

## Letter

# Implementing the International Liaison Committee on Resuscitation guidelines on hypothermia after cardiac arrest. The German experience: still a long way to go?

Michael Sander, Christian von Heymann and Claudia Spies

Department of Anaesthesiology and Intensive Care Medicine, Charité Universitätsmedizin Berlin, Germany

Corresponding author: Prof Claudia D Spies, [claudia.spies@charite.de](mailto:claudia.spies@charite.de)

Published: 5 April 2006

This article is online at <http://ccforum.com/content/10/2/407>

© 2006 BioMed Central Ltd

*Critical Care* 2006, **10**:407 (doi:10.1186/cc4882)

Two prospective randomised landmark trials were recently published comparing mild hypothermia for 12–24 hours with normothermia in comatose patients who had survived out-of-hospital cardiac arrest [1,2]. In 2003 the International Liaison Committee on Resuscitation ALS Task Force published the following recommendations [3] on the basis of the aforementioned evidence: unconscious adult patients with spontaneous circulation after out-of-hospital cardiac arrest should be cooled to 32–34°C for 12–24 hours when the initial rhythm was ventricular fibrillation; and such cooling may also be beneficial for other rhythms or inhospital cardiac arrest.

Recent evidence, however, suggests that the implementation of guidelines and scientific evidence in clinical routine is very difficult. This fact is circumstantiated by a recently published study reporting a wide variation in the management of acute respiratory distress syndrome that appears to be related to limited awareness of relevant research and adherence to local practice patterns [4].

We therefore conducted a telephone survey to address the implementation of the International Liaison Committee on Resuscitation guidelines in anesthesiological intensive care units in Germany in spring 2005. We either called the head of the department or the head of the intensive care unit of all 39 university hospital departments of anesthesiology and intensive care medicine in Germany. Twenty-eight out of these 39 (71.8%) departments provided information on their management of hypothermia after cardiac arrest in this telephone survey.

We asked three simple questions: Do you treat patients after cardiac arrest in your intensive care unit? Do you use therapeutic hypothermia in patients after cardiac arrest? Do you have written standard operating procedures for therapeutic hypothermia after cardiac arrest?

In the intensive care units of those departments responding to our survey, a median of 1900 patients (interquartile range, 1000–2500) were treated per year. The median proportion of ventilated patients was 73% (interquartile range, 60–83). Twenty-six out of 28 (92.9%) intensive care units treated patients after cardiac arrest. Sixteen of these 26 (61.5%) departments were not using therapeutic hypothermia. Only 10 departments out of 26 treating patients after cardiac arrest (38.5%) were using therapeutic hypothermia. Eight out of 26 (30.8%) departments had written standard operating procedures (SOP) for therapeutic hypothermia, eight out of 26 (61.5%) had no written SOP and two out of 26 (7.7%) did not provide information on this topic.

The low proportion of university intensive care units adhering to published recommendations may be due to several reasons. There might be deep-rooted concern that prolonged mild hypothermia has adverse effects on the immune system, on enzyme function and on the coagulation system. Hypothermia may directly or indirectly impair neutrophil function [5]. Leukocytopenia has been described significantly more frequently in patients with induced mild hypothermia [5]. Some studies reported higher rates of pneumonia in patients treated with mild hypothermia [6]. This was, however, not reported in patients treated with therapeutic hypothermia after out-of-hospital cardiac arrest [1,2]. The widespread belief that therapeutic hypothermia with exact temperature control can be only achieved with special equipment might also result in the fact that less intensive care units use this therapy. However, adequate management of therapeutic hypothermia can be achieved with basic equipment (e.g. an ice-cube maker and a refrigerator to store cold intravenous fluids). Another reason might be that the increased work load imposed on doctors in Germany – with increased nonmedical documentation tasks and the drastically increased clinical work caused by cost-cutting reforms such as the introduction

SOP = standard operating procedures.

of the Diagnosis Related Group – might slow down the implementation of published guidelines due to shortcomings in medical continuing education [7]. The prompt implementation of guidelines in routine patient care might possibly be difficult as generation and implementation of SOP is a time-consuming process. Unless these SOP are generated in individual department routines, care seems to be influenced by adherence to – sometimes outdated – local practice patterns.

Given the low rate of complication with short-term therapeutic hypothermia and the published beneficial effects [1,2,5], therapeutic hypothermia should be a standard treatment within the indications recommended by published guidelines and each hospital should generate or adopt written SOP for the indication and clinical use of therapeutic hypothermia [3]. Even if the optimal duration and temperature of therapeutic hypothermia as well as different cooling techniques still remain a subject of investigation, the implementation of current recommendations by international organisations based on the published evidence should be promoted and adhered to in order to guarantee optimal state-of-the-art treatment for our patients.

## Competing interests

The authors declare they have no competing interests.

## Acknowledgement

The authors appreciate the excellent guidance and helpful ideas of Prof. Eldar Søreide (Medical Director ICU, Division of Acute Care Medicine, Stavanger University Hospital, Stavanger, Norway).

## References

1. Bernard SA, Gray TW, Buist MD, Jones BM, Silvester W, Gutteridge G, Smith K: **Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia.** *N Engl J Med* 2002, **346**:557-563.
2. Anonymous: **Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest.** *N Engl J Med* 2002, **346**: 549-556.
3. Nolan JP, Morley PT, Vanden Hoek TL, Hickey RW, Kloeck WG, Billi J, Bottiger BW, Morley PT, Nolan JP, Okada K, *et al.*: **Therapeutic hypothermia after cardiac arrest: an advisory statement by the advanced life support task force of the International Liaison Committee on Resuscitation.** *Circulation* 2003, **108**:118-121.
4. Meade MO, Jacka MJ, Cook DJ, Dodek P, Griffith L, Guyatt GH: **Survey of interventions for the prevention and treatment of acute respiratory distress syndrome.** *Crit Care Med* 2004, **32**: 946-954.
5. Sessler DI: **Complications and treatment of mild hypothermia.** *Anesthesiology* 2001, **95**:531-543.
6. Hein OV, Triltsch A, von Buch C, Kox WJ, Spies C: **Mild hypothermia after near drowning in twin toddlers.** *Crit Care* 2004, **8**:R353-R357.
7. Chapman C: **Disgruntled doctors.** *Lancet* 2004, **364**:1653-1654.