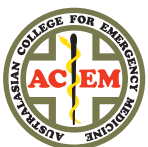


# HEAT HEALTH RESOURCE FOR EMERGENCY DEPARTMENTS



AUSTRALASIAN COLLEGE  
FOR EMERGENCY MEDICINE

## PURPOSE

This resource is applicable to all Australian and New Zealand (NZ) Emergency department (ED) staff. It provides guidance on preparedness for, and the clinical management of, heat-related illness in EDs.

It recognises the significant impact which extreme heat events can have on people's health, particularly vulnerable individuals, such as children, the elderly and people with underlying medical conditions.

## INTRODUCTION

In Australia, heatwaves are a significant cause of morbidity and mortality, and have caused more deaths in the past 200 years than any other natural event including bushfires, storms, cyclones and floods. [1, 2] The seriousness of this effect is under-appreciated: in the 2009 heatwave 374 additional deaths occurred in Victoria as well as another 58 in Adelaide – a number far exceeding those who died as a result of bushfires in that season. Heat health emergencies are likely to become more frequent and more severe due to climate change, as well as occurring in areas with no prior history of such events. [2]

There is no universally accepted definition of a 'heatwave'; however the definition used by the Australian Bureau of Meteorology (BoM) is: 'three days or more of high maximum and minimum temperatures that is unusual for that location.' [4] The definition does not specify threshold temperatures. The BoM delineates three levels of heatwave: the higher levels of severe and extreme pose an increased threat to communities and infrastructure. [4]

There are also wide variations between Australian jurisdictions as to what triggers a heat health alert, as communities in different climatic regions experience the effects of heat differently. Meteorological agencies and epidemiologists are undertaking ongoing research which may in future form a national standard for heatwave alert systems.



## DEFINITIONS

Heat illness refers to a spectrum of presentations, ranging from dehydration and exacerbation of chronic diseases, to exertional and non-exertional heat stroke. For the purposes of this document, the term heat illness will be used to refer this spectrum.

## HEAT ALERTS AND INFORMATION FOR FELLOWS OF ACEM (FACEMS) AND EDS

The BoM provides a heatwave service including a heatwave forecast. [4] The Australian Government and some State and Territory health agencies produce heatwave or heat health policies and other resources. The ACEM Policy on Heatwave (P59) also provides guidance in relation to the preparedness and responsiveness of EDs and emergency medicine systems to heatwaves. [5]

Emergency department personnel should be aware of the heatwave alert mechanisms, policies and resources in their jurisdiction. It is recommended that responses to heatwaves are treated as a whole of health service emergency, potentially leading to activation of hospital emergency arrangements or disaster plans and incident management teams.

# FOR EMERGENCY DEPARTMENTS

## Preparedness/Planning

### General

Hospitals should have a heatwave response plan that is integrated with existing emergency and disaster response plans. It is therefore recommended that a FACEM be assigned heatwave planning either as a specific portfolio duty, or as part of responsibility for overall disaster planning.

It is also necessary to ensure that the ED is stocked with appropriate equipment for the treatment of heat illness, including ice, fans, water spray bottles and cooling blankets.

### Staff Education

Emergency department staff education sessions should include teaching relating to:

- Heat illness – thermoregulation/physiology.
- Risk-factors, at-risk groups and factors increasing population vulnerability.
- Presentation and management.
- Adverse effects of medications in hot weather.

### Workforce

Heatwaves can lead to community-wide disruption of infrastructure and services (including power supply and transport failures) producing surge demand on emergency medical systems requiring disaster management responses. Heatwave response should be included in business continuity plans.

Comprehensive management of heat health emergencies should involve a multi-disciplinary and multi-agency approach.

Emergency department plans should consider the involvement of:

- Social Work and Aged Care Services – to facilitate engagement of community resources to assist discharged at-risk patients.
- Community Nursing Services – for potential home visit/checks on isolated at-risk patients.
- Transport Services.

### Communication

The FACEM who has responsibility for heat health should ensure that they:

- Know how the ED will be notified of a heatwave or heat health alert from central authorities or the BoM.
- Know how a heatwave notification will be disseminated to ED clinicians.

- Have a stockpile of public information material available for ED staff, including posters and take-home pamphlets, regarding maintaining health during heatwave conditions. Further information regarding appropriate resources can be found under the heading 'Additional Resources' in this document.

## Response

### General

- EDs should be a cool and safe environment for patients and staff. Drinking water should be available.
- EDs should keep accurate records of the impact of heatwave events on the ED and resource utilisation to assist in planning for future events.
- Disaster planning should include consideration of appropriate triggers for an external disaster response, e.g. when an extreme heat warning or alert is issued or when the demand for patient care exceeds hospital capacity.

### Clinical Management [6, 7, 8, 9]

- The majority of excess presentations will be triggered by dehydration causing decompensation and aggravation of chronic disease.
- Most cases of heat illness seen will be non-exertional in nature and may occur alone or in combination with worsening of chronic disease.
- Classic Non-Exertional Heat Stroke (NEHS) is characterized by hyperthermia, anhidrosis, and an altered sensorium, which develop suddenly after a period of prolonged elevations in ambient temperatures (i.e. heat waves). Core body temperatures greater than 41°C are diagnostic, although heatstroke may occur with lower core body temperatures. Non-core temperature measurement (eg axillary, tympanic) is unreliable.
- Renal and hepatic dysfunction, electrolyte imbalance, rhabdomyolysis and coagulopathy may accompany NEHS.
- Early aggressive cooling will help reverse cardiovascular instability and is key to preventing secondary multi organ failure. A variety of cooling methods exist. Iced or cold water immersion is the most effective, lowering core body temperature by approximately 0.2 deg C/ min. This may not be practical in critically ill patients, and a combination of fanning with water sponging or fine mist spray is a reasonable alternative. [10, 11]

- It is recommended to use crystalloid as required to restore volume status, while avoiding fluid overload as vasodilatation is reversed.
- Agitation and shivering should be treated with benzodiazepines.
- Withhold medication likely to worsen heat illness e.g. diuretics, antidepressants, antihistamines, phenothiazines, opioids and anticholinergics.
- Consider relaxing fluid restrictions during periods of increased insensible losses.
- Identify vulnerable patients (the elderly, infants, socially isolated, those with comorbidities) and consider the effects of heat stress when planning disposition from the ED.
- Provide advice to all patients and carers on: adequate hydration, medications, minimising exposure to heat, and early recognition of heat stress signs and symptoms.
- Reinforce the dangers of leaving infants and pets in parked cars for even the briefest period, especially during hot weather.
- Consider giving all patients with chronic disease and/or age >65 years a medication review and advice about withholding medications that may increase risk of heat illness in the days preceding and during a Heat Health Alert. (The Australian Department of Health has issued advice for clinicians including information about medications with increase heat health risk).

## Additional Resources

Australian Bureau of Meteorology Heatwave Service	<a href="http://www.bom.gov.au/australia/heatwave/">http://www.bom.gov.au/australia/heatwave/</a>
NZ Ministry of Health	<a href="http://www.health.govt.nz/">http://www.health.govt.nz/</a>
Australian Government	<a href="http://www.health.gov.au/">http://www.health.gov.au/</a>
NSW	<a href="http://www.health.nsw.gov.au/environment/beattheheat/Pages/default.aspx">http://www.health.nsw.gov.au/environment/beattheheat/Pages/default.aspx</a>
VIC	<a href="http://www.health.vic.gov.au/environment/heatwaves.htm">http://www.health.vic.gov.au/environment/heatwaves.htm</a>
QLD	<a href="https://www.health.qld.gov.au/disaster/heat/default.asp">https://www.health.qld.gov.au/disaster/heat/default.asp</a>
ACT	<a href="http://health.act.gov.au/healthy-living/summer-safety/tips-beat-heat">http://health.act.gov.au/healthy-living/summer-safety/tips-beat-heat</a>
TAS	<a href="http://www.dhhs.tas.gov.au/publichealth/alerts/standing_health_alerts/extreme_heat">http://www.dhhs.tas.gov.au/publichealth/alerts/standing_health_alerts/extreme_heat</a>
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NT	<a href="http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/65/06.pdf&amp;siteID=1&amp;str_title=Heat%20stress%20guidelines.pdf">http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/65/06.pdf&amp;siteID=1&amp;str_title=Heat%20stress%20guidelines.pdf</a>
WA	<a href="http://healthywa.wa.gov.au/Articles/F_I/Heat">http://healthywa.wa.gov.au/Articles/F_I/Heat</a>
Medscape	<a href="http://emedicine.medscape.com/article/166320-overview">http://emedicine.medscape.com/article/166320-overview</a>

## REFERENCE LIST

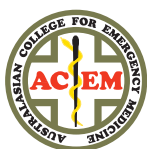
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## DISCLAIMER

This resource is current as of the date of first publication. It is intended for use as a general guide only; it is not a substitute for, and is not intended to replace local hospital policies, procedures or requirements. Individuals utilising this resource are responsible for exercising independent skill and judgement with regard to the particular circumstances and the needs of each patient, or seeking appropriate professional advice.

In compiling this resource, the Australasian College for Emergency Medicine has made every effort to ensure that the information upon which it is based is current and up-to-date. However individuals using this resource should consider any information that may have subsequently become available or published.

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