

# Kesahihan Penilaian Logistic Organ Dysfunction System (LODS) sebagai Prediktor Mortalitas Pasien Unit Perawatan Intensif RSUPN Dr. Cipto Mangunkusumo = Logistic Organ Dysfunction System (LODS) as Mortality Predictor for ICU Patients in Cipto Mangunkusumo Hospital

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## Abstrak

Latar Belakang: Stratifikasi risiko dan prediksi prognosis pasien yang menjalani perawatan di Unit Perawatan intensif (UPI) merupakan hal yang penting dalam tatalaksana pasien UPI. Logistic Organ Dysfunction System (LODS) merupakan sistem penilaian disfungsi organ yang mencatat skor penilaian hanya dari kondisi fisiologis pasien. LODS dikembangkan untuk stratifikasi tingkat keparahan penyakit dan dapat digunakan untuk memprediksi mortalitas pasien di unit perawatan intensif (UPI).

Tujuan: Penelitian ini bertujuan untuk mengetahui kesahihan penilaian LODS dalam memprediksi mortalitas pasien-pasien yang dirawat di UPI RSCM.

Metode: Penelitian ini adalah studi kohort retrospektif menggunakan data rekam medis pasien yang dirawat di UPI RSCM Januari-Desember 2017. Dilakukan pencatatan skor LODS hari pertama perawatan UPI, selanjutnya dinilai kondisi pasien 30 hari, apakah pasien meninggal atau bertahan hidup. Prediksi mortalitas penilaian LODS didapat melalui regresi logistik sederhana. Kemampuan prediksi mortalitas LODS dilakukan dengan analisis diskriminasi dengan ROC untuk mencari nilai AUC, dan ketepatan prediksi mortalitas dilakukan dengan analisis kalibrasi uji *goodness of fit* Hosmer Lemeshow. Dilakukan analisis bivariat dilanjutkan dengan analisis multivariat dengan persamaan regresi logistik berganda untuk melihat variabel yang paling bermakna dalam prediksi mortalitas.

Hasil: Dari 498 subjek yang dirawat di UPI RSCM, mayoritas pasien merupakan kasus bedah elektif, didapatkan LODS mempunyai nilai diskriminasi dan kalibrasi yang baik dengan AUC= 0,81 (IK95% 0,74-0,87) dan hasil uji Hosmer-Lemeshow kalibrasi p=0,94. Nilai titik potong ditetapkan pada nilai LODS=3, dimana sensitivitas 80,8%, spesifisitas 63,2%, PPV 20,4%, NPV 96,6%, *likelihood ratio* positif 2,2 dan *likelihood ratio* negatif 0,3. Variabel LODS yang secara statistik mempunyai pengaruh kuat terhadap mortalitas 30 hari adalah penggunaan ventilasi mekanik dan rasio PaO<sub>2</sub>/FiO<sub>2</sub>, kreatinin dan bilirubin, dengan rumus model akhir regresi logistik  $y = -3,877 + (3,339 \times \text{PaO}_2/\text{FiO}_2 <150>) + (2,226 \times \text{kreatinin } 1,2-1,59\text{mg/dL}) + (1,384 \times \text{bilirubin } >2 \text{ mg/dL}) + (1,369 \times \text{PaO}_2/\text{FiO}_2 <150>) + (1,33 \times \text{kreatinin } <1,2\text{mg/dL})$ .

Simpulan: Sistem penilaian LODS hari pertama sah dalam memprediksi mortalitas 30 hari pasien di UPI RSCM.

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Background : Risk stratification and prognosis prediction for ICU patients are essentials for medical management. Logistic Organ Dysfunction System (LODS) is a scoring system which objectively evaluate ICU patients' physiological condition and can be used to determine organ severity stratification and to predict mortality.

Objective: This study was conducted to evaluate the validity of LODS in predicting mortality of ICU

patients in Cipto Mangunkusumo Hospital (RSCM), Jakarta.

Methods : We retrospectively reviewed medical records of ICU patients who were admitted in January-December 2017. We calculated LODS score from the first 24-hour ICU admission, and we recorded the patients' outcome (mortality) in 30 days. Mortality prediction was calculated from simple logistic regression. The LODS performance was analyzed with Receiver Operating Characteristics (ROC) to evaluate area under the curve (AUC) for discrimination analysis, and the precision was analyzed with Hosmer Lemeshow goodness of fit. We evaluated bivariate analysis and multivariate logistic regression to determine the most significant variable as mortality predictor.

Results: The majority case from 498 subjects admitted in ICU of Cipto Mangunkusumo Hospital were elective surgeries. LODS had a good discrimination and calibration, with AUC 0.81 (95% CI 0.74-0.87) and  $p = 0.94$  with Hosmer Lemeshow goodness of fit test. Cut off LODS value was 3, with sensitivity 80.8%, specificity 63.2%, PPV 20.4%, NPV 96.6%, positive likelihood ratio 2.2, and negative likelihood ratio 0.3. Three variables were statistically significant in predicting 30 days mortality: mechanical ventilation and PaO<sub>2</sub>/FiO<sub>2</sub>, creatinine and bilirubin with final model equation  $y = -3,877 + (3,339 \times \text{PaO}_2/\text{FiO}_2 <150) + (2,226 \times \text{kreatinin } 1,2-1,59 \text{ mg/dL}) + (1,384 \times \text{bilirubin } <2 \text{ mg/dL}) + (1,369 \times \text{PaO}_2/\text{FiO}_2 >150) + (1,33 \times \text{kreatinin } <1,2\text{mg/dL})$ .

Conclusion: First day LODS score is valid in predicting 30 days mortality of ICU patients in RSCM