

## Urinary ACR and PCR are prognostically equivalent for ESRD: results from CANPREDDICT

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**BACKGROUND:** Proteinuria, a key measure of renal damage, is an important prognostic variable in patients with chronic kidney disease (CKD). Both albumin-to-creatinine ratio (ACR) and protein-to-creatinine ratio (PCR) are widely used to estimate proteinuria. No study has directly compared the ability of these measures to predict progression to end-stage renal disease (ESRD).

**METHODS:** We examined the ability of baseline measures of ACR and PCR to predict progression to ESRD over one year in 2544 patients participating in CanPREDDICT, a prospective cohort study of adult CKD patients with baseline eGFR of 15-45 mL/min/1.73m<sup>2</sup> recruited from 25 outpatient nephrology clinics across Canada. ACR and PCR were log transformed for analysis. We created a base Cox multivariable model (BCM) for prediction of RRT using standard clinical variables, and then compared differences in the performance (discrimination [c statistic, IDI] and reclassification [NRI]) of enriched Cox models (ECM) created by addition of either logACR or logPCR to the base model.

**RESULTS:** Both ACR and PCR were strong predictors of RRT at one year, and each remained highly significant after adjustment for BCM variables (age, sex, MDRD GFR, Hgb, serum albumin and phosphate). Both log ACR and log PCR improved BCM performance significantly and to the same degree (Table 1). Sensitivity analyses using alternate choices for BCM variables did not change these results.

**LIMITATIONS:** 1 year follow-up, single baseline measure, predominantly Caucasian cohort

**CONCLUSIONS:** ACR and PCR are equally and interchangeably valid predictors of progression to kidney failure at 1 year. This has implications for clinicians, who can now feel justified in choosing whichever test is most

appropriate for the specific renal diagnosis, without loss of prognostic information applicable to CKD in general.

Table 1: Multivariate performance PCR vs. ACR in predicting kidney failure in patients with stage 3-4 CKD

Variable	BCM + logPCR	BCM + logACR	P value (ACR vs PCR)
C-statistic	0.87 [0.83,0.89]	0.87 [0.83,0.89]	NS
$\Delta$ C-statistic (vs. BCM alone)	0.02 [0.01,0.04]	0.03 [0.01, 0.04]	NS
NRI	0.57 [0.38, 0.72]	0.59 [0.36, 0.69]	NS
IDI	0.04 [0.02, 0.06]	0.04 [0.02,0.06]	NS