

## Association of sepsis treatment of adult patients in the intensive care unit on severity index (APACHE) scores and clinical outcomes

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### Introduction:

Sepsis affects over 26 million people worldwide each year causing death every 3 to 4 seconds. It is considered as the top cause of morbidity and mortality in clinical settings. Severity score system is used to predict the mortality in hospitalized critically ill patients. The most common used scoring system is The Acute Physiology and Chronic Health Evaluation (APACHE). This study aimed to determine the Association of sepsis treatment in adult's ICU patients on severity index APACHE scores and their predictors or clinical outcomes.

### Objectives:

A retrospective study was conducted in critically ill adult patients with sepsis in the ICU of Sungai Boluh Hospital. Data were retrieved from the patients' records. The univariate and multivariate linear regression analyses with cox regression modeling were performed to compute the adjusted Association of sepsis treatment on ICU-mortality. The result showed that out of 228 ICU adults patients, 193 (84.6%) died. In univariate linear regression, there were 28 significant predictors of severity APACHE scores variation. Among 28 variables the most two contributed variables which were shared in explanation of the variation of increment of APACHE score (mechanical ventilation support and renal failure development)  $R^2=0.029$  and B coefficient=13.717 (95% CI: 3.366-24.067;  $P=0.010$ ),  $R^2=0.205$  and B coefficient=9.285 (95% CI: 6.890-11.680;  $P=0.000$ ), respectively.

### Results:

However, for the multivariate linear regression model, only 2 variables were more likely associated as predictors for increment of APACHE scores (septic shock diagnosis and CRRT supported patients) with  $R^2=0.779$ , B coefficient=5.344 (95% CI: 1.077-9.610;  $P=0.016$ ) and B coefficient=4.124 (95% CI: 1.078-7.171;  $P=0.009$ ), respectively. In the univariate cox regression, receiving mechanical ventilation (MV) for 1-3 days has risk of death HR 40.524 (95% CI 5.383-305.076,  $P=0.000$ ), and in MV for 4-6 days HR 10.025, 95% (CI 1.364-73.695,  $P=.024$ ) respectively. Additionally, the sepsis induced organ failures (4 organs) has risk of death HR 1.820, 95% (CI 1.067-3.106,  $P=0.028$ ). DVT develop Disease HR 1.676, 95% (CI 1.225-2.294,  $P=0.001$ ).

### Conclusion:

Intermittent dialysis HR 0.340, 95% (CI.228-0.507,  $P=0.000$ ). While in the multivariate cox regression, the organ dysfunction (4 organs) was the protective factor for mortality with HR 0.128, 95% (CI: 0.025-0.654;  $P=0.014$ ) as well as the intermittent dialysis HR 0.027, 95% (CI: 0.002-0.321,  $P=0.004$ ), respectively. Regarding the survival estimation

Kaplan-Meier, the intermittent dialysis was significantly associated with the survival with the Log Rank (Mantel-Cox)  $\chi^2=27.831$  (95% CI: 13.172-18.828;  $P=0.000$ ). Additionally, patients who received DVT treatment was significantly associated with the survival with the Log Rank (Mantel-Cox)  $\chi^2=12.285$  (95% CI: 8.197-11.803;  $P=0.000$ ). The septic shock and CRRT therapy were predictors for increasing severity index scores. However, the MV received for 1-6 days and sepsis induced four organs failure were risk factors for ICU mortality.