Should Early Prone Positioning Be a Standard of Care in ARDS With Refractory Hypoxemia? Wrong Question

To the Editor:

Marini et al¹ offer a comprehensive and thorough review of the decades of research surrounding prone positioning in ARDS. The authors meticulously recite the literature and data to formulate an extensive list of the pros and cons surrounding prone positioning's utility in the management of ARDS. Although well-articulated and accurately presented, my main contention is that the authors recited studies and data that have already been presented in prior reviews and meta-analyses.²⁻¹⁰ Instead of summarizing and regurgitating what has already been discussed about prone positioning, I wish that the authors had used their forum to discuss what I believe to be most intriguing about this topic: the barriers to its widespread adoption. As the authors mention, PROSEVA definitively showed a significant survival benefit in a select subgroup of subjects with severe ARDS.¹¹ In fact, with a 50% reduction in mortality and a hazard ratio of 0.39, prone positioning for patients with severe ARDS may be more beneficial than any other previously studied intervention for this subgroup of patients.¹¹ The authors neglected to present LUNG-SAFE, which demonstrated that only 16.4% of severe ARDS patients are actually prone.⁷ As an exercise to highlight my point, try to imagine the uproar if only 16.4% of patients with hyperlipidemia refractory to lifestyle changes were prescribed statin therapy or if 16.4% of patients with diabetes and chronic kidney disease were prescribed angiotensin-converting enzyme inhibitors (ACE inhibitors); my guess is that these dismal rates would quickly be addressed. So some paramount questions continue to remain after reading the authors' review and they are: (1) In the appropriate patient, why is prone positioning so underutilized in ARDS management? (2) What studies can we as clinician researchers and educators perform to address this underutilization? (3) What interventions can be performed that address the barriers to widespread adoption and improve the utilization rate of prone positioning? (4) What studies can we perform to test the efficacy of these interventions? Needless to say, there exists an understudied and poorly elucidated discrepancy between prone

positioning's effectiveness and utilization. So, in addition to asking whether prone positioning should be the standard of care in ARDS, as proposed by Marini et al,¹ it is also imperative to include researching and addressing the reasons why prone positioning is so unpopular.⁷

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REFERENCES

1. Marini JJ, Josephs SA, Mechlín M, Hurford WE. Should early prone positioning be a standard of care in ARDS with refractory hypoxemia? *Respir Care* 2016;61(6):818-829.
2. Hu SL, He HL, Pan C, Liu AR, Liu SQ, Liu L, et al. The effect of prone positioning on mortality in patients with acute respiratory distress syndrome: a meta-analysis of randomized controlled trials. *Crit Care* 2014;18(3):R109.
3. Gattinoni L, Taccone P, Carlesso E, Marini JJ. Prone position in acute respiratory distress syndrome: rationale, indications, and limits. *Am J Respir Crit Care Med* 2013;188(11):1286-1293.
4. Dickinson S, Park PK, Napolitano LM. Prone-positioning therapy in ARDS. *Crit Care Clin* 2011;27(3):511-523.
5. Bloomfield R, Noble DW, Sudlow A. Prone position for acute respiratory failure in adults. *Cochrane Database Syst Rev* 2015;(11):CD008095.
6. Benson AB, Albert RK. Prone positioning for acute respiratory distress syndrome. *Clin Chest Med* 2014;35(4):743-752.
7. Bellani G, Laffey JG, Pham T, Fan E, Brochard L, Esteban A, et al. Epidemiology, patterns of care, and mortality for patients with acute respiratory distress syndrome in intensive care units in 50 countries. *JAMA* 2016;315(8):788-800.
8. Beitler JR, Shaefi S, Montesi SB, Devlin A, Loring SH, Talmor D, Malhotra A. Prone positioning reduces mortality from acute respiratory distress syndrome in the low tidal volume era: a meta-analysis. *Intensive Care Med* 2014;40(3):332-341.
9. Alsaghir AH, Martin CM. Effect of prone positioning in patients with acute respiratory distress syndrome: a meta-analysis. *Crit Care Med* 2008;36(2):603-609.
10. Mora-Arteaga JA, Bernal-Ramírez OJ, Rodríguez SJ. The effects of prone position ventilation in patients with acute respiratory distress syndrome: a systematic review and metaanalysis. *Med Intensiva* 2015;39(6):359-372.
11. Guérin C, Reignier J, Richard JC, Beuret P, Gacouin A, Boulain T, et al. Prone positioning in severe acute respiratory distress syndrome. *N Engl J Med* 2013;368(23):2159-2168.

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In reply:

In this nicely written and well-intentioned letter, Dr Chertoff seems to miss the intent and message of the "controversy" format. Clearly, we agree that prone positioning has a definite place and is currently underutilized. Those points of agreement were explicit in the pro half of the discussion.¹ (In fact, underutilization of this often valuable intervention was the primary motivation more than a dozen years ago for our publishing a physiologic rationale for proning and a detailed instruction set for undertaking it safely.²) But even strong advocates understand that proning should not be universally prescribed. Arguments for caution were set out in the opposing narrative of our controversy, which was deliberately polarized toward the negatives. In doing so, we think we made plain the reasons why some are reticent to undertake prone positioning.

We certainly *did* rehash the published literature; we are guilty as charged. The objective of the controversy exercise is to use the existing evidence base to support our assigned sides of the argument. The letter's author would prefer to ask interesting but entirely different rhetorical questions: Why not prone? What holds us back? One answer is that PROSEVA,³ although it convincingly aligns with the body of physiologic and clinical science on which it was based, was only one (as yet uncorroborated) positive randomized trial, and it enrolled a highly selected group of subjects. Those who are outside the early-severe-recrutable cohort may do no better or even worse when prone, judging from the subgroup analyses of 2 large Italian trials^{4,5} and the initial negative study by Guérin et al⁶ in 2004. Al-