PERSPECTIVE

Is 60 the New 80 in Hypertension?

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Since the release of the "2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8)", much controversy has ensued over the appropriate systolic blood pressure goal for those over the age of 60 years. This guideline suggested liberalizing the target for this population to <150 mmHg, moving away from previous guidelines suggesting a target of <140 mmHg. While some national quality measures have accepted the new relaxed blood pressure goal, the American Heart Association and American College of Cardiology have not. Recently published data show that millions of adults over 60 years of age would be classified as controlled using a threshold of <150 mmHg, but not with a target of <140 mmHg. In addition, emerging randomized trial evidence suggests that targeting a systolic blood pressure well below 140 mmHg is beneficial in older adults. In light of the improved health and vitality of older adults, and the steady decline in cardiovascular and cerebrovascular mortality over recent decades, we do not think it is in good judgment to liberalize the treatment target in adults less than 80 years of age.

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The increased longevity and functionality that has been noted among older Americans has led some to declare that "80 is the new 60".[1] In one survey, 89 % of respondents did not consider 60 years as "old".[2] Life expectancy data from the United States Census Bureau suggests that 60-year-old men and women today, on average, will live to 81 and 84 years of age, respectively,[3] a marked increase in longevity from the middle of the twentieth century. Adults over the age of 60 make up 11 % of the American workforce, and that figure is projected to increase to 13 % by 2030, compared to just 6 % in 2000. Despite this demographic shift and previous guidelines suggesting patients between 60 and 80 years of age should strive to achieve a systolic blood pressure of <140 mmHg, the long-anticipated update by the Seventh Joint National Committee (JNC 7) suggested liberalizing the systolic blood pressure goal to <150 mmHg for those without diabetes or chronic kidney disease. This was based upon the absence of compelling prospective clinical trial data supporting the benefits of a lower blood pressure target in the elderly, as well as appropriate concern regarding adverse effects of aggressive treatment in this population. This guideline is often referred to as JNC 8,[4] though it does not represent the fulfillment of the committee initially organized and funded by the National Heart, Lung, and Blood Institute (NHLBI) in 2008. In 2013, the NHLBI decided that they would no longer serve as a primary agency issuing scientific guidelines, and instead would focus on partnering with the Institute of Medicine to support clinical guidelines originated by specialty societies. As specified in the JNC 8 report, the panel published their recommendations, which included liberalizing blood pressure targets for those over the age of 60. This specific recommendation, however, was not unanimously endorsed by the 17-member panel, which resulted in the five dissenting members on the initial commission publishing an article titled "Evidence supporting a systolic blood pressure goal of less than 150 mmHg in patients aged 60 years or older: the minority view".[5] Thus the JNC 8 writing group guideline does not represent a consensus of the commissioned experts and has not been endorsed by any governmental or professional society organization. Adopting this recommendation would represent a major change in the management of chronic hypertension, with one projection estimating that nearly six million patients would no longer receive antihypertensive treatment.[6]

In the Global Burden of Disease Study in 2010,[7] hypertension was the number-one cause of total global disease burden, greater than tobacco use and alcohol consumption combined. The magnitude of the disease burden likely reflects the fact that hypertension is the principal driver for coronary heart disease, heart failure, end-stage renal disease, and stroke events worldwide.[7] The American Heart Association (AHA) 2015 update of heart disease and stroke statistics reported a nearly 67 % prevalence of cardiovascular disease (CVD) among Americans 60 to 80 years of age.[8] Despite this high rate, however, there has been a progressive decrease in CVD morbidity and mortality over past decades, including a 75 % relative risk reduction in stroke mortality from 1950 to 2010, with treatment of hypertension as the main driver of this significant decline.[9]

We are concerned that relaxing treatment targets among hypertensive patients with known CVD and those with elevated CVD risk could have deleterious public health implications. A recent study by Borden

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et al. analyzed a large cardiology practice registry of over one million patients, and estimated that one in seven patients previously not meeting the 2003 JNC 7 systolic blood pressure goal of less than 140 mmHg would now be considered "at target" based on the JNC 8 writing group guidelines.[10] The authors extrapolate the high 10-year risk in this population using CVD event rate data from the Hypertension in the Very Elderly (HYVET)[11] and Systolic Hypertension in the Elderly Program (SHEP)[12] studies, estimating that treating high-risk patients over 60 years of age from a systolic blood pressure of 150 to 140 mmHg would have a number needed to treat of only ten individuals to prevent one CVD event over 10 years.[10] Another registry study corroborated the Borden et al. study, noting that one in six patients would be reclassified from uncontrolled to controlled hypertension based on the JNC 8 writing group guideline.[13] Outcomes among patients with resistant hypertension are an additional concern. A recent publication in this journal suggests that patients with resistant hypertension are elderly (mean age 68 years), with a high prevalence of comorbid conditions.[14] The authors noted that, overall, the use of AHA-recommended medications for resistant hypertension remains low, despite publication of guidelines targeting this demographic. Given that these patients represent a population at very high risk of cardiovascular events, we are concerned that relaxed blood pressure standards would increase clinical inertia regarding necessary multi-drug therapy for hypertension.

The public health impact of widespread implementation of this guideline in clinical practice has not yet been quantified. However, the National Committee of Quality Assurance (NCQA) recently adopted the JNC 8 guidelines in their Health Effectiveness Data and Information Set (HEDIS), a key tool in performance measures that is used by more than 90 % of health plans. In response, the president of the AHA published a letter strongly urging against adoption of a relaxed blood pressure target for those over the age of 60.[15] This letter mirrored the primary argument of the published dissenting opinion of "the minority view" mentioned above,[5] which stated that with the major advances in treatment of hypertension and reduction in cardiovascular disease, raising the goal would require stronger evidence than that used in guiding the initial goal of <140 mmHg. The AHA stated that the evidence was not adequate to support a target blood pressure of <150 mmHg for patients over 60 years of age. They also questioned the methodology used by the writing group for their literature review, which excluded meta-analyses as a source of evidence, and included only randomized controlled trial data. The AHA further cited two meta-analyses that both suggest a blood pressure goal of <140 mmHg may be more appropriate for those over age 60. In the Sipahi et al. analysis, among a total of over 70,000 patients across 17 trials, the incidence of stroke was reduced in patients with baseline systolic blood pressure of <140mmg Hg who were treated with antihypertensive medication versus placebo.[16] The Blood Pressure Lowering Treatment Trialists' Collaboration group analysis of over 32 randomized trials including more than 200,000 patients investigated differences in risk reduction with antihypertensive treatment according patients' baseline blood pressure, and found benefits in cohorts with baseline blood pressure <140 mmHg.[17]

Most recently, the much-anticipated SPRINT trial randomized 9361 older individuals (mean age 68 years) with systolic blood pressure <130 mmHg and an increased cardiovascular risk but without diabetes to a target of <120 mmHg (intensive treatment) compared with <140 mmHg (standard treatment).[18] The trial was stopped early, after a median follow-up of approximately 3 years, given a 25 % relative risk reduction in major CVD events as well as a 27 % relative risk reduction in all-cause mortality associated with intensive treatment. This all-cause mortality reduction resulted in a number needed to treat of 90 over that 3.26-year period. The SPRINT study of non-diabetics is numerically consistent with results from a previous study, the Action to Control Cardiovascular Risk in Diabetes (ACCORD), with identical systolic blood pressure targets.[19] In ACCORD, intensive treatment was associated with a non-significant reduction in CVD events (hazard ratio 0.88; 95 % confidence interval [CI], 0.73 to 1.06) and a significant reduction in stroke events (hazard ratio, 0.59; 95 % CI, 0.39 to 0.89). ACCORD (4733 participants) was a substantially smaller trial than SPRINT (9361 participants) and therefore may have been underpowered for the primary outcome.

Given these results, and the uncertainty regarding the clinical appropriateness of current guidelines, what should providers consider as an appropriate treatment target? The AHA and American College of Cardiology (ACC) plan to release their updated guidelines for treatment of uncomplicated hypertension in 2016, but in their 2015 update on management of hypertension in coronary artery disease, they recommend a treatment goal of <140/90 mmHg for those up to age 80 years.[20] Similarly, the American Society of Hypertension (ASH) released "Clinical practice guidelines for hypertension in the community" in 2013, and recommended a target systolic blood pressure of <140 mmHg for adults until 80 years of age.[21]

While guidelines are helpful road maps for busy clinicians, they vary with regard to methodological rigor and level of evidence. Ironically, the methodology utilized by the JNC 8 writing group may have been too stringent, as they excluded meta-analyses. While we await the refinement of clinical guidelines on hypertension, providers should reject the notion that "60 is the new 80" for their individual patients. We suggest a minimum systolic blood pressure goal of <140/90 in adults <80 years of age. Based on SPRINT, providers may be inclined to reconsider the former JNC 7 goal of <130/80 mmHg, particularly among individuals at highest risk. In the SPRINT trial, this was defined as follows: CVD other than

stroke; chronic kidney disease, a 10-year risk of CVD > 15 % based on the Framingham score; or an age of 75 years or older. In a recent analysis, Bress et al. note that 16.8 million adults in the United States meet SPRINT eligibility requirements and would benefit from a systolic blood pressure <120 mmHg.[22] Nonetheless, pending guideline revisions, we suggest that this blood pressure goal, although previously referred to as "ideal", should be achieved primarily through weight loss, reduced sodium and alcohol intake, and increased physical activity, given the higher rates of serious adverse events including hypotension, syncope, and acute kidney injury observed in the SPRINT trial.[17] At the end of the day, it is up to primary care providers to work with their patients to individualize safe, appropriate, and achievable goals.

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Compliance with Ethical Standards:

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

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