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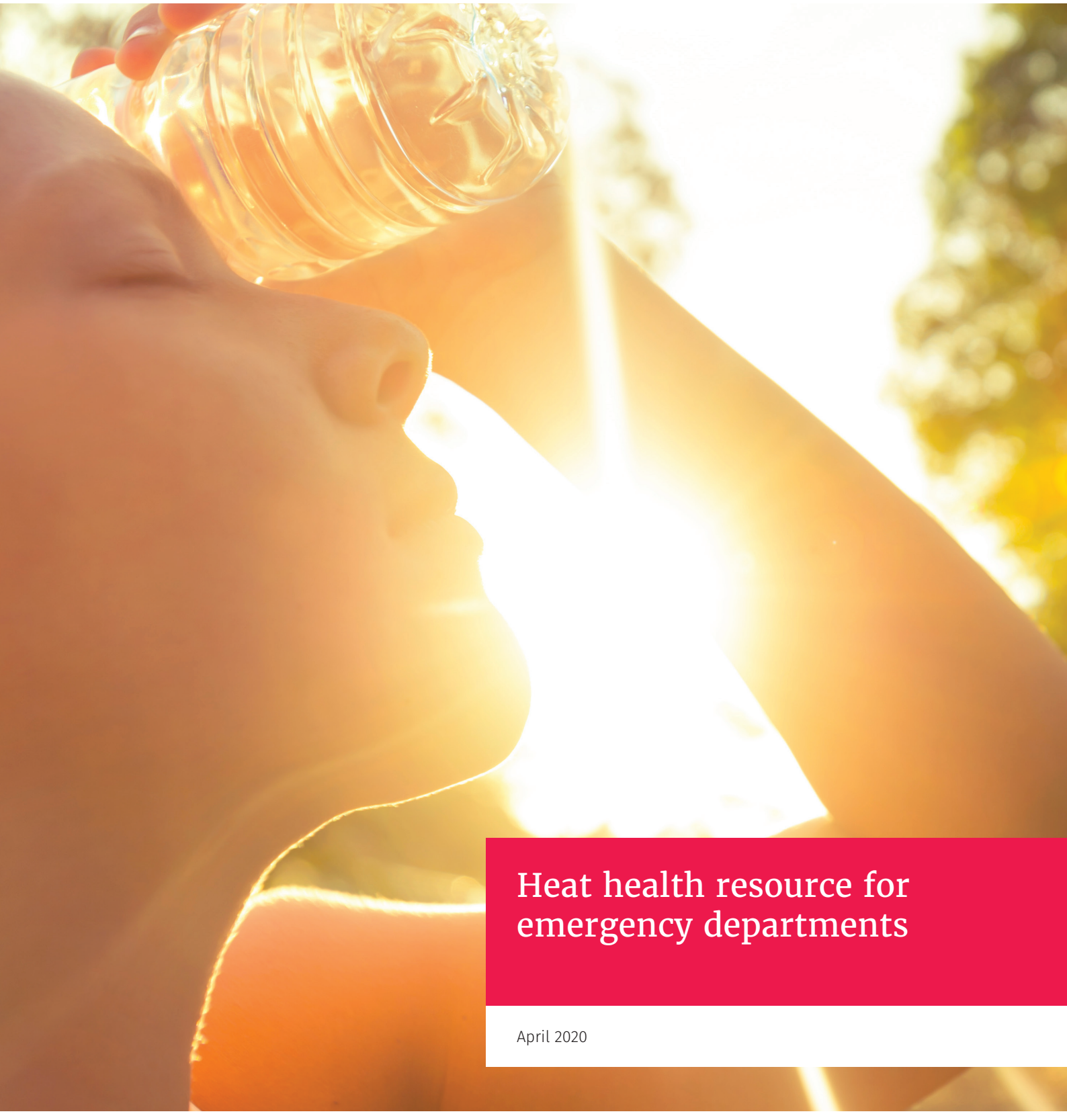

# Heat health resource for emergency departments

April 2020

# Context

## Background

The Australasian College for Emergency Medicine is the not-for-profit organisation responsible for training emergency physicians and advancement of professional standards in emergency medicine in Australia and New Zealand.

Our vision is to be the trusted authority for ensuring clinical, professional and training standards in the provision of quality, patient-focused emergency care.

Our mission is to promote excellence in the delivery of quality emergency care to all of our communities through our committed and expert members.

## Purpose

This resource is applicable to all Australian and New Zealand emergency department staff. It provides guidance on preparedness for, and the clinical management of heat-related illness in emergency departments.

It recognises the significant impact extreme heat events can have on people's health, particularly vulnerable people such as children, older persons 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,]

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.

# Context

## Definition

There is no universally accepted definition of a 'heatwave'; however the definition used by the Australian Bureau of Meteorology (BoM) is: 'when the maximum and the minimum temperatures are unusually hot over a three-day period at a location'.

The definition does not specify threshold temperatures. 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 across Australia and New Zealand 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.

'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 to this spectrum.

## Information sources

The Bureau of Meteorology provides a heatwave service including a heatwave forecast across Australia. New Zealand does not currently have a heatwave warning system.

The Australian and New Zealand governments as well as state and territory health departments and District Health Boards 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 emergency departments and emergency medicine systems to heatwaves.

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.

# Planning and preparedness

### General

Hospitals should have a heatwave response plan that is integrated with existing emergency and disaster response plans.

It is therefore recommended that an emergency physician 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 emergency department 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; and
- 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; and
- transport services.

### Communication

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

- know how the emergency department 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 emergency department clinicians; and
- have a stockpile of public information material available for emergency department staff, including posters and take-home pamphlets, regarding maintaining health during heatwave conditions.

For more, see additional resources.

# Response

## General

- Emergency departments should be a cool and safe environment for patients and staff. Drinking water should be available.
- Emergency departments should keep accurate records of the impact of heatwave events on the emergency department 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

- 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 characterised 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 (e.g. 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°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.
- 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 (older persons, infants, socially isolated, those with comorbidities) and consider the effects of heat stress when planning disposition from the emergency department.
- 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 aged greater than 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.

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# Additional resources

| Agency | Resource |
|---|---|
| **Australian Bureau of Meteorology** | **Heatwave Service for Australia**<br>http://www.bom.gov.au/australia/heatwave |
| **NZ Ministry of Health** | https://www.health.govt.nz/publication/heat-health-plans |
| **Australian Department of Health** | **Heatwave health tips and information**<br>https://www.health.gov.au/health-topics/emergency-health-management/heatwave-health-tips-and-information |

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