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Letter to the Editor

Reply to: Low incidence of avalanche victims in cardiac arrest calls for multi-centre studies and registries for the validation of resuscitation guidelines



To the Editor,

We want to thank Dr Brugger et al. for their comments on our article “Avalanche victims in cardiac arrest are unlikely to survive despite adherence to medical guidelines”, recently published in *Resuscitation*.¹ We would like to bring additional observations regarding issues pointed out in their letter.²

We appreciate Dr Brugger’s compliments on the high compliance with guidelines for avalanche cardiac arrest (CA) patients. The prehospital rescuers’ exposure to avalanche victims has been shown to be usually low, and the exposure to patients in CA even lower.³ An important factor that may have contributed to the performance in our study is the relatively high caseload of avalanche victims concentrated in a single helicopter emergency medical service (HEMS).¹ As in other field of medicine, greater individual volume is usually associated with improved performance and better outcomes.⁴

The monocentric data collection and the high caseload of this specific HEMS allowed for the reliable and exhaustive data collection. In Switzerland, the prehospital network includes three different HEMS for a total of 19 different bases, and numerous different dispatch centers. Victims can be transported to any of the hospitals of the Swiss hospital network that includes 12 level-1 trauma centres for a population of about 8 millions inhabitants, eight of which have extracorporeal life support rewarming (ECLS) capabilities. In addition, numerous regional hospitals are may receive avalanche victims not in CA. This high density and regionalization of care are major barriers for data collection. There is no centralized data repository, and data collection requires approval from seven different ethics committees.

Seven (28%) of the 25 patients still in CA at the hospital in our study underwent ECLS.¹ As noticed by Brugger et al., use of the most recent cutoffs for temperature and potassium would have lowered this figure to three.² The efforts to lower the “overtriage” rate (ECLS of patient with no chance of survival) are certainly laudable, but must not come at the cost of undertriage (denying ECLS to a patient with survival potential). The reduction of overtriage must be proven to be safe, as undertriage means denying a potentially life-saving intervention. Although this approach is obviously debatable as some patients in our study were included in the derivation study,⁵ we a

posteriori calculated the HOPE survival probabilities for patients who underwent ECLS in our study.¹ These were of 0%, 0%, 1%, 1%, 3%, 3%, 12% and 16%, therefore qualifying only two patients for ECLS if deciding ECLS based on a HOPE $\geq 10\%$.⁵

The validation of the evolving recommendations is a recurrent problem in hypothermia and avalanche medical management, essentially as cases are unfrequent, and triage options are applied in practiced before being fully validated, leading to high potential selection bias. As suggested by Brugger et al., we therefore agree that efforts should be pursued to promote systematic data collection of a large amount of cases to ensure reliable research, or at least to standardise the data documentation and reporting for avalanche rescue missions to allow for better comparison between registries or different HEMS.

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Conflicts of interest

None.

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