Guideline 9.3.4 – Heat Induced Illness (Hyperthermia)

Summary

Who does this guideline apply to?

This guideline applies to adults, children and infants.

Who is the audience for this guideline?

This guideline is for use by bystanders, first aiders and first aid training providers.

Recommendations

The ANZCOR recommends that:

- First aiders send for an ambulance early in the treatment of heat induced illness (ungraded, good practice statement).
- First aiders cool the person by the best means available whilst waiting for more advanced care (strong recommendation, weak level of evidence).

Give cool/cold water to drink if fully conscious and able to swallow. For exertional dehydration, ANZCOR suggest a 3-8% carbohydrate electrolyte fluid (e.g. any commercially available “sports drink”) (weak recommendation, very low quality evidence).

1.0 | Introduction

Heat induced illness may be caused by:

- excessive heat absorption from a hot environment
- excessive heat production from metabolic activity
- failure of the body’s cooling mechanisms

- an alteration in the body's set temperature.

Mild elevation in body temperature is normally controlled with sweating, which allows cooling by evaporation. Once the individual becomes too dehydrated to sweat, body temperature can rise rapidly and dramatically.

Factors which may contribute to heat induced illness include:

- excessive physical exertion
- hot climatic conditions with high humidity
- inadequate fluid intake
- infection
- persons who are overweight or obese
- unsuitable environments (e.g. unventilated hot buildings, parked motor vehicles)
- wearing unsuitably heavy, dark clothing on hot days
- drugs which affect heat regulation.

The very young[1, 2, 3] and very old[4] are more prone to heat induced illness. For workers in outdoor or potentially hot environments, there are occupational health guidelines relevant to the particular environment. Work environments that may be particularly prone to precipitating hyperthermia and heat induced illness include those in which there is a high ambient temperature with reduced air movement, where the worker is exposed to radiant heat and there is difficulty in maintaining adequate hydration.

2.0 | Prevention

At no time should children, the disabled or the elderly be left unattended in parked motor vehicles.

On warm, humid or hot days:

- keep infants and the elderly in cool, ventilated areas and provide ample oral fluids
- wear light coloured, loose-fitting clothing during physical exertion and hats during outside activities
- drink adequate fluids during exertion on hot days.

For participants in, and organisers of sporting events:

- allow six weeks for acclimatisation with progressive exercise before competition
- avoid vigorous exercise if suffering from an infection
- plan to conduct events in the early morning or late evening or in the cooler months of the year
- provide regular drink stations
- follow the support guidelines relevant to specific activities.

First aid providers may need to prepare for the potential for heat induced illnesses for specific high-risk events, such as events held in high temperatures. Preparation for such events should include the ability to measure temperatures and provide first aid management.

3.0 | Recognition

Heat induced illness presents with a spectrum of severity. The person may show the signs of exertion (hot, sweaty and breathless) but also have some of these indicators/red flags:

- Inability to continue the activity
- High body temperature
- Dizziness and faintness
- Nausea, vomiting or diarrhoea
- Pale skin and other signs of shock (See GL 9.2.3)
- Dry skin
- Poor muscle control or weakness
- Decreasing levels of consciousness, confusion or seizures.

The lack of sweating is a sign of serious illness, but only seen in a proportion of the more serious cases.

4.0 | Management

If the person is not responding and is not breathing normally, commence resuscitation following the ANZCOR Basic Life Support Flowchart (Guideline 8). [Strong recommendation; Moderate quality of evidence]

The management of heat induced illness is aimed at cooling and hydration.

Cooling the person should be done as soon as practicable, but should not delay sending for an ambulance. (ungraded, good practice statement).

During cooling management, level of consciousness and the ability to maintain an airway should be continuously assessed (ungraded, good practice statement).

Cooling management should aim to remove the cause and assisting the normal cooling mechanisms of evaporation, conduction, radiation and convection. Cooling methods will vary depending on availability and circumstance. A combination of cooling methods may be most effective if immersion is not available (strong recommendation, weak level of evidence).

Cooling management

- Lie the person in a cool environment or in the shade.
- Loosen and remove excessive clothing.

Send for an ambulance if not improving quickly.

While waiting for professional assistance for individuals over 5 years of age:

- Immerse (i.e. whole-body from the neck down) in cold water (a bath if possible, as cold as possible) for 15 minutes. This is the most effective method of cooling (strong recommendation, weak level of evidence). If this is not available, a combination of the following methods should be used:
- Wet the person with cold or cool water, under a shower if safe, or with a hose or other water source
- Apply ice packs (groin, armpits, facial cheeks, palms and soles).
- Repeatedly moisten the skin with a moist cloth or atomizer spray.
- Fan continuously.

While waiting for professional assistance for children 5 years of age and under a combination of the following methods should be used:

- Cool in a tepid (lukewarm) bath sponging frequently[10] if bath available (Ungraded, good practice statement) or:
- Repeatedly moisten the skin with a moist cloth or atomizer spray (Ungraded, good practice statement).
- Fan continuously (Ungraded, good practice statement).

Hydration management

Oral hydration should only be given if fully conscious and able to swallow. Give cool or cold water to drink if fully conscious and able to swallow. For exertional dehydration, ANZCOR suggest a 3-8% carbohydrate electrolyte fluid (e.g. any commercially available “sports drink”) (CoSTR 2015, weak recommendation, very low quality evidence).[8]

Revised in March 2020

This guideline has been revised to include cooling by immersion in cold water and a combination of other cooling methods following publication of a draft Consensus on Science and Treatment Recommendations (CoSTR) by ILCOR in December 2019. The evidence for immersion has been assessed as very low quality and relates to studies of the rate of cooling in adults with exertional heat exhaustion. The ILCOR systematic review found immersion (i.e. whole-body from the neck down) in cold water the fastest method of cooling adults with exertional heat illness[9]. The ILCOR 2020 CoSTR[9] did not rank other cooling methods, but describes passive cooling (e.g. moving to cooler environment, removing clothing) as slower at reducing body temperature compared to other active cooling methods (e.g. ice packs, cold showers, ice sheets/towels, fanning, evaporative cooling, cooling vests and jackets). There has been no examination of the effect of the rate of

cooling on recovery rate. There was no recommendation on the treatment of hyperthermia in children.

References

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Further Reading

ANZCOR Guideline 2 Priorities in an Emergency

ANZCOR Guideline 8 Cardiopulmonary Resuscitation

ANZCOR Guideline 9.2.4 First Aid Management of a Seizure

About this Guideline

Search date/s	ILCOR search updated to July 11, 2019.[9]
Question/PICO:	See ILCOR CoSTR webpage for ILCOR PICO[9] https://costr.ilcor.org/document/first-aid-cooling-techniques-for-heat-stroke-and-exertional-hyperthermia
Method:	Mixed methods, GRADE for ILCOR CoSTR[9]
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Referencing this guideline

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