

Latar belakang : Lama perawatan di ICU dapat menambah beban biaya dan meningkatkan morbiditas dan mortalitas pada pasien. Batasan *Prolonged Length of Stay* (PLOS) di ICU masih belum disepakati, namun beberapa referensi menggunakan batasan $\geq 7 - 30$ hari. Memprediksi PLOS di ICU memberi banyak manfaat dalam hal efisiensi biaya dan kualitas pelayanan, diantaranya membantu merencanakan kebutuhan tempat tidur dan staf, mengidentifikasi secara dini pasien – pasien yang potensial dirawat lama sehingga dapat meningkatkan kualitas pelayanan yang diberikan, serta memungkinkan audit komparatif atau *benchmarking* antar rumah sakit. Memprediksi PLOS di ICU dapat menggunakan *sistem risk prediction*, seperti APACHE dan SAPS namun kedua skor ini masih berbasis populasi Eropa dan Amerika. Widyastuti, Y., *et al.* (2022) telah menyusun sistem skoring (Skor ICU RSUP Dr. Sardjito Yogyakarta) yang berisi variabel : kasus medikal, nilai GCS < 8 , penggunaan obat vasoaktif/inotropik, sepsis, gagal nafas, gagal ginjal dan transfusi produk darah untuk memprediksi PLOS di ICU RSUP Dr. Sardjito Yogyakarta. Temuan ini membutuhkan validasi lebih lanjut, sehingga apabila sistem skoring tersebut juga terbukti valid dan menunjukkan performa yang baik maka diharapkan bisa dipakai untuk memprediksi PLOS di ICU seluruh Indonesia.

Tujuan : Melakukan uji validasi Skor ICU RSUP Dr. Sardjito Yogyakarta untuk memprediksi PLOS.

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 antara berbagai model. Nilai $> 0,7$ dianggap *acceptable* dan nilai $> 0,8$ adalah baik. Kalibrasi menggunakan tes kesesuaian/kecocokan (*goodness of fit test*) yaitu uji Hosmer–Lemeshow 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 : Kekuatan diskriminasi AUC ROC sebesar 83,5% ($p < 0,001$) tergolong kuat, kualitas kalibrasi $p = 0,517$ ($p > 0,05$) pada Hosmer–Lemeshow test memprediksi *predicted* PLOS sesuai dengan nilai *observed* PLOS (aktual PLOS).

Kesimpulan : Skor ICU RSUP Dr. Sardjito Yogyakarta valid untuk memprediksi PLOS.

Kata kunci : ICU, lama rawat inap, *risk prediction*, Skor ICU, validasi

ABSTRACT

Background : *Prolonged Stay in ICU may cause additional expenses and increases patients' morbidity and mortality. The limit of Prolonged Length of Stay (PLOS) in ICU hasn't been settled, however few references use the limit of 7-30 days. Predicting PLOS in ICU provides significant benefits in terms of cost efficiency and service quality, provides early identification for the patients who potentially will received long-term treatment in order to improve the quality of the given treatment and also enables comparative audit or benchmarking between hospitals. Predicting PLOS in ICU could be done by using risk prediction systems, for examples APACHE and SAPS despite both's scores are based on European and American populations. Widyastuti, Y., et al. (2022) have compiled a scoring system (Skor ICU RSUP Dr. Sardjito Yogyakarta) which contains variables : medical cases, GCS score <8, the use of vasoactive/ inotropic drugs, sepsis, respiratory failure, kidney failure and transfusion of blood products to predict PLOS in the ICU of RSUP Dr. Sardjito Yogyakarta. This finding requires further validation, so that if so that if the scoring system is also proven valid and shows good performance, it is expected that it can be used to predict PLOS in ICUs throughout Indonesia.*

Purpose : *Conduct the validation test for the score of the ICU of RSUP Dr. Sardjito Yogyakarta in predicting PLOS.*

Methods : *This research used an observational retrospective cohort study design. Validation scores were assessed from the ability to discriminate and calibrate. Multivariate analysis of the scoring system with a single variable was presented in the form of a total score. Discrimination ability was evaluated by Receiver Operating Characteristics (ROC) curves. Area Under the Curve (AUC or C-statistic) was used to compare the discrimination between the various models. 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 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 : *The strength of discrimination is strong, shown by AUC ROC of 83,5% ($p < 0,001$) calibration quality $p = 0,517$ ($p > 0,05$) in the Hosmer–Lemeshow test predicts predicted PLOS similiar to the observed PLOS value (actual PLOS).*

Conclusion : *The ICU score of RSUP Dr. Sardjito Yogyakarta is valid for predicting PLOS.*

Keywords : *ICU, length of stay, risk prediction, ICU Score, score validation*