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Clinical Hypertension

Review

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Highlights of the 2026 Korean Society of Hypertension guidelines for the management of hypertension: what's new and what has changed

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Abbreviations

ABPM, ambulatory blood pressure monitoring; ACE, angiotensin-converting enzyme; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor-neprilysin inhibitor; ASI, aldosterone synthase inhibitor; bid, twice a day; BP, blood pressure; BUMP 2, Blood Pressure Monitoring in High-Risk Pregnancy; CCB, calcium channel blocker; CHAP, Chronic Hypertension and Pregnancy; CI, confidence interval; CKD, chronic kidney disease; CVD, cardiovascular disease; DBP, diastolic blood pressure; DM, diabetes mellitus; eGFR, estimated glomerular filtration rate; ESPRIT, Effect of Systolic Blood Pressure Reduction on Cardiovascular Outcomes in Patients With Hypertension; GLP-1, glucagon-like peptide-1; HBPM, home blood pressure monitoring; HF, heart failure; HMOD, hypertension-mediated organ damage; IDH, isolated diastolic hypertension; KODC, Korea Orphan and Essential Drug Center; KSH, Korean Society of Hypertension; LOE, Level of Evidence; MRA, mineralocorticoid receptor antagonist; qd, once a day; RESPECT, Recurrent Stroke Prevention Clinical Outcome; SBP, systolic blood pressure; SGLT2, sodium-glucose

ABSTRACT

The recently released 2026 Korean Society of Hypertension (KSH) guidelines incorporate contemporary advances in the diagnosis and management of hypertension. This highlight summarizes the most important updates, focusing on the underlying evidence and key changes, particularly the newly introduced and revised recommendations. The major additions include the incorporation of isolated diastolic hypertension into blood pressure (BP) classification, the first integration of cuffless BP devices into clinical practice, and the incorporation of a new therapy with a BP-lowering effect (angiotensin receptor–neprilysin inhibitors, sodium–glucose cotransporter 2 inhibitors, non-steroidal mineralocorticoid receptor antagonists, and aldosterone synthase inhibitors). A dose-based classification of single-pill combination therapies has been introduced to enhance treatment adherence. In addition, obesity, hypertension in young adults, hypertensive emergencies, and patient-centered care have been incorporated and emphasized. Major updates include expanded screening for primary aldosteronism, adoption of more intensive BP targets, and risk-based initiation of pharmacological therapy in individuals with prehypertension. Lifestyle recommendations have been broadened to include e-smoking cessation and mind-body practices. Furthermore, the definition and management of uncontrolled (or resistant) hypertension have been updated, and BP targets in older adults are now individualized according to frailty status and overall cardiovascular risk; intensive BP lowering to 130/80 mmHg is recommended in selected high-risk older individuals. Finally, BP management during pregnancy has also been refined to emphasize active BP control at < 140/90 mmHg and the use of out-of-office BP measurements for more accurate diagnosis. Overall, the new KSH guidelines provide a more evidence-based framework for hypertension management, with the goal of improving BP control and reducing cardiovascular morbidity and mortality.

Keywords: Hypertension; Blood pressure; Guidelines

INTRODUCTION

Hypertension remains a major health burden in Korea, affecting approximately 30% of the adult population [1], and is a leading risk factor for cardiovascular and cerebrovascular diseases [2-4]. Notably, according to data from the Korea National Health and Nutrition Examination Survey, the hypertension control rate in Korea has markedly improved from 6.2% in 1998 to 62.2% in 2023 [5], positioning Korea as one of the leading countries for hypertension control [6]. Despite improvements in awareness, treatment, and control rates, the overall prevalence of hypertension continues to rise [1], driven by population aging, increasing obesity [7], and lifestyle changes. In addition, emerging challenges, including the growing burden of hypertension during pregnancy [1] and suboptimal blood pressure (BP) control among younger adults [5], have become increasingly important in clinical practice.

Despite advances in hypertension management, a persistent gap remains between guideline recommendations and real-world practice. Since the introduction of the previous guidelines, substantial new evidence has emerged, including advances in BP measurement technologies such as cuffless devices, the need for more intensive BP control strategies, and the introduction of novel therapeutic approaches. These developments have necessitated a comprehensive revision of the hypertension guidelines to better reflect the current evidence and clinical needs.

cotransporter 2; SPC, single-pill combination; SPRINT, Systolic Blood Pressure Intervention Trial; SPS3, Secondary Prevention of Small Subcortical Strokes; STEP, Strategy of Blood Pressure Intervention in Elderly Hypertensive Patients; tid, three times a day; WCH, white-coat hypertension.

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Competing interest

The author declares that they have no competing interests.

Availability of data and materials

No new data were generated or analyzed in this summarized paper of the 2026 Korean Society of Hypertension guidelines. All information discussed is derived from previously published sources cited within the manuscript, including the Korean-language version of the Hypertension Guidelines.

Ethics approval and consent to participate

As this is a consensus paper based on previously published literature, ethics approval and consent to participate were not required.

Consent for publication

This manuscript does not contain any individual person's data in any form. Consent for publication is therefore not applicable.

Authors' contributions

Conceptualization: Lee EM, Cho IJ, Kim KI, Ihm SH; Supervision: Ihm SH; Writing - original draft: Lee EM, Cho IJ, Ihm SH; Writing - review & editing: Lee EM, Cho IJ, Kang HT, Kim KI, Kim DH, Kim JH, Kim HL, Kim HC, Kim HJ, Koh ES, Park S, Park JM, Lee J, Shin JH, Lee HY, Lee H, Jung MH, Cho EJ, Choi S, Ihm SH.

The recently updated 2026 Korean Society of Hypertension (KSH) guidelines incorporate contemporary advances in the diagnosis and management of hypertension. This highlight focuses on the most recent revisions, particularly the newly introduced components and major changes from previous recommendations, and provide a concise overview of the key updates as per the latest KSH guideline.

STRUCTURE, DEVELOPMENT PROCESS, AND GRADING SYSTEM OF THE GUIDELINE

The new KSH guidelines are organized into 3 main sections: 1) Epidemiology, 2) Clinical Evaluation of Hypertension, and 3) Treatment of Hypertension. The guidelines were developed by a multidisciplinary committee of 20 members, including the chair (Ihm SH), affiliated committee members (Lee EM, Cho I, Kim K, Kim D, Kim JH, Kim H, Park S, Shin J, Lee HY, Jung M, Cho EJ, and Choi S), epidemiology experts from the Epidemiology Working Group in KSH (Kim HC and Lee H), the delegated representatives from the Korean Society of Cardiology (Lee J), the Korean Academy of Family Medicine (Kang H), the Korean Diabetes Association (Kim HJ), the Korean Society of Neurology (Koh ES), and the Korean Society of Neurology (Park J). A systematic literature search was conducted from January 2022 to December 2025, with selected key studies published up to March 2026 additionally included. Recommendations were classified according to the Class of Recommendation (Class I, IIa, IIb, and III) and Level of Evidence (LOE A, B, and C) (**Supplementary Table 1**).

WHAT'S NEW

Incorporating isolated diastolic hypertension into the BP classification

Consistent with previous guidelines [8], hypertension is defined as a systolic blood pressure (SBP) ≥ 140 mmHg and/or a diastolic blood pressure (DBP) ≥ 90 mmHg. However, recent major hypertension guidelines [9-12] differ in their BP classification criteria, warranting careful interpretation in clinical practice.

In these guidelines, isolated diastolic hypertension (IDH)—defined as a SBP < 140 mmHg with a DBP ≥ 90 mmHg—has been newly incorporated into the BP classification. Epidemiological data in Korea indicates that IDH is associated with a significantly increased risk of cardiovascular disease (CVD), even among individuals with normal SBP (**Table 1**) [4].

Table 1. Classification of BP and hypertension

Category	SBP (mmHg)		DBP (mmHg)
Normal BP[a]	< 120	and	< 80
Elevated BP	120–129	and	< 80
Prehypertension	130–139	and/or	80–89
Hypertension	≥ 140	and/or	≥ 90
Grade 1	140–159	and/or	90–99
Grade 2	≥ 160	and/or	≥ 100
Isolated systolic hypertension	≥ 140	and	< 90
Isolated diastolic hypertension	< 140	and	≥ 90

BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure.
[a]BP with minimal risk of cardiovascular events.

First inclusion of cuffless BP monitoring devices

Consistent with previous guidelines [8], these guidelines continue to emphasize accurate BP measurements, including repeated office BP measurements with validated devices following standardized protocols, as well as out-of-office measurements such as ambulatory blood pressure monitoring (ABPM) and home blood pressure monitoring (HBPM).

Mercury sphygmomanometers were replaced with mercury-free BP devices. Various BP devices are currently used for office BP measurement in Korea [13]. Accordingly, in these guidelines, BP devices are classified according to their measurement principles (**Fig. 1**). Notably, this is the first guideline to incorporate cuffless BP devices for BP monitoring in clinical practice.

Cuffless BP devices estimate BP using algorithms based on the pulse transit time, photoplethysmography-derived pulse wave velocity and waveform analysis, and peripheral blood flow changes. These devices may improve user comfort by eliminating cuff inflation and enabling continuous BP monitoring during daily activities and sleep. They have the potential to provide a more precise assessment of BP variability and facilitate self-monitoring, thereby improving awareness and control of hypertension [14,15]. However, concerns regarding accuracy remain, and these devices have not yet been widely recommended in other international guidelines [9-12]. Recently, several cuffless devices have been internationally validated [16-18]. Among these, the ring-type devices have demonstrated good correlation with auscultatory measurements (mean SBP/DBP difference, 0.16 ± 5.90 mmHg/−0.07 ± 4.68 mmHg, respectively) [19] and comparable accuracy to ABPM (mean SBP/DBP difference, 1.74 ± 6.69/−3.24 ± 6.51 mmHg, 0.75 ± 7.44/−4.41 ± 7.42 mmHg, and 4.15 ± 6.15/−0.67 ± 5.23 mmHg for 24-hour, daytime, and nighttime periods), all within the acceptable limits defined by the International Organization for Standardization 81060-2:2018 (≤ 5 mmHg for mean difference and ≤ 8 mmHg for standard deviation) [20]. Based on these findings, the cuffless ring-type device has been

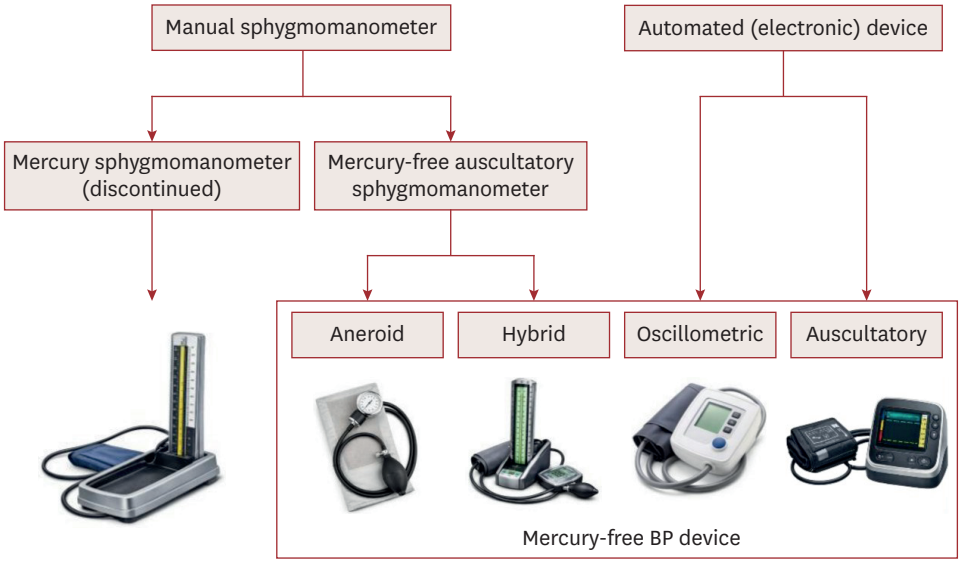

Fig. 1. Classification of currently cuff-based BP devices.
Cuff-based BP devices are classified into manual and automated systems. Mercury sphygmomanometers are being phased out, with current practice shifting toward mercury-free devices. These include auscultatory devices (aneroid and hybrid) and automated devices, such as oscillometric and automated auscultatory systems, which are increasingly adopted in clinical practice.
BP, blood pressure.

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introduced into clinical practice in Korea, approved by the Ministry of Food and Drug Safety, and are covered by the National Health Insurance system for 24-hour ambulatory BP monitoring [15]. However, the accuracy varies across devices, and further standardization of validation protocols, applicable technology, calibration, and data interpretation are required.

In accordance with these guidelines, the recommendation is that cuffless BP devices may be considered for out-of-office BP monitoring (Class IIb, LOE B) [17,20].

Incorporating new therapies with BP-lowering effects: angiotensin receptor-neprilysin inhibitors (ARNIs), sodium-glucose cotransporter 2 (SGLT2) inhibitors, non-steroidal mineralocorticoid receptor antagonists (MRAs), and aldosterone synthase inhibitors

Consistent with previous guidelines [8], this guideline recommends angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), beta-blockers, calcium channel blockers (CCBs), and diuretics as first-line antihypertensive agents. These updates incorporated new therapies including ARNIs, SGLT2 inhibitors, non-steroidal MRAs, and aldosterone synthase inhibitors (ASIs) based on their BP-lowering effects and clinical outcomes.

ARNI

ARNI combines blockade of the renin-angiotensin system via angiotensin receptor inhibition with neprilysin inhibition, leading to enhanced natriuresis, diuresis, and vasodilation. ARNI has been shown to improve clinical outcomes, including reductions in cardiovascular mortality and hospitalization for heart failure (HF), and to promote reverse left ventricular remodeling in patients with HF [21-23]. In addition, sacubitril/valsartan provides effective BP-lowering effects and may offer greater ambulatory BP reduction compared with valsartan, particularly in salt sensitive populations (office SBP/DBP −13.3/−6.2 mmHg vs. −5.8/−4.2 mmHg with valsartan) [24].

First, as per these guidelines, an ARNI is recommended over ACE inhibitors, or ARBs in patients with hypertension and comorbid HF (Class I, LOE A) [21,22,25]. Second, sacubitril/valsartan should be considered in the treatment of salt-sensitive hypertension (Class IIa, LOE B) [24]. Third, switching from an ACE inhibitor or ARB to an ARNI may be considered when additional BP reduction is required (Class IIb, LOE B) [26,27].

SGLT2 inhibitors

SGLT2 inhibitors are a class of glucose-lowering agents that reduce glucose reabsorption in the proximal renal tubules, leading to increased glucose excretion. In addition to glycemic control, they provide cardiovascular and renal protective effects regardless of diabetes status [28]. They also produce moderate BP reductions (4.53/2.12 mmHg in patients with diabetes [29] and 3.76/1.83 mmHg in 24-hour ambulatory BP in both diabetic and non-diabetic populations) [30].

As per these guidelines, SGLT2 inhibitors are recommended for patients with comorbid HF, albuminuria, or reduced estimated glomerular filtration rate (eGFR, not in < 20 mL/min/1.73 m^2) (Class I, LOE A) [28,31-35].

Non-steroidal MRA

Nonsteroidal MRAs provide a more selective mineralocorticoid receptor blockade than steroidal MRAs, such as spironolactone, resulting in a lower incidence of endocrine-related adverse effects (e.g., gynecomastia and menstrual irregularities) and a lower risk of hyperkalemia.

Finerenone produces a modest reduction in SBP (≈ 2.7 mmHg) [36], but has demonstrated cardiovascular and renal protective benefits in patients with diabetes mellitus (DM) and chronic kidney disease (CKD) [37,38].

As per these guidelines, in patients with CKD, eGFR ≥ 25 mL/min/1.73 m^2, and albuminuria with both diabetes and hypertension, finerenone is recommended (Class I, LOE A) [37,38].

ASIs

ASIs selectively inhibit CYP11B2 (aldosterone synthase), reducing aldosterone production as well as sodium and water retention, thereby achieving clinically a meaningful reduction in BP. In clinical trials, baxdrostat [39], and lorundrostat [40] demonstrated additional SBP reductions of approximately 7–8 mmHg compared with placebo in patients with uncontrolled hypertension despite treatment with ≥ 2 antihypertensive agents.

As per these guidelines, the addition of aldosterone synthase inhibitors may be considered for uncontrolled (or resistant) hypertension (Class IIb, LOE B) [41,42].

Incorporating the classification and definition of dose-based single-pill combinations to improve treatment adherence

Single-pill combinations (SPCs), which include two or more antihypertensive agents in a single formulation, improve medication adherence and provide greater BP reduction than free-drug combinations [43-45]. Additionally, SPCs are more cost-effective than free-drug combinations [46].

As SPCs are available in multiple-dose formulations, the guidelines classify SPCs by standard starting dose into ultralow, low, standard, and high dose categories to avoid terminological confusion (**Table 2**, **Supplementary Table 2**).

Recently, ultralow- or low-dose SPC therapies (including triple and quadruple combinations) have demonstrated superior BP-lowering efficacy without an increase in adverse events, highlighting their potential role in future hypertension management [47-50].

As per these guidelines, when using a dual combination therapy, SPCs should be preferentially considered (Class IIa, LOE B) [44,45,51].

Incorporating an obesity section into hypertension management

The prevalence of obesity is increasing in Korea [7]. Obesity and hypertension commonly coexist and are closely associated with DM. Accordingly, the guidelines introduce a new section on the management of hypertension in patients with obesity.

Obese patients with hypertension often require multiple medications [52] and are more likely to develop uncontrolled (or resistant) hypertension [53]. ACE inhibitors, ARBs, and

Table 2. Classification and definition of SPC medications

Classification	Definition
Ultralow-dose SPC	A combination in which more than half of the included agents are formulated at ≤ 1/3 of the standard starting dose
Low-dose SPC	A combination in which more than half of the included agents are formulated at 1/2 of the standard starting dose
Standard-dose SPC	A combination in which more than half of the included agents are formulated at the standard starting dose
High-dose SPC	A combination formulated at 2× to the maximum dose of the standard starting dose

SPC, single-pill combination.

CCBs are preferred for this population [54,55]. Despite potential adverse metabolic effects of high-dose diuretics and beta-blockers, achieving adequate BP control remains the primary goal, and combination therapy with these agents is often required. SGLT2 inhibitors, glucose-dependent insulinotropic polypeptide/glucagon-like peptide-1 (GLP-1) dual agonists, GLP-1 receptor agonists, and bariatric surgery, have demonstrated weight reduction and BP-lowering effects [56-59].

As per these guidelines, weight reduction is recommended for overweight or obese patients with hypertension to reduce BP and prevent CVD (Class I, LOE A) [60,61]. Additionally, anti-diabetic agents that reduce both weight and BP should be considered in obese patients with diabetes and hypertension (Class IIa, LOE B) [56].

Focusing on hypertension in young adults

According to the 2024 Hypertension Fact Sheet, approximately 890,000 Korean adults aged 20–39 had hypertension by 2022, with notably low awareness, treatment, and control rates [5]. However, antihypertensive treatment was associated with a > 70% reduction in CVD risk in this population [62], highlighting the importance of early detection and treatment in young adults with hypertension. Accordingly, the guidelines have introduced a new section on hypertension management in young adults.

Secondary hypertension is relatively common in young adults, with a prevalence of approximately 30%, particularly in women. The most frequent etiologies include primary aldosteronism, renovascular hypertension (including fibromuscular dysplasia), and renal parenchymal disease; oral contraceptive use is an important reversible cause in women. Given the substantial prevalence of secondary hypertension in this population, evaluation of secondary causes should be considered in all patients with hypertension younger than 40 years of age regardless of their BP level [63,64].

Early-onset hypertension was associated with a substantially increased risk of CVD and all-cause mortality, with the strongest associations occurring at younger ages of onset. Individuals with hypertension onset before 45 years of ages had the highest relative risks, with the magnitude of risk progressively attenuating with increasing age at onset [65]. Consistent with these findings, large-scale cohort data from young adults in Korea demonstrate that hypertension is associated with a more than twofold increased risk of major CVD, including myocardial infarction and stroke. In addition, antihypertensive treatment is associated with a significant reduction in cardiovascular risk, with up to a 70% decrease in incident events [62]. These findings underscore the importance of the early detection and proactive management of hypertension in young adults to reduce long-term cardiovascular morbidity and mortality.

As per these guidelines, screening for secondary hypertension in young hypertensive patients, is recommended. (Class I, LOE B) [63,64]. Additionally, evaluation of target organ damage in young hypertensive patients should be considered to enable early identification of high-risk individuals, and prompt initiation of pharmacologic therapy should be undertaken when appropriate (Class IIa, LOE B) [62,65].

Incorporating a new section on hypertensive emergencies

Given the clinical overlap and potential confusion between hypertensive emergencies and acute severe hypertension, the guidelines introduce a new section to clarify their definitions and management.

A hypertensive emergency is defined as a marked elevation in BP (≥ 180/110 mmHg) accompanied by acute hypertension-mediated organ damage (HMOD) involving the brain, heart, kidneys, or aorta. In contrast, acute severe hypertension was defined as a marked elevation in BP (≥ 180/110 mmHg) without evidence of HMOD. The term "hypertensive urgency" is no longer used because of its conceptual ambiguity, such cases are managed as acute severe hypertension.

In hypertensive emergencies, because acute organ damage is already ongoing, BP should be promptly reduced to prevent further injury; however, an excessive or overly rapid reduction may compromise organ perfusion and exacerbate ischemia. In contrast, in acute severe hypertension, rapid BP reduction is unnecessary and may be harmful, because there is no immediate organ injury and perfusion may be compromised [10,11].

First, as per these guidelines, in patients with hypertensive emergency, hospitalization for continuous BP monitoring and surveillance of acute HMOD is recommended with intravenous antihypertensive agents administered based on the clinical condition (Class I, LOE C) [10,11]. Second, in hypertensive emergency patients with aortic dissection, reduction of SBP to < 120 mmHg is recommended as the initial treatment target (Class I, LOE C) [11,66,67]. Third, in hypertensive emergency patients without aortic dissection, excessive rapid initial BP reduction should be avoided, and reducing the mean arterial pressure by approximately 20–25% within the first hour should be considered. (Class IIa, LOE C) [10,11]. Fourth, immediate intravenous antihypertensive therapy is not recommended for patients with severe acute hypertension without confirmed acute HMOD (Class III, LOE C) [10,11].

Incorporating patient-centered care into hypertension management

Patient-centered care prioritizes patients' preferences and needs, recognizes them as partners in care, and incorporates shared decision-making [68]. It was associated with higher satisfaction, better adherence, and improved hypertension outcomes. Therefore, the new guidelines recommend a patient-centered approach to hypertension management.

First, as per these guidelines, patients-tailored explanations of cardiovascular risk and treatment benefits should be considered as part of hypertension management (Class IIa, LOE B) [68,69]. Second, adequate self-measurement of home BP is recommended as an effective strategy to improve BP control (Class I, LOE B) [70-72]. Third, self-measurement of BP is recommended to improve diagnostic accuracy and enhance patient empowerment and treatment adherence [70-72]. Fourth, a multidisciplinary team-based approach involving physicians, nurses, pharmacists, nutritionists, and other allied health professionals is recommended to improve BP control and prevent cardiovascular events in hypertensive patients (Class A, LOE A) [73-75].

WHAT HAS CHANGED

Promoting screening for primary aldosteronism

Screening for primary aldosteronism is important, because it is a common and potentially curable cause of secondary hypertension [76]. Their prevalence is particularly high in patients with resistant hypertension [77]. Moreover, primary aldosteronism is associated with a substantially increased risk of cardiovascular morbidity and mortality beyond that explained by elevated BP alone [76,78]. Early identification enables targeted treatment,

leading to improved BP control and reduced cardiovascular risk. However, despite a reported prevalence of up to 12% among patients with severe hypertension (≥ 180/110 mmHg), screening rates in clinical practice remain low (approximately 2–4%) [79]. Therefore, the guidelines recommend active screening for primary aldosteronism. However, given the insufficient evidence to support unselected population screening [10,80], a targeted screening approach focusing on high-risk populations is recommended [11].

First, as per these guidelines, in adult with hypertension meeting any of the following criteria, screening for primary aldosteronism is recommended: treatment-resistant hypertension, hypokalemia, obstructive sleep apnea, adrenal incidentaloma, early-onset hypertension, family history of stroke before the age of 40 years, or family history of primary aldosteronism (Class I, LOE C) [76,78,81]. Second, in adults with indications for primary aldosteronism screening, initial screening using plasma aldosterone concentration, plasma renin activity, and aldosterone-to-renin activity ratio is recommended (Class I, LOE C) [80]. Third, in adults with an indication for primary aldosteronism screening, continuation of most antihypertensive medications (except MRAs) without discontinuation prior to the initial screening is recommended (Class I, LOE C) [80].

Adopting more intensive BP targets

The Systolic Blood Pressure Intervention Trial (SPRINT) study [82] demonstrated that intensive BP reduces the risk of cardiovascular morbidity and mortality. However, the optimal target BPs in patients with DM, CKD, or stroke remain controversial. Based on recent clinical evidence [83-86], these guidelines recommend a unified BP control of < 130/80 mmHg in hypertensive patients at high CVD risk or with established CVD.

In patients with diabetes, recent trials—including the Strategy of Blood Pressure Intervention in Elderly Hypertensive Patients (STEP), Effect of Systolic Blood Pressure Reduction on Cardiovascular Outcomes in Patients With Hypertension (ESPRIT), and Blood Pressure Reduction for the Prevention of Cardiovascular Disease in Patients With Type 2 Diabetes—have demonstrated that intensive BP lowering to < 120 mmHg reduces cardiovascular events in patients at high cardiovascular risk [83,84,87,88]. Although evidence supporting intensive BP lowering in low-risk patients with diabetes remains limited, the proportion of truly low-risk individuals is very small (< 2%), limiting its clinical relevance [89]. Accordingly, these guidelines recommend a unified BP target for all patients with diabetes.

As per these guidelines, achieving a BP < 130/80 mmHg is recommended for patients with diabetes (Class I, LOE A).

In patients with CKD, previous guidelines [8] recommended intensive BP lowering primarily in those with significant proteinuria (> 1 g/day), based on evidence suggesting reduced proteinuria, slower decline in kidney function, and a statistically significant decrease in all-cause mortality [90]. However, a recent pooled analysis of seven trials demonstrated that intensive BP control was associated with a trend toward lower risks of kidney outcomes and mortality, with a significant reduction (~20%) in major kidney outcomes in patients with advanced CKD (stages 4–5), independent of baseline albuminuria [85]. These findings suggest that intensive BP lowering may delay CKD progression, independent of baseline albuminuria. Accordingly, these guidelines recommend intensive BP control in patients with CKD irrespective of the presence of albuminuria.

First, as per these guidelines, in patients with CKD, achieving BP < 130/80 mmHg is recommended, if tolerated (Class I, LOE A) [85]. Second, when measured using standardized BP measurement methods [82,91], a target SBP of < 120 mmHg should be considered (Class IIa, LOE B).

In stroke patients, previous studies targeting an SBP of < 140 mmHg did not demonstrate a clear clinical benefit [92]. However, in the Secondary Prevention of Small Subcortical Strokes (SPS3) trial, a lower BP target (< 130 mmHg) did not significantly reduce overall cardiovascular events but was associated with a significant reduction in intracerebral hemorrhage [93], supporting the consideration of a target SBP of < 130 mmHg in patients with lacunar stroke in previous guidelines [8]. However, in the Recurrent Stroke Prevention Clinical Outcome (RESPECT) trial, intensive BP control (target < 120/80 mmHg) showed a trend toward a reduced risk of recurrent stroke compared to standard control (< 140/90 mmHg) [86]. Meta-analysis including RESPECT [86], SPS3 [93], Prevention After Stroke-Blood Pressure [94], and Prevention of Decline in Cognition after Stroke Trial [95] demonstrated a significant reduction in recurrent stroke with intensive BP lowering [86]. Based on this evidence, this guideline recommends targeting an SBP of < 130 mmHg in most patients with stroke. However, in patients with ischemic stroke and intracranial arterial stenosis, lowering BP is generally beneficial; nevertheless, some studies suggest that intensive BP reduction, particularly to SBP < 120 mmHg, may not be beneficial in those with hemodynamic compromise [96] or during the acute phase of stroke [97]. Therefore, in patients with severe intracranial arterial stenosis, a more cautious and individualized BP-lowering approach may be considered rather than uniform intensive BP reduction [98].

As per these guidelines, in hypertensive patients with a history of stroke, achieving BP below 130/80 mmHg is recommended (Class I, LOE A) (**Table 3**) [97].

Initiating pharmacologic therapy based on risk in prehypertension

Although strong direct evidence for the prevention of cardiovascular and cerebrovascular events in prehypertension remains limited, the Prevention of Hypertension in Patients with PreHypertension trial [99] demonstrated that pharmacological therapy reduces the progression to hypertension and the risk of left ventricular hypertrophy.

As per these guidelines, drug therapy should be considered in prehypertensive patients with a high CVD risk or concomitant CVD (Class IIb, LOE B).

Table 3. Target BP for hypertension treatment

Clinical situation	SBP (mmHg)	DBP (mmHg)	Class/LOE
Uncomplicated hypertension			
Moderate-to-low risk hypertension	< 140	< 90	I/A
Elderly hypertension	< 140	< 90	I/A
High-risk hypertension[a]	< 130	< 80	I/A
Diabetes mellitus	< 130	< 80	I/A
Hypertension with complications			
Cardiovascular disease[b]	< 130	< 80	I/A
Chronic kidney disease[c]	< 130	< 80	I/A
Stroke[d]	< 130	< 80	I/A

BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; LOE, Level of Evidence.
[a]Presence of asymptomatic target organ damage or ≥ 3 cardiovascular risk factors.
[b]Coronary artery disease, peripheral artery disease, abdominal aortic aneurysm, or heart failure.
[c]When BP is measured using standardized methods [82,91], targeting a SBP < 120 mmHg may be considered.
[d]In patients with ischemic stroke accompanied by intracranial arterial stenosis, a target BP of < 140/90 mmHg is recommended.

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Updating lifestyle strategies: adding e-smoking cessation and mind-body practice

Consistent with previous guidelines [8], nonpharmacological interventions, including weight control, sodium restriction, reduced alcohol intake, smoking cessation, regular physical activity, and a healthy diet, are strongly recommended for the prevention of hypertension and CVD in both hypertensive individuals and the general population. Combined lifestyle modifications may provide greater BP and CV risk reduction than single interventions; therefore, sustained, comprehensive lifestyle improvements are recommended [100].

In patients with hypertension, continued smoking is associated with a significantly increased risk of cardiovascular morbidity and mortality, even when BP is well controlled [101]. In addition, exposure to secondhand smoke and e-cigarette use is associated with increases in BP and heart rate and may further increase CVD [102-104]. Based on this evidence, the guidelines extended smoking cessation to include e-cigarette users.

Stress and anxiety are associated with an increased risk of hypertension and cardiovascular events [105]. Psychological distress and acute emotional stress may elevate BP through activation of the sympathetic nervous system [106]. Recent meta-analyses have shown that stress-reduction interventions, including breathing exercises, mindfulness, and meditation, are associated with modest but significant reductions in BP (SBP/DBP, ≈ 4/2 mmHg) [107], supporting its role as adjuvant nonpharmacological strategies for BP control. Accordingly, this guideline incorporates stress-reduction strategies, including breathing exercises, mindfulness and meditation, as part of nonpharmacological management.

First, as per these guidelines, e-cigarette use is associated with elevated BP, increased pulse rate, and cardiovascular events, smoking cessation is recommended for e-cigarette users (Class I, LOE B) [102-104]. Second, breathing exercises, mindfulness, and meditation may be considered to reduce stress (Class IIb, LOE B) [107].

Updating definition and management approach to uncontrolled (or resistant) hypertension

The prevalence of resistant hypertension in Korea is estimated to be approximately 7.9–10% [108,109], and is associated with a higher risk of CVD than more easily controlled hypertension [110,111], necessitating an active diagnostic approach and management. Traditionally, resistant hypertension has been defined as BP ≥ 140/90 mmHg despite treatment with ≥ 3 antihypertensive agents of different classes, including a diuretic, at optimal doses [8]. However, this definition does not fully capture the heterogeneity of uncontrolled hypertension, including pseudo-resistance (e.g., poor adherence, inaccurate BP measurement, or white-coat effect) and more severe phenotypes such as refractory hypertension (uncontrolled despite ≥ 5 agents) [111]. Accordingly, this guideline adopts a broader concept of “difficult-to-treat or uncontrolled hypertension,” generally defined in clinical research as failure to achieve target BP despite treatment with ≥ 2 antihypertensive agents [39]. This concept encompasses both resistant and refractory hypertension [112,113], thereby better reflecting the spectrum of treatment failure and supporting a more comprehensive evaluation and management. According to these guidelines, this entity is collectively referred to as “uncontrolled hypertension” by the KSH.

Recent advances have identified several pharmacological and interventional options that provide additional BP reduction in patients with uncontrolled (or resistant) hypertension.

Amiloride, a potassium-sparing diuretic that inhibits epithelial sodium channels in the distal nephron, has demonstrated BP-lowering efficacy (–13.6 and –14.7 mmHg from baseline in the amiloride and spironolactone groups, respectively) and safety comparable to spironolactone and may be considered when spironolactone is not tolerated or contraindicated [114].

In patients with inadequate BP control despite ACE inhibitors or ARB therapy, switching to an ARNI may be considered, as sacubitril/valsartan provides additional BP reduction [26,27] and improves arterial stiffness [115]. In addition, BP-lowering effects have been observed in patients with resistant hypertension [116,117], including those with concomitant HF [26]; Therefore, ARNI is recommended as a therapeutic option for uncontrolled (or resistant) hypertension in the guidelines.

Given the key role of excess aldosterone in the pathophysiology of resistant hypertension, aldosterone synthase inhibitors, such as baxdrostat [41] and lorundrostat [42], have emerged as potential therapeutic options, demonstrating significant SBP reduction in early clinical trials. Renal sympathetic denervation has shown consistent BP-lowering effects regardless of background antihypertensive therapy and may be considered in patients with true resistant hypertension (mean ambulatory SBP difference −4.5 mmHg between the denervation and sham procedure groups in Ultrasound renal denervation for hypertension resistant to a triple medication pill (RADIANCE-HRN Trio) [118]. Based on this evidence, the guidelines propose a diagnostic and therapeutic algorithm for the management of uncontrolled (or resistant) hypertension (**Fig. 2**).

First, as per these guidelines, if spironolactone is not feasible, addition of amiloride should be considered for uncontrolled (or resistant) hypertension (Class IIa, LOE B) [114]. Second, switching from an ACE inhibitor or ARB to an ARNI may be considered when additional BP reduction is required in uncontrolled (or resistant) hypertension (Class IIb, LOE B) [26,27]. Third, the addition of an ASI may be considered in patients with uncontrolled (or resistant) hypertension (Class IIb, LOE B) [41,42]. Fourth, renal sympathetic denervation may be considered in patients with uncontrolled (or resistant) hypertension when drug therapy fails to control BP (Class IIb, LOE B) [118].

Individualizing BP targets in older patients: intensive BP lowering in high-risk individuals and frailty assessment

While previous guidelines recommended a unified SBP target was of < 140 mmHg in older patients with hypertension [8], both earlier landmark trials such as SPRINT [82,119] and STEP trials [119], as well as more recent evidence from ESPRIT trial, have consistently demonstrated that intensive BP lowering is associated with improved cardiovascular outcomes in older adults, including high-risk individuals aged ≥ 65 years. These findings suggest that, even in older populations, intensive BP control may confer additional cardiovascular benefits when the treatment is well tolerated by high-risk patients [83].

However, excessive BP reduction that may induce orthostatic hypotension should be avoided when lowering BP in older adults. Moreover, the optimal BP targets for very old, frail, and institutionalized elderly patients remain uncertain: Therefore, treatment strategies should be individualized based on the patient's overall clinical condition. Fragility assessment is recommended for older patients with hypertension to guide treatment initiation and BP targets. Previous KSH guidelines did not include frailty assessment tools; however, these

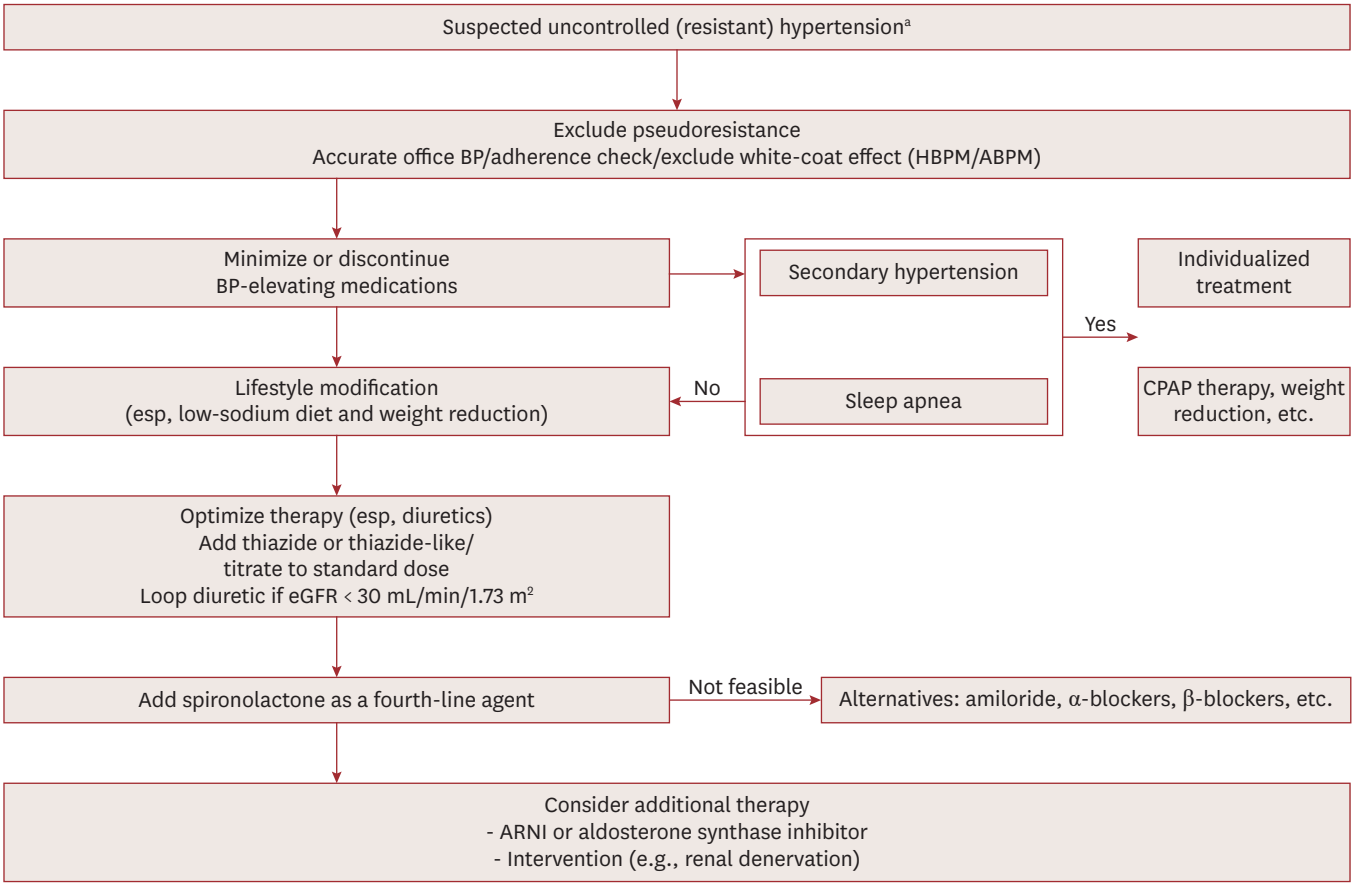

Fig. 2. Diagnostic and therapeutic algorithm for uncontrolled (or resistant) hypertension.
Initial evaluation includes exclusion of pseudoresistance by confirming accurate office BP measurement, assessing adherence, and ruling out white-coat effect using HBPM or ABPM. Secondary causes, including sleep apnea, should be assessed and treated when present. Management involves lifestyle modification and optimization of pharmacologic therapy, particularly with diuretics, followed by the addition of spironolactone as a fourth-line agent. If not tolerated, alternatives may be considered, with additional therapies such as ARNI, aldosterone synthase inhibitors, or renal denervation for refractory cases.
BP, blood pressure; HBPM, home blood pressure monitoring; ABPM, ambulatory blood pressure monitoring; ARNI, angiotensin receptor-neprilysin inhibitor; eGFR, estimated glomerular filtration rate; CPAP, continuous positive airway pressure.
*Suspected uncontrolled hypertension refers to failure to achieve target BP despite treatment with ≥ 2 antihypertensive drugs.

guidelines included practical tools to support individualized care (K-FRAIL, Clinical Frailty Scale) [120,121] and emphasized the evaluation of orthostatic BP changes during the initial assessment in older adults.

First, as per these guidelines, in high-risk elderly patients aged ≥ 65 years with CVD or CKD, achieving an SBP < 130 mmHg may be considered (Class IIb, LOE B) [83]. Second, in frail elderly, those aged ≥ 85 years, those with life expectancy < 3 years, or those with symptomatic orthostatic hypotension, individualized BP targets may be considered (Class IIb, LOE C) [122].

Managing BP in pregnancy: active BP control and the use of out-of-office BP measurements for accurate diagnosis

A meta-analysis of 12 studies demonstrated that white-coat hypertension (WCH) in pregnancy is associated with an increased risk of adverse maternal and perinatal outcomes compared with normotension, although the outcomes are more favorable than those of gestational or chronic hypertension [123]. In addition, the Blood Pressure Monitoring in High-Risk Pregnancy (BUMP 2) trial [124] showed that HBPM with telemonitoring did not

improve clinic-based BP control but was safe and may support patient engagement [124], suggesting a potential adjunctive role of HBPM. Therefore, out-of-office BP monitoring should be considered during pregnancy.

The Chronic Hypertension and Pregnancy (CHAP) trial [125] demonstrated that treating mild chronic hypertension during pregnancy to a target BP of < 140/90 mmHg significantly reduced adverse pregnancy outcomes (30.2% vs. 37.0% in the active-treatment vs. control groups, respectively, adjusted risk ratio, 0.82; 95% confidence interval [CI], 0.74–0.92; P < 0.001) without increasing the risk of fetal growth restriction. Based on this evidence, the guidelines recommend active treatment for gestational or chronic hypertension.

Antihypertensive agents considered safe during pregnancy include methyldopa, labetalol, nifedipine, and amlodipine. Among these, oral methyldopa, labetalol, and intravenous hydralazine, are available from the Korea Orphan and Essential Drug Center (KODC; http://www.kodc.or.kr). Amlodipine was not associated with an increased risk of adverse outcomes compared with other antihypertensive agents during the first trimester [126] and was used in the CHAP trial [125]. However, a large claims database study (2010–2019) showed an increased risk of major congenital malformations with first-trimester exposure to antihypertensives, including amlodipine and methyldopa (adjusted adds ratio [aOR], 1.219; 95% CI, 0.400–3.721 and aOR, 0.921; 95% CI, 0.331–2.564, respectively) [127]. Despite these conflicting findings, the overall available evidence suggests that the benefits of BP control generally outweigh the potential risks; accordingly, accordingly, in the guidelines, amlodipine may be considered for the management of hypertensive disorders in pregnancy. During breastfeeding, agents with minimal transfer into breast milk including nifedipine, amlodipine, and labetalol, and selective ACE inhibitors such as enalapril, are preferred.

First, as per these guidelines, out-of-office BP measurements (ambulatory or home) should be considered for the diagnosis of hypertension during pregnancy (Class IIa, LOE B) [123]. Second, HBPM may be considered in pregnant women with chronic or gestational hypertension to improve BP management and outcomes (Class IIb, LOE B) [124]. Third, in pregnant women with chronic hypertension (regardless of preeclampsia) or gestational hypertension, maintaining BP < 140/90 mmHg is recommended (Class I, LOE B) [125,128]. Fourth, excessive blood pressure reduction (DBP < 80 mmHg) is not recommended for pregnant women with hypertension [128].

CONCLUSION

In conclusion, the updated KSH guidelines incorporate emerging evidence and evolving clinical needs to refine the diagnosis and management of hypertension. Key advances include the incorporation of IDH, the first recommendation for cuffless BP devices, and the integration of new therapies with BP lowering. Additionally, a dose-based classification of SPCs was introduced to improve treatment adherence. Major changes include broader screening for primary aldosteronism, risk-based pharmacological treatment of prehypertension, and the adoption of more intensive BP targets, particularly in high-risk populations and older adults, with individualized approaches guided by frailty. These guidelines also emphasize active BP control during pregnancy and reinforce accurate BP assessment through out-of-office measurements. Resistant hypertension was addressed using a more proactive treatment approach.

Collectively, these updates aim to bridge the gap between evidence and clinical practice, enabling more precise, personalized, and effective BP management, and ultimately improving BP control, cardiovascular outcomes, and population health.

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SUPPLEMENTARY MATERIALS

Supplementary Table 1
Classes of recommendations and LOE

Supplementary Table 2
Starting, maintenance, and maximum doses of antihypertensive drugs

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