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# Managing stage 1 hypertension: Consider the risks, stop the progression

## ABSTRACT

The 2017 American College of Cardiology and American Heart Association Task Force on Clinical Practice Guidelines on the treatment of hypertension recommended lifestyle modification and monitoring every 3 to 6 months for patients with stage 1 hypertension. However, the guidelines did not include recommendations for patients whose blood pressure is unresponsive to lifestyle therapy. The authors review the updated AHA position statement, which is meant to help clinicians manage patients with stage 1 hypertension and a low 10-year risk of atherosclerotic cardiovascular disease.

## KEY POINTS

There are no national guidelines for the treatment of stage 1 hypertension in patients with a low 10-year risk for cardiovascular disease.

This population represents an important guideline gap: most patients with stage 1 hypertension progress to stage 2 hypertension, which increases the risk for cardiovascular events.

Lifestyle modifications and, if these fail, pharmacotherapy can effectively prevent progression from stage 1 to stage 2 hypertension.

Pharmacologic therapy should be considered in patients with stage 1 hypertension who do not achieve goal blood pressure within 6 months.

**T**HREE YEARS AFTER THE American College of Cardiology (ACC) and American Heart Association (AHA) Task Force on Clinical Practice Guidelines published their 2017 recommendations for treatment of hypertension,<sup>1</sup> an important guideline gap was identified. The 2017 guidelines recommended lifestyle modification and monitoring every 3 to 6 months for patients with stage 1 hypertension, but they did not include recommendations for managing patients whose blood pressure is unresponsive to lifestyle therapy.

Patients with stage 1 hypertension have blood pressure levels of 130–139/80–89 mm Hg, have less than 10% calculated 10-year risk of atherosclerotic cardiovascular disease (ASCVD), and are unable to achieve a blood pressure goal of less than 130/80 mm Hg after 6 months of lifestyle changes. (The ASCVD Risk Estimator Plus is accessible on the ACC website.<sup>2</sup>)

To clarify the information gap in the 2017 guidelines, the AHA released a scientific statement on the management of hypertension in this specific patient population.<sup>3</sup>

## CLINICAL SETTING

The AHA scientific statement on the management of stage 1 hypertension in adults with a low calculated 10-year ASCVD risk focuses on outpatient management of hypertension.

## INTENDED AUDIENCE

While the AHA statement is directed to practicing internists and primary care physicians, it

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is pertinent to any practicing physician or advanced practitioner engaged in treating adults with hypertension or in the primary prevention of atherosclerotic events. The AHA scientific statement is relevant to all patients with stage 1 hypertension with a low 10-year ASCVD risk and assumes that no secondary causes of hypertension are involved.

### ■ WHO WROTE THE GUIDELINES?

The authors of the AHA scientific statement are nephrologists, cardiologists, internists, and a PhD epidemiologist, and the document reflects their consensus opinion. The statement is a comprehensive literature review, but its development did not utilize a more formalized method for preparation, such as the Delphi method.<sup>4</sup> The AHA supported the development of the scientific statement, and authors' potential conflicts of interest are listed at the conclusion of the document. Without a presumption of conflict, we note that one author received grant funding from the AHA. No other relevant conflicts of interest were disclosed.

### ■ WHAT ARE THE MAIN RECOMMENDATIONS?

The AHA statement summarizes the adverse effects of elevated blood pressure and the clinical impact of reducing it and offers lifestyle-based and medication-based treatment options. There are 5 take-home points, as follows:

- Stage 1 hypertension is prevalent in outpatient settings and usually progresses to stage 2 hypertension
- Stage 1 hypertension increases the risk for adverse cardiovascular events
- It is possible to blunt or stop the progression of stage 1 hypertension through lifestyle modifications alone
- If lifestyle modifications fail to lower blood pressure in 6 months, pharmacotherapy should be considered for patients with persistent stage 1 hypertension
- The benefits of treating stage 1 hypertension in patients with a low 10-year ASCVD risk outweigh the risks, given the elevated event rate and common progression to stage 2 hypertension.

The patient population described by the scientific statement is primarily young adults

with a low incidence of cardiovascular events, reflecting the fact that age is a major risk factor for cardiovascular disease (CVD).<sup>3,5</sup> Randomized controlled trials powered to detect clinical events are often unfeasible in adults younger than 40 due to the large sample size and long time frame needed to detect events in a lower-risk cohort. Consequently, the AHA recommendations<sup>3</sup> reflect observational data on all of the following:

- The significance of hypertension on CVD risk
- Lifestyle therapy to prevent progression of hypertension
- Next steps if lifestyle therapy fails.

### ■ SIGNIFICANCE OF LIFETIME RISK FOR CVD AND PROGRESSION OF HYPERTENSION

The prevalence of hypertension increases with age, reaching 82% in US adults age 75 and older.<sup>1,6</sup> Up to 31.6% (95% confidence interval [CI] 27.6%–35.4%) of patients with stage 1 hypertension progress to stage 2 hypertension.<sup>7</sup> Before the 2017 ACC/AHA clinical practice guidelines were published, observational studies showed a proportional relationship between rising systolic blood pressure and the risk for future CVD events and all-cause mortality.<sup>1,8–10</sup>

Patients with stage 1 hypertension as defined by the 2017 ACC/AHA guidelines had an increased incidence of cardiovascular disease (hazard ratio [HR] 1.75, 95% CI 1.22–2.53) compared with their normotensive counterparts.<sup>3,10</sup> Another study found similar elevations in the risk for cardiovascular disease (HR 1.82, 95% CI 1.12–2.94) and stroke (HR 1.79, 95% CI 1.03–3.11) in patients with stage 1 hypertension compared to normotensive patients.<sup>11</sup> Recent multiple studies involving young adults stratified by the revised hypertension definitions further supported this relationship.<sup>10–13</sup> One study that followed Chinese participants over age 35 without CVD for 20 years found that patients with stage 1 hypertension according to the 2017 ACC/AHA guidelines had an increased risk of developing CVD (HR 1.78, 95% CI 1.50–2.11), coronary heart disease (HR 1.77, 95% CI 1.33–2.36), stroke (HR 1.79, 95% CI 1.45–2.22), and CVD mortality (HR 2.50, 95% CI 1.66–3.77) compared with normoten-

**There is a proportional relationship between systolic pressure and the risk of CVD events**

sive participants.<sup>13</sup> There was no relationship between stage 1 hypertension and increased CVD risk in participants over age 60.<sup>13</sup>

Compared with hypertension onset at a later age, hypertension in early adulthood correlates with increased carotid intima-media thickness and coronary artery calcification scores above 100 and confers a significant risk for target-organ damage and premature adverse CVD outcomes.<sup>14,15</sup>

### ■ BLUNTING THE PROGRESSION OF HYPERTENSION WITH LIFESTYLE THERAPY

Age-related increases in blood pressure may not be inevitable. Data suggest that low body mass index and adherence to a Dietary Approaches to Stop Hypertension (DASH) diet are associated with a low risk for hypertension over 30 years of follow-up.<sup>1,16,17</sup> Lifestyle modification is the cornerstone of hypertension prevention and treatment.

Although much of the data on lifestyle interventions identifies blood pressure reduction rather than clinical events as the primary end point,<sup>1,17–21</sup> there is a well-established relationship between rising blood pressure and adverse cardiovascular events.<sup>11,12</sup> Evidence-based lifestyle interventions supported by the AHA statement include reducing sodium intake, enhancing potassium intake, decreasing alcohol intake, and increasing physical activity.<sup>1</sup> PREMIER trial (Lifestyle Interventions for Blood Pressure Control)<sup>21</sup> found significant and sustained blood pressure reductions and less use of hypertensive medications (38% prevalence baseline hypertension vs 12% at 6-month follow-up,  $P < .001$ ) in patients randomized to established lifestyle therapy (weight loss, sodium restriction, and increased physical activity) plus the DASH diet. At 18 months, there was a lower prevalence of hypertension and less use of hypertensive medications (38% prevalence baseline hypertension vs 22% at 18-month follow-up,  $P > .05$ ).<sup>21</sup> The change in prevalence of hypertension between 6-month and 18-month follow-up could have derived from multiple challenges to maintain adherence to lifestyle therapy, though this was not assessed during the trial.

Blood pressure lowering associated with individual lifestyle changes tends to reduce

blood pressure less than medications.<sup>3</sup> Because each lifestyle intervention has a modest impact on blood pressure, 2 or more interventions (eg, sodium intake and weight loss) should be targeted.<sup>18</sup> To promote durability in lifestyle modifications, it helps if the patient receives lifestyle counseling by a provider with expertise in behavior change.<sup>3,22,23</sup>

### ■ RECOMMENDATIONS WHEN LIFESTYLE THERAPY FAILS

For patients in whom lifestyle modifications do not successfully lower blood pressure below 130/80 mm Hg after 6 months, the AHA statement recommends continued lifestyle interventions and considering treatment with a thiazide diuretic, calcium channel blocker, angiotensin-converting enzyme inhibitor, or angiotensin receptor blocker. The recommendation for pharmacologic intervention applies especially to individuals with a family history of premature CVD, a history of hypertension during pregnancy, or a history of premature birth or premature menopause.<sup>3,24–26</sup> Several randomized trials<sup>27–30</sup> support the AHA emphasis on the effectiveness of pharmacologic interventions (especially with angiotensin-converting enzyme inhibitors and angiotensin receptor blockers) to prevent the progression from what is now classified as stage 1 to stage 2 hypertension.<sup>3</sup>

### ■ WHAT IS DIFFERENT FROM PRIOR GUIDELINES?

These recommendations for early treatment of stage 1 hypertension differ from the prior guidelines with the suggestion of pharmacologic intervention for patients whose blood pressure does not respond to lifestyle modifications. Like the 2017 ACC/AHA hypertension clinical practice guidelines, vigorous implementation of nonpharmacologic or lifestyle therapy remains the initial recommendation for patients with stage 1 hypertension who have an estimated 10-year ASCVD risk of less than 10%. The blood pressure in these patients should be reassessed after 3 to 6 months.<sup>1</sup>

### ■ DO OTHER SOCIETIES AGREE?

The 2018 Task Force for the management of hypertension published by the European Soci-

**Lifestyle modification is the cornerstone of hypertension prevention and treatment**

ety of Cardiology (ESC) and the European Society of Hypertension (ESH) recommended a systolic blood pressure goal of less than 140 mm Hg.<sup>31</sup> Blood pressure of 130–139/85–89 mm Hg was considered “high-normal blood pressure,” and antihypertensive medications were not recommended in the absence of very high cardiovascular risk due to established CVD. However, patients with a calculated 10-year ASCVD score of 5% to 10% were considered at high risk. Further, the ESC/ESH guidelines note that antihypertensive drugs may be considered in patients with blood pressure close to the threshold of 140/90 mm Hg after a prolonged attempt to control blood pressure with lifestyle changes, and they suggest that other conditions such as a family history of premature CVD and human immunodeficiency virus infection increase cardiovascular risk.<sup>31</sup>

### ■ HOW WILL THIS CHANGE DAILY PRACTICE?

Patients should be informed that many patients with stage 1 hypertension can lower their blood pressure via intensive lifestyle therapy without the need for medication, but also that medication might be a reasonable option if lifestyle changes do not achieve the desired effect.<sup>17,21</sup> If lifestyle therapy fails to lower blood pressure to less than 130/80 mm Hg, patients and physicians should have some reassurance from trials from trials by Zhang et al<sup>32</sup> and by the SPRINT Research Group.<sup>33</sup> These trials demonstrated that targeting a systolic blood pressure goal of less than 130 mm Hg in patients with hypertension who are over age 50 resulted in lower rates of fatal and nonfatal major cardiovascular events and lower all-cause mortality without increasing the risk of adverse events from drug therapy used to achieve a lower blood pressure.<sup>32,33</sup>

Given the significant proportion of patients with stage 1 hypertension who progress

to stage 2 hypertension and the stepwise increase in cardiovascular risk with each successive stage, we believe that the aggressive treatment of stage 1 hypertension can reduce cardiovascular events.

### ■ WHEN WOULD THE GUIDELINES NOT APPLY?

The recommendations provided in the AHA scientific statement apply only to patients in whom lifestyle therapy was not effective at reducing blood pressure to less than 130/80 mm Hg after 6 months. These guidelines do not apply to patients who achieve a blood pressure of under 130/80 mm Hg with 6 months of lifestyle therapy, who are already on antihypertensive medications, or who have secondary causes of hypertension.

### ■ THE BOTTOM LINE

The updated AHA position statement is meant to assist clinicians in navigating an important guideline gap in the 2017 ACC/AHA recommendations, ie, the management of patients with stage 1 hypertension and a low 10-year ASCVD risk. The authors of the position statement correctly claim that patients who do not achieve a blood pressure goal of less than 130/80 mm Hg after 6 months of lifestyle therapy should be considered for pharmacologic therapy. However, we believe that clinical judgment should prevail. The ACC/AHA recommendations are population-based and may not apply to individual situations. Both the AHA statement and 2017 ACC/AHA guidelines should serve as a conceptual framework for clinicians, but they do not replace patient-centered conversations between patients and providers. ■

### ■ DISCLOSURES

The authors report no relevant financial relationships which, in the context of their contributions, could be perceived as a potential conflict of interest.

**Guidelines are valuable conceptual frameworks but do not replace patient-doctor conversations**



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