

INTISARI

Latar belakang : Penggunaan ventilator mekanik jangka panjang akan menambah beban biaya dan meningkatkan morbiditas dan mortalitas pada pasien. Batasan terminologi *Longterm Mechanical ventilation* (LTMV) di ICU masih belum disepakati. ICD-10 menggunakan batasan penggunaan ventilasi mekanik ≥ 96 jam sebagai LTMV. Memprediksi kejadian LTMV di ICU memberi manfaat dalam menekan angka mortalitas dan morbiditas serta efisiensi biaya. Sayangnya, hingga saat ini belum ada sistem skor yang digunakan sebagai pedoman dalam memprediksi kejadian LTMV di ICU, khususnya di RSUP Dr. Sardjito Yogyakarta. Tujuh variabel prediktor kejadian LTMV diantaranya adalah faktor demografis, analisa gas darah arteri, kondisi pernapasan, faktor kardiovaskular, fungsi ginjal, faktor pembedahan dan skor ICU. *Simplified Acute Physiology Score* (SAPS) II terdiri dari 15 variabel yaitu 12 variabel fisiologis, variabel usia, variabel jenis admisi dan variabel 3 penyakit penyerta di mana variabel-variabel tersebut diukur dalam 24 jam pertama admisi di ICU. SAPS II dinilai merupakan skoring yang paling akurat memperkirakan risiko mortalitas di ICU dan khususnya pada tulisan ini diharapkan juga mampu mempresentasikan prediksi LTMV di ICU.

Tujuan : Melakukan uji validasi SAPS II untuk memprediksi LTMV di ICU RSUP Dr. Sardjito Yogyakarta.

Metode : Penelitian ini menggunakan rancangan penelitian kohort retrospektif observasional. Validasi skor dinilai dari kemampuan diskriminasi dan kalibrasi. Kemampuan diskriminasi dievaluasi dengan *Receiver Operating Characteristics* (ROC) curves. *Area Under The Curve* (AUC atau C-statistic) digunakan untuk membandingkan diskriminasi model. Nilai $> 0,7$ dianggap *acceptable* dan nilai $> 0,8$ adalah baik. Kalibrasi menggunakan tes kesesuaian atau kecocokan (*goodness of fit test*) yaitu uji Hosmer–Lemeshow C test. Skor dikatakan mempunyai kalibrasi yang baik apabila nilai $p > 0,05$ pada Hosmer-Lemeshow test. Titik potong ditentukan berdasarkan nilai sensitivitas dan spesifisitas tiap titik potong.

Hasil : Telah dilakukan penelitian Di ICU RS Sardjito Yogyakarta tahun 2020, sebanyak 618 pasien ICU, memiliki rerata skor SAPS II $39,01 \pm 19,07$. Terdapat 175 (28,8%) pasien yang mengalami LTMV. Berdasarkan hasil analisis, didapatkan kekuatan diskriminasi AUC ROC sebesar 72,7% ($p=0,001$) tergolong kategori sedang, dengan kualitas kalibrasi yang kurang baik ($p < 0,01$) pada Hosmer–Lemeshow test. Dari metode Youden Index didapatkan skor SAPS $\geq 41,5$ memiliki kemampuan memprediksi kejadian LTMV dengan sensitivitas sebesar 61,7% dan spesifisitas 76,1%.

Kesimpulan : Pasien ICU RSUP dr Sardjito yang memiliki skor SAPS II $\geq 41,5$ diprediksi mengalami LTMV dengan nilai sensitifitas sebesar 61,7% dan skor SAPS II memiliki validitas dalam memprediksi LTMV pada pasien ICU RSUP dr Sardjito Yogyakarta dengan kekuatan diskriminasi kategori sedang (AUC 72,7% ($p=0,001$)) dan kualitas kalibrasi yang kurang baik ($p < 0,001$).

Kata kunci : ICU, SAPS II, LTMV, Validasi

ABSTRACT

Background : Long-term use of ventilators will increase the burden and increase morbidity and mortality in patients. The Longterm Mechanical ventilation (LTMV) in the ICU has not yet been agreed upon. The ICD-10 uses the limitation of ≥ 96 hours of mechanical ventilation as LTMV. Predicting the incidence of LTMV in the ICU provides benefits in reducing mortality and morbidity rates as well as cost efficiency. Unfortunately, until now there is no scoring system that is used as a guide in predicting the incidence of LTMV in the ICU, especially at Dr. Sardjito Yogyakarta. The seven predictor variables for LTMV include demographic factors, arterial blood gas analysis, respiratory conditions, cardiovascular factors, kidney function, surgical factors and ICU scores. The Simplified Acute Physiology Score (SAPS) II consisted of 15 variables, namely 12 physiological variables, age variable, admission type variable and 3 comorbidities variables where these variables were measured in the first 24 hours of admission to the ICU. SAPS II is considered as the most accurate score predicting mortality in the ICU and especially in this paper is expected to also be able to present the prediction of LTMV in the ICU.

Purpose : to perform the SAPS II validation test to predict LTMV in the ICU Dr. Sardjito Yogyakarta.

Methods : This research used an observational retrospective cohort study design. Validation scores were assessed from the ability to discriminate and calibrate. Discrimination ability was evaluated by Receiver Operating Characteristics (ROC) curves. Area Under the Curve (AUC or C-statistic) was used to compare the discrimination of model. Score with value of > 0.7 was considered acceptable and value of > 0.8 was good. Calibration was done with a suitability test (goodness of fit test), namely the Hosmer–Lemeshow C test. The score was said to have a good calibration if the p had value of > 0.05 on the Hosmer–Lemeshow test. The cut-off point was determined based on the sensitivity and specificity of each cut-off point.

Result : A study was carried out at the ICU of Sardjito Hospital Yogyakarta in 2020, as many as 618 ICU patients had an average SAPS II score of 39.01 ± 19.07 . There were 175 (28.8%) patients who had LTMV. Based on the analysis results, it was found that the AUC ROC discrimination power was 72.7% ($p=0.001$) belonging to the moderate category, with poor calibration quality ($p < 0.01$) on the Hosmer–Lemeshow test. From the Youden Index method, it was found that a SAPS score ≥ 41.5 had the ability to predict LTMV events with a sensitivity of 61.7% and a specificity of 76.1%.

Conclusion : ICU patients who have a SAPS II score ≥ 41.5 are predicted to have LTMV with a sensitivity value of 61.7% and the SAPS II score has validity in predicting LTMV in ICU patients at Yogyakarta Dr. Sardjito Hospital with moderate discrimination power (AUC 72.7% ($p = 0.001$)) and poor calibration quality ($p < 0.001$).

Keywords : ICU, SAPS II, LTMV, score validation