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Response to: Lactate change after CPR: Everything is in the baseline value!

Michael Donnino, MD,

Beth Israel Deaconess Medical Center, Boston, MA, Beth Israel Deaconess Medical Center, 1 Deaconess Street, Boston, MA 02135, 617-208-8656

Lars Andersen, MD, and

Department of Emergency Medicine, Beth Israel Deaconess Medical Center

Michael Cocchi, MD

Department of Emergency Medicine and Department of Anesthesia/Critical Care, Beth Israel Deaconess Medical Center

Michael Donnino: mdonnino@bidmc.harvard.edu

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On behalf of the author group, we thank Drs. De Backer and Donadella (1) for their thoughtful commentary on our manuscript. Drs. De Backer and Donadella are concerned that the initial lactate level is driving the overall difference in outcomes and that relative (as compared to absolute) change in lactate is the wrong measurement. First, we agree that the baseline lactate in this dataset is important and was associated with survival and good neurological outcome. These findings are reported as part of our main results and illustrated in Table 2 of the manuscript. In order to account for this in the analysis of change in lactate, we included baseline lactate in the model. The findings described with lactate change were still significant when including baseline lactate in the model. The choice to utilize lactate change as defined in the paper (relative change) was made *a priori* by the investigative team. This decision was based, in part, on the precedence in the literature with multiple previous investigators using this approach including a previous study in post-cardiac arrest patients and two randomized trials using relative lactate change as an endpoint of resuscitation. (2–5) Drs. De Backer and Donadella argue that an absolute change in lactate is the more appropriate metric based on logic. Our results do not necessarily support their assertion. As illustrated in Drs. De Backer and Donadella's letter, the absolute change in lactate was not associated with differences in good neurological outcome or survival. In contrast and as illustrated in our paper (6), we found that relative lactate change was associated with both good neurological outcome and survival. This would seem to suggest that from a prognostic perspective, relative lactate change is superior to absolute lactate

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change when assessing post-cardiac arrest patients. That stated, we recognize that there are likely pros and cons to the use of only the absolute or relative change in lactate, and we also recognize the importance of the baseline level that may contribute to the findings. We agree that adjusting for the exact timing of the initial lactate might be ideal and could be considered in larger datasets in future prospective studies.

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