

### Impact of comorbidities on survival of patients admitted for an acute coronary syndrome

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**Background:** The great majority of randomised clinical trials (RCT) for acute coronary syndrome (ACS) patients exclude those with significant co-morbidity. This selection process thus only partially reflects "real life", and can lead to misconceptions regarding applied treatment modalities and hospital outcome.

**Methods:** The Charlson Index (CI) ascribes a score based on 17 comorbidity variables. We prospectively collected this information for 11,932 patients in the AMIS Plus registry, admitted to 64 Swiss hospitals for ACS between 2000 and 2005, and evaluated the impact of the score on hospital mortality.

**Results:** The overall mean CI score was  $1.06 \pm 1.63$ , and 2762 patients (23%) would not have been candidates for inclusion in typical current RCT's of ACS patients (because of chronic heart failure [5%], hemiplegia [1%], dementia [2%], connective tissue disease [1%], peptic ulcer disease [3%], moderate to severe liver or renal disease [7%], or active malignant disease [6%]). The CI score was a powerful predictor of short and long term mortality (table 1). Despite being strongly correlated with advanced age, a high CI score remained a predictor of in-hospital outcome when multivariate analysis was used for admission characteristics (table 2).

Table 1

	In-hospital mortality	3-month mortality	12-month mortality
All patients	725/11,932 (6.1)	18/1204 (1.0)	31/407 (7.6)
CI Score 0	212/6183 (3.4)	3/681 (0.4)	5/219 (2.3)
CI Score 1	181/2772 (6.5)	2/242 (0.8)	4/88 (4.5)
CI Score 2	108/1378 (7.8)	4/131 (3.0)	9/51 (17.6)
CI Score $\geq 3$	224/1599 (14.0)	9/150 (6.0)	13/49 (26.5)

Values are number (%); CI=Charlson Index.

Table 2

	Odds ratio	95% confidence interval	p value
CI Score 1	1.4	1.0-1.8	0.06
CI Score 2	1.7	1.1-2.4	0.03
CI Score $\geq 3$	2.7	1.9-3.7	<0.0001
Age (per 10 years)	2.1	1.9-2.5	<0.0001
Killip class II	2.3	1.7-2.9	<0.0001
Killip class III	3.8	2.6-5.4	<0.0001
Killip class IV	12.7	8.1-19.5	<0.0001
Prehospital CPR	7.5	4.7-11.6	<0.0001
ST elevation	1.4	1.1-1.7	0.011

CI=Charlson index; CPR=cardiopulmonary resuscitation.

**Conclusions:** Co-morbidities have a significant impact on outcome for patients admitted to hospital for ACS. This should be kept in mind when translating results obtained in RCT's to the "real world" of everyday clinical practice.