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RRT-MORTALITY SCORE AS A TOOL FOR PREDICTING DEATH IN SEVERE ACUTE KIDNEY INJURY PATIENTS WHO RECEIVING RENAL REPLACEMENT THERAPY: PRELIMINARY RESULT FROM SEA-RRT REGISTRY STUDY

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Objectives: To create a simplified clinical score to predict mortality within 28 day of severe AKI patients who receiving RRT in ICU.

Methods: A prospective multicenter cohort, involving the adult patients who admitted to ICU with severe AKI in 14 centers across Thailand during 2019 to 2021. Apart from descriptive analysis, multivariable logistic regression was used to perform estimated coefficients of predictive models. A predicting score was derived from the regression equation with Receiver-Operating Characteristic (ROC) analysis for evaluating diagnostic test and predictive models. Internal validation was obtained with bootstrapping method.

Results: 761 (65 %) from all 1,167 cases had received RRT. Among those of RRT, 372 (49 %) cases ended up with death. The simplified point of each mortality predictor including underlying malignancy =2, low Glasgow coma score = 2, main cause of AKI (ischemic =3, multifactorial =3, sepsis = 7), liver disease contributing AKI = 2, any complication of RRT= 4, urine volume (oliguria =1, anuria = 2). The optimism-corrected performance (area under ROC curve) of the score was 0.72 (0.69, 0.76). At the lower cutoff value of 5; the sensitivity, specificity, and negative predictive value were 0.97, 0.21, and 0.89, respectively. And at the upper cutoff value of 10; the sensitivity, specificity, and positive predictive value were 0.57, 0.77, and 0.70, respectively.

Conclusions: The RRT-MORTALITY score can be considered as a clinical score to predict death outcome in severe AKI patients who receiving RRT. The simplicity and feasibility of the score will increase the possibility of use especially in resource limited settings. However, external validation must be needed before wide use.

Figure 1. Development & Internal Validation Flowchart

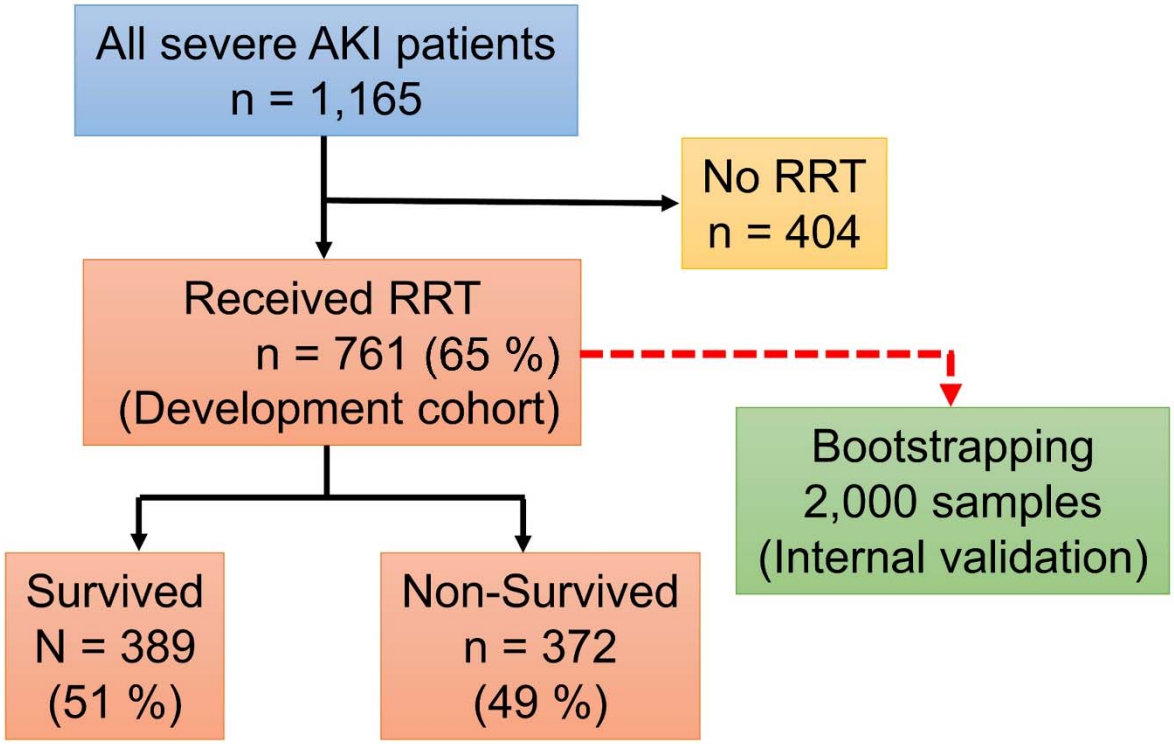

Figure 2. Creating the RRT-Mortality Score (n=761)

Predictors (6)	B	S.E.	Adjusted OR[b] (95% CI)	P	Simplified scores[#]
Underlying malignancy	0.71	0.31	2.03 (1.10, 3.74)	0.023	2
Glasgow coma score (ICU admission) < 10	0.67	0.18	1.96 (1.38, 2.79)	< 0.001	2
Main cause of AKI[c]					
Sepsis	2.24	0.54	9.42 (3.29, 26.97)	< 0.001	7
Pre-renal/Ischemic	0.99	0.54	2.70 (0.94, 7.79)	0.066	3
Multifactorial	0.90	0.54	2.47 (0.86, 7.10)	0.094	3
Liver disease contributing AKI	0.54	0.21	1.71 (1.13, 2.62)	0.011	2
Total urine volume at enrollment, L/d					
0.2-0.5	0.27	0.24	1.31 (0.83, 2.08)	0.244	1
< 0.2	0.73	0.19	2.07 (1.42, 3.02)	< 0.001	2
Any complication of RRT[d]	1.07	0.18	2.92 (2.04, 4.20)	< 0.001	4
Constant	-2.78	0.54		< 0.001	

[#]Simplified scores according to **Schneeweiss's score system**
[a]Pooled data from multiple imputations (n=10) for the missing candidate variables
[b]Adjusted for co-variates; All of the variance inflation factors (VIFs) < 1.5 and tolerance coefficients > 0.75 in multicollinearity test among all co-variates
[c]Nephrotoxic agents or contributing medication was the comparator factor (simplified score =0)
[d]Any complication of RRT including IHD/CRRT/SLED complications such as catheter-related thrombosis, catheter-related infection, dialysis disequilibrium syndrome, bleeding, hemodynamic instability, arrhythmia, catheter-related injury and PD complications such as peritonitis, positive culture, leakage, bleeding, malposition, hypokalemia, hypophosphatemia, hyperglycemia.