A clinical prediction model predicted 30-day and 1-year mortality in patients hospitalized for heart failure


**Question**
In patients presenting with heart failure, does a clinical prediction model adequately stratify the risk for death at 30 days and 1 year?

**Design**
2 cohort studies, 1 for derivation and 1 for validation.

**Setting**
Derivation cohort: 34 hospitals; validation cohort: 14 hospitals in Ontario, Canada.

**Patients**
Newly admitted patients (2624 for derivation [mean age 67 y, 51% women] and 1407 for validation [mean age 75 y, 51% women]) with a primary diagnosis of heart failure meeting modified Framingham heart failure criteria. Exclusion criteria included development of heart failure after admission, transfer from another acute care facility, and age ≥ 105 years.

**Description of Prediction Guide**
Potential candidate variables were identified based on literature review, expert opinion, and availability. Data on left-ventricular function were collected when available.

Score-based prediction rules for 30-day and 1-year mortality were developed using a coefficient-based scoring method of 30-point increments (very low ≤ 60, low 61 to 90, intermediate 91 to 120, high 121 to 150, and very high > 150 points).

**Main Outcome Measures**
Performance of model in predicting all-cause 30-day and 1-year mortality.

**Main Results**
Mortality rates at 30 days and 1 year were 10.7% and 32.9%, respectively, in the derivation cohort, and 10.4% and 30.5% in the validation cohort and increased with increasing risk scores (Table). Multivariate analysis showed predictors of 30-day and 1-year mortality were increased age, decreased systolic blood pressure, increased respiratory rate, hyponatremia, and increased urea nitrogen levels; and the comorbid conditions of cerebrovascular disease, dementia, chronic obstructive pulmonary disease, cirrhosis, and cancer.

**Conclusion**
In patients with heart failure, a prediction model based on clinical data gathered within the initial hours of hospital presentation predicted all-cause mortality at 30 days and 1 year.

**References**