

## Relationships of middle molecules and Protein-bound solutes to Residual Kidney Function in patients receiving HD

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### BACKGROUND:

Residual kidney function (RKF) can contribute significantly to overall solute clearance in patients receiving haemodialysis (HD) and provides numerous clinical benefits. KDOQI guidelines suggest that Kt/V targets may be reduced in those with urea clearance (KRU) $>2\text{ml}/\text{min}/1.73\text{m}^2$ . Measurement of RKF requires cumbersome inter-dialytic urine collections. Use of serum biomarkers to estimate RKF could eliminate the need for these collections. We have previously reported an estimate of RKF based on Beta-2-microglobulin (B2M) and Beta-Trace Protein (BTP). We wished to determine whether inclusion of other biomarkers could improve this estimate. As part of this we investigated a series of candidate middle molecules and protein-bound solutes (PBS) to determine their relationship to RKF.

### METHODS:

We measured glomerular filtration rate GFR (mean of urea and creatinine clearance) from inter-dialytic urine collection. Pre-dialysis blood samples were collected to measure serum BTP, B2M, Tumour Associated Trypsin Inhibitor (TATI) and plasma PBS molecules in 100 patients receiving HD. The relationship of these serum biomarkers to GFR was determined using correlation analysis (Spearman's correlation coefficient).

### RESULTS:

Mean age of participants was  $67.3 \pm 15.6$  years. Sixty-one were male and 74 white. Median GFR was 3.0 (IQR 4.1) ml/min. Eleven were anuric. Median serum levels of the biomarkers and results of the correlation analyses with GFR are shown in the table. Levels of BTP, B2M, TATI and most PBS were negatively correlated with GFR. The strongest relationships were with BTP, B2M, TATI and Indole acetic acid.

### CONCLUSION:

There were strong negative correlations between measured GFR and BTP, B2M, TATI and Indole acetic acid. These markers may have a role as predictors of RKF in patients receiving HD.