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ORIGINAL INVESTIGATION

Systolic Blood Pressure and Outcomes in Patients With Heart Failure With Reduced Ejection Fraction

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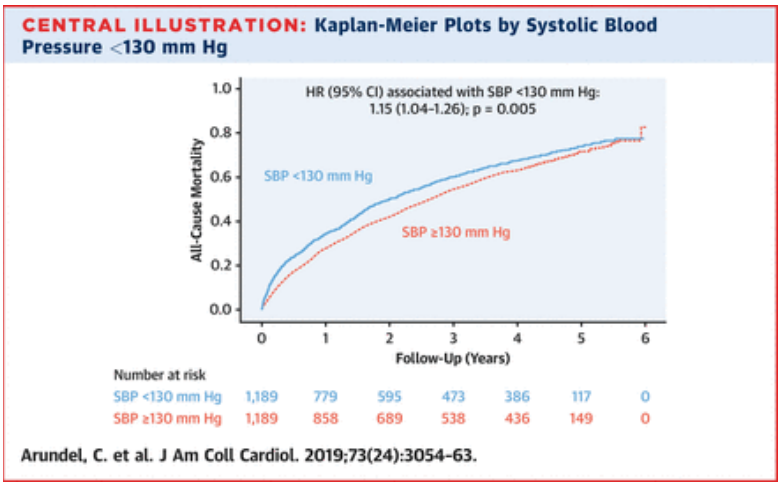
Author + information

Central Illustration



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Abstract

Background National guidelines recommend that systolic blood pressure (SBP) in patients with heart failure with reduced ejection fraction (HFrEF) and hypertension be maintained below 130 mm Hg.

Objectives This study sought to determine associations of SBP <130 mm Hg with outcomes in patients with HFrEF.

Methods Of the 25,345 patients in the Medicare-linked OPTIMIZE-HF registry, 10,535 had an ejection fraction (EF) ≤40%. Of these, 5,615 had stable SBP (≤20 mm Hg admission to discharge variation), and 3,805 (68%) had a discharge SBP <130 mm Hg. Propensity scores for SBP <130 mm Hg, estimated for each of the 5,615 patients, were used to assemble a matched cohort of 1,189 pairs of patients with SBP <130 versus ≥130 mm Hg, balanced on 58 baseline characteristics (mean age 76 years; mean EF 28%, 45% women, 13% African American). This process was repeated in 3,946 patients, after excluding 1,669 patients (30% of 5,615) with a discharge SBP <110 mm Hg and assembled a second matched balanced cohort of 1,099 pairs of patients with SBP 110 to 129 mm Hg versus ≥130 mm Hg.

Results Thirty-day all-cause mortality occurred in 7% and 4% of matched patients with SBP <130 mm Hg versus ≥130 mm Hg, respectively (hazard ratio [HR]: 1.76; 95% confidence interval [CI]: 1.24 to 2.48; p = 0.001). HRs (95% CIs) for all-cause mortality, all-cause readmission, and HF readmission at 1 year, associated with SBP <130 mm Hg, were 1.32 (1.15 to 1.53; p < 0.001), 1.11 (1.01 to 1.23; p = 0.030), and 1.24 (1.09 to 1.42; p = 0.001), respectively. HRs (95% CIs) for 30-day and 1-year all-cause mortality associated with SBP 110 to 129 mm Hg (vs. ≥130 mm Hg) were 1.50 (1.03 to 2.19; p = 0.035), and 1.19 (1.02 to 1.39; p = 0.029), respectively.

Conclusions Among hospitalized older patients with HFrEF, SBP <130 mm Hg is associated with poor outcomes. This association persisted when the analyses were repeated after excluding patients with SBP <110 mm Hg. There is an urgent need for randomized controlled trials to evaluate optimal SBP reduction goals in patients with HFrEF.

Key Words

heart failure **outcomes** **systolic blood pressure**

Footnotes

↵* Drs. Arundel and Lam contributed equally to this work.

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