

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

To the Editor:

Marini et al<sup>1</sup> 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.<sup>2-10</sup> 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.<sup>11</sup> 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.<sup>11</sup> The authors neglected to present LUNG-SAFE, which demonstrated that only 16.4% of severe ARDS patients are actually prone.<sup>7</sup> 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,<sup>1</sup> it is also imperative to include researching and addressing the reasons why prone positioning is so unpopular.<sup>7</sup>

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

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.<sup>1</sup> (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.<sup>2</sup>) 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,<sup>3</sup> 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<sup>4,5</sup> and the initial negative study by Guérin et al<sup>6</sup> in 2004. Al-

though we have our suspicions, there are no published scientific data that tell us exactly *what* impedes appropriate use of prone positioning, assuming that we now know which patients constitute that group who should benefit from it. The Lung-Safe survey results are certainly germane to the writer's questions of interest but quite tangential to ours.

In short, we understand and agree with Dr Chertoff's frustration with today's reluctance to adopt useful practices, but his lament seems misdirected. These controversy debates are never meant to settle the question or to reach tight consensus, simply to air the relevant issues.

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### STOP-BANG Questionnaire to Screen Sleep-Disordered Breathing for Football Players: Methodological Validity

*To the Editor:*

I read with great interest the article by Dobrosielski et al<sup>1</sup> on their risk assessment for sleep-disordered breathing (SDB) in 51 collegiate football players by using the STOP-BANG questionnaire and finger pulse oximetry device. The STOP-BANG questionnaire consists of the following 8 dichotomous (yes/no) items: snoring, tiredness, observed apnea, high blood pressure, body mass index, age, neck circumference, and male sex. Summing the score, ranging from 0 to 8, was used to specify high-risk and low-risk groups for SDB. The authors defined SDB as an apnea-hypopnea index (AHI) of  $\geq 5$ , and about half of the players were categorized in the high-risk group for SDB by the STOP-BANG questionnaire. There was no significant difference in the prevalence of SDB between the 2 groups, and I surmise that there is no advantage of using the STOP-BANG questionnaire to specify SDB patients in athletes. I have some concerns regarding their study.

First, I think that football players have a tendency toward a large neck circumference and high body mass index, which would not be related to obesity. The STOP-BANG questionnaire was prepared for the general population, and there is difficulty applying the STOP-BANG questionnaire to athletes with muscularity. Taken together, the screening ability of the STOP-BANG questionnaire for football players should be approached with caution.

Second, I question the definition of SDB as AHI of  $\geq 5$ . Chung et al<sup>2,3</sup> overviewed the STOP-BANG questionnaire to screen for obstructive sleep apnea. The authors found that the sensitivity of a STOP-BANG score of  $\geq 3$  to detect moderate to severe obstructive sleep apnea (AHI >15) and severe obstructive sleep apnea (AHI >30) was 93 and 100%, respectively. In addition, corresponding negative predictive values were 90 and 100%. The same authors also presented predictive performance using sensitivity, specificity, positive predictive value, and negative predictive value by citing another reference by the authors.<sup>2,4</sup> These reports showed that specificity and positive predictive value were not satisfactory when a STOP-BANG score of  $\geq 3$  was adopted as a cut-off point, but there is no information in

these references that AHI of  $\geq 5$  was selected for diagnosing or ruling out SDB. Because the prevalence of SDB among collegiate football players was about 8% by using the mild SDB criteria of an AHI of  $\geq 5$ , it seems that the SDB risk is relatively small as compared with the general population.

In summary, predictive performance differs by setting different cut-off points of STOP-BANG score and selecting different values of AHI as an accepted standard. There is a recent report on combination of the STOP-BANG questionnaire and a simple physiological apparatus for detecting obstructive sleep apnea,<sup>5</sup> and it should be considered for further study.

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### STOP-BANG Questionnaire to Screen Sleep-Disordered Breathing for Football Players: Methodological Validity—Reply

*In reply:*

On behalf of my co-authors, I thank Dr Kawada for comments on our recent pa-