Newer biomarkers improve prediction of death in CKD patients - CanPreddict study outcomes

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BACKGROUND: Chronic kidney disease (CKD) patients have variable risk of death. General population risk prediction tools perform poorly in this patient group. Better prediction models are needed.

OBJECTIVE: To assess if the inclusion of newer biomarkers (NBM) improves risk prediction of death in the CKD cohort, over and above conventional clinical, demographic and laboratory predictors.

METHODS: Pan-Canadian prospective cohort study of 2544 referred CKD patients, from 25 centres. NBM tests at baseline included asymmetric dimethylarginine (ADMA), high sensitivity C-reactive protein (hsCRP), interleukin 6, pro-brain natriuretic peptide (NTproBNP), troponin I, transforming growth factor β1, cystatin C and fibroblast growth factor (FGF23).

Outcome: all-cause mortality within 3 years. We compared discrimination (C statistic) and classification (net reclassification index (NRI)) of proportional hazards models based on conventional vs. combination of conventional and NBM predictors.

RESULTS: Mean age of the cohort is 68yrs; median eGFR was 28ml/min/1.73m2; 62% were male. 15.5% patients died during 3-year follow-up. Models based on base, base+NBM and 'best' predictors are presented in the following figure:
After adjusting for base predictors, NTproBNP yields the highest improvement in mortality prediction (NRI=8.9;95%CI:3.3-17.4), followed by hsCRP (NRI=4.5;95%CI:1.3-9.6) and FGF23 (NRI=3.1;95%CI:0.4-11.4).

**CONCLUSIONS:** Inclusion of NBMs in risk prediction models significantly improves precision of death prediction in the cohort of CKD patients but needs to be validated in similar cohorts.