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Biomarker-Guided Versus Guideline-Based Treatment of Patients With Heart Failure
Results From BIOSTAT-CHF

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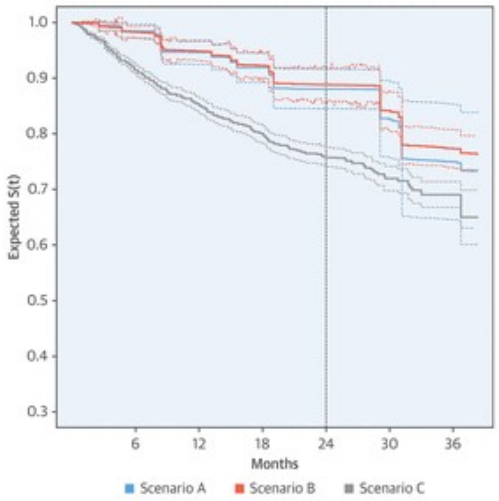
Central Illustration

CENTRAL ILLUSTRATION: Biomarker-Guided Treatment in Heart Failure: Estimated Kaplan-Meier Survival Curves Based on 3 Scenarios for Up-Titrating MRAs



Ouwerkerk, W. et al. J Am Coll Cardiol. 2018;71(4):386-98.

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Abstract

Background Heart failure guidelines recommend up-titration of angiotensin-converting enzyme (ACE) inhibitor/angiotensin receptor blockers (ARBs), beta-blockers, and mineralocorticoid receptor antagonists (MRAs) to doses used in randomized clinical trials, but these recommended doses are often not reached. Up-titration may, however, not be necessary in all patients.

Objectives This study sought to establish the role of blood biomarkers to determine which patients should or should not be up-titrated.

Methods Clinical outcomes of 2,516 patients with worsening heart failure from the BIOSTAT-CHF (BIOlogy Study to Tailored Treatment in Chronic Heart Failure) were compared between 3 theoretical treatment scenarios: scenario A, in which all patients are up-titrated to >50% of recommended doses; scenario B, in which patients are up-titrated according to a biomarker-based treatment selection model; and scenario C, in which no patient is up-titrated to >50% of recommended doses. The study conducted multivariable Cox regression using 161 biomarkers and their interaction with treatment, weighted for treatment-indication bias to estimate the expected number of deaths or heart failure hospitalizations at 24 months for all 3 scenarios.

Results Estimated death or hospitalization rates in 1,802 patients with available (bio)markers were 16%, 16%, and 26%, respectively, in the ACE inhibitor/ARB up-titration scenarios A, B, and C. Similar rates for beta-blocker and MRA up-titration scenarios A, B, and C were 23%, 19%, and 24%, and 12%, 11%, and 24%, respectively. If up-titration was successful in all patients, an estimated 9.8, 1.3, and 12.3 events per 100 treated patients could be prevented at 24 months by ACE inhibitor/ARB, beta-blocker, and MRA therapy, respectively. Similar numbers were 9.9, 4.7, and 13.1 if up-titration treatment decision was based on a biomarker-based treatment selection model.

Conclusions Up-titrating patients with heart failure based on biomarker values might have resulted in fewer deaths or hospitalizations compared with a hypothetical scenario in which all patients were successfully up-titrated.

Key Words

ACE inhibitor/ARB **beta-blocker** **biomarkers** **MRA** **treatment decision**

Footnotes

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