VIEWPOINT

Diagnosis and Treatment of Hypertension in the 2017 ACC/AHA Guidelines and in the Real World

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The recently released American College of Cardiology/American Heart Association (ACC/AHA) guidelines[1] promote radical changes in the management of hypertension. First, given the change in the definition of the condition (blood pressure >130/80 mm Hg instead of >140/90 mm Hg), the proportion of adults in the United States labeled as having hypertension has suddenly increased from 32% to 46%.[2] Second, the new blood pressure target of treatment is also accordingly lower. Third, use of antihypertensive drugs is to be guided by blood pressure as well as by the presence of cardiovascular disease (CVD), diabetes, or a more than 10% 10-year risk of developing CVD. Fourth, the guidelines put more emphasis on monitoring blood pressure at home and on team-based systems for managing hypertension.

The new guidelines mean that an estimated additional 31 million individuals in the United States now need treatment.[2] Most of this newly defined population of individuals with hypertension is expected to be manageable with nonpharmacological interventions, although 4.2 million of these newly diagnosed patients will require antihypertensive medication. Furthermore, with the new goals, an estimated 53% of the 55 million patients already taking antihypertensive drugs will need better blood pressure control.[2] This means that 29 million currently treated patients should intensify their current antihypertensive medication regimens. The guidelines reinforce the message that inexpensive drugs (eg, thiazides) are excellent first-line choices; however, to attain the lower blood pressure target, unavoidably, many patients will require combinations of multiple drugs, potentially including some expensive ones. The incidence of adverse events will likely increase with expanded treatment.

Expanding the definition of disease to label more people as having medical conditions and in need of treatment has become more common. Many specialties want to increase their volume of patients. Industry also cherishes larger markets for its products through expansive definitions of illness.[3] Guidelines are typically the final step to justify illness-by-committee and treatment overuse. However, this pattern does not seem to sufficiently explain the case of hypertension and the 2017 ACC/AHA guidelines. Hypertension is indeed a major risk factor for CVD and death. Starting at values as low as 115 mm Hg for systolic blood pressure (SBP), higher blood pressure linearly increases the risk of CVD events. Treatment of hypertension has substantially contributed toward increasing life expectancy in the 20th and 21st centuries. The goal of promoting a healthy lifestyle in millions of additional people who might be otherwise outside the scope of appropriate lifestyle modification is laudable. The 2017 ACA/AHA guidelines are a stellar report running at 481 pages, with full systematic review of the background evidence. The panel of authors is highly experienced and has no conflicts of interest. The intentions are superb and the prospects of saving lives are exciting. The main question is whether the recommendations are feasible in clinical practice.

A major driver for the changes introduced in the 2017 ACA/AHA guidelines was SPRINT (Systolic Blood Pressure Intervention Trial).[4,5] Funded by the National Institutes of Health, SPRINT randomized 9361 patients with SBP greater than 130 mm Hg to intensive blood pressure control of SBP to less than 120 mm Hg vs less than 140 mm Hg. The intensive control intervention used on average 2.8 antihypertensive drugs vs 1.8 in the control group. This one extra drug resulted in a statistically significant 0.54% reduction in the composite primary end point (myocardial infarction, other acute coronary syndromes, stroke, heart failure, and cardiovascular death) over a median follow-up of 3.26 years as well as a statistically significant reduction in overall mortality, leading to the early trial termination.

SPRINT was a well-done study, but it does have some caveats that become important when trying to translate its results to guidelines and then to actual clinical practice. Trials that are stopped early typically provide exaggerated estimates of benefits.[6] Regardless, some benefits do exist unquestionably by pushing for a lower blood pressure target. The issue is how to reap those benefits.

Blood pressure in SPRINT was measured under idealized research conditions in the participating clinical sites, with the patient resting quietly and not doing anything for 5 minutes.[4] Although expanding the use of home measurements for diagnosis and monitoring is a good idea, the quality of these measurements in the expanded population of labeled hypertensive patients may be uneven. Training hundreds of millions of people to perform reliable, good-quality blood pressure measurements requires committed resources. For management done in busy clinical settings, reproducing the ideal measurement conditions of SPRINT is difficult. Mislabeling of hypertension may be more common with the lower 130/80 mm Hg threshold. Flooding an already overburdened health care system with an estimated extra 31 million patients with hypertension plus probably several more millions of individuals falsely diagnosed as having hypertension will pose a considerable strain. Given that hypertension requires lifelong management, this strain may be both intense and sustained.

The benefits of intensive blood pressure control come with an accompanying increase in adverse effects (eg, hypotension, syncope, electrolyte abnormalities, and 1.21%

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per year vs 0.35% per year in the control group of acute kidney injury or failure in SPRINT).[4] As the treatment focus shifts to lower blood pressure ranges, benefits in actual clinical practice may become smaller. Conversely, adverse effects may remain equally high, or even become higher if medications are misused. Predictive risk modeling of the SPRINT data[7] showed that the benefit of more intensive blood pressure control was driven largely from the upper third of predicted risk of CVD events and that the adverse events were mostly in a subset of the population. Patients who have a clearly favorable, major benefit-to-harm ratio may be the minority.

Perhaps most important, SPRINT included patients with already established hypertension according to the old definition (>140/90 mm Hg), who were already treated with antihypertensive drugs and were older than 50 years (mean age, 68 years).[4] It is unclear how relevant these results are to the millions of younger adults who have been newly labeled with hypertension based on the new guidelines. In the group younger than 45 years, the new definition is estimated to triple hypertension prevalence among men and double the prevalence among women. Most of the newly diagnosed, nonelderly patients would have no previous disease. Therefore, the decision to treat with medications would depend largely on whether these individuals are estimated to be at more than 10% 10-year CVD risk. Here, the choice of ACC/AHA pooled cohort equations[8] to estimate CVD risk creates additional difficulties. The advantage is that the respective ACC/AHA cholesterol guidelines use the same risk estimator. However, the risk estimator has also been criticized for lacking proper calibration and for overestimating risk, particularly in young individuals. This may lead more low-risk people to aggressive drug treatment with questionable benefit-to-harm ratios.

The greatest benefit of the guideline recommendations may be that they emphasize, most likely for young adults, lifestyle interventions, including weight loss, healthy diet, physical exercise, reduced sodium intake, increased potassium intake, and curtailed alcohol consumption. In principle, shifting the health care system more toward prevention with lifestyle measures is a welcome move.[9] In the long-term, this emphasis may add value for the current health care system that undervalues prevention, and primary prevention in particular. However, it is unclear whether patients and clinicians are ready for such a change and whether these tens of millions of individuals will be able to obtain appropriate counseling and endorse effective, sustainable lifestyle modifications. Resources, supporting personnel, and infrastructure are still lacking in most places to achieve this long-due change. If primary prevention efforts fail, the likely option will be to resort to medications even for patients who would have done well with lifestyle modification. Thus, an emphasis on lifestyle-based prevention may paradoxically promote further overmedicalization of US society.

The wish to reap every benefit possible from blood pressure control, even for relatively low-risk patients, is welcome. However, clinicians should not forget that many high-risk patients remain undiagnosed even with very high blood pressure. Many others receive suboptimal treatment, even according to more conservative definitions of hypertension. The new guidelines promote team-based system approaches for better diagnosis and management of hypertension and, indeed, there is evidence that team-based systems can offer substantial gains on these fronts.[10] The ability to generalize these gains across diverse settings in clinical practice and to use limited resources wisely remains an open challenge.

ARTICLE INFORMATION

Published Online: December 14, 2017. doi:10.1001/jama.2017.19672

Conflict of Interest Disclosures: The author has completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Funding/Support: The work of Dr Ioannidis is supported by an unrestricted gift from Sue and Bob O'Donnell. METRICS is supported with funding from the John and Laura Arnold Foundation.

Role of the Funder/Sponsor: The funders had no role in the preparation, review, or approval of the manuscript, or the decision to submit the manuscript for publication.

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