Hypertension Guidelines and Interventions

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KEYWORDS

• Hypertension • High blood pressure • Elevated blood pressure
• Hypertension guidelines • Antihypertensive interventions • Primary care

KEY POINTS

- Nearly half of all adults in the United States have hypertension, making high blood pressure one of the leading causes of office visits and prescription medication use in primary care settings.
- Hypertension is a major risk factor for cardiovascular disease, including heart attack, stroke, heart failure, and chronic kidney disease. The risk of dying of one of these conditions doubles with each 20 mm Hg increase in systolic blood pressure and each 10 mm Hg increase in diastolic blood pressure.
- Despite various hypertension guidelines with differing diagnosis and treatment thresholds, consensus exists on the importance of routine blood pressure screening and the integration of multiple blood pressure measurements to establish a diagnosis of hypertension.
- Clinicians should be familiar with the varied guidelines in order to make patient-informed choices for screening and management of hypertension, mindful of population-based considerations related to race, older patients, and use of telehealth.

INTRODUCTION

Hypertension, or high blood pressure (HBP), is one of the most commonly recognized and managed conditions in primary care and a major contributor to cardiovascular morbidity and mortality in the United States. National ambulatory survey data compiled from Federally Qualified Health Center service delivery data revealed that hypertension is the most prevalent chronic condition noted for all patients with the lifetime risk of hypertension surpassing 80% in the United States.[1,2] A national ambulatory medical care survey similarly evaluated chronic conditions in ambulatory settings, revealing that hypertension created the highest percentage of all visits in metropolitan and nonmetropolitan areas, at 33.6% and 27.7%, respectively.[3] Moreover, hypertension is one of the most common indications for chronic prescription medication use.[4]

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Prevalence data indicate that 46.7% of United States adults have hypertension, which equals an estimated 122 million adults (62.8 million men and 59.6 million women).[5] More than half of the individuals with hypertension have blood pressure (BP) that is inadequately controlled.[6] Although pediatric hypertension will not be discussed in this article, it is important to note that in child and adolescent populations, HBP has also increased due to growing obesity.[7]

Given this persistent prevalence in primary care settings, it is imperative for clinicians to recognize and appropriately manage HBP. Guidelines, however, for diagnosis and treatment have not always been consistent. During the last few decades, multiple expert groups have provided slightly varied recommendations. Given these guidelines suggest slightly different parameters, it can be challenging for patients and clinicians to achieve therapeutic treatment goals. Moreover, disparities in hypertension are also prevalent, especially among consistently marginalized populations. Because different patient populations may require varied interventions, it is imperative for clinicians to be familiar with the guidelines and the associated evidence to not only improve outcomes but also make informed and equitable decisions.

Causes of Hypertension

Primary hypertension, formerly referred to as essential hypertension, is idiopathic and vastly outnumbers HBP caused by identifiable and potentially reversible causes, termed secondary hypertension. Although idiopathic, the development of primary hypertension is influenced by genetic predispositions as well as environmental risk factors related to diet, physical activity, and substance consumption.[2] Secondary hypertension accounts for about 10% of adult patients with HBP.[2] Although less common, secondary causes should be considered when evaluating patients with elevated BP because a potential cure and/or marked improvement will significantly reduce cardiovascular risk. Secondary causes must be specifically considered in resistant hypertension and when evaluating younger patients with HBP. The most prevalent causes of secondary hypertension are renovascular disease, primary aldosteronism, and obstructive sleep apnea. Less common but other important causes of secondary hypertension include renal parenchymal disease, pheochromocytoma, hypothyroidism and hyperthyroidism, aortic coarctation, primary hyperparathyroidism, congenital adrenal hyperplasia, and acromegaly.

Most of these secondary hypertension causes have specific clinical features that assist clinicians in determining the cause and appropriately intervening or referring when necessary. Clinicians should also recognize there are many common exogenous agents that contribute to elevated BP. Multiple commonly used substances, such as prescription medications, over-the-counter pain medications, supplements, herbals, and food substances affect BP. Attention to these agents and elimination if possible may positively reduce BP and facilitate the attenuation of antihypertensive therapy.

Hypertension and Cardiovascular Disease

Elevated BP is correlated with an increased incidence of cardiovascular disease and associated mortality. This includes diagnoses of angina, myocardial infarction, heart failure, stroke, peripheral artery disease, and aortic aneurysm.[2] Each 20 mm Hg increase in systolic BP and each 10 mm Hg increase in diastolic BP confers twice the risk of an individual dying of heart disease, stroke, or other vascular condition.[2] Compared with other modifiable risk factors, hypertension accounts for the most deaths from cardiovascular disease and can be attributed to about one-quarter of all cardiovascular events including coronary artery disease and revascularization, stroke, and heart failure.[2] Hypertension is only second to diabetes mellitus as the

leading cause of end-stage renal disease in the United States, accounting for one-third of these patients.[2]

GUIDELINES

Several hypertension guidelines and recommendation statements from expert groups exist, including those from the Joint National Committee (JNC), American College of Cardiology/American Heart Association (ACC/AHA), European Society of Cardiology/European Society of Hypertension (ESC/ESH), the United States Preventive Services Task Force (USPSTF), and American Academy of Family Physicians (AAFP). Each of these is evidence-informed, yet among them exist instances of varying recommendations regarding screening, diagnosis, and treatment thresholds or targets. Despite differences, consistent features among guidelines include the importance of screening, the use of appropriate technique when measuring BP to improve measurement accuracy, and the integration of multiple BP readings when making the diagnosis of hypertension. A brief synopsis of key expert group guidelines and recommendation statements is provided, followed by sections on guideline-informed approaches to hypertension screening, diagnosis, and treatment synthesized from these guidelines.

In 2003, the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) was released. This was considered a landmark publication, including simplified system of BP classification, recommendations for prevention and management, as well as recommendations for frequency of hypertension screening based on previous measurements.[8] This was followed by the report from the panel members appointed to the Eighth Joint National Committee (JNC 8), in 2014, which focused on treatment. JNC 8 did not address hypertension diagnosis but did provide guidance on management based on age and comorbid conditions.[9] Although use of the JNC guidelines is considered out of date in favor of newer guidelines, they are included for their important historical context and due to the fact that some organizations such as the AAFP continue to endorse some of their components.

The ACC and AHA released collaborative comprehensive guidelines on the prevention, detection, evaluation, and management of HBP for adults in 2017.[2] The ACC/AHA introduced notably lower BP thresholds at which a diagnosis of hypertension is made, and utilization of overall cardiovascular risk estimation using the 10-year risk of atherosclerotic cardiovascular disease (ASCVD) to guide pharmacologic management of hypertension.

In 2018, the ESC and the ESH published joint guidelines addressing hypertension diagnosis, treatment thresholds, and BP targets.[10] Notable recommendations in the ESC/ESH report included recommendations for ambulatory measurement for more accurate diagnostic purposes, a simplified medication algorithm, and treatment guidance regarding early initiation of combination therapy.[10,11] These guidelines use the terminology “grade” when referring to hypertension classification by BP measurement rather than “stage” used in other guidelines.

The USPSTF provided an updated recommendation statement for hypertension screening in 2021, providing an “A” recommendation for screening all individuals aged 18 years or older for hypertension.[12] Methods for screening are also addressed by the USPSTF, suggesting that the initial screening BP measurements be taken in an office setting, termed office blood pressure measurement (OBPM), and confirmatory measurements taken outside of the clinical setting before confirming the diagnosis and initiating treatment.

The AAFP released a clinical practice guideline on BP targets in adults with hypertension in 2022. It did not address screening, diagnosis, or other aspects of treatment. AAFP maintained their endorsement of the older JNC 8 targets by "differences in methodological rigor, insufficient consideration of harms, and management of conflict of interest" perceived in the newer guidelines.[13]

GUIDELINE-INFORMED APPROACH TO SCREENING

Hypertension is usually asymptomatic, yet it is the most common contributor to adverse cardiovascular and cerebrovascular outcomes. As noted, its prevalence remains high in the general population. These factors justify the importance of individuals undergoing screening for hypertension as preventive health care.

The USPSTF has reaffirmed its guidelines for screening all adults aged 18 years and older for hypertension with OBPM.[12] When reaffirming this "A" recommendation based on high levels of evidence, the USPSTF concluded with high certainty that screening for hypertension in adults has a substantial net benefit. Suggested screening intervals are every 3 to 5 years for individuals aged 18 to 39 years with previously nonelevated BP and who are not considered at an increased risk for hypertension. For individuals aged 40 years or older or younger adults who are at increased risk for hypertension, annual screening is recommended. USPSTF cites characteristics that increase an individual's risk for hypertension as Black race, family history, overweight and obesity, sedentariness, stress, tobacco use, excessive alcohol use, and diet that is high in fat or sodium or low in potassium.[14,15]

Although the USPSTF has determined there is insufficient evidence to recommend screening for hypertension in asymptomatic children and adolescents, the American Academy of Pediatrics recommends that all children be screened for hypertension starting at age 3.[7,10] According to data from National Health and Nutrition Examination Survey examining elevated BPs from 2013 to 2016, the new guidelines would reclassify approximately 800,000 additional youth as having hypertension.[16]

Similar hypertension screening intervals are recommended by ESC/ESH, and the older JNC 7 guidelines, with integration of previous BP measurements considered when determining screening frequency, as noted in **Table 1**. Screening intervals are not addressed in AAFP, ACC/AHA, or JNC 8 guidelines.

Blood Pressure Measurement

Correct BP measurement is essential in patient-centered and equitable hypertension screening, diagnosis, and management. Measurement of BP may be achieved using one of three strategies including OBPM, 24-hour ambulatory blood pressure

Table 1
Recommended blood pressure screening frequency by guideline

Guideline	Recommendation
ESC/ESH	Annually: adults with high–normal BP (130–139/85–89 mm Hg) Every 3 years: adults with normal BP (120–129/80–84 mm Hg) Every 5 years: adults with optimal BP (<120/80 mm Hg)
JNC 7	Annually: adults with systolic BP 120–139 mm Hg OR diastolic 80–90 mm Hg Every 2 years: all adults with BP <120/80 mm Hg
USPSTF	Annually: age >40 y or <40 y with hypertension risk factors Every 2 years: age 18–39 years and without hypertension risk factors

AAFP, ACC/AHA, and JNC 8 do not address screening intervals.
Data from Welton et al,[2] Chobanian et al,[8] James et al,[9] Williams et al,[10] Krist et al,[12] Coles et al.[13]

monitoring (ABPM), and home blood pressure monitoring (HBPM). Initial BP screening should take place in the office setting with OBPM. Depending on feasibility and resources, ABPM and/or HBPM should be used to confirm measurements and diagnosis outside of the clinical setting before establishing a hypertension diagnosis or initiating treatment.

Appropriate technique optimizes BP measurement accuracy. Proper technique includes the use of a calibrated device measuring BP of the upper arm with the brachial artery elevated to the level of the right atrium. For OBPM and HBPM, the individual should be in a seated position with the back supported and feet flat on the floor after five minutes of rest.[17] Activities such as strenuous exercise, smoking, and caffeine intake should be avoided in the 30 minutes preceding measurement because these may cause an elevated reading.[2] Selecting an appropriate cuff size is essential as BP may be overestimated in the setting of a too-small cuff, and underestimated if the cuff is too large.[17] The cuff bladder length should be 75% to 100% of the individual's arm circumference.[17]

GUIDELINE-INFORMED APPROACH TO DIAGNOSIS

Making the diagnosis of hypertension is complex and should include multiple BP measurements taken with good technique both in-office and out-of-office settings. Guidelines set forth by both ACC/AHA and ESC/ESH offer important standards of care for the detection of hypertension. There is concordance between these two sets of guidelines in most areas except for thresholds to determine the diagnosis (**Table 2**). Both guidelines place an emphasis on using multiple validated BP measurements in the initial assessment.[18] Although the report by the panel members of JNC8 did not define cutoffs for normal or elevated BPs, its predecessor JNC 7 did, with a threshold for diagnosing hypertension at 140/90 mm Hg.[8,9]

To establish a diagnosis of hypertension, individuals should undergo routine screening initially with OBPM. If elevated, confirmatory measurements are required. Both the most recent AHA/ACC and ESC/ESH similarly place emphasis on accurate measurement of BP with multiple readings, although with slightly different number of measurements.[2,10] The ACC/AHA recommends averaging two or more BPs on two separate occasions, and the ESC/ESH recommends three readings for the office measurement, followed by confirmation through repeated office readings or out-of-office ABPM or HBPM measurements. Diagnosis is made if the BP meets at least the Stage/Grade 1 threshold (130–139/80–89 mm Hg for ACC/AHA, 140–159/90–99 mm Hg for ESC/ESH).[2,10] If a patient's systolic and diastolic measurements fall into different stages/grades, they should be classified in the higher stages/grades.

Hypertension diagnosis should also involve evaluation for the presence of target-organ damage, cardiovascular or lifestyle risk factors, and potential causes of

Table 2
Blood pressure classification (in mm Hg)

	Normal (Systolic/ Diastolic)	Elevated/High Normal	Hypertension, Stage/Grade 1	Hypertension, Stage/Grade 2	Hypertension, Stage/Grade 3
ACC/AHA	<120/<80	120–129/<80	130–139/80–89	≥140/≥90	Not defined
ESC/ESH	120–129/80–84	130–139/85–89	140–159/90–99	160–179/100–109	≥180/≥110

ESC/ESH guidelines use "grade" language instead of "stage." ACC/AHA guidelines do not define a stage 3.

Data from Welton et al[2] and Williams et al.[10]

secondary hypertension. This evaluation can be achieved with thorough history and physical examination for all patients, with additional testing as indicated based on these assessments. Initial additional investigations may include electrocardiogram and laboratory studies such as metabolic panel, urinalysis, thyroid studies, and lipid panel.

GUIDELINE-INFORMED APPROACH TO TREATMENT

The goals of hypertension management may include lowering BP itself. However, treatment should also focus on preventing or slowing the progression of associated cardiovascular diseases, thus reducing the risk of hypertension-associated morbidity and mortality. The AHA/ACC guidelines specifically integrate the utilization of risk estimation using the 10-year risk of ASCVD to establish the BP threshold for treatment.[2] This risk can be calculated using the ACC's ASCVD Risk Estimator Plus (tools.acc.org/ascvd-risk-estimator-plus), which considers an individual's age, sex, racial identity, systolic and diastolic BP, use of antihypertensive medication, total and HDL cholesterol, current or past cigarette use, and whether the individual has a history of diabetes.[19] Individuals are stratified into low (<5%), borderline (5–<7.5%), intermediate (7.5–<20%), and high (≥20%) 10-year risk of ASVCD.[19]

Regardless of approach, goals of hypertension management may be achieved through nonpharmacologic and pharmacologic interventions or a combination of both using shared decision-making with patients considering individuals' values, preferences, and comorbidities or concurrent conditions.

Nonpharmacologic Interventions

All individuals with either elevated BP or a formal diagnosis of hypertension should be recommended lifestyle modifications or promotion of a healthy lifestyle as nonpharmacologic interventions for BP management. These lifestyle modifications include optimization of dietary consumption and supplementation, weight, and physical activity. Each of these modifications has varying effects on BP measurement.

Adherence to the Dietary Approaches to Stop Hypertension (DASH) diet, which is rich in fruit, vegetables, and whole grains, and restricts the intake of saturated fats and sodium, may result in an up to 11 mm Hg reduction in systolic BP. This reduction may be seen in as few as 2 weeks. Sodium restriction alone may decrease systolic BP by 5 mm Hg if sodium is limited to less than 1500 mg per day, whereas daily potassium supplementation of 3500 to 5000 mg is associated with approximately a 4 mm Hg reduction. An average 4 mm Hg decrease in systolic BP is also observed when alcohol consumption is limited to 1 drink or lesser for women and 2 drinks or lesser for men each day.[20]

For patients with clinically defined overweight or obesity (BMI >25 kg/m^2 and >30 kg/m^2, respectively), with each kilogram shed, an individual can expect a 1 mm Hg reduction in systolic BP. Engaging in sufficient physical activity, defined as three to five 30-minute moderate-intensity aerobic sessions per week, is associated with an approximately 5 mm Hg systolic BP decrease.[20]

Pharmacologic Interventions

Large-scale trials have shown that pharmacologic management of hypertension results in significant risk reduction of cardiovascular and cerebrovascular diseases, including relative risk reductions of almost 50% for heart failure, 30% to 40% for stroke, and 20% to 25% for myocardial infarction.[21] ACC/AHA guidelines recommend that pharmacologic interventions are initiated in tandem with nonpharmacologic

interventions if a patient has stage 2 hypertension (>140/90 mm Hg) or if a patient with stage 1 hypertension (130–139/80–89 mm Hg) also has clinical ASCVD or a 10-year ASVCD risk of 10% or greater.[2] If a patient does not meet these thresholds, nonpharmacological interventions alone are indicated with a reassessment in 3 to 6 months for those with elevated BP (120–129/<80 mm Hg) or stage 1 hypertension with less than 10% 10-year ASCVD risk.[2]

When selecting an initial pharmacologic agent for the management of hypertension, both the ACC/AHA guidelines and an associated systematic review, suggest monotherapy with an agent from one of four medication classes because there was similar efficacy profiles for each. These medication classes include thiazide or thiazide-like diuretics, long-acting calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, or angiotensin II receptor blockers (ARBs).[2,22] For patients with stage 2 hypertension, combination therapy with medication from 2 different first-line agents may be considered.

When initiating a thiazide or thiazide-like diuretic, evidence supports selecting chlorthalidone over hydrochlorothiazide due to its greater antihypertensive efficacy, prolonged half-life, and noted reduction in cardiovascular disease incidence.[2] However, in the absence of medical indications or contraindications, clinicians should use patient-centered care and shared decision-making in the selection of a specific antihypertensive agent. Factors such as medication cost, dosing, and side effect profile should be considered.

Some patients may have a compelling indication for a specific agent or class based on their comorbidities or may have contraindications to certain agents or classes. Compelling indications are defined as a major improvement in outcomes independent of BP. In these instances, the initial agent choice should be individualized to the patient. Examples may include the use of ACE inhibitor or ARB, beta-blocker, diuretic, or aldosterone antagonists for patients with heart failure with reduced ejection fraction; ACE inhibitor or ARB, beta-blocker, aldosterone antagonist for individuals with a history of myocardial infarction; or beta-blocker, calcium channel blocker in the instance of atrial fibrillation or flutter requiring rate control.[8]

ACC/AHA guidelines recommend that once pharmacologic therapy for hypertension is initiated, patients should be reassessed at monthly intervals until their target BP has been met (**Table 3**). Once met, the patient may be reassessed in 3 to 6 month intervals. If the target goal is not met, adherence to therapy should be assessed and optimized, and intensification of therapy can be considered with dose uptitration or combination therapy.[2]

Most patients with hypertension will eventually require more than one antihypertensive agent to achieve adequate BP control, especially if their baseline systolic BP is 15 mm Hg or greater above goal. Combination therapy, which uses medications from two different classes, has a more profound impact on lowering BP than dose titration of a single agent and carries a lower risk of side effects. Combination therapy should be initiated for patients who have systolic BP of 20 mm Hg or greater above goal or diastolic BP of 10 mm Hg or greater above goal.[2,10] When selecting a

Table 3
Target blood pressure for patients with hypertension (in mm Hg)[2]

With known ASCVD or 10-y ASCVD risk ≥10%	≤130/80 *is recommended*
Without increased ASCVD risk	≤130/80 *may be reasonable*

Data from Welton et al.[2]

combination therapy regimen, optimal combinations include an ACE inhibitor or an ARB plus a calcium channel blocker, or an ACE inhibitor or an ARB plus a thiazide diuretic. Do not use ACE inhibitors and ARBs together because they target the same physiologic mechanism of BP control and may pose patient harm without increased efficacy.[2]

Resistant Hypertension

Resistant hypertension is defined as BP that remains elevated to at least 130/80 mm Hg on three pharmacologic agents—one of which must be a diuretic—or hypertension that requires four or more agents in order to maintain a BP of less than 130/80 mm Hg. About 17% of people with hypertension meet this definition, and it is more common in patients who have clinically defined obesity, are older, are Black, have chronic kidney disease, or have secondary causes of hypertension.[2]

The approach to evaluation and management of resistant hypertension should begin by confirming treatment adherence and ensuring accurate OBPM with the consideration of HBPM or ABPM to exclude white coat hypertension or other pseudoresistance. Then, address contributing lifestyle factors such as physical inactivity, dietary factors, or substance use. If hypertension remains resistant, discontinuation or dose reduction of substances with potential to increase BP is indicated; these may include nonsteroidal anti-inflammatory drugs (NSAIDs), stimulants, oral contraceptives, or certain antidepressants. Workup for secondary causes of hypertension should then be pursued and managed if discovered. At this point, additional pharmacologic interventions may be considered, including maximizing diuretics, the addition of a mineralocorticoid receptor antagonist such as spironolactone, or loop diuretics, particularly in the setting of reduced glomerular filtration rate.[2] If BP remains uncontrolled, the patient should be referred to a hypertension specialist.

POPULATION-BASED CONSIDERATIONS

The burden of hypertension disproportionally influences certain populations within the United States. Two populations disproportionally affected are the elderly and BIPOC (black, indigenous, people of color) patients. Differences in management for these populations are compounded by the fact that the guidelines have offered varied recommendations for management. Because hypertension has significant effects on cardiovascular outcomes and inequities may persist if clinicians are not consistently following criteria and guidelines, we highlight these two populations below. We conclude with a brief discussion of telemedicine as an emerging technology that might have the potential to address inequities and enhance access to hypertension care for majority and marginalized populations alike.

"Race" and Hypertension

Race is a social construct and has traditionally been used to categorize people based on phenotypic characteristics. Since the human genome project, sociologists, anthropologists, and geneticists have deepened our understanding of human biology, ancestry, and genealogy. Evidence continues to grow that humans are genetically similar, and there is more variation within racial groups than among them.[23] Despite developing more nuanced and critical approaches to considering race and ethnicity within academic medicine in the last few decades, so-called race-based decisions on management and assessment have persisted.

One of the key problems beyond its social construction is that racialized categories have not only been defined differently over time but they are also unreliable proxies for

differences and do not fully account for the complexity of people's racial and ethnic backgrounds.[24] In fact, race and ethnicity have inappropriately been used in clinical risk prediction equations in multiple fields of medicine including internal medicine, obstetrics, pediatrics, and surgery.[24]

The JNC-8 was one of the first guidelines to make race-based recommendations for first-line antihypertensive medication treatment.[9] Critics of these recommendations point out that not only was race not well defined in the studies used to justify the recommendation but the study authors also did not discuss how they determined race for participants.[25]

It is becoming increasingly evident that continuing to use racial or ethnic categories in the absence of contextual factors may contribute to health inequities.[26] The assessment of kidney disease is one such example and is particularly relevant to hypertension given the links between high BP and chronic kidney disease. Scholars have suggested that there are potentially positive and negative downstream consequences of race-based correction factors in nephrology, including influences on kidney donations and transplantation, use of nephroprotective medications, and kidney surveillance.[27] As a result, many academic health centers and their affiliated hospitals have raised concerns about using race as a measurable biological variable and are beginning to instead recommend biomarkers for determining estimated glomerular filtrations without race adjustments.[28]

As noted, health disparities persist in the management of hypertension, which has implications for morbidity and mortality for persistently at-risk populations. Precision medicine and the utilization of unique genetic markers by patient may be a promising option for tailored treatment of the hypertensive patient of the future. Until studies use biologic or genetic markers consistently rather than socially constructed ones, however, the authors currently recommend against following racial or ethnic-based recommendations for the treatment of hypertension.

Older Adults with Hypertension

Given hypertension prevalence increases with age, managing hypertension in elderly populations is an important consideration for primary care clinicians. Treating hypertension in older patients can be a challenge, however, given multiple medical societies not only offer different thresholds for the initiation of pharmacotherapy but also recommend different BP targets (**Table 4**).

Even without those differences, it is also noteworthy that older patients have traditionally been excluded or underrepresented in studies that have been used to guide the screening and management of hypertension.[29] This challenge is compounded by potential modifications in cognition, increased side effect risks, polypharmacy,

Table 4
Blood pressure targets in elderly patients (in mm Hg)

Guideline	60–69 y	70–79 y	Older than 80 y
AAFP	<140/90	<140/90	<140/90
ESC/ESH	<130/80[a]	<140/80[a]	<140/80[a]
ACC/AHA	<130/80	<130/80	<130/80
JNC 8	<150/90	<150/90	<150/90

[a] ESC/ESH guidelines recommend less than 140/90 mm Hg for patients with CKD.
Data from Welton et al,[2] James et al,[9] Williams et al,[10] and Coles et al.[13]

structural and functional changes of the vasculature, and changing pharmacodynamics as patients age.

Although guidelines may differ, there is consensus that lowering systolic BP confers significant cardiovascular benefits when systolic BP is less than 160 mm Hg. All current guidelines recommend targets be less than 150/90 mm Hg. Nonpharmacologic interventions should be strongly encouraged when appropriate and possible. If pharmacologic treatment is needed, thiazide diuretics, ACE inhibitors, and calcium channel blockers are all considered first-line and have shown benefits on cardiovascular disease in older patients. Beta-blockers, loop diuretics, and alpha-blockers generally should be avoided unless there are other indications. Clinicians should enter into a shared discussion and decision with patients that balances several factors including comorbidities, patient preference, and life expectancy.[30]

Telemedicine and Hypertension Management

Telemedicine has emerged as an option to provide quality care for a variety of conditions. Since the coronavirus disease 2019 pandemic, it has increasingly been used for improved access and potential cost reduction while improving communication regarding patients' health. It may be beneficial in hypertension care for specific populations, including older adults, people who are medically underserved, individuals with multiple comorbidities, and people subject to isolation due to pandemics or national emergencies.[31]

Evidence exists that integration of telehealth correlates with improved BP control for each of these aforementioned subgroups of patients with hypertension.[31–35] However, the only hypertension guidelines that provide specific recommendations for its use are those from ACC/AHA.[31] These guidelines recommend diagnosis confirmation using telemedicine, and counseling via telehealth in conjunction with standard care for improved treatment adherence and BP control.[2] Telehealth management of hypertension will likely gain expanding relevance to primary care clinicians and should be considered to improve patient care.

SUMMARY

Hypertension remains one of the most common conditions encountered in the primary care setting. It is a major contributor to cardiovascular disease and associated morbidity and mortality. Various guidelines exist for the screening, diagnosis, and management of hypertension, including approaches for individuals of specific populations. Clinicians should be familiar with these guidelines and make patient informed choices to improve cardiovascular outcomes and eliminate inequities.

CLINICS CARE POINTS

- High blood pressure is a leading cause of office visits and prescription medication use in the primary care setting.
- Even modest BP elevation may significantly raise the risk of mortality from cardiovascular disease.
- Guidelines support routine BP screening and the use of multiple BP measurements to establish hypertension diagnosis.
- Hypertension screening and management should be patient-informed and mindful of population-based considerations including race, age, and use of telehealth.

DISCLOSURE

The authors have no relevant financial or nonfinancial interests to disclose.

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