# Usefulness of the society for cardiovascular angiography and intervention classification for predicting in-hospital mortality in patients with acute decompensated heart failure

L. Burgos, L. Talavera, R. Baro Vila, A. Acosta, M. Cabral, M. Buscio, M. Diez

*Instituto Cardiovascular De Buenos Aires, Buenos Aires, Argentina*

**Introduction:** Recently a multidisciplinary group of the Society for Cardiovascular Angiography and Interventions (SCAI) derived a new classification schema for cardiogenic shock (CS), simple, clinically based and suitable for rapid assessment at the bedside but also arbitrary. Validation in different clinical datasets, specifically in patients with acute decompensated heart failure (ADHF), is necessary to establish the utility of this proposed classification schema.
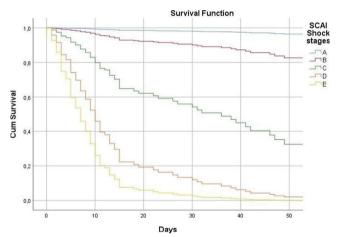
**Purpose:** We aimed to evaluate the ability of a new SCAI CS staging classification to predict in-hospital mortality in patients with ADHF.

**Methods:** We conducted a single-center cohort study, performing a retrospective analysis of prospectively collected data of consecutive patients admitted with ADHF as a primary diagnosis between January 2015 and January 2019. We excluded patients who were hospitalized for an acute coronary syndrome. Patients were assigned to the modified SCAI Classification for CS: Stage A is "at risk" for CS, stage B is "beginning" shock, stage C is "classic", stage D is "deteriorating", and E is "extremis", and in-hospital mortality was evaluated for each group. All-cause mortality was compared across SCAI stages using Kaplan-Meier analysis and log-rank test. Cox proportional hazards models were used to determine the association between SCAI stages and in-hospital mortality after adjusting for age, gender, left ventricular ejection fraction, use of vasoactive medication, mechanical circulatory assist devices, mechanical ventilation, percutaneous coronary intervention and cardiac surgery.

**Results:** Among 668 patients with a mean age of 74.9±12 years, 63.9% were male. In-hospital mortality was 11.2%. According to SCAI classification, the proportion of patients in stages A through E was 51.7%, 26.7%, 14.4%, 4.6% and 2.5%. The unadjusted mortality in each stages was: A 0.6%, B 4.5%, C 32.3%, D 61.3%, and E 88.2% (Log Rank P<0.0001). After multivariable adjustment, each SCAI shock stage remained associated with increased in-hospital mortality (all P<0.001 compared to stage A). Compared with SCAI shock stage A, adjusted hazard ratio (HR) values were SCAI shock stages B through E were 5.2, 31, 107, and 185, respectively (Figure).

**Conclusion:** In this large clinical cohort of patients with ADHF exclusively, the new SCAI CS staging classification was associated with in-hospital mortality. This finding supports the rationale of the classification in this setting, further prospective trials are needed to validate these findings.

Adjusted in-hospital Mortality as a Func