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European Resuscitation Council Guidelines for Resuscitation 2015 Section 4. Cardiac arrest in special circumstances



Anatolij Truhlář^{a,b,*}, Charles D. Deakin^c, Jasmeet Soar^d, Gamal Eldin Abbas Khalifa^e, Annette Alfonzo^f, Joost J.L.M. Bierens^g, Guttorm Brattebø^h, Hermann Bruggerⁱ, Joel Dunning^j, Silviya Hunyadi-Antičević^k, Rudolph W. Koster^l, David J. Lockey^{m,w}, Carsten Lottⁿ, Peter Paal^{o,p}, Gavin D. Perkins^{q,r}, Claudio Sandroni^s, Karl-Christian Thies^t, David A. Zideman^u, Jerry P. Nolan^{v,w}, on behalf of the Cardiac arrest in special circumstances section Collaborators¹

^a Emergency Medical Services of the Hradec Králové Region, Hradec Králové, Czech Republic

^b Department of Anaesthesiology and Intensive Care Medicine, University Hospital Hradec Králové, Hradec Králové, Czech Republic

^c Cardiac Anaesthesia and Cardiac Intensive Care, NIHR Southampton Respiratory Biomedical Research Unit, Southampton University Hospital NHS Trust, Southampton, UK

^d Anaesthesia and Intensive Care Medicine, Southmead Hospital, North Bristol NHS Trust, Bristol, UK

^e Emergency and Disaster Medicine, Six October University Hospital, Cairo, Egypt

^f Departments of Renal and Internal Medicine, Victoria Hospital, Kirkcaldy, Fife, UK

^g Society to Rescue People from Drowning, Amsterdam, The Netherlands

^h Bergen Emergency Medical Services, Department of Anaesthesia and Intensive Care, Haukeland University Hospital, Bergen, Norway

ⁱ EURAC Institute of Mountain Emergency Medicine, Bozen, Italy

^j Department of Cardiothoracic Surgery, James Cook University Hospital, Middlesbrough, UK

^k Center for Emergency Medicine, Clinical Hospital Center Zagreb, Zagreb, Croatia

^l Department of Cardiology, Academic Medical Center, Amsterdam, The Netherlands

^m Intensive Care Medicine and Anaesthesia, Southmead Hospital, North Bristol NHS Trust, Bristol, UK

ⁿ Department of Anaesthesiology, University Medical Center, Johannes Gutenberg-Universität, Mainz, Germany

^o Barts Heart Centre, St Bartholomew's Hospital, Barts Health NHS Trust, Queen Mary University of London, London, UK

^p Department of Anaesthesiology and Critical Care Medicine, University Hospital Innsbruck, Austria

^q Warwick Medical School, University of Warwick, Coventry, UK

^r Critical Care Unit, Heart of England NHS Foundation Trust, Birmingham, UK

^s Department of Anaesthesiology and Intensive Care, Catholic University School of Medicine, Rome, Italy

^t Birmingham Children's Hospital, Birmingham, UK

^u Department of Anaesthetics, Imperial College Healthcare NHS Trust, London, UK

^v Anaesthesia and Intensive Care Medicine, Royal United Hospital, Bath, UK

^w School of Clinical Sciences, University of Bristol, UK

Page 155: Hyperthermia

Hyperthermia occurs when the body's ability to thermo-regulate fails and core temperature exceeds that normally maintained by homeostatic mechanisms. Hyperthermia may be exogenous, caused by environmental conditions, or secondary to endogenous heat production.

Hyperthermia is a continuum of heat-related conditions, starting with heat stress, progressing to heat exhaustion, then to heat stroke and finally to multiple organ dysfunction and cardiac arrest. [63]

Page 155: Heatstroke

Heatstroke (HS) is defined as hyperthermia accompanied by a systemic inflammatory response with a **core temperature >40°C**, accompanied by mental state change and varying levels of organ dysfunction. [63] Mortality from heat stroke ranges between 10 and 50%. [68]

There are two forms of Heatstroke:

1. Classic (non-exertional) heat stroke (CHS) occurs during high environmental temperatures and often affects the elderly during heat waves. [662]
2. Exertional heat stroke (EHS) occurs during strenuous physical exercise in high environmental temperatures and/or high humidity and usually affects healthy young adults. [67]

The mainstay of treatment is supportive therapy and rapidly cooling the patient. [76–78] **Start cooling** in the **prehospital setting** if possible. Aim to **rapidly reduce** the core temperature **to** approximately **39°C**.

There is no good evidence that antipyretics (e.g. non-steroidal anti-inflammatory drugs or paracetamol) are effective in heat stroke. Dantrolene has not been shown to be beneficial.[87–89] Patients with severe heat stroke need to be managed in an ICU environment.

Page 156: **Malignant hyperthermia**

Malignant hyperthermia is a rare disorder of skeletal muscle calcium homeostasis. It is characterised by muscle contracture and life-threatening hypermetabolic crisis following exposure of genetically predisposed individuals to halogenated anaesthetics and depolarising muscle relaxants. [64, 65]

Treatment: Stop triggering agents immediately; give oxygen, correct acidosis and electrolyte abnormalities. Start **active cooling** and give **dantrolene**. [91]

Other drugs such as 'ecstasy' (MDMA = 3,4-methylenedioxymethamphetamine) and amphetamines also cause a condition similar to malignant hyperthermia and the use of dantrolene may be beneficial. [92]

Page 156: **Hyperthermic clinical conditions**

Other hyperthermic clinical conditions include the following: drug toxicity, drug withdrawal syndrome, serotonin syndrome, neuroleptic malignant syndrome, sepsis, central nervous system infection, endocrine disorders (e.g. thyroid storm, pheochromocytoma).

Techniques to cool patients with hyperthermia are similar to those used for targeted temperature management after cardiac arrest (see post resuscitation care). Immersion is also not practical in the sickest patients.

Page 156: **Cardiac arrest in hyperthermia.**

There are no specific clinical studies of cardiac arrest in hyperthermia. Animal studies suggest the prognosis is poor compared with normothermic cardiac arrest. [93,94] The risk of unfavourable neurological outcome increases by 2.26 (odds ratio) for each degree of body temperature >37°C. [95]

For full version please click here:

http://emcools.com/fileadmin/daten/Guidelines/ERC_Guidelines_2015_Section_4_Cardiac_arrest_in_special_circumstances.pdf