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## **Mortality Predictors in Critically Ill Patients after Continuous Renal Replacement Therapy-Requiring Acute Kidney Injury**

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**Objectives:** Studies are needed to identify patients who will most likely benefit from CRRT to guide therapeutic decisions, optimize limited resources, and provide realistic prognostic information. This study aims to determine mortality rates and mortality predictors among ICU patients with AKI requiring CRRT.

**Methods:** This a retrospective, multi-center observational study of 414 ICU patients with AKI from June 2017-September 2018 who received CRRT. Primary outcomes are in-hospital and 90-day mortality. Logistic regression was used to explore the effects of variables on 90-day mortality. Kaplan-Meier survival analysis compared survival among groups classified based on degree of fluid overload (FO) and SOFA score.

**Results:** In-hospital mortality rate was 57.2%. Ninety day mortality rate was 58.5%. Lower creatinine and pH were significant predictors of in-hospital (creatinine  $p$  0.000; pH  $p$  0.007) and 90-day mortality (creatinine  $p$  0.000; pH  $p$  0.010). A 1-unit increase in SOFA score was associated with increased risk of in-hospital (OR 1.138,  $p$  0.000) and 90-day mortality (OR 1.130,  $p$  0.000). FO was also significantly associated with increased risk of in-hospital (OR 1.984,  $p$  0.001) and 90-day mortality (OR 2.155,  $p$  0.000).

In patients without FO or  $FO \leq 10\%$ , a high SOFA score was associated with increased OR for in hospital (1.849,  $p$  0.021 and 2.920,  $p$  0.001, respectively) and 90-day mortality (1.789,  $p$  0.029 and 3.052,  $p$  0.001, respectively). Mortality risk was not statistically different for  $FO \leq 10\%$  patients with low SOFA score. Highest mortality rates were in  $FO > 10\%$  patients (in hospital: 82.1%,  $p$  .000; 90-day: 85.1%,  $p$  .000). Kaplan-Meier survival curve showed that patients with  $FO > 10\%$  had the lowest survival regardless of SOFA score.

**Conclusions:** Creatinine, pH, SOFA score and FO are significant predictors of mortality. In patients without FO and  $FO \leq 10\%$ , a lower SOFA score connotes higher survival.  $FO > 10\%$  patients have worse outcomes regardless of SOFA score hence strict fluid monitoring is essential.

Table 1. Adjusted Odds Ratio for 90-day Mortality.

	Serum creatinine		pH		SOFA score		Fluid overload	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Model 1 <sup>a</sup>	0.755 (0.683- 0.835)	0.000	0.119 (0.024- 0.595)	0.010	1.130 (1.060- 1.204)	0.000	2.155 (1.437- 3.233)	0.000
Model 2 <sup>b</sup>	0.741 (0.668- 0.822)	0.000	0.120 (0.024- 0.602)	0.010	1.129 (1.059- 1.203)	0.000	2.204 (1.464- 3.318)	0.000
Model 3 <sup>c</sup>	0.743 (0.666- 0.828)	0.000	0.089 (0.015- 0.519)	0.007	1.828 (1.186- 2.817)	0.006	1.928 (1.237- 3.005)	0.004
Model 4 <sup>d</sup>	0.762 (0.683- 0.850)	0.000	0.140 (0.023- 0.845)	0.032	1.754 (1.124- 2.736)	0.013	1.722 (1.094- 2.710)	0.019

<sup>a</sup>Model 1: logistic regression analysis of variable and mortality

<sup>b</sup>Model 2: Model 1 with adjustments for age and gender.

<sup>c</sup>Model 3: Model 1 with adjustments for age, gender, and the other variables.

<sup>d</sup>Model 4: Model 1 with adjustments for age, gender, the other variables, diabetes mellitus, hypertension, and sepsis as cause of AKI.

SOFA, sequential organ failure assessment; OR, odds ratio; CI, confidence interval; AKI, acute kidney injury.

Figure 1. Kaplan-Meier survival curve for 90-day Mortality.

