal business of the Health Board, or an acceptable level of business wherever reasonably practicable, and to support the community in reducing the impact of a heatwave. This will be achieved through meeting the following objectives:-

- **Collaborating with the South Wales Local Resilience Forum (SWLRF) to ensure the community risk register adequately reflects risk to human health.**
- **Working with key partner agencies to communicate and minimise the risks to the public and wider community.**
- **Support the development of strong working links with the media so that advice and information can be communicated promptly both before, and during, a heat wave**
- **Support co-ordination amongst social and health care agencies to provide appropriate care to the CVUHB catchment population during heat wave conditions**
- **Maintain effective management arrangements to minimise the risks to patient’s safety.**
Maintaining effective management arrangements to minimise the risks to staff health, safety and welfare.

4. Definition
The temperature thresholds for declaring an extreme heat condition or heat wave warning are 30°C or more during the day and 15°C or more during the night (for Wales). It is important to note that the definition includes both day and a night time temperature as it is the combined impact of both that results in harm to health.

5. Roles and responsibilities

Chief Executive
The Chief Executive has overall responsibility for ensuring that the UHB is able to respond to the “Heatwave Plan for Wales” identified in this policy. He is also responsible for ensuring that Heat-Health Watch alert notices received from the Meteorological Office are forwarded via e-mail to Clinical Board triumvirates, Heads of Departments, and Service Team Leaders for cascade, and are posted on the Trust Intranet.

In the course of routine business the information cascade action is delegated to the Emergency Planning / Civil Contingency Manager.

Executive Directors (on call)

a) Be familiar with the “Heatwave Plan for Wales” and its requirements.

b) Executive Directors must ensure that they provide the necessary support and advice to the senior manager on call and clinical staff, if required.

c) Be prepared to convene and chair a strategic (Gold) command meeting in the event that a level 4 alert (major Incident) is issued.

Chief Operating Officer

a) Be fully conversant with the “Heatwave Plan for Wales” and its requirements.

b) Customarily support long term service planning to mitigate the effects of adverse weather on the UHB and its resources.

c) Direct and support Clinical Board triumvirates to develop systems to identify and improve resilience of high-risk individuals.

d) Promote the development of business continuity plans to ensure robust systems are in place to cope with extreme temperatures, which might result in power or water shortages to UHB premises.

e) Verify surge plans are up to date and aligned with current Clinical Board bed stock and capacity.

Clinical Board triumvirates

It is the responsibility of Clinical Board triumvirates to:

a) Be familiar with the “Heatwave Plan for Wales” and its requirements.
b) Ensure that they develop, implement and monitor a system within their area of responsibility for the rapid dissemination of Heat wave alerts to their staff, paying particular attention as to when key people are absent.

c) Ensure that they develop, implement and monitor a system within their area of responsibility which provides assurance that measures commensurate with the alert levels are undertaken, and that business continuity is maintained.

d) Under the guidance of the Executive Nurse Director the Clinical Board Nurses will lead the Tactical (Silver) UHB response.

e) Make sure that Situation Reports are produced (as required) and submitted at agreed frequencies.

Lead Nurses / Heads of Department / Service team leaders

a) Ensure they are fully conversant with the Clinical Board plan for implementing the information cascade.

b) Confirm that existing and new staff are aware of this policy, and their responsibilities.

c) Develop a business continuity plan that recognises that a severe heat wave may result in higher than usual levels of staff absenteeism. Combined with summer holidays, this may create difficulties in maintaining essential services.

d) Establish operational systems to ensure that the appropriate action, as described in the alert, is taken.

e) Routinely prompt reporting of adverse events through the appropriate channels, and ensure that all necessary investigations are completed.

f) Provide assurance that local action is taken as necessary to pre identify vulnerable patient groups.

g) Guarantee all necessary actions are taken to ensure the safety of patients, relatives and staff.

h) Ensure that out of hours, weekends and Bank Holidays that Ward/Team Managers receive alerts by checking the Met Office website www.metoffice.gov.uk on a daily basis.

i) Ensuring a consistent UHB and Public Health Wales message is conveyed to patients, staff and relatives. Remain mindful that email can an ineffective form of communication for frontline staff and you may need to consider testing other modes of communication, particularly looking into the value of instant messaging services and social networking websites.

**Primary care services and General Practitioners**

It is recommended by the World Health Organisation (Heat Health Action Plan 2008)
that General Practitioners include pre-summer medical assessment and advice in routine care, including on fluid intake, weight changes and medication relevant to heat (see appendix 1). This principle should be applied to all community based clinical teams.

6. Hazards to human health
Cities and urban areas tend to be hotter than rural areas, creating urban heat island effects (see appendix 2). This is due to increased absorption and reflection of the sun on concrete compared with green or brown spaces; reduced cooling from breezes due to buildings; and increased energy production from houses, industry, businesses and vehicles.

High temperatures are also linked to poor air quality with high levels of ozone which are formed more rapidly in strong sunlight; small particles (PM10s) also increase in concentration during hot, still air conditions. Both are associated with respiratory and cardiovascular mortality. Additionally, there may be increases in sulphur dioxide emissions from power stations due to an increase in energy use for air-conditioning. Sulphur dioxide worsens symptoms of asthma.

People gradually adapt to changing temperature trends. Therefore, heatwaves are a relative experience, affecting different people in different ways. The human body responds to heat in a number of different ways. When the ambient temperature is higher than skin temperature, the body regulates its temperature by losing heat through sweating. So, any factor that reduces the body’s effectiveness of sweating such as dehydration, lack of breeze, or tight fitting clothing 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. During previous heat waves death rates have been noted to increase in particular for those with renal disease. A peak in homicide and suicide rates during previous heat waves in the United Kingdom has also been observed.

Some people are at particularly high risk during a heat wave. These include:

- Older people - especially those over 75 years old and living alone.
- People living in residential care or nursing homes
- People who have a history of self-neglect
- People with an already raised temperature from infection
- People with underlying health issues. For example people who are:
  - suffering from mental ill health, dementia and those who rely on help from other people to manage day-to- day activities;
  - immobile or bed-bound;
  - taking certain types of medication;
  - suffering from chronic ill health, particularly respiratory or cardiac conditions;
  - known to have previously experienced problems in adapting to extreme heat;
  - dependent upon excessive alcohol or illicit drugs;
  - babies and young children, especially under four years old.

In a moderate heat wave, it is mainly the high-risk groups mentioned above who are affected. However, during an extreme heat wave such as the one affecting France in 2003, normally fit and healthy people can also be affected.
6.1 Symptoms of excessive heat exposure
In a severe heat wave the body can overheat and dehydrate quickly, leading to heat exhaustion or heat stroke. 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, vasodilatation, 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 37ºC and 40ºC. 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 40ºC 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).

Heatstroke can develop if heat exhaustion is left untreated but can also occur suddenly and without warning. It can result in irreversible damage to the body, including the brain, or in the most severe cases, death.

6.2 Conditions which increase the risk of dying in a heat wave
Virtually all chronic diseases present a risk of death/illness due to heat and, since the elderly are more likely to have a chronic medical condition, this is another reason why they are at increased risk.

There are several reasons why people with chronic diseases are at increased risk during heat-waves (see also Table 1).

- Any disease that leads to an inability to increase cardiac output, such as cardiovascular disease, will increase the susceptibility to heatstroke and/or cardiovascular failure and death, as thermoregulation during severe heat stress requires a healthy cardiovascular system.
- Peripheral vascular disease, often caused by diabetes or atherosclerosis, may increase the risk of severe heat illness, as it may be hard to increase the blood supply to the skin.
- Diarrhoea or febrile illness, particularly in children, and pre-existing renal or metabolic diseases may increase the risk of heat-related illness and death because these may be associated with excessive fluid loss and dehydration.
Chronic diseases which affect the number and/or function of sweat glands, such as diabetes, scleroderma and cystic fibrosis, can increase the risk of hyperthermia and heatstroke.

Any disease or condition that confines someone to bed and reduces their ability to care for themselves or to leave home daily also increases the risk. This is because of a general reduction in the ability to make an appropriate behavioural response to heat.

Table 1

<table>
<thead>
<tr>
<th>Chronic conditions</th>
<th>Acute conditions</th>
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<tr>
<td>Diabetes mellitus, other endocrine disorders</td>
<td>Infections, fever, gastroenteritis</td>
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<tr>
<td>Organic or mental disorders, dementia, Alzheimer’s (mild, moderate, severe)</td>
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<tr>
<td>Mental and behavioural disorders due to psychoactive substance use, alcoholism</td>
<td>Medications can also aggravate heat illness. For example, vasodilators, such as nitrates and calcium channel blockers, can theoretically cause low blood pressure in people who tend to be dehydrated during excessive heat exposure, particularly the elderly.</td>
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<tr>
<td>Schizophrenia, schizotypal and delusional disorders</td>
<td>Dehydration and changes in blood volume distribution can also increase medication toxicity and/or decrease the efficacy by influencing drug levels, drug kinetics and excretion and, hence, the pharmacological activity. This includes drugs with a narrow therapeutic index.</td>
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<tr>
<td>Extrapyramidal and movement disorders (e.g. Parkinson's disease)</td>
<td>Finally, storage of drugs at high ambient temperatures can adversely affect their efficacy, as most manufactured drugs are licensed for storage at temperatures up to 25 °C. This is particularly important for emergency drugs used by practitioners including antibiotics, adrenalin, analgesics and sedatives.</td>
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<tr>
<td>Cardiovascular disease, hypertension, coronary artery disease, heart conduction disorders</td>
<td>6.3 Reducing the risk</td>
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<td>Diseases of the respiratory system, chronic lower respiratory disease (COPD, bronchitis)</td>
<td>The Civil Contingency Act requires the UHB to work in partnership with local authorities and social care services to identify vulnerable populations to target long-term planning and interventions. Consequently all service managers must routinely take steps to ensure that vulnerable groups in their care are pre identified as “at risk”.</td>
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<td>Diseases of the renal system, renal failure, kidney stones</td>
<td>This is an essential step to ensuring patient welfare during adverse weather – be it heat wave, severe cold and snow or flooding. Such information would prove invaluable to partner agencies during a civil emergency. Examples being Natural Resources Wales and the Fire and Rescue Service during flooding; or water supply companies at time of drought.</td>
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Well in advance of the summer months the Health Board and local authorities should review what support primary care, community and other care staff can provide to selected groups of individuals.
As seasons change service managers should routinely monitor weather forecasts in order to obtain advanced warning of any impending adverse weather conditions. This will allow time to review existing care plans in order to assess which individuals are at particular risk, and to identify what extra help they might need in a proactive manner. Consider extra help, where available, from social care services, the voluntary sector, families and others to care for those most at risk. This will be pre-determined locally as part of individual care plans, and will be based on existing relationships between statutory and voluntary bodies. This support may include:

- identifying individuals who are at particular risk from extreme heat. Many of these people are likely to already be receiving care;
- identifying and implementing necessary changes to individual care plans for those in high-risk groups, including initiating daily visits by formal or informal carers to check on people living on their own;
- check that the person can contact the primary care team if one of their informal carers is unavailable;
- confirm business continuity arrangements for external companies commissioned to provide services on behalf of the UHB;
- working with families and informal carers of at-risk individuals to raise awareness in respect of the dangers of heat, how to keep cool and put in place simple protective measures e.g. installing appropriate ventilation and ensuring fans and refrigerators are available and in good working order;
- reviewing surge capacity and the need for, and availability of, suitably trained staff support in the event of extreme heat conditions or heat-wave, especially if over a prolonged period;
- where individual households are identified as being at particular risk from hot weather, a request can be made to local authority Environmental Health professionals to undertake an assessment using the Health Housing and Safety Rating System. The Health Board can work actively with the local authority lead on the Housing Health and Safety Rating System (HHSRS) to identify and assess those considered most vulnerable during heatwaves (see appendix 3).

Additional practical actions to consider during a period of increased temperatures include:

- Check patients body temperature, heart and breathing rates, blood pressure and hydration levels at a minimum of 4 hourly intervals
- Observe for any changes in behaviour, especially excessive drowsiness.
- Watch for signs of headache, unusual tiredness, weakness, giddiness, disorientation or sleeping problems – and have a plan to address these symptoms.
- Place a thermometer in the clinical inpatient area or client’s home to keep a check on the temperature.
- Turn off non-essential lights and electrical equipment – they generate heat.
- Ensuring south facing windows have blinds or curtains.
- Keep windows that are exposed to the sun closed during the day, and open windows at night when the temperature has dropped.
- Keep rooms well ventilated.
- Persuade people to stay out of the sun between 11am and 3pm;
- Adjust therapy schedules to occur outside 11am and 3pm if possible;
- Consider moving patients to cooler area if necessary – even for part of the day / night. (This will require advanced planning in secure areas e.g. mental health);
- Cool areas must be kept at a temperature of no more than 26°C;
✓ Ensure the ongoing provision of cool drinks;
✓ Where possible and in compliance with the patient care plan consider adapting menus to cold meals – encouraging salads and fruit (preferably with a high water content);
✓ Discourage caffeine (coffee, tea, colas), very sweet drinks and alcohol;
✓ Check fans and / or air-conditioning devices are available and in good working order;
✓ Advise them to wear light, loose, cotton clothing;
✓ Facilitate a cool shower, bath or body wash;
✓ Consider the requirement for possible changes in medication;
✓ Identify any extra help, care or support needed;
✓ Arrange additional welfare visits for those who live alone, or live with an elderly or disabled relative.
✓ Consider postponing non-emergency surgery;
✓ Confirm bed availability especially in emergency departments;
✓ Increase medical care staff to ensure full coverage in case of an increase in admissions;
✓ Consider moving Hospital visiting hours to mornings and evenings to reduce afternoon heat from increased numbers of people.
✓ Ensure that discharge planning takes into account the vulnerability of the patient to high temperatures and the accommodation they will be going back to.

Considerations must also include actions to protect staff. To include:

✓ Consider amendment to staff uniform to minimise discomfort. If safe to do so allow staff to wear light, loose-fitting cotton clothes;
✓ Factor in additional rest periods for staff, and ensure that they avoid extreme physical exertion. This may necessitate additional staff on rotas;
✓ Ensure access to a cold water supply.

7. Hazards to infrastructure
Preparations for dealing with the effects of adverse weather will inevitably concentrate on the preservation of life. However, it is essential that the UHB have plans in place to ensure the reliability and safety of the infrastructure which supports core services.

Heat waves sometimes cause power outages that can threaten the welfare of individuals, who depend on lighting, cooling systems, medical equipment, alarms and other electronically powered systems or devices. Laboratories, pharmaceutical storage and food storage areas in hospitals may be adversely affected by increasing temperatures. Most pharmaceutical products are heat sensitive and start to degrade if stored at higher than room temperature (usually 25°C).

In addition there is a potential for information technology servers to overheat and cause disruption to email communication or electronic patient records – this may occur in both primary and secondary care settings. In preparation for adverse weather managers will need to collaborate with support services to assess the resilience of equipment to ensure that it can be maintained at working temperatures and that there is no risk of failure through overheating.

In the medium term (10 plus years) UHB Capital Planning teams will need to focus on building hospitals and primary care facilities to aid passive cooling where possible, and target vulnerable areas (inpatients, medications, IT) with air-conditioning.
8. Information/Alerts

In recent years the ability to forecast severe weather events has become more accurate. This advance has allowed organisations to plan for these events and ensure that adequate arrangements are in place to minimise the risk to health.

The Health Board, as a Category 1 Responder under the Civil Contingencies Act 2004, is part of a 'Heat-Health Watch' alert system that operates in Wales from 1st June to 15th September each year. During this period, the Meteorological Office may forecast severe heat warnings and heatwaves, as defined by forecasts of day and night-time temperatures and their duration. These forecasts are sent to Public Health Wales who then cascade the alerts via an email database.

In addition you can monitor the current situation by checking the Heat-Health Watch level on the internet (www.metoffice.gov.uk) or listening to local weather news. It is important to ensure a consistent message and to make sure you know what advice to give people at risk. Public information on what to do in a heatwave is available from Age Concern Cymru, NHS Direct Wales and from the Chief Medical Officer Wales website (http://wales.gov.uk/topics/health/protection/environmental/publications/public1/?lang=en)

Whilst the 'Heat-Health Watch' alert system is operational, collaborative epidemiological surveillance arrangements will allow trends in heat-related morbidity and mortality to be tracked and monitored and facilitate the evaluation of intervention effectiveness.

Once the alerts are received by personnel within the UHB it is the responsibility of managers to:
- Cascade the information to all staff groups – especially frontline units;
- Ensure that suitable arrangements are in place to mitigate effects of heat;
- Minimise the risk to the business, health, safety and welfare of both patients, staff and the community;
- Utilise contacts with Regional media teams and the UHB social media sites to issue alerts about keeping cool.

Communication is important in all contingency planning but is particularly critical during heatwave periods. Quick and effective communication and clearly established procedures are essential since the time lag between the start of a heatwave and excess mortality is brief.

Communication with the Meteorological Office, Public Health Wales and UHB intra-managerial communication will be coordinated by the Strategic Civil Contingency Manager. However, it is the responsibility of Clinical Board triumvirates to ensure the alerts cascade to frontline staff.

All staff have a responsibility to ensure that they understand this plan and are also expected to follow any safety advice issued.

9. Alert levels

The 'Heat-Health Watch' alert system comprises four levels of alert:

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<th>Long-term Planning – All year</th>
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<td>Heat wave and Summer Preparedness 1 June – 15 September</td>
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<tr>
<td>Level 2 (YELLOW)</td>
<td>Heat wave is forecast – Alert and Readiness 60% risk of heatwave in the next 2–3 days</td>
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<tr>
<td>Level 3 (AMBER)</td>
<td>Heat wave Action</td>
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The response levels required to these alerts are described in more detail in appendix 4. The alert system is based on threshold day and night-time temperatures as defined by the Meteorological Office.

10. Communication and Coordination

Many of the approaches to planning for and responding to heat-waves draw on generic emergency planning models. As a rule, creating new systems runs the risk that lessons learnt elsewhere will not be applied and, in crises, tried and tested command and control mechanisms work best. Therefore, it is advisable to use existing local, regional and national systems for emergency response in the planning and response phases of heat-waves.

Nearly all emergency plans require a multiagency and intersectoral approach, and this is also the case for heat-waves. While many of the actions fall to the health sector, active involvement of other sectors is essential. All partners within the SWLRF can, and will be of assistance at this time.

When a forecast heat wave, or unpredicted event is realised, the overall response must be coordinated. The following principles will apply when planning for an imminent event and the subsequent UHB response:

- The Executive Nurse Director will assume the role of Strategic (Gold) commander. At levels 1 – 3 this may be in a "virtual" or advisory capacity only. Level 4 will trigger a Major Incident and functional gold will be activated.

- Under the guidance of the Executive Nurse Director, Tactical (Silver) management of the situation will be led by the Clinical Board Nurses. Collectively they will coordinate the overall response to the incident and monitor its effectiveness.

- Operational (Bronze) management will be provided by the Lead Nurse / Therapist in each directorate, who will coordinate the deployment of resources and monitor the welfare of patients and staff.

- All service managers are responsible for maintaining the routine business of the Health Board and for the welfare of staff. They must report any potential or actual business disruption to the Lead Nurse / Therapist immediately and provide advice on any corrective action being planned / implemented.

In the event of the scale of the event being deemed serious/protracted i.e. Level 4, a MAJOR INCIDENT will be declared and the Executive Nurse Director or Executive Director on call (out of hours) will convene and chair a Strategic (Gold) command meeting. This will in turn activate all communication cascades and control and command structures as outlined within the UHB major Incident Plan.

Externally this will trigger a multiagency Strategic Command Group (SCG) at Police Headquarters. The UHB will be represented by the Strategic Civil Contingency manager, and an Executive Director.
11. Training
Following document approval, the Plan will be posted on the UHB Intranet Site. No formal training sessions will be facilitated.

12. Post incident
A structured debrief will be organised after each heat wave and managers/staff will be invited to attend to feed back on the response and identify any areas for improvement to this plan and future responses.

13. References


Appendix 1  A proactive approach by GPs – What GPs should know and do

Doctors should:

- understand the thermoregulatory and haemodynamic responses to excessive heat exposure;
- understand the mechanisms of heat illnesses, their clinical manifestations, diagnosis and treatment;
- recognize early signs of heatstroke, which is a medical emergency;
- initiate proper cooling and resuscitative measures;
- be aware of the risk and protective factors in heat-wave-related illness;
- identify the patients at risk and encourage proper education regarding heat illnesses and their prevention; education of guardians of the old and infirm and infants is also important;
- include a pre-summer medical assessment and advice relevant to heat into routine care for people with chronic disease (reduction of heat exposure, fluid intake, medication);
- be aware of the potential side-effects of the medicines prescribed and adjust dose, if necessary, during hot weather and heat-waves;
- make decisions on an individual basis, since there are – according to current knowledge – no standards or formal advice for alteration in medications during hot weather;
- be aware that high temperatures can adversely affect the efficacy of drugs, as most manufactured drugs are licensed for storage at temperatures up to 25 °C; ensure that emergency drugs are stored and transported at proper temperature;
- be prepared to monitor drug therapy and fluid intake, especially in the old and infirm and those with advanced cardiac diseases.

Education and counselling of patients

Advice to patients should stress the importance of adhering to the recommendations spelt out in the leaflet for the general public. In addition, individual adjustments of behaviour (particularly for patients with chronic diseases), medication and fluid intake may be necessary according to clinical status. Contact details of social and medical services, helplines and emergency services should be made available.

Source: adapted from Bouchama, 2007.
Appendix 2

Urban Heat Islands

During a heatwave it is likely to be hotter in cities than in surrounding rural areas, especially at night. Temperatures typically rise from the outer edges of the city and peak in the centre. This phenomenon is referred to as the ‘Urban Heat Island’ (UHI) and its impact can be significant. In London during the August 2003 heatwave, the maximum temperature difference between urban and rural locations reached 9°C on occasions. A range of factors vary between urban and urban areas and contribute to the UHI – for example:

- **Thermal properties** of building and road materials, the height and spacing of buildings and air pollution levels. These factors result in more of the sun’s energy being captured, absorbed and stored in urban surfaces compared to rural surfaces during the day and a slower loss of this energy at night, thus resulting in comparatively higher air temperatures.

- **Less evaporation and shading**, with the consequent reduction in associated cooling, taking place in the typically drier urban areas as there is less vegetation.

- **Greater inputs of heat** as a result of the high density of energy use in cities. All this energy, for example from buildings and transport, ultimately ends up as heat.

Strategic planning is therefore required which takes account of the above factors, particularly in the context of climate change. At a local scale these include the modification of surface properties, for example ‘cool roofs’, ‘green roofs’ and ‘cool pavements’. Planting trees and vegetation and the creation of green spaces to enhance evaporation and shading are other options, as temperatures in and around green spaces can be several degrees lower than their surroundings.
Appendix 3  Housing health and safety rating system (HHSRS)

This is the way in which local housing authorities assess homes under the Housing Act 2004. It is the basis for regulation of housing conditions. Anyone, including health professionals, can request that an assessment be made if they have concerns about how housing conditions could potentially affect someone’s health.

The assessment is usually made by an Environmental Health practitioner in the local housing authority. Judgement as to the risk is made by reference to the vulnerable age group for the hazard arising from deficiencies identified on inspection regardless of who is actually living there (for excess heat this is people aged 65 years or over).

There are 29 potential hazards in the system: these include excess cold, excess heat, damp and mould, lead, carbon monoxide, noise, entry by intruders, falls associated with baths, falling on stairs, falling on the level, fire, electrical hazards, and crowding and space.

Depending on the severity of the hazards found, the housing authority can require that a person (including landlords) takes action to reduce the hazard; alternatively, the assessment can be used as a basis for housing renewal assistance, e.g. grants or loans. For the most serious of hazards (Category 1) there is a duty on the authority to take action.

For further information on the HHSRS please visit: http://wales.gov.uk/topics/housingandcommunity/housing/private/hhsrs/?lang=en.
## Alert levels

<table>
<thead>
<tr>
<th>Level 1 – Green</th>
<th>This level is the period between the 1st June and 15th September each year when the ‘Heat – Health Watch’ Arrangements are operational.</th>
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</thead>
</table>
| Level 2* - Yellow | This level of alert is for a 60% risk of a Heat wave in 2 - 3 days time.  
On receipt of a yellow alert the information must be cascaded to Clinical Board Nurses for further consideration and planned intervention – including the identification of potential surge capacity and postponement of non urgent surgery.  
As death rates rise soon after temperature increases, with many deaths occurring in the first two days of a heat wave, this is an important stage at which to ensure readiness and swift action to reduce harm from a potential heat wave.  
All staff should ensure that high risk patients are identified and monitored. Where appropriate they or their carers should be given suitable advice to reduce the risk of adverse effects on their health.  
The Maintenance Department, Estates, will need to be prepared for an increased demand from the organisation for equipment checks. In addition, in conjunction with the Fire Safety Team they will jointly identify any ‘at risk’ plant that may pose a hazard during hot weather.  
Executive Directors and Clinical Board triumvirate members need to be prepared to receive requests for information around increased admissions due to the heat from Public Health Wales and/or Welsh Government. |
| Level 3 – Amber | This level of alert is when the trigger temperatures have been reached in one or more Region.  
On receipt of an amber alert the information must be cascaded to all staff to ensure that high risk patients are monitored in accordance with predetermined care plans.  
Appropriate measures must be taken to minimise the effects of the heat on patients and staff. |
| Level 4 - Red | A level 4 alert is triggered when a heatwave is so severe and/or prolonged that its effects extend outside health and social care, such as power or water shortages, and/or where the integrity of health and social care systems is threatened.  
At this level, illness and death may occur among the fit and healthy, not just in those at-risk individuals, and will require a multi-sector response at national and regional levels.  
At this stage a MAJOR INCIDENT will be declared and the UHB will convene a strategic (Gold) command meeting to ensure that all areas of the Health Board are coping with responding to the event. It is highly likely that a multi agency Strategic Command Group will be activated by the South Wales Police. |

*Because Level 2 is based on a prediction, there may be jumps between levels.  
Following Level 3, wait until temperatures cool to Level 1 before stopping Level 3 actions.*
Appendix 5  Communication and coordination flowchart

Heat health alert issued by Meteorological Office or Public Health Wales

Chief Executive

Strategic planning team (Civil contingency)

Chief Operating Officer and Clinical Boards

Nurse Director Strategic (Gold) control

Clinical Board Nurse Tactical (Silver) control

Lead Nurse / Therapist Operational control

Strategic Communication team

UHB intranet and social media sites

Team briefings

Directorate management teams

All frontline staff

If a level 4 alert is activated the Major Incident communication cascade and control and command structures will supersede these arrangements