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Letter to the Editor

Monitoring outcomes after cardiac arrest: All resuscitated patients matter

We read with interest the recent paper by Dr. Abazi and colleagues,¹ which did not detect a difference in 6 month survival for patients resuscitated from out-of-hospital cardiac arrest (OHCA) before vs. after adoption of a target temperature of 36 °C versus 33 °C among 2899 patients in 69 ICUs in Scandinavia. The authors themselves note that the results of the Targeted Temperature Management (TTM) randomized trial² may have been misinterpreted by some as signifying that fever control alone can supplant therapeutic hypothermia. We are concerned that some may also misinterpret the results of study by Abazi *et al.*

In contrast with the results cited above, there is recent evidence supporting the hypothesis that a target temperature below 34 °C improves outcomes in patients resuscitated from cardiac arrest when compared to 36 °C. Specifically, an observational study in multiple intensive care units in Australia and New Zealand (16,252 patients in 140 hospitals) examining clinical practice and patient outcomes before and after publication of the TTM trial found that a lower minimum temperature was independently associated with significantly increased survival.³ As well, a recent randomized trial demonstrated significantly improved neurologic outcome with cooling to 33 °C vs 37 °C in patients with an initial nonshockable rhythm.⁴

How can we account for the results of Abazi *et al.*?

First, the authors did not report or adjust for time to target temperature or for method of induced hypothermia. Their assessment of the relationship between different target temperatures and outcome may have been confounded by differences in these factors. Second, Abazi *et al.* excluded patients who did not receive any form of TTM from their outcome assessment. Since a significantly greater percentage of patients resuscitated from OHCA did not receive any form of therapeutic hypothermia after vs. before publication of the TTM trial, it seems plausible that the presence of selection bias or confounding by indication may have impacted their estimate of the effect of hypothermia.

We believe that the cumulative evidence accrued from animal models and prior observational and randomized trials in humans suggests that IH should be applied as quickly as possible to achieve a temperature of less than 34 °C in patients resuscitated from cardiac

arrest. Moreover, we believe that efforts to temper or abandon use of IH in patients resuscitated from cardiac arrest are premature. We encourage the authors to evaluate the overall outcomes of all patients resuscitated from OHCA in the Swedish Intensive Care Registry before and after the publication of TTM data. Prior to the publication of the TTM trial, several groups had reported overall trends towards improved survival from OHCA.^{3,5} All patients with this devastating condition matter, and detecting a trend towards worsened overall outcomes in the Scandinavian registry, including among those who did not receive dedicated TTM, would be an important call to action to re-consider the apparent less stringent adherence to current guidelines seen after the TTM trial.

Conflict of interest statement

The authors report the following disclosures:

Bartlett — Principal investigator (PI) of a feasibility trial of remote ischemic conditioning for patients resuscitated from cardiac arrest funded by ZOLL Foundation, Chelmsford, MA

Nichol — Consultant and PI, STEMI COOL trial of intravascular cooling in patients with ST-elevation myocardial infarction, funded by ZOLL Circulation Inc; Consultant, QOOL Therapeutics Inc, Mountain View, CA.

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<http://dx.doi.org/10.1016/j.resuscitation.2019.10.032>

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