# Predictors of 30-day mortality in ST-Elevation Myocardial Infarction (STEMI) patients

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Abstrak

Background: to identify other factors other than the TIMI scores that can be used as predictors of 30-day mortality in STEMI patients by including variables of left ventricle ejection fraction (LVEF) and glomerulus filtration rate (GFR) at Cipto Mangunkusumo National Central General Hospital.
Methods: a retrospective cohort study was conducted in 487 STEMI patients who were hospitalized at RSUPN Cipto Mangunkusumo between 2004 and 2013. Sample size was calculated using the rule of thumbs formula. Data were obtained from medical records and analyzed with bivariate and multivariate method using Coxs Proportional Hazard Regression Model. Subsequently, a new scoring system was developed to predict 30-day mortality rate in STEMI patients. Calibration and discrimination features of the new model were assessed using Hosmer-Lemeshow test and area under receiver operating characteristic curve (AUC).
Results: bivariate and multivariate analyses showed that only two variables in the new score system model were statistically significant, i.e. the Killip class II to IV and GFR with a range of total score between 0 and 4,6. Thirty-day mortality risk stratification for STEMI patient included high, moderate and low risks. The risk was considered high when the total score was >3,5 (46,5%). It was considered moderate if the total score was between 2,5 and 3,5 (23,2%) and low if the total score was <2,5 (5,95%). Both variables of the score had satisfactory calibration (p > 0,05) and discrimination (AUC 0,816 (0,756-0,875; CI 95%).
Conclusion: There are two new score variables that can be used as predictors of 30-day mortality risks for STEMI patients, i.e. the Killip class and GFR with satisfactory calibration and discrimination rate.
.....Latar belakang: menemukan faktor-faktor lain selain TIMI  skor yang dapat dijadikan sebagai predictor mortalitas 30 hari pada pasien ST-elevation myocardial infarction (STEMI) dengan memasukkan variabel laju filtrasi glomerulus dan variabel fraksi ejeksi ventrikel kiri (FEVK) di Rumah Sakit Umum Pusat Nasional (RSUPN) Cipto Mangunkusumo.
Metode: studi kohort retrospektif terhadap 487 pasien STEMI yang dirawat di RSUPN Cipto Mangunkusumo pada periode 2004-2013. Besar sampel dihitung dengan menggunakan rumus rule of thumbs. Data diperoleh dari penelusuran rekam medis dan dianalisis secara bivariat dan multivariat menggunakan Cox’s Proportional Hazard Regression Model. Setelah itu, sebuah model sistem skor baru dibuat untuk memperkirakan tingkat mortalitas 30 hari pada pasien STEMI. Kemampuan kalibrasi dan diskriminasi dari model sistem skor baru ditinjau dengan menggunakan uji Hosmer-Lemenshow dan AUC (area under receiver operating characteristic curve).
Hasil: analisis secara bivariat dan multivariat menunjukkan bahwa hanya dua variabel yang secara statistik bermakna dalam model sistem skor baru yaitu kelas Killip II-IV dan LFG dengan kisaran total skor 0 hingga 4.6. Klasifikasi risiko mortalitas dalam 30 hari pada pasien STEMI adalah tinggi (total skor >3,5; 46,5%), sedang (total skor 2,5-3,5;23,2%), dan rendah (total skor <2,5;5,95%). Dua variable skor ini memiliki kalibrasi (p >0,05) dan diskriminasi (AUC 0.816; IK 95%; 0.756-0.875) yang memuaskan.

Kesimpulan: terdapat dua variabel skor baru yang dapat dijadikan sebagai prediktor risiko mortalitas 30 hari pada pasien STEMI, yaitu kelas Killip dan LFG. Dua variabel skor ini memiliki kalibrasi dan diskriminasi yang baik