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Letter to the Editor

LETTER TO THE EDITOR

The AHI is useful but limited: how can we do better?

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Dear Editor,

We thank Leppanen et al. [1] for their comments on our recent Research Statement and appreciate the extensive work that they have done in obstructive sleep apnea (OSA). As stated in the Introduction, our paper was motivated by a recognition of the limitations of the apnea–hypopnea index (AHI) both to predict adverse effects of OSA and, following the publication of several negative cardiovascular secondary prevention trials, to predict responsiveness to OSA treatment. The purpose of the Research Statement was to provide the historical context for the development of the AHI and a consideration of its strengths and weaknesses as currently employed, while suggesting a framework for evaluating the possible added value of additional metrics of sleep apnea severity [2]. Leppanen et al. correctly note that we did not intend an exhaustive review of potential alternative metrics, and no slight was intended towards this group or the many other investigators exploring such alternatives. Indeed, we presented only a small number of proposed alternative polysomnogram-derived metrics, in order to provide an illustrative sample of the types of metrics under investigation. We chose to focus, where possible, on measures that were evaluated for their ability to improve the prediction of mortality or major adverse cardiovascular outcomes, particularly when studied in general community rather than sleep laboratory cohorts. In mentioning exploration of symptom subtypes, genetic susceptibility factors, blood biomarkers, and wearable technologies, we again did not attempt to provide a detailed review of these areas, but rather to suggest investigative approaches that are likely to prove fruitful. We deliberately avoided endorsement of any specific wearable device or commercial product, citing instead a recent review [3]. One key point of this Research Statement bears repeating: while much has been made of the limitations of the AHI, the diagnosis of OSA based on this metric has a predictive value for multiple important health outcomes, including stroke and death, that appears comparable to other widely accepted cardiovascular risk factors [4]. Therefore, while we agree with others that more precise clinical markers of the presence, severity and treatment responsiveness of OSA are needed [5], we also emphasize the need to demonstrate, and replicate across studies, the ability of novel metrics to improve upon the AHI as markers of prognosis or predictors of response to therapy. We are not aware of any alternative metric that has met this standard but remain confident that, with multiple excellent investigative teams worldwide addressing this problem, progress in this field will continue steadily.

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