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Letter to the Editor

# Reply to: The integration of prehospital standard operating procedures and in-hospital HOPE score for management of hypothermic patients in cardiac arrest

*Sir,*

We want to thank Dr Strapazzon et al. for their their positive feed-back and additional insights on our article "Hypothermia outcome prediction after extracorporeal life support for hypothermic cardiac arrest patients: An external validation of the HOPE score", recently published in *Resuscitation*.[1] We have additional comments regarding some of their specific remarks.[2]

The successfull management of a hypothermic cardiac arrest (CA) patient is conditional on critical decisions along the chain of survival, namely the decision to start cardiopulmonary resuscitation (CPR), to transport the patient under CPR to a local or extracorporeal life support (ECLS) capable hospital, and finally to initiate ECLS rewarming. As pertinently reported by Strappazzon et al., the HOPE score, unlike the potassium threshold, does not just provide a dichotomous but a continuous estimation of the survival probability at each stage along this chain of survival. This probability is likely to evolve, as some of the HOPE variables, e.g. potassium or estimated time to ECLS, change over time. The adjustment of this probability may be especially useful for cases with very long CPR durations, such as this reported by Strappazzon et al.[2] Based on personal observations and published cases considered as "extreme", we are convinced that the survival probability of hypothermic CA patients is underestimated by clinicians, reflecting a prognostic miscalibration due to several reasons. Most clinicians have little expertise managing hypothermic CA patients, unlike the more frequent normothermic CA. CPR duration — a strong predictor of lower survival probabilities in normothermic CA — has a relatively low weight compared to the other five variables in the HOPE score: 25% of the survivors of hypothermic CA had a CPR duration $\geq$ 165 min in the derivation cohort.[3,4] An accurate estimation of the survival probabilities using the HOPE score is therefore a powerful motivational tool to help us evaluating whether resuscitation efforts are worth pursuing or not.

As suggested by Strapazzon et al., we agree that efforts must continue to improve the management of these unfrequent cases, from the prehospital phase, to hospital orientation and hospital triage. It has been advocated that hospitals should systematically record the information required to calculate the score.[5] Strapazzon et al. suggest that survival probabilities assessment using HOPE may be integrated into standard operating procedures for the in-hospital management of hypothermic CA patients. With the same intent, we adapted our website with the HOPE online calculator (www.hypothermiascore.org) to allow for the data collection of new cases where HOPE probabilities were calculated to guide clinical decision-making, and to enable us to contact clinicians regarding the actual decision and outcome for their patients. The collection of HOPE variables and outcomes in additional new cases is important to further validate the HOPE performance.

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## Conflicts of interest

None.

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Mathieu Pasquier*
*Emergency Department, Lausanne University Hospital, Lausanne, Switzerland*

Valentin Rousson
*Center of Primary Care and Public Health, University of Lausanne, Route de la Corniche 10, 1010 Lausanne, Switzerland*

Tomasz Darocha
*Severe Accidental Hypothermia Center, Department of Anaesthesiology and Intensive Care, Medical University of Silesia, 055, Poniatowskiego 15, Katowice, Poland*

Olivier Hugli
*Emergency Department, Lausanne University Hospital, Lausanne, Switzerland*

* Corresponding author at: Emergency Service, University Hospital Centre, BH 09, CHUV, 1011 Lausanne, Switzerland.
E-mail addresses: Mathieu.Pasquier@chuv.ch (M. Pasquier) valentin.rousson@chuv.ch (V. Rousson) tomekdarocha@wp.pl (T. Darocha) olivier.hugli@chuv.ch (O. Hugli).

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