Predicting hospitalization and mortality in patients with heart failure: The BARDICHE-index

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BACKGROUND
Prediction of events in chronic heart failure (CHF) patients is still difficult and available scores are often complex to calculate. Therefore, we developed and validated a simple-to-use, multidimensional prognostic index for such patients.

METHODS
A theoretical model was developed based on known prognostic factors of CHF that are easily obtainable: Body mass index (B), Age (A), Resting systolic blood pressure (R), Dyspnea (D), N-terminal pro brain natriuretic peptide (NT-proBNP) (I), Cockcroft-Gault equation to estimate glomerular filtration rate (C), resting Heart rate (H), and Exercise performance using the 6-min walk test (E) (the BARDICHE-index). Scores were given for all components and added, the sum ranging from 1 (lowest value) to 25 points (maximal value), with estimated risk being highest in patients with highest scores. Scores were categorized into three groups: a low (≤8 points); medium (9-16 points), or high (>16 points) BARDICHE-score. The model was validated in a data set of 1811 patients from two prospective CHF-cohorts (median follow-up 887 days). The primary outcome was 5-year all-cause survival. Secondary outcomes were 5-year survival without all-cause hospitalization and 5-year survival without CHF-related hospitalization.

RESULTS
There were significant differences between BARDICHE-risk groups for mortality (hazard ratio=3.63 per BARDICHE-group, 95%-CI 3.10-4.25), mortality or all-cause hospitalization (HR=2.00 per BARDICHE-group, 95%-CI 1.83-2.19), and mortality or CHF-related hospitalization (HR=3.43 per BARDICHE-group, 95%-CI 3.01-3.92; all P<10⁻⁵⁰). Outcome was predicted independently of left ventricular ejection fraction (LVEF) and gender.

CONCLUSIONS
The BARDICHE-index is a simple multidimensional prognostic tool for patients with CHF, independently of LVEF.
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