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Performance of new race-free eGFR equation in predicting complications in chronic kidney disease: from the KNOW-CKD study

Jaehee Koh[1], Sangmin Jo[1], Jihyun Yang[1], Kyu-Beck Lee[1], Hyang Kim[1], Kook-Hwan Oh[2], Young Youl Hyun[1]
[1]Department of Internal Medicine, Kangbuk Samsung Hospital, Korea, Republic of
[2]Department of Internal Medicine, Seoul National University College of Medicine, Korea, Republic of

Objectives: National Kidney Foundation (NKF) and the American Society of Nephrology (ASN) developed new race-free eGFR equations and recommend to use new equations in 2021. However, the clinical implication of new equations are not determined in Korean adults. The aim of this study is to evaluate the performance of new race-free eGFR equations in predicting complications in Korean chronic kidney disease (CKD) patients.

Methods: This study analyzed participants from the KNOW-CKD cohort. We selected anemia, hyperkalemia, acidosis, hyperphosphatemia and hyperparathyroidism as five complications of CKD. We determined cross-sectional associations between complications and four eGFR equations.

Results: All the associations between complications and eGFR values form four equations were similar. For example, C-statistics (95% CI) of the logistic model for anemia and eGFRs were 0.826 (0.806-0.845), 0.827 (0.806-0.846), 0.838 (0.819-0.857) and 0.839 (0.820-0.858) for 2009 CKD-EPI creatinine, 2021 CKD-EPI creatinine, 2012 CKD-EPI creatinine-cystatic C, and 2021 CKD-EPI creatinine-cystatin C.

Conclusions: The new race-free eGFR equations show similar performance to the existing equations in predicting complications in Korean patients with CKD.

Table 1. 4 eGFRs

	4 eGFRs			
	2009 CKD-EPI creatinine	2021 CKD-EPI creatinine	2012 CKD-EPI creatinine-cystatin C	2021 CKD-EPI creatinine-cystatin C
anemia				
OR (95% CI)	0.95 (0.95 to 0.96)	0.95 (0.95 to 0.96)	0.95 (0.95 to 0.96)	0.95 (0.95 to 0.96)
c-statistics	0.83 (0.81 to 0.85)	0.84 (0.82 to 0.86)	0.83 (0.81 to 0.85)	0.84 (0.82 to 0.86)
hyperkalemia				
OR (95% CI)	0.95 (0.94 to 0.96)	0.95 (0.94 to 0.96)	0.96 (0.95 to 0.97)	0.95 (0.94 to 0.96)
c-statistics	0.77 (0.74 to 0.81)	0.78 (0.75 to 0.82)	0.77 (0.74 to 0.81)	0.78 (0.75 to 0.82)
acidosis				
OR (95% CI)	0.95 (0.94 to 0.96)	0.94 (0.93 to 0.95)	0.95 (0.94 to 0.96)	0.94 (0.94 to 0.95)
c-statistics	0.80 (0.77 to 0.83)	0.81 (0.78 to 0.84)	0.80 (0.77 to 0.83)	0.81 (0.78 to 0.84)
hyperphosphatemia				
OR (95% CI)	0.97 (0.97 to 0.98)	0.97 (0.97 to 0.98)	0.97 (0.97 to 0.98)	0.97 (0.97 to 0.98)
c-statistics	0.72 (0.67 to 0.76)	0.72 (0.68 to 0.76)	0.72 (0.68 to 0.76)	0.72 (0.68 to 0.76)
hyperparathyroidism				
OR (95% CI)	0.89 (0.87 to 0.91)	0.88 (0.86 to 0.90)	0.9 (0.88 to 0.91)	0.88 (0.87 to 0.90)
c-statistics	0.90 (0.87 to 0.92)	0.90 (0.88 to 0.93)	0.9 (0.87 to 0.92)	0.90 (0.88 to 0.93)