Inadequate performance of established risk prediction scores for patients with ST-Elevation myocardial infarction in the modern era.

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Background: Mortality prediction of patients admitted with ST elevation myocardial infarction (STEMI) is currently based on models derived from randomised controlled trials performed in the 1990's, with selective inclusion and exclusion criteria. It is unclear whether such models remain valid in community-based populations in the modern era.

Methods: The AMIS-Plus registry prospectively collects data from ACS patients admitted to 56 Swiss hospitals. We analysed hospital mortality for patients with ST-Elevation myocardial infarction (STEMI) included in this registry between 1997-2004, and compared it to mortality as predicted by the benchmark risk score from the TIMI study group. This is an integer score calculated from 10 weighted parameters available at admission. Each score value delivers a hospital mortality risk prediction (range 0.7% for 0 points, 31.7% for >8 points).

Results: Among 7356 patients with STEMI, overall hospital mortality was 7.3%. The TIMI risk score overestimated mortality risk at each score level for the entire population. Subgroup analysis according to initial revascularisation treatment (PCI [n=3053], thrombolysis [n=2470], none [n=3053]) showed an especially poor performance for patients treated by PCI. In this subgroup no significant increase in mortality was observed up until 5 points (actual mortality 1.5%, predicted 11.6%), and remained below 5% up till 7 points (predicted 21.5%) (Figure 1).

Conclusions: The TIMI risk score overestimates the mortality risk and delivers poor stratification in real life patients with STEMI treated according to current guidelines.

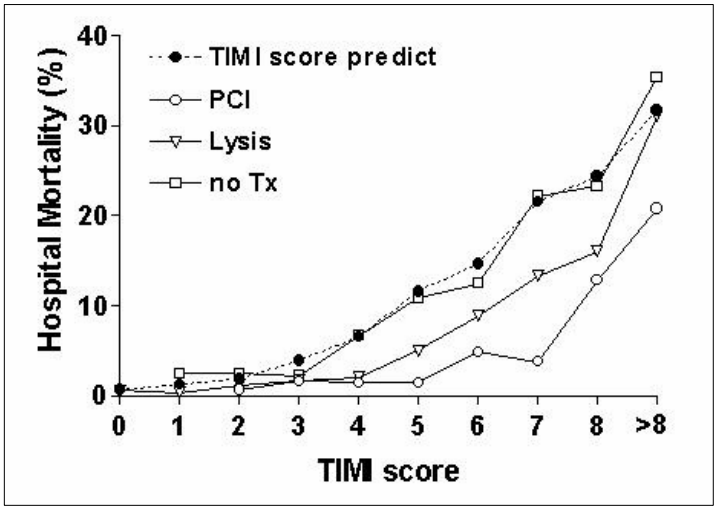

Figure 1. TIMI risk score prediction and actual hospital mortality for patients with STEMI according to initial revascularisation treatment.

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