Predictors of in-hospital mortality in the Global Registry of Acute Coronary Events (GRACE)

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Background: Specific therapies and interventional approaches have been identified as the most effective treatments in high-risk ACS patients. Despite this, clinical practice is not always based on clinical trial data or evidence-based guidelines. The aim of this study was to develop a robust and clinically applicable risk model with which to guide routine practice, using data from a large unselected ACS population.

Methods and results: A multivariable logistic regression hospital death-prediction model was developed using data from 11,380 patients (509 hospital deaths). The model was validated internally using a prospective cohort of 3972 patients and externally in 12,142 patients from the GUSTO IIb trial. Eight risk factors accounted for 90% of the predictive information for the risk of hospital death (Table).

Conclusions: This robust risk model for hospital death can be used for patients who present with STEMI, NSTEMI or UA. Two new independent predictors of mortality – resuscitated cardiac arrest and serum creatinine – have been identified.

Risk factor	OR
Resuscitated cardiac arrest	4.3
ST-deviation	2.4
Killip class (per class)	2.0
Age (per 10 years over 30)	1.7
Elevated initial cardiac markers (CRP, troponin)	1.6
Systolic blood pressure (per 20 mmHg under 200)	1.4
Heart rate (per 30 bpm over 50)	1.3
Creatinine (per mg/dL under 4)	1.2

Table. Independent risk factors for hospital death (c-statistic 0.83)