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# Resuscitation Plus

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## Letter to the Editor

# Reply to: Comment on the use of the HOPE score in the specific case of drowning resuscitation



Dear Editor,

With great interest, we have read the response from Hall et al., to our case report on “successful prehospital ECMO in drowning resuscitation after prolonged submersion” regarding the use of the HOPE score in this context.<sup>1</sup> We appreciate this valid response to initiate the discussion on this matter and would therefore like to respond.

As correctly indicated by Hall et al., the HOPE score estimates the likelihood of survival at hospital discharge after rewarming using extracorporeal life support (ECLS) in patients with hypothermic cardiac arrest (CA). This score is intended to guide the decision-making process regarding whether to initiate ECLS after hospital admission.

To clarify, the HOPE score was not utilized in the decision to start prehospital ECLS in this case. As in this case, not all variables are often available prehospitally, as potassium is not typically measured in this setting.<sup>2</sup> In the absence of a reliable decision score for initiating prehospital ECLS, we retrospectively determined the HOPE score at the time of hospital admission to provide perspective for this unique situation. The score of 5% is therefore based on an 18-year-old male, with a resuscitation duration of 15 min, asphyxia, a potassium level of 3.4 mmol/L, and a temperature of 32.4 degrees Celsius. Hall et al. rightly noted that it is unlikely that the potassium level used to calculate HOPE at hospital admission corresponds to the value at water extrication or to the hypothetical value during ongoing cardiopulmonary resuscitation upon hospital arrival. If we had simulated the prehospital moment of extrication with his temperature at 30.5 °C and the same estimated potassium level, the resulting HOPE score would have been 16%.

The suggestion by Hall et al. to assume the most favorable scenario in cases of uncertainty between immersion and submersion seems insufficiently nuanced to us. We are aware that extended submersion times are associated with significantly poor neurological outcomes, and that advanced life support for longer than 30 min in children in the Netherlands has resulted in no neurologically favorable survivors.<sup>3,4</sup> Additionally, prehospital ECLS is a very costly method that should not be used too readily.<sup>5</sup> Therefore, it is

important to make an individual assessment for each case. Situations that enhance survival rates include prolonged immersion and the onset of hypothermia prior to submersion, particularly in extremely cold conditions or when an underwater air source is available (e.g., a diver, a capsized boat, or a submerged car).<sup>3</sup>

In conclusion, we suggest that the development of a new scoring system to guide the decision to initiate ECLS in patients with hypothermic CA in the prehospital setting would be useful.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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