Extravascular lung water and its association with weight, height, age, and gender: a study in intensive care unit patients.

With regard to large inter-individual variability of height, body weight (BW), and age, several hemodynamic parameters are adjusted for biometric data. This also applies to extravascular lung water (EVLW), which traditionally was indexed to actual BW (BW-act) resulting in EVLW-index (EVLWI; i.e., EVLWI-act). Since indexation to BW-act might inappropriately diminish EVLWI-act in obese patients, the indexation has been changed to predicted BW (BW-pred) resulting in EVLWI-pred. BW-pred is a weight estimation formula calculated from height and gender that has not been derived from population-based data. The aim of the study was to investigate the independent association of biometric data with EVLW. We analyzed a hemodynamic monitoring database including 3,691 transpulmonary thermodilution-derived EVLW measurements (234 consecutive patients; intensive care unit of a university hospital). We performed univariate and multivariate analyses regarding the association of biometric data with the first EVLW measurement and the mean EVLW value of each patient. In univariate analysis, the first EVLW significantly correlated with height ($r = 0.254$; $p< 0.001$), but neither with age nor BW-act. Similar findings were made in the analysis of the patients’ EVLW means of all measurements (“one point per
In multivariate analysis (primary endpoint), including BW-act, height, age, and gender, only height was independently associated with EVLW, with each centimeter of height increasing the first measurement of EVLW by 6.882 mL (p< 0.001) and mean EVLW by 6.727 mL (p< 0.001). Height is the only biometric parameter independently associated with the first and mean EVLW. In adult patients, EVLW should be indexed to height.