

LETTER TO THE EDITOR

Discordance in Estimated GFR Among Hospitalized Older Adults



To the Editor:

Wang et al¹ evaluated discordances in the estimated glomerular filtration rate (eGFR) based on creatinine (eGFRcr), cystatin C (eGFRcys), or their combination (eGFRcr-cys). They used data from the 2021 CKD-EPI external validation cohort, which included 4,050 ambulatory participants (mean age of 57.0 years and mean measured GFR [mGFR] of 76.4 mL/min/1.73m²).² Defining eGFRdiff as a discordance between eGFRcys and eGFRcr larger than ± 15 mL/min/1.73m², the authors found that 21% of patients had a negative discordance (eGFRcr higher) and 10% had a positive discordance (eGFRcys higher). In both groups, eGFRcr-cys yielded the best performance relative to mGFR, according to bias and P30. The authors acknowledge that their study was limited by the lack of multimorbid or hospitalized patients.

Our research focuses on hospitalized older adults, who are characterized by high rates of multimorbidity, frailty, malnutrition, and polypharmacy.^{3,4} Given the unique patient population, we performed a similar analysis to Wang et al¹ for a previously described cohort of 106 hospitalized older adults with a mean age of 79.0 years and mGFR of 62.7 mL/min/1.73m² (Table 1).⁵ Using the 2009 eGFRcr equation (Danish standard), we found that 51% of patients had a negative discordance (67% when using 2021

eGFRcr), which is more than double that of Wang et al¹ and probably reflects differences in non-GFR determinants between cohorts. Like Wang et al,¹ we found that eGFRcr-cys outperformed both eGFRcr and eGFRcys in patients with a negative discordance.

These findings corroborate the results of Wang et al¹ and emphasize the potential clinical value of eGFRcr-cys. The authors note that cystatin C is already part of routine clinical practice in Sweden, and we agree that cystatin C should be routinely measured in patient populations with a high risk of eGFR discordance.

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Table 1. Patient Characteristics and Performance of GFR Estimating Equations Compared With mGFR in Hospitalized Older Adults, Stratified by Groups Based on eGFRdiff (eGFRcys–eGFRcr)

	Overall	eGFRdiff group (eGFRcys–eGFRcr)		
		Negative (< –15) (eGFRcr higher)	Concordant (–15 to 15)	Positive (≥ 15) (eGFRcys higher)
Patient characteristics				
Number	106 (100%)	51 (48%)	54 (51%)	1 (1%)
Age (y)	79.0 \pm 7.2	80.1 \pm 8.2	77.9 \pm 6.0	80.3 \pm NA
Female	61 (58%)	29 (57%)	32 (59%)	0 (0%)
BMI (kg/m ²)	27.0 \pm 6.5	26.2 \pm 7.2	27.7 \pm 5.8	31.4 \pm NA
mGFR (mL/min/1.73m ²)	62.7 \pm 19.8	65.8 \pm 18.7	59.3 \pm 20.3	85.9 \pm NA
Performance metrics				
eGFRcr				
Bias	–2.6 (–4.7 to 1.3)	–7.2 (–9.6 to –3.4)	2.6 (–0.6 to 4.0)	21.0 (NA)
P30	92 (86-96)	84 (75-94)	98 (94-100)	100 (NA)
eGFRcys				
Bias	11.2 (9.8-12.9)	16.6 (12.9-21.4)	8.3 (6.8-10.0)	–1.4 (NA)
P30	78 (70-86)	61 (47-75)	94 (87-100)	100 (NA)
eGFRcr-cys				
Bias	1.9 (0.8-3.5)	3.5 (0.9-6.4)	1.1 (–0.2 to 3.2)	0.9 (NA)
P30	96 (93-99)	94 (86-100)	98 (94-100)	100 (NA)

Note: Patient characteristics are presented as N (%) or mean \pm standard deviation. Performance metrics are presented with 95% confidence intervals calculated by bootstrapping with 10,000 iterations. Bias is defined as the median difference between mGFR and eGFR in units of mL/min/1.73m², where negative values indicate overestimation and positive values indicate underestimation. P30 is defined as the percent of eGFR values within 30% of mGFR, where values closer to 100 indicate better performance. The mGFR was determined by plasma clearance of 99mTc-DTPA with 4-point or 5-point sampling.

Abbreviations: BMI, body mass index; cr, creatinine; cys, cystatin C; eGFR, estimated glomerular filtration rate; mGFR, measured glomerular filtration rate; NA, not applicable.

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