mean also being compatible with clinically important effects, as the entire CI needs to be considered. Returning to the study by Colquhoun *et al.*, the CI suggests that the odds of postoperative pulmonary complications could plausibly be somewhere between 44% lower and up to 32% higher in one treatment group compared to the other. This is a difference that most clinicians would probably consider clinically relevant, and thus, the study does *not* demonstrate the lack of a clinically important association in either direction. The same is true in many other articles reporting nonsignificant study results. We believe it is important that authors and readers are aware that absence of evidence must not be confused with evidence of absence. A nonsignificant difference between treatment groups should be interpreted and reported in terms of insufficient evidence to reject the null hypothesis, but neither demonstrates the lack of a difference, nor the equivalence of treatments.

## Competing Interests

The authors declare no competing interests.

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The corresponding author of the original article referenced above has read the letter and does not have anything to add in a published reply.

DOI: 10.1097/ALN.0000000000003932

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*(Accepted for publication July 16, 2021. Published online first on September 8, 2021.)*

# One-lung Ventilation and Complications: Comment

## To the Editor:

With great interest we have read the article by Douglas A. Colquhoun *et al.*[1] regarding the effect of lower tidal volume ventilation on postoperative pulmonary complication in patients undergoing lung resection surgery with one-lung ventilation. There are two important points of concern.

First, an *a priori* test was used to calculate the sample size by using a two-sided Z test with unpooled variance, and the results showed that 1,315 unmatched cases in each group (total study N = 2,630) provided 90% power at an alpha = 0.05 to detect a 5% difference. However, the Z test was used to calculate the sample size, whereas the conditional logistic regression model was used to analyze the relationship of protective ventilation and pulmonary complication (main outcome), and only 762 patients matched were enrolled in the logistic regression. We think that the sample size should be calculated according to the main outcome and corresponding main statistical analysis method, rather than using a different statistical method. Therefore, the power (90%) based on the Z test and corresponding sample size may mislead readers to believe the conclusion too much. Although there are many multivariate power analysis methods, none of them is generally accepted and feasible; therefore, we suggest that the authors use univariate power analysis with logistic regression to provide accurate power.[2]

Second, although this study defined the criteria of one-lung protective ventilation as both tidal volumes equal to or less than 5 ml/kg predicted body weight and median positive end-expiratory pressure greater than or equal to 5 cm $H_2O$, the generally accepted definition of lung protective ventilation contained (1) tidal volume equal to or less than 5 ml/kg predicted body weight, (2) positive end-expiratory pressure greater than or equal to 5 cm $H_2O$, and (3) lung recruitment maneuvers.[3] In addition, recruitment maneuvers are an important component of lung protective ventilation to reduce postoperative pulmonary complications.

## Competing Interests

The authors declare no competing interests.

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The corresponding author of the original article referenced above has read the letter and does not have anything to add in a published reply.

DOI: 10.1097/ALN.0000000000003933

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*(Accepted for publication July 16, 2021. Published online first on September 8, 2021.)*

# One-lung Ventilation and Complications: Comment

To the Editor:

In their retrospective observational analysis of patients undergoing one-lung ventilation during thoracic surgery, Colquhoun *et al.* did not detect an independent association between a low tidal lung protection ventilation regimen and a composite of postoperative pulmonary complications.[1] However, there are two additional factors that may have an impact on this finding.

First, the right lung is larger than the left lung. Normally, the left lung receives a smaller tidal volume than the right lung. By using the same tidal volume for both the left and right lungs, it is possible that a tidal volume that is protective for the right lung may be excessive for the left lung. Without accounting for this difference, it is possible that the left lung did not accrue the full benefit of low tidal volume ventilation and might have had greater injury.

Second, respiratory rate is one of the key variables through which mechanical ventilation may injure a patient.[2–4] Reduction of respiratory rate and tidal volume ameliorates lung inflammation and injury. An increased respiratory rate may contribute to the development of dynamic hyperinflation and intrinsic positive end-expiratory pressure with multiple respiratory and hemodynamic consequences. It is well established that ventilator-induced lung injury is largely caused by the cyclic overstretch and/or collapse of alveoli. With a higher respiratory rate, there will be more such cycles and thus, more accumulated damage. Colquhoun's patients with protective ventilation had higher mean respiratory rates with larger SDs. It is possible that more patients in this group had sufficiently high respiratory rates which may have negated benefits that otherwise might have been seen with protective ventilation.

If there is a future study, it would be helpful to use different left and right lung tidal volumes, as well as ensure no differences in respiratory rate between protective ventilation and no protective ventilation patients. Such a study will require a large number of subjects and a very careful prospective study design.

### Competing Interests

The author declares no competing interests.

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The corresponding author of the original article referenced above has read the letter and does not have anything to add in a published reply.

DOI: 10.1097/ALN.0000000000003934

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