

cially in the case of B-line assessments, as described by Lichtenstein and Mezière.³ Exploring the lateral and posterior regions aids in recognizing other important lung findings that may contribute to a failed SBT, and this is not necessarily time-consuming in trained hands.

Third, given the alterations in systolic and diastolic function intrinsically related to the critically ill patient and the fact that the echocardiographic data were collected at an excessively distant time for the subjects enrolled in this study, an actual cardiac mechanism could not be entirely ruled out in failed SBT cases.

The take-home message is that we, as practitioners, need to consider lung ultrasound in all the ways it contributes to deterioration, not only interstitial syndrome. Even more importantly, we need to point out the relevance of always integrating lung ultrasound into a multimodality approach and avoiding its use in isolation.

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The authors have disclosed no conflicts of interest.

DOI: 10.4187/respcare.06375

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In Reply:

We thank Dr Blanco and Dr Bello for their interest and comments on our manuscript.¹ Bedside lung ultrasound has become a primary tool in daily ICU management.

Indeed, it is our concern that, despite its diagnostic success and accuracy, lung ultrasound does not have the same remarkable impact when it comes to patient-centered outcomes. Laursen et al² elegantly showed that point-of-care ultrasonography was superior to standard diagnostic tests alone to establish the correct diagnosis in individuals presenting to the emergency department with respiratory impairment. However, no effects on mortality or length of hospital stay were observed, and there was a significant increase in downstream testing in the point-of-care ultrasonography group.

Certainly we do not rule out the usefulness of echocardiography and lung, diaphragm, and vein ultrasound in many critical and emergency scenarios. Nevertheless, withholding a safe test such as a spontaneous breathing trial up to vanishing of B-lines may be harmful or, at least, pointless. It must be highlighted that simple weaning, which is the most common scenario for an ordinary medical-surgical ICU, comprised 75.6% of our study population.¹

Regarding pleural ultrasound, a systematic review and meta-analysis was unable to identify any evidence to support or refute the use of pleural drainage to promote liberation from mechanical ventilation.³ Llamas-Álvarez et al⁴ raised applicability concerns of diaphragm ultrasound for weaning management after a large number of studies performed it in populations with higher likelihood of weaning failure.

Because de-aeration found in lower lung regions implies gravitational changes after a few days on mechanical ventilation,⁵ our simplified 4-zone approach seemed plausible for the purposes of our study. We did recognize that, based on our data, no inference could be made regarding either entire lung assessment or its integration with echocardiography. We cannot completely agree, however, with the argument that an intensivist could perform this approach accurately without consuming a great deal of time.

We fully agree with the compelling need to explore the full potential of lung ultrasound. We do, however, question whether additional diagnostic testing will truly improve the patient's prognosis, given their current presentation of signs and symptoms.

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The authors have disclosed no conflicts of interest.

DOI: 10.4187/respcare.06748

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Noninvasive Ventilation after Surgical Myocardial Revascularization for Left-Ventricular Dysfunction: A Hypothesis-Generating Study

To the Editor:

Noninvasive ventilation (NIV) affects both the pulmonary and the cardiovascular systems. Indeed, it restores lung volume by opening atelectatic areas, increases alveolar ventilation, and reduces the work of breathing. Moreover, NIV reduces left ventricle afterload and improves cardiac output.

Currently, high-quality evidence supports the use of NIV after cardiac surgery because it significantly improves the patient's oxygenation and decreases the need for endotracheal intubation without significant complications. However, data about improvement of cardiovascular function are scarce, and a mild reduction of the cardiac function due to NIV has been reported. Thus, a judicious application is wise, with constant hemodynamic monitoring in case of reduced left ventricular function. In this line,

we read with great interest the study by Marcondi et al,¹ which evaluated the acute effects of NIV on central-venous oxygen saturation (S_{cvO_2}) and blood lactate in subjects with left ventricular dysfunction during the early postoperative phase of coronary artery bypass graft surgery.¹ The authors found that NIV acutely improved S_{cvO_2} and decreased lactatemia, two known determinants of survival.² The authors are to be commended for their pioneering approach, nevertheless a few key aspects require comment to strengthen the message of the paper.

The timing of NIV implementation (ie, early after extubation) and the short duration of the application (ie, 1 h) raise clinical and physiological concerns. Similarly, there was no mention of the intra-operative course, data from hemodynamic monitoring, or concomitant medical or invasive therapy (eg, inotropic drugs, intra-aortic balloon pumping). Without these data, the interpretation of mere biochemical markers might be misleading.³ Moreover, the study sample is ample but poorly characterized, and stratification according to surgical technique might introduce further bias. Indeed, according to institutional practice, an on-pump technique might be a surrogate marker of more demanding revascularization, lower hemodynamic stability, less atherosclerotic burden, or surgeon expertise. A new target population has been clearly identified, but the inherent merits of NIV require further investigation.

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DOI: 10.4187/respcare.06510

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In Reply:

We are grateful for the thoughtful comments from the authors about the findings of our report.¹ Certainly, the well-balanced comments express the experience of this group related to the postoperative care of patients who underwent coronary artery bypass graft surgery.

Very few studies have addressed the correlation between tissue perfusion markers and the use of noninvasive ventilation (NIV). Despite the concerns surrounding the timing of NIV application and the short duration, data from our forthcoming studies have strengthened the findings now reported.² Regarding the intra-operative course, none of our subjects had mechanical circulatory support with an intra-aortic balloon pump, which is not part of our routine operative strategy. The stratification by technique, either on-pump or off-pump, has already been clarified in our report, where allocation to the technique was based on the surgeon's expertise and not on the severity and extension of the coronary disease.³

Ongoing work from our group will provide new information about the impact of the surgical procedure on the emergent and increasingly high-risk population of patients referred for coronary artery bypass surgery, especially those with COPD⁴ and left ventricular dysfunction, where current information is worryingly scarce. It is therefore important to emphasize the potential role of NIV as an additional strategy for improving the postoperative care of these high-risk pa-

tients, allowing early and safe mobilization after coronary artery bypass graft surgery.

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The authors have disclosed no conflicts of interest.

DOI: 10.4187/respcare.06693

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