parameters at sepsis, we performed a multivariate logistic regression analysis. All variables that were found by univariate analysis to display a p<0.1 were included into the model. According to the univariate model, eight parameters were predictive of SAAKI: urine α1m levels 24-hours before SAAKI [odds ratio (OR): 1.16 (1.02-1.31), p=0.01], age [OR: 1.03 (0.99-1.07), p=0.05], Acute Physiology and Chronic Health Evaluation II (APACHE II) [OR: 1.24 (1.06-1.44), p=0.004] and Sequential Organ Failure Assessment (SOFA) scores calculated on sepsis onset [OR: 1.34 (0.97-1.85), p=0.07], serum creatinine [OR: 59.27 (4.15-845), p=0.002] and urea serum concentrations [OR: 1.03 (1.005-1.061), p=0.02] on sepsis, fluid balance on sepsis [OR: 1.01 (0.99-1.03), p=0.002] and the worst pH at the episode of sepsis [OR: 0.0002 (0.0-0.23), p=0.01]. However, by multiple stepwise regression analysis, only α1m, serum creatinine and APACHE II score emerged as the most powerful independent predictors. Adding α1m to creatinine and APACHE II improved the prediction significantly and increased AUC from 0.849 (95% CI 0.709-0.939) to 0.944 (95% CI 0.831-0.991) (Table 4).

### Discussion

In this study we sought to evaluate the predictive value of urine α1m levels on SAAKI development in critically ill patients by urine alpha1-microglobulin (α1m) levels measured 24-hours before AKI develops.

![Figure 1: Time course of alpha1-microglobulin (α1m) levels and renal function (Glomerular Filtration Rate, GFR) in septic critically ill patients with or without acute kidney injury (AKI) development.](image1.png)

![Figure 2: Receiver operator characteristic (ROC) curve for prediction of sepsis-associated acute kidney injury (AKI) in critically ill patients by urine alpha1-microglobulin (α1m) levels measured 24-hours before AKI develops.](image2.png)