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PERSPECTIVE

New Guidelines and SPRINT Results

Implications for Geriatric Hypertension

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The projected growth in the geriatric age population, its high cardiovascular disease risk, and its prevalence of hypertension that exceeds 60% have created a public health opportunity to carefully examine treatment recommendations for hypertension in older individuals. Based on new evidence related to brain health observed in SPRINT (Systolic Blood Pressure Intervention Trial),[1] this perspective from 2 of its investigators highlights the benefits of achieving a lower systolic blood pressure (SBP) goal that should be considered in managing hypertension in older adults.

The evolution in the recommended SBP treatment goal for older individuals beginning with the publication of the seminal Systolic Hypertension in the Elderly Program study in 1991 is illustrated in the Figure. The most current (2017) American College of Cardiology/American Heart Association guideline states that an "SBP treatment goal of less than 130 mm Hg is recommended for noninstitutionalized ambulatory community-dwelling adults (≥65 years of age) with an average SBP of 130 mm Hg or higher."[2] This recommendation was based primarily on new evidence from the SPRINT study.[3] Of relevance to geriatric hypertension, SPRINT enrolled 2656 participants ≥75 years of age.[4] In this older cohort, a 34% reduction in the cardiovascular disease outcome and 33% reduction in total mortality were identified with intensive SBP management to a goal of 120 mm Hg. These benefits were noted among the frailest older participants and were not accompanied by any serious, irreversible adverse events. It is notable that the rate of injurious falls did not differ by treatment group, even among participants ≥85 years of age. Moreover, the rates of withdrawal and loss to follow-up did not differ according to the treatment arm.

SPRINT was also designed to address the hypothesis that the incidence of all-cause dementia would be lower with intensive SBP treatment in its Memory and Cognition in Decreased Hypertension (MIND) component. Cognitive data collection continued beyond the termination of the active intervention at 3.26 years, and these data are now available from 8563 SPRINT participants followed up for an average of 5.11 years.[1] Although the 17% reduction in adjudicated all-cause probable dementia in the intensive relative to the standard group did not achieve statistical significance, there were significant reductions of the same magnitude in the occurrence of mild cognitive impairment (MCI; 19%; P=0.01) and in the composite outcome of MCI or dementia (15%; P=0.02). It is important to recognize that MCI is a distinct clinical condition that is an obligatory precursor to developing dementia. Estimates for the rate of progression from MCI to dementia range from 10% to 22% per year, depending on the study cohort's risk factors and the type of MCI, with its amnestic form being more likely to progress. Demonstrating a delay in developing MCI has important public health implications. Postponing the development of dementia by 2 years could result in a 20% decrease in the number

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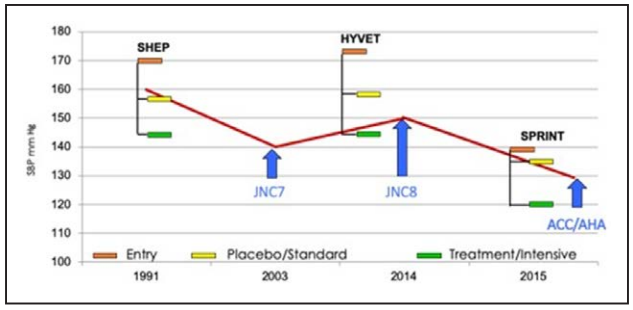

Figure. Recommended systolic blood pressure (SBP) treatment goals for older individuals.
No randomized clinical trial (RCT) data existed before 1991 to inform the treatment of what was then referred to as isolated systolic hypertension in older adults. The red line illustrates the changes in the recommended SBP goal sequentially over time by the Joint National Committee on the Detection and Prevention of Hypertension (JNC) 7 (published in 2003) and 8 (published in 2013) guidelines and the 2017 American College of Cardiology/American Heart Association (ACC/AHA) guideline. The 2 major RCTs before SPRINT (Systolic Blood Pressure Intervention Trial) that informed these changes, SHEP (Systolic Hypertension in the Elderly Project) in 1991 and HYVET (Hypertension in the Very Elderly Trial) in 2008, are superimposed with the entry SBP levels for their participants (red bar) and the achieved SBP for the placebo or standard (yellow bar) and active or intensive arms (green bars). It is important to recognize that the benefits observed with intensive therapy in SPRINT are relative to a standard arm with SBP levels below the level recommended in prior guidelines.

of people living with dementia in the United States by 2040 (from 11.7 to 9.5 million people). SPRINT-MIND provides the first rigorously adjudicated evidence that MCI can be prevented with intensive SBP control, demonstrating that what is good for the heart is good for the brain.

Before SPRINT-MIND, there was clinical equipoise concerning lower SBP thresholds and brain health. There was no conclusive evidence from 15 previous hypertension clinical trials for the effect of SBP reduction on cognitive impairment or dementia. The recently completed HOPE-3 study (Heart Outcomes Prevention Evaluation-3) was designed to assess the effect of blood pressure or lipid-lowering therapy on cognitive performance among 2361 older adults (age ≥70 years).[5] In contrast with SPRINT-MIND, HOPE-3 investigators concluded that SBP lowering had no effect on cognitive decline. Several critical differences in study design account for the negative HOPE-3 study findings: (1) Its study population was defined as intermediate risk (eg, fewer than half of participants had a diagnosis of hypertension); (2) its primary cognitive outcome was a decline in a single cognitive test (there was no adjudication of either MCI or dementia); and (3) the SBP difference between treatment groups was only 6 mm Hg. Of interest, a significant reduction in the rate of decline on the cognitive test was noted with active intervention among the highest baseline SBP tertile subgroup in HOPE-3.

The second recommendation of the American College of Cardiology/American Heart Association guideline is as follows: "For older adults (≥65 years of age) with hypertension and a high burden of comorbidity and limited life expectancy, clinical judgment, patient preference, and a team-based approach to assess risk/benefit is reasonable for decisions regarding intensity of BP lowering and choice of antihypertensive drugs."[2] This recommendation encapsulates the nuances inherent in the complexity of providing care to older individuals. Perhaps especially among the heterogeneous population of older adults with hypertension, a personalized, patient-centric approach that carefully integrates the individual's risks and benefits of more intensive BP control is necessary. This evaluation should incorporate the patient's additional comorbidities, frailty status, prognosis with regard to projected time to benefit from the intervention, and goals of care. The SPRINT eligibility criteria should also be considered. For example, SPRINT excluded participants with an SBP <110 mm Hg after 1 minute of standing. In addition, because of its other exclusions, its results cannot be generalized to older adults with prevalent dementia or residents of skilled nursing facilities.

SBP reduction is one of the few interventions for which there is now clear evidence of benefit to significantly reduce mortality and morbidity, including preventing the development of MCI, in older individuals, including ambulatory, frail older adults. It bears emphasis that these benefits were demonstrated relative to a group treated to a target SBP <140 mm Hg who would have been considered to be well controlled before the publication of the 2017 American College of Cardiology/American Heart Association guideline (Figure). The SPRINT-MIND findings may prompt further discussion to consider whether the recommended goal of 130 mm Hg in the guideline was actually too conservative. With the recognition that SBP control rates were suboptimal when the threshold was 140 mm Hg, it seems evident that greater attention needs to be devoted to improving SBP control rates among the high-risk population of older adults.

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Disclosures

None.

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