

## LETTER

# Lower tidal volumes in Brazil, also in patients without acute respiratory distress syndrome?

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In a recent study, Azevedo and colleagues [1] show tidal volumes ( $V_T$ ) to be low in patients in Brazilian ICUs. By showing this, it is clear that ventilation practice in Brazil mirrors worldwide changes, at least with regard to  $V_T$  in patients with acute respiratory distress syndrome (ARDS) [2,3].

Efforts to implement protective ventilation have been largely restricted to patients with ARDS, which is understandable since its beneficial effects were convincingly demonstrated in these patients only. It is not unreasonable, however, to consider that lower  $V_T$  also benefits patients without ARDS [4], although it could also be argued that lower  $V_T$  strategies could harm patients without ARDS since it may increase sedation and maybe even paralysis needs, which are associated with increased

incidence of delirium, ventilator-induced diaphragm dysfunction, and longer duration of ventilation. Furthermore, the new ARDS definition categorizes patients as having mild, moderate and severe ARDS [5]. It has been questioned whether attempts to control  $V_T$  should be restricted to patients with moderate or severe ARDS. Consequently, the ICU community remains reluctant to use lower  $V_T$  in patients without ARDS and patients only having mild ARDS, and desires randomized controlled trial (RCT) evidence. When planning a RCT, one would like to know to what  $V_T$  the 'lower'  $V_T$  is to be compared.

We would like to know, therefore, what  $V_T$  was used in patients without ARDS, in patients with mild ARDS, and in patients with moderate or severe ARDS in Brazilian ICUs?

### Authors' response

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We would like to thank Drs Serpa-Neto and Schultz for their interest in our manuscript. We agree with the authors that there is now considerable evidence demonstrating the benefits of lung protective ventilation including lower tidal volumes in patients with ARDS [3] and even for ventilated patients without injured lungs [4]. However, this evidence is not currently translated into daily practice and our study provides additional data suggesting the common use of 'high' tidal volumes for patients with acute respiratory failure and also for the subgroup of those with ARDS [1,6]. We report (Table 1) data of tidal volumes per predicted body weight in the first day of mechanical ventilation of patients without ARDS, patients with mild ARDS (the previous definition of acute lung injury) and patients with moderate/severe

ARDS (the previous ARDS definition before the Berlin definitions). Median tidal volumes in all subgroups were above 6 ml/kg predicted body weight, without statistical difference between subgroups (Kruskal-Wallis test). Reasons for the lack of adherence to this strategy may include concerns about adverse effects of low tidal volumes, such as hypercapnia and increased need for sedatives, insufficient knowledge of the lung protective ventilation protocols and underrecognition of ARDS [7]. In conclusion, we believe more efforts are needed to identify the gaps that result in an incomplete translation of evidence to practice in order to guarantee implementation of the lung protective ventilation strategies on a daily basis.

#### Abbreviations

ARDS, acute respiratory distress syndrome; RCT, randomized controlled trial;  $V_T$ , tidal volume.

#### Competing interests

The authors declare that they have no competing interests.

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**Table 1. Data on tidal volumes on the first day of ventilatory support for patients without and with ARDS**

Parameter	Without ARDS	Mild ARDS	Moderate/severe ARDS
Tidal volume day 1 (ml/kg)	7.3 (6.1-8.5)	8.1 (6.4-9.5)	7.6 (6.5-8.9)

Data are expressed as median (P25-P75). ARDS, acute respiratory distress syndrome.

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Published: 12 June 2013

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doi:10.1186/cc12721

Cite this article as: Neto AS, Schultz MJ: Lower tidal volumes in Brazil, also in patients without acute respiratory distress syndrome? *Critical Care* 2013, **17**:436.