2018 ESC/ESH guideline-recommended age categories and intensive blood pressure management in high-risk adults: insights from SPRINT

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Topic(s):
Hypertension: Pharmacotherapy

Citation:
Background: The 2018 European Society of Cardiology/European Society of Hypertension (ESC/ESH) guidelines for arterial hypertension propose different intensities of blood pressure (BP) lowering in patients <65 years, 65-79 years, and ≥80 years of age. However, it is unclear whether intensive BP management is well-tolerated and modifies risk uniformly across this age spectrum.

Purpose: To assess the relationship between age, treatment response to intensive BP lowering, and cardiovascular (CV) outcomes.

Methods: SPRINT was a randomized, controlled trial in which 9,361 individuals ≥50 years of age, at high CV risk but without diabetes who had a systolic BP (SBP) 130-180 mmHg, were randomized to intensive (target SBP <120mmHg) or standard antihypertensive treatment (target SBP <140mmHg). The primary efficacy endpoint was the composite of acute coronary syndromes, stroke, heart failure, or death from CV causes. The primary safety endpoint was the composite of serious adverse events (SAE). We examined the prognostic implications of age, using Cox proportional-hazards regression models adjusted for demographic, clinical, and laboratory variables. Whether a linear association was present between age and clinical endpoints was evaluated using restricted cubic splines. We further explored the effects of intensive BP lowering across the age spectrum using interaction analyses.

Results: Age was noted for all individuals, and 3,805 (41%), 4,390 (47%), and 1,166 (12%) were <65 years, 65-79 years, and ≥80 years, respectively. Mean age was similar between the two study groups (intensive group 67.9 years vs. standard group 67.9 years; P=0.94). Median follow-up was 3.3 years (range 0-4.8), with 562 primary efficacy events (6%) and 3,529 primary safety events (38%) recorded during the study period. Age was linearly associated with the risk of stroke (test for overall trend, P<0.001) and non-linearly associated with the risk of primary efficacy events, death from CV causes, death from any cause, heart failure, and SAE (test for non-linearity, P<0.05; test for overall trend, P<0.001). Age remained significantly associated with all tested endpoints after multivariable adjustment (P<0.001). Furthermore, the risk of primary events increased over guideline-recommended age-categories (65-79 years vs. <65 years; adj. HR 1.65, 95% CI 1.34-2.04; P<0.001 and ≥80 years vs. 65-79 years; adj. HR 1.92, 95% CI 1.54-2.40; P<0.001), as did the risk of SAE (P<0.001). The safety and efficacy of intensive BP lowering was not modified by age whether tested continuously or categorically (P>0.05). The Figure shows similar treatment effects (hazard ratios) across the spectrum of age. P-values are for the interaction between age and treatment effect for each endpoint.

Conclusions: In SPRINT, higher age was associated with a greater risk of both CV events and SAE. However, intensive BP lowering appeared to be associated with similar risks and benefits across the age spectrum.
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