

PERFORMA SKOR *PEDIATRIC INDEX OF MORTALITY* 3 (PIM3) SEBAGAI PREDIKTOR MORTALITAS PASIEN RUJUKAN DENGAN INDIKASI PERAWATAN INTENSIF DI PICU RSUP DR. SARDJITO YOGYAKARTA

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INTISARI

Latar belakang: Sistem rujukan masih menjadi isu penting semenjak implementasi *universal health coverage* di Indonesia. Sebuah sistem skor membantu klinisi untuk menilai keparahan penyakit serta memprediksi risiko mortalitas pada pasien rujukan dengan sakit kritis, sehingga probabilitas mortalitas dapat diprediksi sebelum tatalaksana lanjutan. Skor *Pediatric Index of Mortality* 3 (PIM3) terdiri dari parameter yang sederhana serta telah digunakan secara global. Namun, studi terkait performa PIM3 di Indonesia masih terbatas, terutama pada kelompok rujukan anak dengan sakit kritis di rumah sakit tersier

Tujuan: Mengetahui karakteristik populasi rujukan anak sakit kritis di PICU tersier di RSUP Dr. Sardjito, Yogyakarta, Indonesia, serta mengetahui performa sistem skor PIM3 sebagai prediktor mortalitas pada populasi rujukan anak sakit kritis yang memerlukan perawatan intensif di PICU RSUP Dr. Sardjito.

Metode: Studi observasional analitik dengan desain kohort retrospektif yang menggunakan data sekunder berupa resume medis pasien di PICU RSUP Dr. Sardjito. Seluruh rujukan anak sakit kritis pada periode antara 1 Agustus 2022 hingga 31 Januari 2023 yang dirawat di PICU RSUP Dr. Sardjito dan memenuhi kriteria eligibilitas, diikuti dalam studi ini. Kemampuan diskriminasi PIM3 terhadap luaran mortalitas dan hidup dinilai dengan kurva *area under the receiver operating characteristic plot* (AUC). Uji Hosmer-Lemeshow *goodness-of-fit* serta *standardized mortality rate* (SMR) digunakan untuk menilai kalibrasi PIM3.

Hasil: Sebanyak 220 kasus (median usia 64 bulan) diikuti dalam studi ini. Prevalensi mortalitas sebesar 22,07% (49/220). Rentang skor PIM3 subjek antara 0,111 hingga 98,034. Nilai SMR dengan interval kepercayaan 95% (IK-95%) sebesar 2,231 (1,651-2,899). Nilai AUC PIM3 sebesar 0,836 (IK-95% 0,765-0,906; $p < 0,001$). Uji Hosmer-Lemeshow *goodness-of-fit* didapatkan nilai χ^2 154,310 ($p < 0,001$) yang bermakna secara statistik, menunjukkan kemampuan prediksi mortalitas yang rendah.

Kesimpulan: Diskriminasi skor PIM3 terhadap luaran mortalitas baik, namun kalibrasi buruk, sehingga skor PIM3 tidak sesuai sebagai model prediktor mortalitas pada populasi rujukan anak sakit kritis di PICU RSUP Dr. Sardjito, Yogyakarta

Kata kunci: mortalitas; rujukan sakit kritis; *Pediatric Intensive Care Unit*; *Pediatric Index of Mortality* 3; prognostik

PERFORMANCE OF THE PEDIATRIC INDEX OF MORTALITY 3 (PIM3) SCORE AS A MORTALITY PREDICTOR AMONG CRITICALLY ILL REFERRED CHILDREN WITH INTENSIVE CARE INDICATIONS IN PICU AT DR. SARDJITO HOSPITAL, YOGYAKARTA

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ABSTRACT

Background: Since the era of universal health coverage in Indonesia, referral system is still one of the most important issue. A scoring system is helpful for assessing the severity of morbidity and predicting risk of mortality in critically ill referred patients, so the probability of death can be assessed prior to undergo advanced therapies. The Pediatric Index of Mortality 3 (PIM3) scoring system consists of simple parameters and has been widely used around the world. However, studies about performance of PIM3 in Indonesia are still limited, especially among referred patients with critical illness in tertiary hospital.

Objective: To understand the characteristics of pediatric referral cases with critical illness in tertiary PICU at Dr. Sardjito hospital, Yogyakarta, and to evaluate the mortality prognostic performance of PIM3 in pediatric referral cases with critical illness and require intensive care in PICU at Dr. Sardjito Hospital.

Methods: This retrospective observational single center cohort study was conducted in a tertiary PICU at Dr. Sardjito Hospital, using medical records as secondary datas. All critically ill referred children, between 1 month and 18 years old, admitted to PICU at Dr. Sardjito Hospital between August 1st, 2022, until January 31st, 2023, were included in the study. Discrimination between death and survival was assessed by area under the receiver operating characteristic plot (AUC) for the model. The Hosmer-Lemeshow goodness-of-fit test and standardized mortality rate (SMR) were used to assess the calibration of the model.

Results: A total of 220 cases (median age 64 months) were enrolled in the study. The overall mortality rate was 22,07% (49/220). Subjects' PIM3 score ranged from 0,111 to 98,034. The SMR of PIM3 with 95% confidence interval (CI) was 2,231 (1,651-2,899). The AUC with 95%-CI was 0,836 (0,765-0,906; $p < 0,001$). The Hosmer-Lemeshow goodness-of-fit χ^2 154,310 test showed that the difference between observed and predicted mortality by PIM3 ($p < 0,001$) was statistically significant, indicating that death was underpredicted.

Conclusion: Among critically ill referred children in PICU at Dr. Sardjito hospital, Yogyakarta, PIM3's discrimination between death and survival was good, but the calibration was poor, indicating that PIM3 was unfitted as mortality predictor in critically ill referral cases in PICU at Dr. Sardjito hospital.

Keywords: mortality; critical ill referral cases; Pediatric Intensive Care Unit; Pediatric Index of Mortality 3; prognostic