

LETTER

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# VCO<sub>2</sub> calorimetry: stop tossing stones, it's time for building!

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See related research by Stapel *et al.* <http://ccforum.biomedcentral.com/articles/10.1186/s13054-015-1087-2>

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We followed with interest the discussion [1, 2] fueled by the study of Stapel *et al.* [3] who reported fairly accurate assessment of energy expenditure (EE) in critically ill patients based on ventilator-derived carbon dioxide production (VCO<sub>2</sub>). The proposed technique is elegant and valid but has inherent limitations. It is applicable in patients who are in one way or another ventilator-dependent but not in spontaneously breathing yet oxygen-dependent subjects. We concur that VO<sub>2</sub> is the most relevant variable for EE measurement. However, the most accurate and precise estimation of EE in a critically ill population can only be obtained by sampling of inspired and expired oxygen/carbon dioxide concentrations and measuring expired gas flow. This is the core task of indirect calorimetry [4].

Initiative has been undertaken to develop a 'full option,' easy-to-use, accurate, and affordable indirect calorimeter. The project is supported by the European Society of Intensive Care Medicine and the European Society of Parenteral and Enteral Nutrition [5] and has actually reached Technology Readiness Level. It is probably only a matter of time before such a device will render all current mathematical uproar obsolete.

#### Abbreviations

EE: Energy expenditure; VCO<sub>2</sub>: Carbon dioxide production

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EDW designed the paper; EDW, PMH, and HDS participated in drafting the manuscript, and have read and approved the final version.

#### Authors' information

Not applicable.

#### Competing interests

The authors declare that they have no competing interests.

#### Consent for publication

Not appropriate.

#### Ethics approval and consent to participate

Not appropriate.

#### Clinical trial registration

Not appropriate.

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