Intensive Care Med (2016) 42:1834
DOI 10.1007/s00134-016-4528-8

CORRESPONDENCE

Collinearity and multivariable analysis

Pierre-Géraud Claret*, Xavier Bobbia and Jean Emmanuel de La Coussaye

We read with interest the article by Martin-Loeches et al. entitled "Determinants of time to death in hospital in critically ill patients around the world" [1]. In this article, the authors aimed to investigate which factors influence time to death in hospital in critically ill patients worldwide. They found that time to death in hospital is longer in older patients, surgical patients, and patients with infection. We congratulate the authors for this valuable study.

To obtain these results, the authors performed a multivariable analysis using a multilevel multinomial logistic model. Among the explanatory variables considered in the model, we found SAPS II and age. However, SAPS II uses a point score based upon initial values of 17 variables included age or type of admission [2]. Unfortunately, collinearity occurs when there are high correlations among variables. In this situation, the coefficient estimates of the regression can change capriciously in response to small changes in the model or the data. Thus, the coefficient estimates are unstable and very difficult to interpret. I wonder if the authors can reassure us concerning a possible collinearity bias between SAPS II and age, type of admission, or the other explanatory variables used in the model?

Compliance with ethical standards

Conflicts of interest
On behalf of all authors, the corresponding author states that there is no conflict of interest.

Accepted: 23 August 2016
Published online: 26 September 2016

References

1. Martin-Loeches I, Wunderink RG, Nanchal R, Lefrant JY, Kapadia F, Sakr Y, Vincent JL, Investigators ICON (2016) Determinants of time to death in hospital in critically ill patients around the world. Intensive Care Med 42:1454–1460. doi:10.1007/s00134-016-4479-0
2. Le Gall JR, Lemeshow S, Saulnier F (1993) A new simplified acute physiology score (SAPS II) based on a European/North American multicenter study. JAMA 270:2957–2963

*Correspondence: pierre.geraud.claret@gmail.com
Department of Anesthesia Resuscitation Pain Emergency Medicine, Nîmes University Hospital, 1 place du Professeur Robert Debré, 30029 Nîmes, France

A response to these comments can be found at doi: 10.1007/s00134-016-4529-7.

Springer