Hypertension Clinical Practice Guidelines (ISH, 2020): What Is New?

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Highlights of the Study

- In May 2020, the International Society of Hypertension published “Practice Guidelines for the Management of Hypertension.”
- The defined purpose was to adhere to the current evidence and develop a balanced proposal for global use.
- These guidelines are practical, physician friendly, and immensely helpful for low-resource countries without national guidelines.

Keywords

Hypertension · Guidelines

Abstract

Objective: In May 2020, the International Society of Hypertension (ISH) published “Practice Guidelines for the Management of Hypertension.” The ISH 2020 guidelines were developed based on evidence criteria (i) to be used globally, (ii) to be fit for application in low-middle-income and high-income settings, and (iii) to be concise, simple, and easy to use by clinicians, nurses, and community health workers, as appropriate. The defined purpose was to adhere to the current evidence and develop a balanced proposal for global use in line with the ISH mission. **Methodology:** Multiple novel approaches have been included keeping in mind about lifestyle modification and flexibility in treatment options. **Re-**

sults and Conclusions: The ISH 2020 guidelines are practical and physician friendly. It also proves immensely helpful for low-resource countries without national guidelines on the management of hypertension.

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Introduction

Hypertension is one of the commonest global health problems which depends on multiple factors. Ideal management and control of blood pressure demand a proper guideline as it varies from country to country depending on race, food habit, lifestyle, etc. In May 2020, the International Society of Hypertension (ISH) published “Practice Guidelines for the Management of Hypertension” in the *Journal of Hypertension* [1].

Table 1. Summary of hypertension clinical practice guidelines (ISH, 2020)

Hypertension classification (based on office BP measurements)	
Normal BP	SBP < 130 and DBP < 85
High-normal BP	SBP 130–139 and/or DBP 85–89
Grade 1 hypertension	SBP 140–159 and/or DBP 90–99
Grade 2 hypertension	SBP ≥ 160 and/or DBP ≥ 100
Criteria for hypertension based on office, ABPM, and HBPM	
Office BP	SBP ≥ 140 and/or DBP ≥ 90
24-h average ABPM	SBP ≥ 130 and/or DBP ≥ 80
Day time (or awake) average ABPM	SBP ≥ 135 and/or DBP ≥ 85
Night time (or asleep) average ABPM	SBP ≥ 120 and/or DBP ≥ 70
HBPM	SBP ≥ 135 and/or DBP ≥ 85
Hypertension diagnosis (office and out-of-office BP measurements and plans)	
First office visit	Concurrently measure BP in both arms. If a >10-mm Hg difference is consistent between the arms on repeated measurements, use the arm with the higher BP. If a >20-mm Hg difference is found, consider further evaluation
Office BP <130/85 mm Hg	Re-measure in 3 years (after 1 year if other risk factors exist)
Office BP 130–159/85–99 mm Hg	Confirm with ABPM or HBPM or confirm with repeated office visits. If HBPM <135/85 mm Hg or 24-h ABPM <130/80 mm Hg, re-measure after 1 year; if HBPM ≥135/85 mm Hg or 24-h ABPM ≥130/80 mm Hg, then hypertension is diagnosed
Office BP >160/100 mm Hg	Confirm within a few days or weeks
Diagnostic parameters of essential and optimal standards of care in hypertension ⁺	
Essential	
Levels of sodium, potassium, serum creatinine, fasting glucose; estimated glomerular filtration rate; lipid profile	
Urine dipstick	
12-lead ECG to detect atrial fibrillation, left ventricular hypertrophy, and ischemic heart disease	
Optimal (additional tests to consider)	
Extended blood biochemistry	
Imaging (cardiac, kidney, brain, or vascular)	
Funduscopy	
BP control targets	
Aim for BP control within 3 months	
Aim for at least a 20/10 mm Hg BP reduction, ideally to <140/90 mm Hg	
<65 years: target BP <130/80 mm Hg if tolerated (but >120/70 mm Hg)	
≥65 years: target BP <140/90 mm Hg if tolerated; individualizing target BPs may be considered in those who are frail, independent, and likely to tolerate therapy	
Approach to treatment	
Grade 1 hypertension (140–159/90–99 mm Hg)	
Start lifestyle interventions (smoking cessation, exercise, weight loss, salt and alcohol reduction, and healthy diet)	
Initiate pharmacotherapy in high-risk patients (cardiovascular disease, chronic kidney disease, diabetes, or organ damage) and those with persistent high BP after 3–6 months of lifestyle intervention	
Consider monotherapy in low-risk grade 1 hypertension and elderly (>80 years) or frail patients. A simplified regimen with once-daily dosing and single pill combinations is ideal	
Grade 2 hypertension (≥160/100 mm Hg)	
Immediately initiate pharmacotherapy	
Start lifestyle interventions	
Pharmacotherapy (if BP uncontrolled after 3–6 months of lifestyle intervention)	
For non-Black patients who are not pregnant or not planning pregnancy	
Step 1: use a dual low-dose drug combination (ACEI or ARB + DHP-CCB)	
Step 2: increase the regimen to the dual full-dose combination	
Step 3 (triple combination): add a thiazide or thiazide-like diuretic	
Step 4 (resistant hypertension): triple combination plus spironolactone** or, alternatively, amiloride doxazosin, eplerenone, clonidine, or a β-blocker	
For Black patients who are not pregnant or not planning pregnancy	
Step 1: use a dual low-dose drug combination (e.g., ARB + DHP-CCB or DHP-CCB + thiazide/thiazide-like diuretic)	
Step 2: increase the regimen to the dual full-dose combination	
Step 3 (triple combination): add a diuretic or ARB or ACEI	
Step 4 (resistant hypertension): triple combination plus spironolactone** or, alternatively, amiloride doxazosin, eplerenone, clonidine, or a β-blocker	

All measurements in mm Hg. BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; ABPM, ambulatory blood pressure measurement; HBPM, home blood pressure measurement; ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin-receptor blocker; DHP-CCB, dihydropyridine-calcium channel blocker. ⁺ ISH has differentiated between “optimal care” (evidence-based standard of care) and “essential care” (minimum standards of care in low-resource settings). ^{**} Caution with spironolactone or other potassium-sparing diuretics when estimated GFR is <45 mL/min/1.73 m² or K⁺ >4.5 mmol/L.

Table 2. Summary of hypertension clinical practice guidelines (ISH, 2020): drug treatment in hypertensive emergencies

Clinical presentation	Timeline and target BP	First-line treatment	Alternative
Malignant hypertension with or without thrombotic microangiopathy or acute renal failure	Several hours MAP –20% to –25%	Labetalol, nicardipine	Nitroprusside, urapidil
Hypertensive encephalopathy	Immediate MAP –20% to –25%	Labetalol, nicardipine	Nitroprusside
Acute ischemic stroke and SBP >220 or DBP > 120	1-hr MAP –15%	Labetalol, nicardipine	Nitroprusside
Acute ischemic stroke with indication for thrombolytic therapy and SBP > 180 or DBP > 110	1-hr MAP –15%	Labetalol, nicardipine	Nitroprusside
Acute hemorrhagic stroke and SBP > 180	Immediate SBP between 130 and 180	Labetalol, nicardipine	Urapidil
Acute coronary event	Immediate SBP <140	Labetalol, nitroglycerine	Urapidil
Acute cardiogenic pulmonary edema	Immediate SBP <140	Nitroprusside or nitroglycerine (with loop diuretics)	Urapidil (with loop diuretics)
Acute aortic disease	Immediate SBP <120 and HR <60 bpm	Esmolol and nitroprusside or nitroglycerine or nicardipine	Labetalol or metoprolol
Eclampsia and severe eclampsia or HELLP syndrome	Immediate SBP < 160 and DBP < 105	Labetalol or nicardipine and magnesium sulfate	

BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean-arterial pressure; bpm, beats per minute; HELLP, hemolysis, elevated liver enzymes, and low platelet count. All measurements in mm Hg. Formula for MAP = SBP +2/3 (DBP).

Materials and Methods

We have studied the different aspects of newly published guidelines keeping in mind the various subjects from different origins. Data from the published guidelines were analyzed.

Results

Tables 1 and 2 provide a brief overview of ISH 2020 guidelines with respect to classification, diagnosis, drug treatments, and preferred treatment in hypertensive emergency. The diagnostic and treatment strategies recommended in the ISH guidelines reflect those issued by the European, American, and other major societies, but there are also some differences (Tables 3–5).

Discussion

The ISH 2020 guidelines were developed based on evidence criteria (i) to be used globally, (ii) to be fit for application in low-middle-income and high-income settings, and (iii) to be concise, simple, and easy to use by clinicians, nurses, and community health workers, as ap-

propriate. The defined purpose was not to revisit, but to adhere to the current evidence (based on recommendations from ACC/AHA and ESC/ESH) and to develop a balanced proposal for global use in line with the ISH mission. It involved defining “essential” versus “optimal” criteria of diagnosis and treatment according to resources available in low-middle-income settings.

A few differences from American, European, and other guidelines are not worthy. For instance, much significance has been given to the needs of healthcare professionals obtaining data on adherence to medication, which is notoriously difficult. The ISH guidelines partly address this need, through detailed collection of patient data, which may allow doctors to closely understand prescription behavior. Another element of novelty is the focus on stress-reducing measures (such as meditation and yoga) as lifestyle modifications in reducing hypertension; these proven interventions are usually not mentioned in other guidelines due to a lack of studies using controlled experimental designs. Additionally, it adopts a stratified approach that takes patients from low-dose to high-dose dual combination therapy in a flexible manner, in contrast to the ESC/ESH approach of immediate escalation from dual to triple therapy [2, 3]. The stratified approach tends to provide greater treatment flexibility.

Table 3. Comparative summary of hypertension clinical practice guidelines ESC/ESH 2018 versus ISH 2020

Features	ESC/ESH 2018	ISH 2020
Target population	Focus on optimal care	Optimal care when possible; essential care as a minimum
BP classification and definition of hypertension	Based on office BP hypertension $\geq 140/90$ mm Hg	Based on office BP $\geq 140/90$ mm Hg
Diagnosis of hypertension	Screening: office BP Confirmation: ABPM, home, or repeated office BP	Optimal: same as ESC/ESH 2018 Essential: office BP, confirm with ABPM, or home BP if possible
Cardiovascular risk assessment	High risk: CV disease, CKD stage 3, diabetes, HMOD, CV risk assessment in all others	Same as ESC/ESH 2018 CV risk assessment tool not specified
Drug treatment BP threshold	Drug treatment and lifestyle for: Grade 2 hypertension Grade 1 and high risk Grade 1 and low risk after 3–6 months lifestyle intervention	Same as ESC/ESH 2018 Essential: focus on grade 2 and high-risk resources limited
Lifestyle interventions	Smoking cessation, healthy diet/drinks, reduce salt, alcohol moderation, weight control, and regular exercise	Same as ESC-ESH 2018 Optimal: in addition, stress reduction and avoid air pollution
Initial drug treatment	Dual therapy SPC for most patients Usually A + C or A + D; β -blockers when indicated others Drugs for specific indications	Optimal: ideally A + C SPC for most, or C + D in Black patients. Other drugs same as ESC-ESH 2018 Essential: as above if possible, or any available drugs proven to lower BP
Further drug treatment	Triple therapy: A + C + D, ideally as SPC 4 drugs (resistant hypertension), for example, spironolactone, or other drugs if needed	Optimal: same as ESC-ESH 2018 Essential: as above if possible, or any available drugs proven to lower BP
Treatment targets	Target ranges 18–65 yrs $<140/90$ mm Hg down to $130/80$ mm Hg or lower if tolerated; 65+ yrs $<140/90$ mm Hg down to $130/80$ mm Hg, if possible and if tolerated	Optimal: $<130/80$ but individualize in the elderly, based on frailty Essential: reduce BP by at least $20/10$ mm Hg and ideally to $<140/90$ and individualize in the elderly based on frailty
Monitoring treatment	Aim for BP control within 3 months, monitor for side effects Check adherence if BP not controlled	Optimal and essential Aim for BP control within 3 months Monitor for side effects Monitor adherence
Cardiovascular risk management	Statins for all high-risk patients. Consider statins for moderate/low-risk patients. Antiplatelets for secondary prevention	No specific recommendation

BP, blood pressure; CV, cardiovascular; CKD, chronic kidney disease; SPC, single pill combination; HMOD, hypertension-mediated organ damage; ISH, International Society for Hypertension; ESC/ESH, European Society of Cardiology/European Society of Hypertension arterial hypertension.

Conclusion

The ISH 2020 guidelines are practical and physician friendly. They are also immensely helpful for low-resource countries which do not have national guidelines for the management of hypertension.

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Statement of Ethics

Statement of ethics is not applicable.

Table 4. Comparative summary of hypertension clinical practice guidelines ISH 2020 versus ACC/AHA and LASH guidelines

Stages of hypertension	ISH 2020	ACC/AHA ¹	LASH ²
Optimal	–	–	SBP < 120 and DBP < 80 mm Hg
Normal BP	–	SBP < 120 and DBP < 80 mm Hg	SBP 120–129 and/or DBP 80–84 mm Hg
High-normal BP (ISH) or elevated (ACC/AHA)	SBP < 130 and DBP < 85 mm Hg	SBP < 120 and DBP < 80 mm Hg	SBP 130–139 and/or DBP 85–89 mm Hg
Grade 1/stage 1 hypertension (arterial)	SBP 130–139 and/or DBP 85–89 mm Hg	SBP 120–129 and/or DBP < 80 mm Hg	SBP 140–159 and/or DBP 90–99 mm Hg
Grade 2/stage 2 hypertension (arterial)	SBP 140–159 and/or DBP 90–99 mm Hg	SBP 130–139 and/or DBP 80–89 mm Hg	SBP 160–179 and/or DBP 100–109 mm Hg
	SBP ≥ 160 and/or DBP ≥ 100 mm Hg	SBP ≥ 140 and/or DBP ≥ 90 mm Hg	

All measurements in mm Hg. BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; ISH, International Society for Hypertension; ACA/AHA, American College of Cardiology¹ LASH; Latin-American Society for Hypertension. ¹ISH versus ACC/AHA: blood pressure definitions of normal blood pressure stages of hypertension are different. Inclusion of high-normal blood pressure category. Blood pressure value thresholds for treatment are therefore different (i.e., treatment initiated at lower blood pressure in ACC/AHA guidelines). ²ISH versus LASH: in general, more congruence than discrepancy between the new ISH 2020 Guidelines and the last Latin America (LA) Guidelines of 2017. Diagnosis and use of office and out-of-office blood pressure measurements and ambulatory or home blood pressure monitoring are points of agreement. Nonpharmacological treatment: despite the differences in the usual daily diet in LA, there is agreement on the benefit of lifestyle changes to the general population. Common and other comorbidities: due to the prevalence of specific pathologies, the LA Guidelines emphasize the accuracy in diagnosis and treatment of malnutrition, especially in children and adolescents. Relating to ethnic populations: in addition to Afro-descendants, the LA Guidelines give directives for people living on high altitude in the Andes Mountain Range (Andean populations).

Table 5. Comparative summary of hypertension clinical practice guidelines ISH 2020 versus JSH 2018

Stages of hypertension	ISH 2020 (based on office BP measurement)	JSH 2018	
		office BP measurement	home BP measurement
Normal BP	SBP < 130 and DBP < 85 mm Hg	SBP < 120 and DBP < 80 mm Hg	SBP < 115 and DBP < 75 mm Hg
High-normal BP	SBP 130–139 and/or DBP 85–89 mm Hg	SBP 120–129 and DBP < 80 mm Hg	SBP 115–124 and DBP < 75 mm Hg
Elevated BP	–	SBP 130–139 and/or DBP 80–89 mm Hg	SBP 125–134 and/or DBP 75–84
Grade 1 hypertension	SBP 140–159 and/or DBP 90–99 mm Hg	SBP 140–159 and/or DBP 90–99 mm Hg	SBP 135–144 and/or DBP 85–99 mm Hg
Grade 2 hypertension	SBP ≥ 160 and/or DBP ≥ 100 mm Hg	SBP 160–179 and/or DBP 100–109 mm Hg	SBP 145–159 and/or DBP 90–99 mm Hg
Grade 3 hypertension	–	SBP ≥ 180 and/or DBP ≥ 110 mm Hg	SBP ≥ 160 and/or DBP ≥ 100 mm Hg
(Isolated) systolic hypertension	–	SBP ≥ 140 and DBP < 90 mm Hg	SBP ≥ 135 and DBP < 85 mm Hg

Major differences between ISH 2020 versus JSH 2018 guidelines as follows. In ISH 2020, the BP target differs at age 65 years, but in JSH 2019, at 75 years. In JSH 2019, BP of patients with CVD, CAD, diabetes, CKD with proteinuria, or on antithrombotic drugs should be lowered to <130/80, even if in age ≥75 years. In ISH 2020, the lower limit (120/70) is shown. JSH 2019 calls attention against excessive BP lowering. Office BP ≥140/90 mm Hg is the criterion of hypertension in JSH 2019, which is the same in ISH 2020. Normal BP <120/80 mm Hg, in contrast to ISH 2020 <130/85 mm Hg. JSH 2019 has a category of “elevated BP,” which implies a disease state required for intervention. JSH 2019 shows the criteria of both office and home BP with equal values for BP classification. “Elevated BP” in JSH 2019 is regarded as having high risk when it is complicated with CVD, diabetes, CKD with proteinuria, nonvalvular atrial fibrillation, or >3 risk factors. That is the case with “high-normal BP” in ISH 2020. It can be high risk if it is complicated with hypertension-mediated organ damage, CKD grade 3, diabetes mellitus, or CVD. In patients with “elevated BP,” pharmacological therapy can be initiated when CV risk is high and BP control is insufficient with nonpharmacological therapy. That is the case with “high-normal BP” in ISH 2020 and 2018 ESC/ESH guidelines, which indicate that drug treatment should be considered if CV risk is very high. As first line, JSH recommends monotherapy, whereas ISH 2020 recommends combination therapy using combination tablet. In JSH 2019, thiazide diuretics are included in first-line drugs. JSH 2019 does not mention triple combination using single pill. In JSH 2019, β- and α-blockers are equally recommended as MR antagonist at step 4. Under lifestyle modifications, JSH 2019 gives concrete values to the goals (salt intake <6 g/day, increased vegetable/fruit intake, reduced saturated fatty acids, increased PUFA, maintenance of BMI <25 kg/m², mild aerobic exercise >30 min/day or 180 min/week, reduction in alcohol intake – ethanol <20–30 mL/day in men and <10–20 mL/day in women, and smoking cessation). ISH 2020 gives additional goals, that is, reduction in stress – mindfulness, complementary, alternative, or traditional medicines, reduction in exposure to indoor cold temperature, and air pollution. All measurements in mm Hg. ISH, International Society for Hypertension; JSH, Japanese Society for Hypertension; BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

Author Contributions

All authors contributed equally to the manuscript.

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Data Availability Statement

A data availability statement is not required as no human subject data has been taken. The study is based on the article available in public domain in the article published with a new ISH guideline. Data from this published guideline were analyzed. (<http://dx.doi.org/10.1161/HYPERTENSIONAHA.120.15026>.2020)

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