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## CORRESPONDENCE

## ROX monitoring in critical COVID-19 patients treated with high flow oxygen: A real added value compared to the respiratory rate?



Dear Editor,

We read with interest the communication by Vega *et al.* recently published in *Pulmonology*, dealing with the particular features of the ROX index in the population of COVID-19 critical patients treated with high flow nasal cannula (HFNC).<sup>1</sup>

We congratulate the authors for having added new evidence in this field, by investigating 120 additional patients with COVID-19-related acute respiratory failure.

However, we would like to correct a misreading by the authors regarding our study published in *Intensive Care Medicine*.<sup>2</sup> Indeed, the oxygen flow used in our study was not “a surprisingly low flow of 10 L/min” as written by Vega *et al.* but the “usual” high flow of 60 L/min for all patients at HFNC initiation (“HFNC was systematically initiated at 60 L min<sup>-1</sup> /FiO<sub>2</sub> 1” – second paragraph). We think that Vega *et al.* had mistaken the gas flow rate once HFNC was initiated for the median oxygen flow rate delivered to the patients prior to HFNC initiation in our study (“Prior to HFNC, the median [IQR] RR was 30 [26–36]/min and O<sub>2</sub> flow was 10 [8–15] L/min” – Second sentence of the third paragraph).

In addition, we did not report that “respiratory rate had better accuracy than the ROX index” as suggested by Vega *et al.* in their discussion. In fact, we showed that the RR and ROX 30 min after HFNC initiation had similar predictive values for HFNC failure (AUROC 0.81 (0.61–0.96) and 0.78 (0.58–0.95), respectively).<sup>2</sup> Since it is easier to monitor the RR than the full ROX index, we entitled our work “less is more, better look at respiratory rate”. We believe that the results provided by Vega are concordant with our own, as AUROC at the earliest time point (H2) were strictly similar for RR and ROX (0.64 95%CI(0.51–0.78) vs. 0.64 (0.52–0.77), respectively); thus demonstrating no real advantage of a more complex ROX calculation compared to a simple respiratory rate monitoring. We could further

discuss a possible difference in performance between RR and ROX at a later point in time (are the AUROC reported by Vega *et al.* at H12 for the RR [0.72 (0.61–0.83)] and the ROX [0.78 (0.67–0.89)] really significantly different?). However, we believe that such a late time point might not really impact patient’s management in case of HFNC failure as, in both our experience and Vega’s, “most intubation occurred between 12 and 24 hrs” after HFNC initiation.

### Conflicts of interest

The authors declare that they have no conflict of interest regarding this article.

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### References

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2. Blez D, Soulier A, Bonnet F, Garnier M. Monitoring of high-flow nasal cannula for SARS-CoV-2 severe pneumonia: less is more, better look at respiratory rate. *Intensive Care Med*. 2020;46: 2094–5. <https://doi.org/10.1007/s00134-020-06199-9>.

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