

LETTER

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A limitation of Chase's proposal for safe doubling of ventilator capacity

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Letter:

We read with interest the description by Chase and colleagues of a system to provide an “in series” rather than “in parallel” sharing of a single ventilator between two patients [1]. Their suggestion is that this is a “last resort technique” that may be useful during the COVID-19 pandemic surge. In contradistinction to other “shared ventilation” systems, Chase’s design permits individual adjustments for patients’ compliance and PEEP [2]. However, using the system described by Chase, every second breath is delivered to each patient. This results in an inspiration time limited to less than 50% of the respiratory cycle time, even if the ventilator set expiration time is minimized [3]. Several ventilators further limit inspiratory time to 80% of cycle time, meaning the longest inspiratory time would be an I:E ratio of 1:1.5 [4].

COVID-19 respiratory failure is characterized by severe hypoxemia, often with near normal compliance, and frequently resistant to PEEP and recruitment maneuvers [5]. One additional strategy available to increase oxygenation is to increase inspiratory time, which allows more distribution of fresh gas to slow filling alveoli and raises the mean alveolar pressure. The Chase apparatus’s inability to provide reverse ratio or even 1:1 ventilation is an important limitation in severe hypoxemia respiratory failure that may reduce its utility in a COVID-19 crisis.

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Authors' contributions

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