Hypertension

REVIEW

Debate on the 2025 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: New Blood Pressure Targets, Lower Is Better—And Possible

Lucas Lauder, Kazem Rahimi, Michael Böhm, Felix Mahfoud

ABSTRACT: The American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guideline has now released the long-awaited 2025 American College of Cardiology/American Heart Association Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults. Since the previous version, which had been in place for 8 years, meta-analyses and several treat-to-target trials investigating lower versus standard blood pressure targets have been published. Based on these, the 2025 American College of Cardiology/American Heart Association guideline recommends in adults with confirmed hypertension, an office blood pressure goal of <130/80 mm Hg, with encouragement to further reduce systolic blood pressure to <120 mm Hg. Here, we set out why we support these lower blood pressure targets and outline strategies to achieve them.

Key Words: adult ■ blood pressure ■ cardiology ■ hypertension ■ hypotension

Hypertension guidelines are critically important. Elevated blood pressure (BP) is the most prevalent modifiable risk factor for cardiovascular disease (CVD) morbidity and mortality worldwide.[1] In 2019, an estimated 626 million women and 652 million men were affected.[2] Elevated BP is a major contributor to both short- and long-term organ damage. The risk of CVD, cerebrovascular disease, renal disease, and fatal events increases continuously in a log-linear fashion, beginning at office systolic BP levels above 90 mm Hg.[3–7]

Several clinical trials and meta-analyses have demonstrated that pharmacological BP lowering reduces the risk of CVD events and all-cause mortality.[8] For instance, a meta-analysis including data from 613 815 participants found that each 10 mm Hg reduction in systolic BP reduced the relative risk of major CVD events by 20%, coronary heart disease by 17%, stroke by 27%, heart failure by 28%, and all-cause mortality by 13%.[8] These associations were observed regardless of age[9] and sex,[10] in patients with and without diabetes,[11] and in both primary and secondary prevention settings.[12]

The 2025 American College of Cardiology (ACC)/American Heart Association (AHA) guideline and the 2023 European Society of Hypertension and 2024 European Society of Cardiology (ESC) hypertension guidelines are aligned on many aspects.[13,14] This concordance is expected given their reliance on largely the same body of evidence.[13,14] However, there are notable differences in 3 key areas: (1) the definition and classification of hypertension, (2) treatment initiation thresholds, and (3) BP treatment targets.

THRESHOLDS AND TRADE-OFFS IN DEFINING HYPERTENSION

In 2017, the ACC/AHA guideline revised the definition of hypertension to a BP of ≥130/80 mm Hg,[15] which substantially increased the prevalence of hypertension in the United States from 32% to 46%.[16,17]

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REVIEW

Nonstandard Abbreviations and Acronyms

ACC	American College of Cardiology
ACCORD-BP	Action to Control Cardiovascular Risk in Diabetes-Blood Pressure
AHA	American Heart Association
BP	blood pressure
BPROAD	Blood Pressure Control Target in Diabetes
CRHCP	China Rural Hypertension Control Project
CVD	cardiovascular disease
ESC	European Society of Cardiology
ESPRIT	Effects of Intensive Systolic Blood Pressure Lowering Treatment in Reducing Risk of Vascular Events
PREVENT	Predicting Risk of cardiovascular Events
SPRINT	Systolic Blood Pressure Intervention Trial

Of note, about 1 in 10 individuals classified as hypertensive under this definition were not recommended for pharmacological therapy but for lifestyle modification alone.[17] Globally, applying this lower threshold would result in a 72% relative increase in hypertension prevalence, with the most pronounced increase in low-income countries.[18] The 2025 ACC/AHA guideline retains this definition of hypertension, including its subclassification into stage 1 hypertension (BP 130–140/80–90 mm Hg) and stage 2 hypertension (BP ≥140/90 mm Hg). In contrast, the European Society of Hypertension and ESC continue to define hypertension as BP ≥140/90 mm Hg (Table).[13,14]

These differences highlight the complexity of defining hypertension thresholds and establishing treatment targets, and may lead to confusion among patients and clinicians.[16] Of course, any threshold is inherently arbitrary, as the relationship between BP and CVD outcomes is continuous, and BP measurements are subject to substantial biological and technical variability.[19] If the treatment thresholds were based on meta-analyses showing relative risk reductions across a wide range of pretreatment BP, including those with 120 mm Hg for systolic BP, the vast majority of adults would be recommended for treatment.[12]

Clinical practice guidelines aim to support professionals across diverse settings—clinical, social, and financial. Therefore, disease definitions, once decoupled from treatment thresholds, must be framed with broader implications in mind. These definitions influence how hypertension is communicated to patients, how individuals perceive their health, and how health insurance coverage is determined. While lowering the diagnostic threshold may encourage earlier adoption of risk-reducing behaviors and interventions, it also increases the number of individuals labeled with a chronic disease, potentially resulting in socioeconomic consequences, including changes in insurance premiums and coverage. From this perspective, the definition of 140/90 mm Hg may be the most practical and balanced approach if treatment is not only linked to this single BP threshold.

TREATMENT THRESHOLDS: WHO TO TREAT?

All 3 guidelines recommend pharmacological therapy in nearly all patients with an office BP ≥140/90 mm Hg, and a risk-based approach for those with a systolic BP of 130 to 139 mm Hg or a diastolic BP of 80 to 89 mm Hg (Table).[13,14] Unlike the 2023 European Society of Hypertension guideline, the 2024 ESC and 2025 ACC/AHA guidelines include formal risk assessment using the Systematic Coronary Risk Evaluation 2, Systematic Coronary Risk Evaluation 2-Older Persons, or Predicting Risk of cardiovascular Events risk calculators, respectively (Table). The 2024 ESC guideline uses risk assessment to identify patients at high risk within the 130 to 139/80 to 89 mm Hg BP range and recommends initiating pharmacotherapy if BP remains ≥130/80 mm Hg after 3 months of lifestyle interventions. In contrast, the 2025 ACC/AHA guideline recommends immediate pharmacotherapy for all patients with an office BP 130 to 139/80 to 89 mm Hg who are at increased CVD risk but also for lower-risk patients if BP remains ≥130/80 mm Hg after 3 to 6 months of lifestyle modification. The criteria for determining high risk to justify pharmacotherapy differ between guidelines (Table). The risk-based approach is founded on the following principles:

1. Many of the death attributed to high BP occur in patients with systolic BP <140 mm Hg.[20]
2. The benefit of antihypertensive therapy depends on an individual's overall CVD risk.[21]
3. At any given BP level, the absolute CVD risk varies by age, sex, and comorbidities.[21]
4. CVD risk factors and modifiers often cluster in the same individuals.[22]

Although the relative risk reduction from pharmacological treatment is similar across all levels of CVD risk, even at a systolic BP of <140 mm Hg, patients with higher CVD risk experience a greater absolute risk reduction.[12,21] Moreover, an individual-patient data meta-analysis from the BP Lowering Treatment Trialists' Collaboration found that compared with treating everyone with a systolic BP ≥140 mm Hg, a CVD risk strategy would require treatment of fewer patients to prevent the same number of events or would prevent more events with the same number of patients treated.[23]

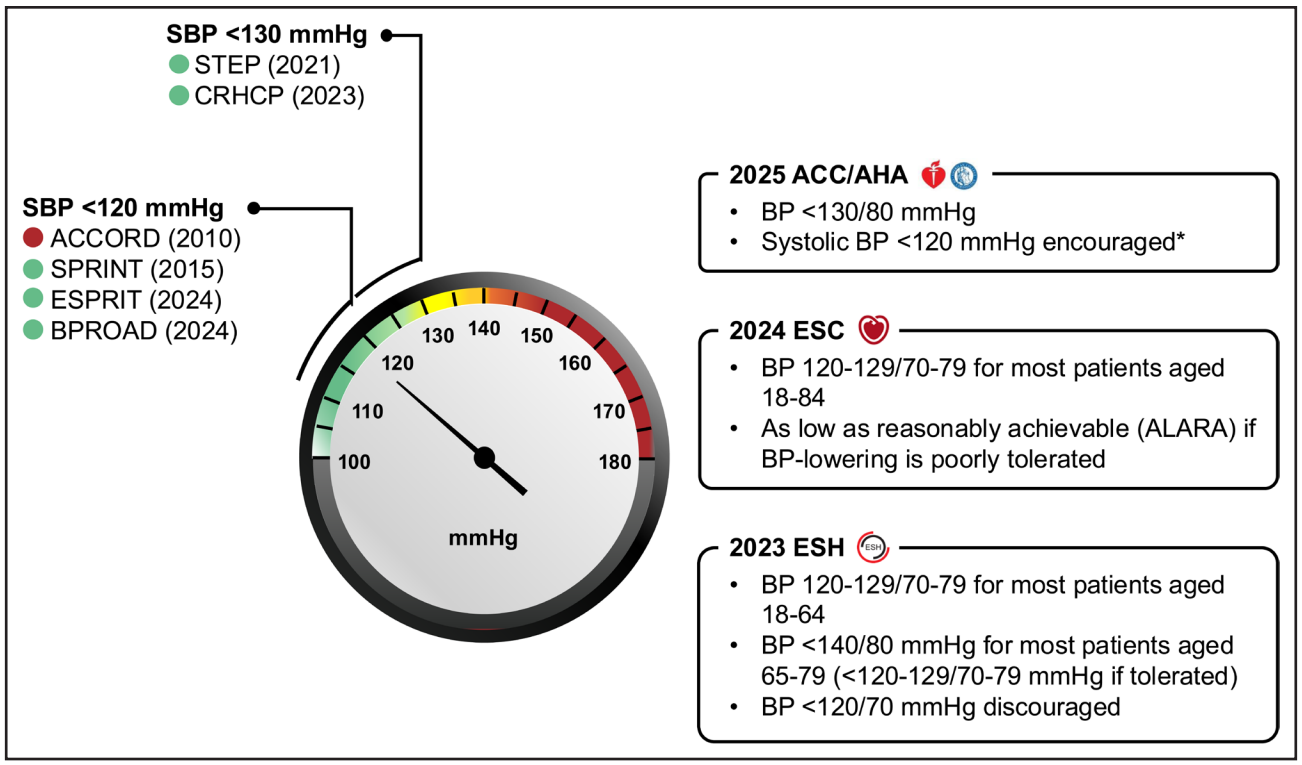

Figure. Blood pressure (BP) targets in recent treat-to-target trials and guidelines.
The figure summarizes the systolic BP (SBP) targets for intensive treatment groups in recent treat-to-target trials, alongside guideline-recommended targets. The bullet colors indicate whether the primary efficacy end point was achieved (green) or not achieved (red). *Systolic BP <130 mm Hg and diastolic BP <80 mm Hg, with encouragement to lower systolic BP to <120 mm Hg (class 1 if 10-year CVD risk PREVENT [Predicting Risk of cardiovascular Events] ≥7.5%; class 2b if <7.5%). ACC indicates American College of Cardiology; AHA, American Heart Association; BPROAD, Blood Pressure Control Target in Diabetes; CRHCP, China Rural Hypertension Control Project; ESC, European Society of Cardiology; ESH, European Society of Hypertension; ESPRIT, Effects of Intensive Systolic Blood Pressure Lowering Treatment in Reducing Risk of Vascular Events; SPRINT, Systolic Blood Pressure Intervention Trial; and STEP, Strategy of Blood Pressure Intervention in the Elderly Hypertensive Patients.

Five recent trials of intensive BP-lowering treatment—ACCORD-BP (Action to Control Cardiovascular Risk in Diabetes-Blood Pressure),[24] SPRINT (Systolic Blood Pressure Intervention Trial),[25] CRHCP (China Rural Hypertension Control Project),[26] ESPRIT (Effects of Intensive Systolic Blood Pressure Lowering Treatment in Reducing Risk of Vascular Events),[27] and BPROAD (Blood Pressure Control Target in Diabetes)[28]—all enrolled patients with a systolic BP ≥130 mm Hg and high CVD risk. In 4 of these trials (except for ACCORD-BP) intensive systolic BP lowering to either <120 mm Hg or <130 mm Hg, compared with standard BP lowering, reduced the risk of the primary outcomes.[25–28] Three of these trials also showed that intensive treatment decreased CVD and all-cause mortality.[25–27]

In the context of initiating antihypertensive medication in patients who do not have an increased CVD risk (10-year CVD risk according to PREVENT [Predicting Risk of cardiovascular Events] <7.5%), the 2025 ACC/AHA guideline refers to individual-patient data meta-analyses of the BP Lowering Treatment Trialists' Collaboration.[12,29] One of these analyses indicates that lowering BP is associated with a reduced risk of major cardiovascular events at baseline BP even <120/70 mm Hg.

In our view, treating all patients with office BP between 130 and 139 mm Hg systolic or 80 to 89 mm Hg diastolic—if not reduced to <130 mm Hg systolic and <80 mm Hg diastolic after 3 to 6 months of lifestyle modifications—irrespective of their CVD risk, could lead to overtreatment. Overtreatment may result in adverse events possibly outweighing the benefits of BP reductions, poor guideline adoption, and a diversion of focus away from those at highest CVD risk, who could benefit the most from BP lowering.

TREATMENT TARGETS: HOW LOW SHOULD WE GO?

The 2025 ACC/AHA guideline recommends (class of recommendation 1) in adults at increased CVD risk (≥7.5% using the PREVENT risk calculator) with confirmed hypertension, an office BP goal of <130/80 mm Hg, with encouragement of further reduction of systolic BP to <120 mm Hg to lower CVD events and

REVIEW

Table. Definitions of Hypertension, Thresholds for Antihypertensive Medications and BP Treatment Targets Across Guidelines

	2023 ESH guideline[13]	2024 ESC guideline[14]	2025 ACC/AHA guideline
Categories of BP and definition of hypertension	Optimal: SBP <120 mm Hg and DBP <80 mm Hg	Nonelevated: SBP <120 mm Hg and DBP <70 mm Hg	Normal: SBP <120 mm Hg and DBP <80 mm Hg
	Normal: SBP 120–129 mm Hg and DBP 80–84 mm Hg	Elevated: SBP 120–139 mm Hg or DBP 70–89 mm Hg	Elevated: SBP 120–129 mm Hg and DBP <80 mm Hg
	High-normal: SBP 130–139 mm Hg and DBP 85–89 mm Hg	Hypertension: SBP ≥140 mm Hg or DBP ≥90 mm Hg	Hypertension stage 1: SBP 130–139 mm Hg or DBP 80–89 mm Hg
	Hypertension grade 1: SBP 140–159 mm Hg and DBP 90–99 mm Hg		Hypertension stage 2: SBP ≥140 mm Hg or DBP ≥90 mm Hg
	Hypertension grade 2: SBP 160–179 mm Hg and DBP 100–109 mm Hg		
	Hypertension grade 3: SBP ≥180 mm Hg and DBP ≥110 mm Hg		
Office BP threshold for pharmacological treatment initiation	BP ≥140/90 mm Hg if age 18–79 y (class 1) or SBP ≥160 mm Hg (class 1; consider SBP ≥140 mm Hg [class 2]) if age ≥80 y	BP ≥140/90 mm Hg (class 1)	BP ≥130/80 mm Hg in primary prevention if 10-y CVD risk (PREVENT) ≥7.5% or in secondary prevention of CVD (class 1)
		BP ≥130/80 mm Hg despite 3 mo of lifestyle treatment if one of the following (class 1)*	
	BP≥130/80 mm Hg if history of CVD, predominantly CAD (class 1)	High-risk conditions (established CVD, HMOD, DM if aged ≥60 y, FH, or moderate or severe CKD)	BP ≥130/80 mm Hg in primary prevention if 10-y CVD risk (PREVENT)<7.5% if lifestyle interventions fail to lower SBP <130 mm Hg and DBP <80 mm Hg (class 1)
	Individualized in frailty (class 1)	10-y CVD risk (SCORE2/SCORE2-OP)≥10%	
		10-y CVD risk (SCORE2/SCORE2-OP) 5–<10% in the presence of risk modifiers or risk tool tests	Individualized in substantial frailty
		Individualized in substantial frailty	
Office BP treatment targets (if tolerated)	SBP 120–129 mm Hg and DBP 70–79 mm Hg if age 18–64 y (class 1)	SBP 120–129 mm Hg (class 1) and DBP 70–79 mm Hg (class 2b) if age 18–84 y	SBP <130 mm Hg and DBP <80 mm Hg with encouragement to lower SBP <120 mm Hg if 10-y CVD risk (PREVENT)≥7.5% (class 1)
		Lower targets if tolerable	
	Primary goal of <140/80 mm Hg if age 65–79 y (class 1) and 120–129/70–79 mm Hg to be considered if tolerable (class 2)	Individualized and more lenient targets (eg, SBP <140 mm Hg) if pretreatment symptomatic orthostatic hypotension or age ≥85 y (class 2a)	SBP <130 mm Hg and DBP <80 mm Hg with encouragement to lower SBP <120 mm Hg if 10-y CVD risk (PREVENT)<7.5% (class 2b)
	Primarily SBP 140–150 mm Hg (if tolerated 130–139 mm Hg) in isolated systolic hypertension with age 65–79 y (both class 1)	Individualized and more lenient targets (eg, SBP <140 mm Hg and DBP <90 mm Hg) in moderate-to-severe frailty or life-limiting disease (class 2b)	Individualized in frailty
	Primarily SBP 140–150 mm Hg (class 1; consider 130–139 mm Hg [class 2]) if age ≥80 y		
	Individualized in frailty (class 1)		
	Treatment to <120/70 mm Hg discouraged (class 3)		

ACC indicates American College of Cardiology; AHA, American Heart Association; BP, blood pressure; CAD, coronary artery disease; CKD, chronic kidney disease; CVD, cardiovascular disease; DBP, diastolic blood pressure; DM, diabetes mellitus; ESC, European Society of Cardiology; ESH, European Society of Hypertension; FH, familial hypercholesterolemia; HMOD, hypertension-mediated organ damage; PREVENT, Predicting Risk of cardiovascular Events; SBP, systolic blood pressure; SCORE2, Systematic Coronary Risk Evaluation 2; and SCORE2-OP, Systematic Coronary Risk Evaluation 2-Older Persons.

*Exceptions: clinically significant moderate-to-severe frailty, pretreatment symptomatic orthostatic hypotension, age ≥85 y, or limited predicted lifespan (<3 y; class 2a).

all-cause mortality (Table). In adults who are not at increased risk (10-year CVD risk according to PREVENT <7.5%) with confirmed hypertension, the same targets may also be reasonable (class of recommendation 2b) to lower the risk of further BP elevation (Table). Notably, the ACC/AHA guidelines emphasize that individualization and relaxation of the BP target may be necessary in patients who struggle to tolerate antihypertensive treatment, experience side effects, or have a limited life expectancy.

These recommendations are based on several meta-analyses and trials of intensive BP-lowering treatment (Figure).[25–28] A series of individual-patient data meta-analyses have demonstrated that pharmacological BP reduction lowers the relative risk for CVD outcomes as well as CVD and all-cause mortality in patients regardless of age,[9] sex,[10] known diabetes,[11,30] and whether they had a history of CVD disease[12] even at baseline BP <120/70 mm Hg.[12] A network meta-analysis including studies published up to December 2015 identified linear associations between mean achieved systolic BP and the risk of CVD and mortality, with the lowest risk observed at the lowest achieved systolic BP levels (120–124 mm Hg).[31] These meta-analyses have been complemented by more

recent treat-to-target trials providing evidence for treatment strategies aimed at specific intended BP targets.

Since 2015, 5 key trials investigating intensive versus standard BP treatment targets demonstrated that lowering systolic BP to <120 mm Hg in the intensive versus <140 mm Hg in the standard treatment group in high-risk patients reduced primary CVD outcomes.[24–28] Although the mean achieved systolic BP at 1 year was only around 120 mm Hg, many patients did attain lower BP.

We commend the ACC/AHA guideline committee for recognizing the extensive body of evidence and recommending a BP target of <120/70 mm Hg in high-risk individuals if tolerable. Opponents of such intensive BP targets have traditionally raised 2 main concerns. In our view, however, these concerns are no longer tenable. The first concern is that in some patients, a very low BP target unintentionally increases the rate of CVD and all-cause death. This worry stems from the understanding that myocardial perfusion occurs during diastole, unlike other organs where coronary perfusion happens primarily during systole. Observational studies and post hoc analyses of randomized controlled trials fueled this concern by suggesting J-curve or U-curve associations between BP and CVD risk, with excess risk associated with not only high systolic BP but also low on-treatment systolic BP, particularly below <120 mm Hg and in patients with significant coronary artery stenoses.[32–35] However, such studies only provide associations that could be due to uncontrolled confounding. Mendelian randomization analyses and cohort studies with comprehensive adjustments for confounders found no evidence of a nonlinear association between on-treatment systolic or diastolic BP (>90 mm Hg and 50 mm Hg, respectively) and adverse CVD outcomes.[7,30,36] Furthermore, meta-analyses of intensive BP treatment trials have found no evidence that baseline diastolic BP modified the beneficial effects of intensive BP lowering within the included diastolic BP range.[37,38]

The second argument put forward by opponents of lower BP targets is the increased risk of adverse events associated with intensive BP lowering. While it is true that intensive BP reduction can lead to some adverse effects, these occurrences are relatively rare.[39] However, evidence suggests that the benefits of intensive BP lowering outweigh its harms. Indeed, with careful monitoring of harms as was done in more recent trials, the rate of adverse outcomes has been low.[40]

The risk of adverse events associated with intensified BP management warrants caution, especially in very frail patients, but this is a relatively small patient group[41] and the 2025 ACC/AHA guideline does recommend caution and personalization in such scenarios. Overall, the significant reductions in CVD outcomes support the recommendation to target systolic BP primarily to <130 mm Hg, and even to <120 mm Hg if tolerated and achievable in patients with hypertension at increased CVD risk, as per the 2025 ACC/AHA guideline.

However, the extension of pharmacological treatment to all patients with stage 1 hypertension, even at low predicted risk of CVD, deviates from the 2023 European Society of Hypertension and 2024 ESC guidelines and requires further scrutiny. Existing large-scale RCTs and their meta-analysis have almost exclusively included patients at high risk of CVD and cannot provide a reliable answer to the question of effects in low-risk individuals. Two individual-participant meta-analyses of RCTs have aimed to investigate this question and have not identified any heterogeneity of treatment effects by baseline categories of CVD risk.[21,23] However, the lowest category of risk in those studies was still relatively high. To support its class 2b recommendation, the 2025 ACC/AHA guideline refers to the placebo-controlled Prevention of Hypertension in Patients with Pre-Hypertension (PREVER-Prevention) trial, which showed that antihypertensive therapy in apparently low-risk patients with an office BP of 120 to 139/80 to 89 mm Hg without CVD delayed progression to systolic BP ≥140 mm Hg or diastolic BP ≥90 mm Hg during follow-up.[42] However, this study did not formally assess risk, and more importantly, was not powered for investigation of major cardiovascular outcomes. While there is no reason to assume that the relative effect of BP lowering will change substantially below a particular threshold, it is possible that treatment effects and treatment harms do not change proportionally when the predicted risk of CVD is lower. Even if this were not the case, the number needed to treat would be substantially higher in low-risk patients. Therefore, more research is needed in this patient group as correctly acknowledged by the class 2b recommendation.

IMPLEMENTING TREATMENT TARGETS INTO PRACTICE

Lifestyle modification, often underemphasized, remains a cornerstone of hypertension prevention and management. Recommended lifestyle interventions include weight loss for patients with overweight or obesity, heart-healthy diet, reduction in sodium and alcohol, increase in dietary potassium intake, aerobic and resistance exercise of ≥150 minutes of moderate physical activity per week and resistance exercise ≥2 days per week, and stress management practices (eg, breathing control techniques or yoga).

In line with the 2024 ESC guideline,[14] the 2025 ACC/AHA guideline recommends thiazide or thiazide-like diuretics, dihydropyridine-type calcium channel blockers, and renin-angiotensin system blockers (angiotensin-converting enzyme or angiotensin-receptor blockers) as first-line drugs. β-blockers should be reserved for patients with compelling indications, such as coronary heart disease or chronic heart failure. For most patients,

the guideline recommends initial combination therapy with a renin-angiotensin system blocker and either a calcium channel blocker or a diuretic, preferably as a single-pill combination to improve adherence and BP control.

For patients with hypertension stage 1 defined as an office BP of 130 to 139/80 to 89 mm Hg, antihypertensive medication can be started as monotherapy. Similarly, BP-lowering medications should be carefully initiated, in some cases as monotherapy, in older and frail patients because hypotension or orthostatic hypotension may develop, and in those with multiple drug intolerances.

Despite the availability of numerous safe and effective medications, BP control rates remain unacceptably low both globally and in the United States. In 2019, global control rates (defined as BP <140/90 mm Hg) were 23% for women and 19% for men.[2] In the United States, from 2021 to 2023, the control rates were 51% among individuals with hypertension and 68% among those taking antihypertensive medications.[43] These figures reflect poor adherence and persistence to lifestyle recommendations and antihypertensive medications, along with physician inertia. Lowering BP to recommended target values will likely necessitate the use of more medications or higher doses. In the intensive BP treatment trials, patients typically required an average of 2 to 3 antihypertensive medications to achieve a mean systolic BP of ≈120 mm Hg.[25–28] Since using a greater number of pills is linked to nonadherence, strategies to enhance adherence are critical.[44] These include the use of long-acting agents and once-daily single-pill combinations to simplify treatment regimens and improve adherence. In addition, educating patients, incorporating patient preferences and values, as well as self-management interventions, can further promote adherence and persistence. Self-management approaches, home BP measurements, and team-based care models involving various health care professionals can facilitate adherence and improve BP control.[45,46]

Finally, for certain patients with resistant hypertension or those who do not achieve BP control due to multiple drug intolerances or nonadherence, the 2025 ACC/AHA guideline considers renal denervation a reasonable therapeutic option.

CONCLUSIONS

The 2025 ACC/AHA guideline's recommendation to pursue lower BP targets, particularly systolic BP <130 mm Hg and ideally <120 mm Hg, is supported by recent treat-to-target trials and meta-analyses demonstrating significant reductions in CVD events and mortality among high-risk patients. However, evidence supporting these targets in low-risk individuals remains limited. In few patients with intolerances, certain comorbidities, or significant frailty, these targets may need to be individualized. Achieving these BP targets will require a comprehensive strategy that combines effective pharmacological therapy with sustained support for lifestyle modifications. Ultimately, success will depend on improving adherence and persistence through simplified treatment regimens, team-based care models, patient-centered education, and dedicated efforts to overcome physician inertia. In summary, targeting lower BP in patients with hypertension is both better and possible.

ARTICLE INFORMATION

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