## 95. Comparison of Machine Learning Based PRAISE Score With Traditional Models to Predict Acute Myocardial Infarction Outcomes

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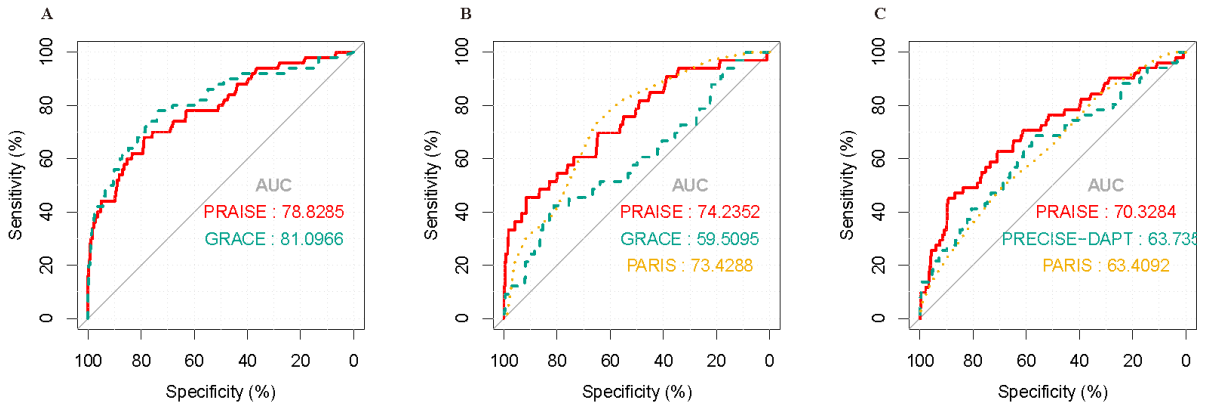
### Body

**Background:** The Prediction of Adverse Events Following an Acute Coronary Syndrome (PRAISE) score is a machine learning-based tool that has been developed to predict 1-year all-cause death, myocardial infarction, and Bleeding Academic Research Consortium (BARC) type 3 or 5 major bleeding. This model was based on 25 variables with clinical, anatomical, and procedural risk factors that assessed at patient discharge. We aimed to investigate its value in identifying adverse events in an Asian real-world cohort.

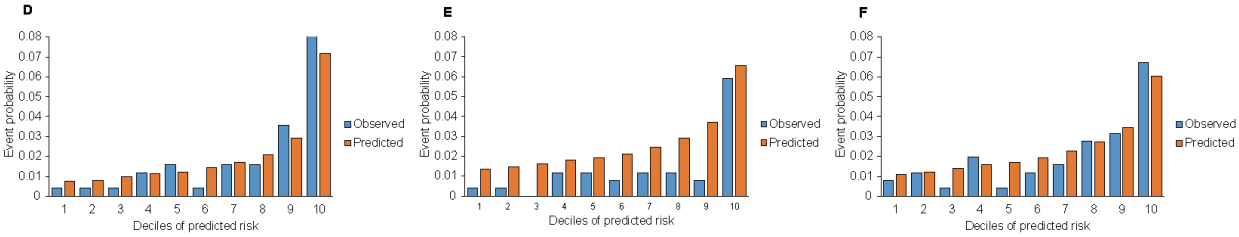
**Methods:** We analyzed data from the Fuwai Percutaneous Coronary Intervention registry, to assess the ability of PRAISE score to stratify ischemic and bleeding risk and compare its performances with previous commonly recommended scores. The discriminative abilities of PRAISE score were assessed using Harrell's C statistic. Agreement between observed and predicted event rates following acute myocardial infarction (AMI) for these outcomes were assessed using calibration plots.

**Results:** The study population included 2,534 patients with AMI. In our cohort, 50 (2.0%) patients died within a year, 33 (1.3%) patients had a recurrent myocardial infarction within a year, and 51 (2.0%) patients had significant bleeding within a year. The c-statistic of PRAISE score for all-cause death, AMI and major bleeding through 1 year in AMI population were 0.78, 0.74, and 0.70, respectively. As depicted in Figure 1, the PRAISE score performed better than the GRACE 2.0 score at c-statistic for predicting spontaneous MI (P for comparison =0.038). As for predicting major bleeding, PRAISE score also performed better than the PRECISE-DAPT score at c-statistic (P for comparison =0.017). Figure 1D, 1E and 1F showed the calibration abilities of the PRAISE score in AMI population. The Hosmer-Lemeshow goodness-of-fit P values of all-cause mortality, recurrent myocardial infarction and major bleeding were 0.685, 0.005 and 0.593, respectively.

**Conclusion:** In an all-comer real-world cohort with AMI patients treated with PCI, the PRAISE score, a machine learning-based risk algorithm, performed well with high levels of discrimination and calibration in terms of 1-year all-cause death, MI, and major bleeding outcomes.




ROC curves in AMI patients for (A) all-cause mortality, (B) recurrent acute myocardial infarction, (C) major bleeding.




Risk of observed (D) all-cause mortality, (E) recurrent acute myocardial infarction, (F) major bleeding according to deciles of event probability based on PRAISE scores in AMI patients.

**Clinical Implications:** My study will help enable cardiovascular clinicians to implement PRAISE score in everyday clinical practice to predict patients' prognosis after AMI and might be useful to guide clinical decision making for the intensity of antithrombotic treatment.