



## The criteria used to justify endotracheal intubation of patients with COVID-19 are worrisome

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To the Editor,

I read with interest the article by Ahmad *et al.* describing their experience with endotracheal intubation of patients with COVID-19.<sup>1</sup> I thank the caregivers for their voluminous clinical work and acknowledge the many physicians who became infected in the course of their actions.

Intubation and mechanical ventilation in severe respiratory failure is lifesaving, and few therapies equal its power across the breadth of medicine. Intubation is also associated with numerous life-threatening complications as documented by decades of research. The decision to insert an endotracheal tube is one of the most difficult faced by an intensivist, and I continue to find this a formidable challenge after 45 years of bedside practice. In contrast to weaning from mechanical ventilation, where physiologic tests exist to guide clinical decision-making,<sup>2</sup> the decision to insert an endotracheal tube is based on clinical judgement, gestalt, and tacit knowledge.<sup>3,4</sup> While various authors list criteria to guide intubation, not one of these has stood the test of rigorous experimental investigation.

Ahmad *et al.* specify protocolized thresholds that guided intubation decisions, and they report values recorded before intubation. The respiratory rate threshold of 25

breaths·min<sup>-1</sup> is the expected physiologic response to stimulation of sensory receptors in a patient with a viral respiratory tract infection.<sup>5</sup> The standard deviation (SD) of 10 for mean respiratory rate of 31 breaths/minute (before intubation) signifies that many patients had rates that barely exceeded the upper limit of normal. The mean oxygen saturation of 92% before intubation had an SD of 7%, indicating that many patients had saturations of 95% (or higher), which can signify an arterial oxygen tension of up to 200 mmHg.<sup>4</sup> Ahmad *et al.* report a mean (SD) inspired oxygen concentration (F<sub>I</sub>O<sub>2</sub>) of 82 (25)% before intubation; these values are inherently inaccurate because F<sub>I</sub>O<sub>2</sub> is totally unknowable in a non-intubated patient.<sup>5</sup>

Ahmad *et al.* convey that they intubated patients early “before significant physiologic decompensation.”<sup>1</sup> A strategy of preemptive intubation means that patients who will be able to sustain spontaneous ventilation and gas exchange are going to be intubated in the absence of physiological justification and thus exposed unnecessarily to life-threatening complications. They further state that if a patient was considered a suitable candidate for insertion of an endotracheal tube, that consideration represented justification for not using non-invasive ventilation and high-flow nasal oxygen. This statement is distinctly disturbing—a patient’s ability to tolerate a more invasive procedure should not be justification for bypassing a less invasive, but effective, step.

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