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## Letter to the Editor



## Non-invasive respiratory supports on inspiratory effort in COVID-19: How and when is it matter of selection? Author's reply.

Dear Editor,

First of all, we would like to thank Flora et al. [1] for their positive comments regarding our study. It is true that early monitoring of respiratory mechanics during non-invasive respiratory support (NRS) treatment may be important to assess, not only the effort performed by the patients, but also their “response” to different NRS.

Our study [2] was a physiological investigation and therefore it may not predict the final outcome of the patients, since the clinical observation of COVID-19 patients with acute respiratory failure (ARF) taught us that some individuals may develop an abrupt worsening of their condition just few hours or days after admission.

It is important to stress the point that our study was conducted within the first 36 h of emergency room (ER) admission (on average 12 h spent in the ER before respiratory intensive care unit –RICU- admission and within the first 24 h after RICU admission).

The point highlighted by Flora et al. [1] refers to the potential reduction of the risk of ventilator-induced lung injury (VILI) or self-induced lung injury by adopting the prone position (PP).

PP has been shown to have a positive impact during an episode of ARF, including COVID-19 patients, on respiratory mechanics, gas exchange and also hemodynamics, whereas the effects of the use of different NRS have not been fully elucidated [3].

It is true that awake PP reduces the need for intubation, but this is particularly true only in patients requiring advanced respiratory support and those in intensive care unit (ICU) settings [4], so the effectiveness of PP may not be recommended in all patients.

Of note, PP has been shown to be particularly useful when implemented early, achieving a significant oxygenation response in ~80% of patients, again highlighting the time frame in which PP may be of most benefit [5].

However, some drawbacks of PP deserve to be recognized. In particular, it has been shown that this practice is not always well tolerated, and that the efficacy may be related to the number of hours PP is maintained [6,7].

Indeed, very recent data indicate that PP has little impact on the dead space fraction, a prognostic factor for death in patients with severe COVID-19, despite improving oxygenation. This may highlight the concern that aside from a transient improvement in oxygenation that would buy time for additional therapies to succeed, it may unduly delay the time to intubation when using NRS [8].

## References

- [1] Flora M, Mollica M, Fiorentino G, et al. Non-invasive respiratory supports on inspiratory effort in Covid-19: how and when is it matter of selection? *Eur J Intern Med* 2022. <https://doi.org/10.1016/j.ejim.2022.08.026>.
- [2] Schifino G, Vega ML, Pisani L, et al. Effects of non-invasive respiratory supports on inspiratory effort in moderate-severe COVID-19 patients. A randomized physiological study. *Eur J Intern Med* 2022;100:110–8. <https://doi.org/10.1016/j.ejim.2022.04.012>.
- [3] Gattinoni L, Camporota L, Marini JJ. Prone position and COVID-19: mechanisms and effects. *Crit Care Med* 2022;50(5):873–5. <https://doi.org/10.1097/CCM.0000000000005486>.
- [4] Li J, Luo J, Pavlov I, et al. Awake prone positioning for non-intubated patients with COVID-19-related acute hypoxaemic respiratory failure: a systematic review and meta-analysis. *Lancet Respir Med* 2022;10(6):573–83. [https://doi.org/10.1016/S2213-2600\(22\)00043-1](https://doi.org/10.1016/S2213-2600(22)00043-1).
- [5] Camporota L, Sanderson B, Chiumello D, et al. Prone position in COVID-19 and -COVID-19 acute respiratory distress syndrome: an international multicenter observational comparative study. *Crit Care Med* 2022;50(4):633–43. <https://doi.org/10.1097/CCM.0000000000005354>.
- [6] Elharrar X, Trigui Y, Dols AM, et al. Use of Prone positioning in nonintubated patients with COVID-19 and hypoxemic acute respiratory failure. *JAMA* 2020;323(22):2336–8. <https://doi.org/10.1001/jama.2020.8255>.
- [7] Alhazzani W, Parhar KKS, Weatherald J, Z Al Duhailib, Alshahrani M, Al-Fares A, Buabbas S, Cherian SV, Munshi L, Fan E, Al-Hameed F, Chalabi J, Rahmatullah AA, Duan E, Tsang JLY, Lewis K, Lauzier F, Centofanti J, Rochweg B, Cuglin S, Nelson K, Abdukahil SA, Fiest KM, Stelfox HT, Tlayeh H, Meade MO, Perri D, Solverson K, Niven DJ, Lim R, Möller MH, Belley-Cote E, Thabane L, Tamim H, Cook DJ, Arabi YM. COVI-PRONE trial investigators and the Saudi critical care trials group. Effect of awake prone positioning on endotracheal intubation in patients with COVID-19 and acute respiratory failure: a randomized clinical trial. *JAMA* 2022;327(21):2104–13. <https://doi.org/10.1001/jama.2022.7993>.
- [8] Sharp T, Al-Faham Z, Brown M, et al. Prone position in covid-19: can we tackle rising dead space? *J Intensiv Care Soc* 2022;23(2):240–3. <https://doi.org/10.1177/1751143720975317>.

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