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Abstract Topic : Acute Kidney Injury

Performance of the SOFA-2 score in assessing mortality risk among patients with acute kidney injury receiving continuous kidney replacement therapy: Results from the RENERGY study

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Objectives : The Sequential Organ Failure Assessment–2 (SOFA-2) score was developed to update organ dysfunction assessment for contemporary intensive care unit (ICU) practice. However, its prognostic performance in patients with acute kidney injury (AKI) requiring continuous kidney replacement therapy (CKRT) remains unclear. We aimed to evaluate the prognostic performance of the SOFA-2 score for mortality in critically ill patients with acute kidney injury requiring continuous kidney replacement therapy.

Methods : This multicenter retrospective cohort study included adult patients who received CKRT for AKI at seven tertiary hospitals between 2005 and 2021. SOFA-2, SOFA, and Acute Physiology and Chronic Health Evaluation-II (APACHE-II) scores were calculated at the time of CKRT initiation. The primary outcome was 28-day mortality. Secondary outcomes included 90-day mortality, CKRT duration, KRT dependence at discharge, and lengths of ICU and hospital stays.

Results : A total of 3,557 patients were included. The 28- and 90-day mortality occurred in 2,051 (57.7%) and 2,301 (64.7%) patients, respectively. Higher SOFA-2 categories were independently associated with increased mortality in multivariable Cox models. For 28-day mortality, the hazard ratios were 1.66 (95% CI, 1.34–2.05) and 3.17 (95% CI, 2.57–3.90) for scores of 8–11 and ≥ 12 , respectively, compared with scores of 0–7, with similar associations observed for 90-day mortality. SOFA-2 scores were also associated with mortality when analyzed as a continuous variable. The C-statistics for 28-day mortality were 0.634 (95% CI, 0.620–0.647) for SOFA-2, 0.609 for SOFA, and 0.633 for APACHE-II, with similar results for 90-day mortality.

Conclusions : In critically ill patients with AKI requiring CKRT, the SOFA-2 score showed better mortality risk prediction compared with the original SOFA score.



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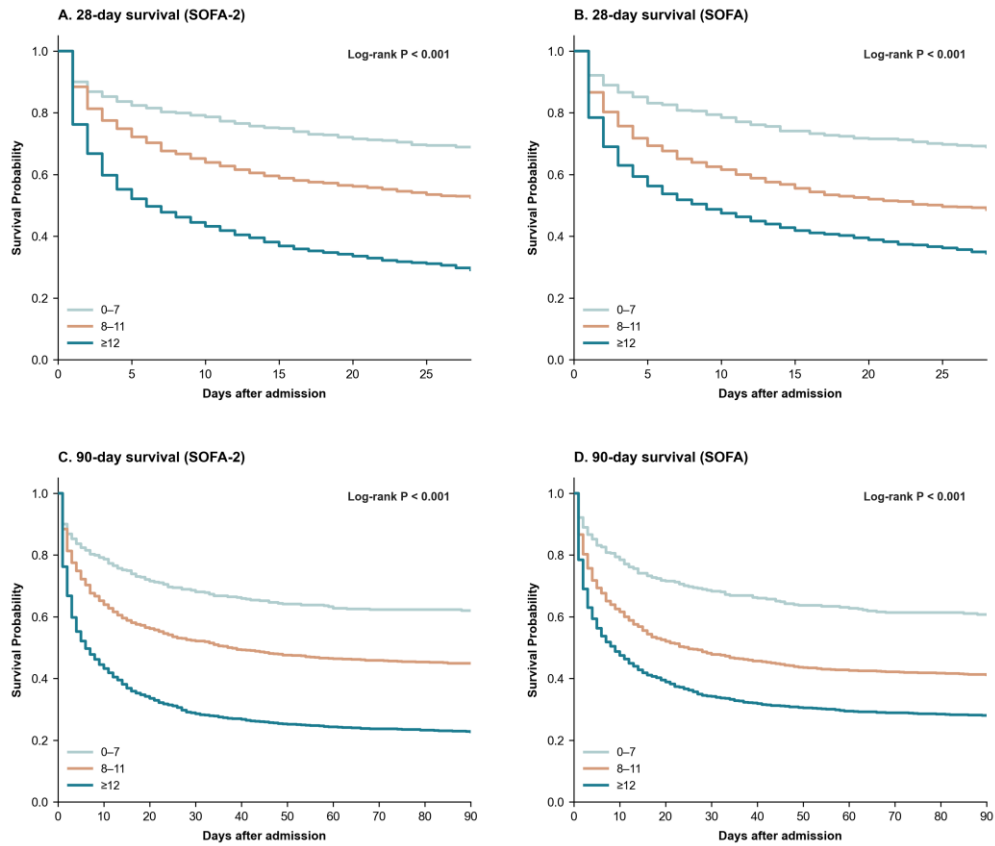


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Predictive performance of SOFA, SOFA-2, and APACHE-II scores for 28- and 90-day mortality (Harrell's C-statistic and ΔC relative to SOFA)			
	C-statistic (95% CI)	ΔC (95% CI)	P
28-day mortality			
SOFA	0.609 (0.596–0.621)	–	–
SOFA-2	0.634 (0.621–0.647)	0.025 (0.015–0.037)	<0.001
APACHE-II	0.634 (0.622–0.646)	0.025 (0.010–0.040)	0.002
90-day mortality			
SOFA	0.605 (0.593–0.617)	–	–
SOFA-2	0.631 (0.618–0.643)	0.026 (0.016–0.036)	<0.001
APACHE-II	0.627 (0.615–0.639)	0.022 (0.007–0.036)	0.002

Note: ΔC denotes the change in Harrell's C-statistic compared with SOFA

Abbreviations: SOFA, Sequential Organ Failure Assessment; APACHE-II, Acute Physiology and Chronic Health Evaluation-II