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Title: Serum Potassium Levels during Admissions for Acute Decompensated Heart Failure: Identifying Possible Threats to Outcome

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Title: **Serum potassium levels during admissions for acute decompensated heart failure: identifying possible threats to outcome.**

Dear editor,

With interest we read the article of Tromp et al, *Serum Potassium Levels and Outcome in Acute Heart Failure (Data from the PROTECT and COACH Trials)*, published in the American Journal of Cardiology 2017 (1).

The authors of the article found that neither admission serum potassium levels nor potassium changes during admissions for acute decompensated heart failure (ADHF) are associated with long term (6 months) prognosis (1). The authors also state that there have been no previous studies on the subject in patients admitted for acute heart failure that included both reduced and preserved heart failure patients, but they probably were unaware of our study in 754 patients with acute decompensated heart failure with similar features that was published in 2015 (2). We, like the present study, found that admission potassium levels were associated with 180 day mortality in univariate analysis (HR 1.99, CI 1.48 – 2.69), and not in multivariate analysis. Serum potassium levels at discharge were also not predictive for outcome. However, potassium concentrations during hospital admissions are expected to decrease in those patients with increased RAAS activation either because of advanced heart failure or RAAS activation that occurs with diuretic therapy (3). Therefore it seems more interesting to study the changes and especially the decreases in serum potassium levels, since these may (by increased RAAS activation) also translate into a worse prognosis. Our study demonstrated that potassium changes between admission and discharge of  $> 15\%$  and  $> 0,7$  mmol/L are predictors of 180 day mortality, independent of renal function parameters and independent of a NT-proBNP reduction of  $\leq 30\%$  during hospitalization. In fact, a serum potassium reduction  $> 15\%$  was a strong predictor of 180 day mortality (adjusted multivariable model HR 2,06,

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