Introduction:
Several new biomarkers have been introduced to improve early diagnosis of acute kidney injury (AKI). “NephroCheck” (NC; Astute Medical, USA) is a bedside test calculating “AKIRisk” (product of urinary concentration of the cell cycle arrest-markers TIMP-2 and IGFBP7). Several studies suggest the usefulness of NC in selected populations. However, the value of early routine measurement of NC is unclear.

Methods:
Therefore, we compared the prediction of a combined endpoint (CEP: death <60 days and/or requirement of renal replacement therapy RRT) by NC within 12h of ICU admission (NC1) and 24h later (NC2) with admission values of serum creatinine, BUN, cystatin C, urinary NGAL, APACHE II and SOFA (ROC-analysis). As a secondary endpoint we investigated the additional value of pathological measurements of NC1≥0.3 and/or NC2≥0.3 (NC+) in addition to AKI defined as KDIGO≥1 in a combined model (Kaplan-Meier-analysis). Statistics: SPSS 26.0.

Results:
106 patients of a general ICU (63±17 years; APACHE II 18±8; SOFA 6±4). ICU-mortality was 14/106 (13,2%), mortality <60d 33/106 (31,1%). De novo or acute on chronic (AoC) AKI according to KDIGO≥1: 65/106 (61,3%). Requirement of RRT 21/106 (19,8%). CEP 40/106 (37,3%). NC2 provided the largest ROC-AUC regarding the CEP (AUC=0.716; p<0.0001). Furthermore, cystatin C (AUC=0.715; p<0.001), BUN (AUC=0.700; p=0.001), creatinine (AUC=0.700; p=0.001), NC1 (AUC=0.659; p=0.008) and APACHE-II (AUC=0.651; p=0.012) significantly predicted the combined endpoint. Kaplan-Meier-analysis (p=0.024) demonstrated the lowest survival time for patients with both AKI and elevated NC1 and/or NC2 (AKI+/NC+: 36±4d) compared to AKI+/NC- (42±8d), AKI-/NC+ (49±4d) and AKI-/NC- 54±4d).

Conclusion:
1) NC1 and NC2 were significant predictors of the combined endpoint CEP. However, their predictive capacity was not superior to cystatin C on admission.
2) By contrast, combination of NC with AKI according to KDIGO improves prediction of the combined endpoint vs. KDIGO alone.