Predicting Mortality after Severe Acute Kidney Injury: A Step Forward but Not Close to the Finish Line

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Acute kidney injury (AKI) is a worldwide epidemic that results in 2 million deaths per year along with imposing significant economic burden. Several reports have highlighted a higher prevalence of acute renal failure associated with critical illness, with a significant proportion of patients needing acute renal replacement therapy (RRT) \cite{1}. Severe AKI requiring RRT is associated with higher rates of in-hospital mortality and increased risk of chronic dialysis among survivors. There is lack of specific therapy for AKI, and no differences in survival with existing RRT modalities (continuous vs. intermittent) or with increasing intensity of treatment have been demonstrated. Hence, there is a need to identify those who are at a high risk for developing AKI. Kiers et al. \cite{2} reported that predictive models by Thakar and colleagues offer the best discriminative value to predict the development of AKI after cardiothoracic surgery and are applicable for all patients undergoing cardiac surgery.

In those with established AKI, mortality prediction models are valuable for risk stratification, clinical decision-making, comparing quality of care and facilitating AKI clinical trial enrollment. Several studies have studied the risk factors for mortality after AKI. The Stuivenberg Hospital Acute Renal Failure and Liano scores were initially derived from a single center, and later tested in a multi-center cohort in which the Stuivenberg Hospital Acute Renal Failure II score performed better than the Liano score \cite{3, 4}. The Vellore score was developed using both community and hospital AKI cohorts in the tropics. Two other studies have derived risk scores for in-hospital mortality using a multi-centric database, and inclusion criteria were based on serum creatinine measurements \cite{5}. Demirjian et al. \cite{6} developed an AKI-specific risk prediction model for 60-day mortality in patients supported by RRT using the VA/NIH acute renal failure trial network database.

In this issue of the Journal, Ohnuma et al. \cite{7} compared the ability of various mortality prediction models in a retrospective, multi-centric cohort of 343 Japanese patients with AKI requiring continuous renal replacement therapy in 14 ICUs captured between January and December 2010. Overall, the mortality rate of this cohort (58.6\%) was slightly higher than other established scoring systems. All included scores had an area under the re-
ceivers of the outcomes in those with AKI using such data would reflect real-world data and might be more generalizable.

It is unequivocal that there is a substantial need for strategies to prevent the development of AKI, to hasten the kidney function recovery and to mitigate the adverse outcomes following AKI. Although predictive models cannot replace clinical acumen, they act in conjunction and aid risk stratification. While we hope that a combination will facilitate novel diagnostic tools and interventions in AKI, additional studies are warranted to accurately predict long-term outcomes in those with severe AKI.

**Acknowledgements/Grant Support**

S.D.N. is supported by R01DK101500. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH. The authors have no relevant financial interest in the study.

**Disclosure Statement**

The authors have no relevant financial interests to the contents of this manuscript.
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