

**LETTER**

# Methodology of electrical impedance tomography-derived measures of regional lung ventilation

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See related research by Blankman et al., <http://ccforum.com/content/18/3/R95>

In the previous issue of *Critical Care*, we read with interest the article by Blankman and colleagues [1], who studied the performance of various electrical impedance tomography (EIT)-derived measures in detecting the 'best' positive end-expiratory pressure. The aim of that study is relevant; however, the article contains some methodological inaccuracies that need to be clarified.

One of the EIT measures used to characterize ventilation distribution is the center of ventilation (COV), first introduced in [2]. The authors refer appropriately to an article that contains a methodological figure illustrating how COV is derived from EIT ventilation images [3]. However, the authors incorrectly state that COV is the ratio between the EIT-derived ventilations in the dorsal and whole-image regions, provide a wrong equation 6, and attribute it to [3].

It is important for the understanding of EIT findings to appreciate that Figure one [1] does not show images of 'impedance' and the degree of 'aeration' (legend) but of tidal impedance differences representing regional tidal volumes. Regional ventilation delay (RVD) was analyzed not in [4], but in [5], where it was calculated in each pixel. A two-dimensional map was produced from these values, and standard deviation was calculated as an aggregate measure of ventilation homogeneity. Equation 3 regarding RVD calculation was used in [5], not in [6], where an additional multiplication by maximum impedance amplitude of the studied low-flow inflation was included. It is not clear which percentages of regional compliance are presented in Figure two B [1].

EIT is currently at an important stage of its development. Its clinical use might be fostered by implementation of accurate analysis tools.

#### Abbreviations

COV: Center of ventilation; EIT: Electrical impedance tomography; RVD: Regional ventilation delay.

#### Competing interests

IF has received congress fees, travel costs, and speaking fees from CareFusion (Höchberg, Germany), Swisstom (Landquart, Switzerland), and Dräger (Lübeck, Germany), respectively. TB has received congress fees, travel costs, and speaking fees from Dräger. NW has received speaking fees and research grants from Dräger.

Published online: 18 November 2014

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doi:10.1186/s13054-014-0635-5

**Cite this article as:** Frerichs et al.: Methodology of electrical impedance tomography-derived measures of regional lung ventilation. *Critical Care* 2014 **18**:635.