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Predicting Risk of Cardiovascular Disease EVENTS (PREVENT) Equation for Adverse Cardio-Renal Outcomes in Chronic Kidney Disease Population: The KNOW-CKD study

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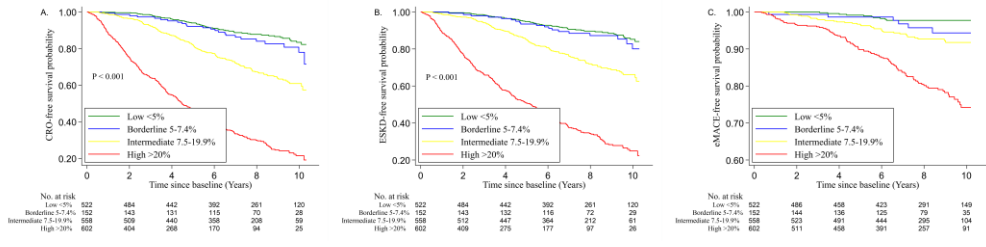
Objectives : Chronic kidney disease (CKD) considerably contributes to cardiovascular disease (CVD) and mortality globally. The American Heart Association's PREVENT (Predicting Risk of CVD Events) score, integrating cardiovascular and renal risk factors, requires validation across diverse populations. This study aimed to evaluate the predictive accuracy of the PREVENT, Pooled Cohort Equations (PCE), and SCORE2 scores for cardiorenal outcomes in a South Korean CKD cohort, KNOW-CKD.

Methods : The study involved 1,834 patients with CKD without previous CVD history from nine tertiary hospitals in South Korea. The exposures were the PREVENT, PCE, and SCORE2 scores. Two versions of the PREVENT score were used: PREVENT-CVD, which included heart failure, and PREVENT-ASCVD, focusing solely on atherosclerotic disease. The primary outcome was the incident cardiorenal composite, including end-stage kidney disease, ischemic stroke, myocardial infarction, heart failure admission, and all-cause mortality. Secondary outcomes included end-stage kidney disease and extended major cardiovascular events (a composite of ischemic stroke, myocardial infarction, heart failure admission, and all-cause death).

Results : The PREVENT-CVD score demonstrated superior predictive accuracy for cardiorenal outcomes (Harrell's C: 0.774, 95% CI: 0.756–0.793) compared to PREVENT-ASCVD (0.756, 95% CI: 0.737–0.775), PCE (0.615, 95% CI: 0.591–0.638), and SCORE2 (0.624, 95% CI: 0.601–0.646). The corresponding ΔC statistics were -0.018 (95% CI, -0.021 to -0.015; $P < 0.001$) for PREVENT-ASCVD, -0.160 (95% CI, -0.176 to -0.143; $P < 0.001$) for PCE, and -0.151 (95% CI, -0.166 to -0.135; $P < 0.001$) for SCORE2. This superiority was consistent for end-stage kidney disease but not for extended major cardiovascular events.

Conclusions : The PREVENT score effectively predicts cardiorenal outcomes in East Asian patients with CKD, outperforming other models. Further validation and refinement of these risk scores are necessary to improve the management of patients with CKD globally.

4_Fig1. KM curve.png



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