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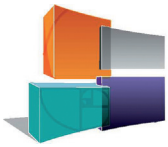

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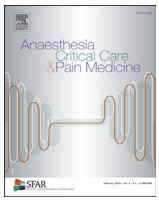

Letter to the Editor

Reply to the letter to the editor

To the Editor,

We read with great interest the letter from Dr. Jawed regarding our recent publication on blood pressure variability in the intensive care unit and operating room and thank him for his relevant questions [1].

As noticed by Dr. Jawed, the two samples correspond to completely different populations managed in completely different settings. In this context, the observation that the distribution of blood pressure ranges was similar in both samples represents a quite interesting information. At both sites, providers appear to systematically overshoot targets when patients are on vasopressors whatever the clinical situation. The slightly lower rate of overshoot observed in the operating room cohort may be explained by the constant presence of a provider immediately at the patient's side. Interestingly, healthcare providers were also different between the two institutions: surgical patients were managed by a combination of staff anaesthesiologists and resident anaesthesiologists in Belgium (we do not have nurse anaesthetists), while intensive care patients were managed by critical care nurses in the US centre. The threshold of tolerance, or rather the zone of comfort, could have been different, because of the provider's specialty and their respective health care facilities.

The study began once electronic medical records data were available at both sites and stopped somewhat arbitrarily when the amount of data collected appeared sufficient for our analysis. Regarding the screening for aberrant values, we discarded 0.92% of the total MAP data as being non-physiologic (values like MAP < 30 and MAP > 140 from arterial line flushes, for example). At both sites, samples came exclusively from patients with arterial line catheters allowing for a higher sample rate than non-invasive blood pressure would have allowed. We agree with Dr Jawed's comment about the possible influence of heart rate on blood pressure management, but, unfortunately, these data were not collected. Of note, noradrenaline was the only vasopressor used at both institutions.

Although risks associated with hypotensive episodes in different clinical conditions are increasingly recognised, [2–4] those associated with vasopressor over-treatment remain largely unknown. Our results indicate that blood pressure management in operating rooms and intensive care units should be improved to reduce these risks. Closed-loop vasopressor administration system may represent an interesting way to address this problem and are developed at an increasing rate as demonstrated by recent publications on this topic [5–7].

Ethical approval

The authors declare that the work described has been carried out in accordance with the Declaration of Helsinki of the World Medical Association revised in 2013 for experiments involving humans as well as in accordance with the EU Directive 2010/63/EU for animal experiments.
The authors declare that this report does not contain any personal information that could lead to the identification of the patient(s).

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Author's contribution

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship.

Disclosure of interest

Alexandre Joosten, and Joseph Rinehart are consultants for Edwards Lifesciences (Irvine, CA, USA). Joseph Rinehart has ownership interest in Sironis, and Sironis has developed a fluid closed-loop system that has been licensed to Edwards Lifesciences. A provisional patent has been submitted through the University of California Irvine by Joseph Rinehart covering aspects of closed-loop vasopressor administration.
The other authors declare that they have no competing interest.

Acknowledgments

NA.

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