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## Letter to the Editor

# Clinical applicability of the accelerometer-based chest compression measurement in cardiac arrest



### To the Editor

I have read the article by Nichol et al. titled “Compression depth measured by accelerometer vs. outcome in patients with out-of-hospital cardiac arrest” with great interest.<sup>1</sup> However, I think that there are two important issues in this study. The first issue is whether there was any effect of feedback on the chest compression depth, and the second is regarding the possibility of overestimation when using an accelerometer device for measuring the chest compression depth. I would like to discuss these issues with the authors of the manuscript and readers of the journal.

Although the application of real-time feedback could optimise cardiopulmonary resuscitation (CPR) performance during out-of-hospital cardiac arrest, it was not associated with clinical outcomes.<sup>2</sup> Therefore, if the results of the present study were obtained by conducting CPR according to the feedback on the chest compression depth measured by the accelerometer, it could be utilized as real evidence of its clinical applicability. However, the authors described that not all CPR was guided by real-time feedback.<sup>1</sup> If the authors provided the results of the subgroup analysis according to real-time feedback use, we could estimate the clinical applicability of feedback according to the chest compression depth measured by the accelerometer.

The second issue is more complicated. Accelerometer devices can overestimate the chest compression depth in patients lying on a soft surface, such as a mattress.<sup>3</sup> Considering that the delivery of chest compression by the emergency medical service providers was conducted on the bed, such as a stretcher cart, there is a possibility of overestimating the compression depth, which would create confusion when applying the results of the present study to clinical situations. Furthermore, although the CPR guidelines recommend compressing the chest to a depth ranging from 5 to 6 cm, this definition of the chest compression depth may not have been applicable to everyone, since the thorax sizes were not the same.<sup>4,5</sup> Ideally, this indication could be applied to an average-sized adult.<sup>4</sup> Similarly, we can easily assume that the thorax sizes of the participants of the present study might not be the same. Although we can statistically analyse the CPR results by matching the range of the average chest compression depth with predefined outcomes, we cannot apply the results of the present study in a real situation, as we cannot standardise patients' thorax sizes during CPR. Since these complex issues can decrease the clinical applicability of the study results,

more accurate data, such as the actual chest compression depth of the patients, compression depth of the mattress, and thorax size of the patients, will be needed to overcome these concerns.

### Conflicts of interest

The author has no potential conflicts of interest to disclose.

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