

Advances in the treatment strategies in hypertension

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KEY FACTS ON HYPERTENSION

Recent 30 years

Number of people living with hypertension has doubled to

1.28 billion



DALYs attributable to hypertension have increased by

40%



CVD: Cardiovascular disease, DALY: Disability-adjusted life years

Hypertension. 2015;66:254-9, Lancet. 2020; 396: 1223-1249, Lancet. 2021;398:957-980

KEY FACTS ON HYPERTENSION

- Individuals with hypertension have:
 - Higher lifetime risks for CVD
 - Experience the *onset of CVD morbidity 5 years earlier than individuals with normal BP.*
- Every **20 mm Hg** increase in SBP is associated with a **doubling in the rate of death** resulting from stroke, ischemic heart disease, and other vascular causes, among middle-aged adults, .

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120–129	and	80–84
High-normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension ^a	≥140	and	<90
Isolated diastolic hypertension ^a	<140	and	≥90

The BP category is defined by the highest level of BP, whether systolic or diastolic.

^aIsolated systolic or diastolic hypertension is graded 1, 2 or 3 according to SBP and DBP values in the ranges indicated. The same classification is used for adolescents ≥16 years old (Section 15.1).

Similarities in ACC/AHA 2017 and ESH 2023

- ✓ Similar lifestyle change recommendations for prevention and treatment of hypertension
- ✓ Antihypertensive drug therapy recommended when SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg in both guidelines

Table 1: Similarities and Differences Between ACC/AHA and ESH Guidelines on Hypertension

Guideline Similarities	2017 ACC/AHA	2023 ESH
Accurate Blood Pressure Measurement	Office-based BP measurements and use of validated, cuffed devices and home/ambulatory BP monitoring are recommended prior to diagnosing hypertension.	
Cardiovascular Risk Calculator for Treatment Thresholds	Pooled Cohort Equation and SCORE2/SCORE2-OP provide estimates for 10-year risk of fatal and non-fatal cardiovascular events and should be used to guide treatment decisions.	
Initial Pharmacotherapy Recommendations	Initial therapeutic choices include ACE inhibitors, angiotensin-receptor blockers, thiazide or thiazide-like diuretics, and calcium channel blockers. Single pill combination therapy is a first-line strategy for many patients.	



Guideline Differences	2017 ACC/AHA	2023 ESH
Hypertension Definition	$\geq 130/80$	$\geq 140/90$
Normal BP Ranges (mmHg)	Normal: $< 120/80$ Elevated: $120-129/<80$	Optimal: $< 120/80$ Normal: $120-129/80-84$ High-Normal: $130-139/85-89$
Hypertensive BP Ranges (mmHg)	Hypertension Stage 1: $130-139/80-89$ Hypertension Stage 2: $\geq 140/90$	Hypertension Grade 1: $140-159/90-99$ Hypertension Grade 2: $160-179/100-109$ Hypertension Grade 3: $\geq 180/110$
BP Targets for Treatment		
18 – 64 years (mmHg)	$< 130/80$	$< 130/80$
65-79 years (mmHg)	$< 130/80$	$< 140/80^*$
≥ 80 years (mmHg)	$< 130/80$	$140-150/<80$
	Initial therapy with beta-blockers reserved	Beta blockers included as first-line therapy



WHAT IS NEW AND WHAT HAS CHANGED IN THE 2023 ESH ARTERIAL HYPERTENSION GUIDELINES?

- The most important difference compared with the previous guidelines is acknowledging that the **primary aim of antihypertensive treatment is to reduce the risk of clinical outcomes and not only BP.**



Screening for hypertension

Recommendations and statements	CoR	LoR
Case finding or opportunistic screening for hypertension is recommended in all adults.	I	C
Regular BP measurements are recommended in adults from the age of 40 years or earlier in patients at high-risk.	I	C
In individuals without hypertension, intervals for repeated BP measurement should be scheduled depending on the BP level, the risk of hypertension and CV risk. In patients with high risk, annual follow-up is recommended.	I	C

Confirming the diagnosis of hypertension

- Because of the variability of BP, an elevation of office BP (SBP 140 mmHg or DBP 90 mmHg) should be confirmed by at least two to three visits, unless the BP values recorded during the first visit are markedly elevated (grade 3 hypertension) or CV risk is high, including the presence of HMOD.
- ABPM, HBPM or data should be collected whenever feasible when office BP is elevated, to confirm the diagnosis of hypertension and identify specific BP phenotypes. ABPM and/or HBPM can be especially important when office BP data visit provide variable results.

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- In the vast majority of patients, an accurate evaluation of office BP requires **at least two to three office visits** at 1–4-week intervals (depending on the BP level and CV risk) using the **average of the last two out of three readings per visit** .
 - In older persons (**>65 years of age**), **treated hypertensive patients (especially very old patients)**, **diabetic patients**, **patients with neurodegenerative disorders**, or **with symptoms suggesting postural hypotension**, BP should also be measured 1 and 3 min after standing for detecting orthostatic hypotension
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- At the initial office visit, BP should be measured **in both arms, ideally with electronic devices** that can measure them simultaneously.
 - An interarm SBP difference >10 mmHg must be confirmed with measurements. If confirmed, **the arm with the higher BP should be used for all subsequent measurements.**

Cuffless BP devices should not be used for the evaluation or management of hypertension in clinical practice.

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HYPERTENSION MANAGEMENT

Evaluation

History & Physical Exam

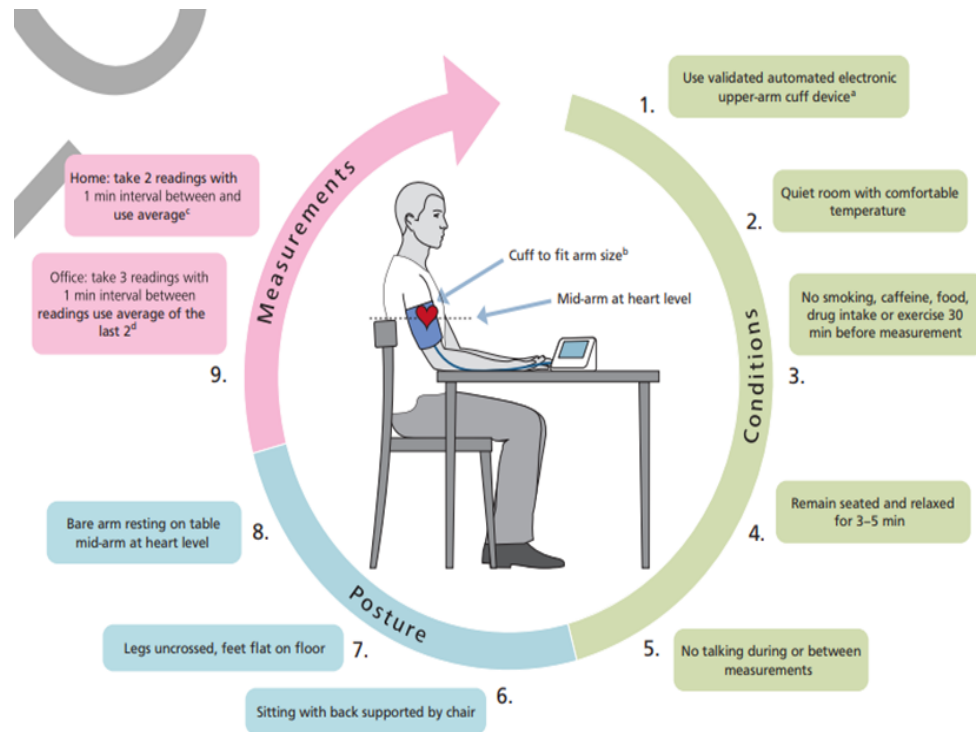
- Exclude drug-induced hypertension
- Evaluate for organ damage
- Consider additional CV risk factors
- Assess total cardiovascular risk
- Search for symptoms/signs of secondary hypertension
- Check adherence

Lab Tests

- Serum sodium, potassium & creatinine, uric acid
- Lipid profile & glucose
- Urine dipstick
- 12 lead ECG

Additional Tests

- If necessary for suspected organ damage or secondary hypertension



Home BP should be monitored for 7 (not fewer than 3) days with duplicate morning (with 1 minute between them) and evening measurements before office visits. Average home BP should be calculated after discarding readings of the first day.

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TABLE 4. Definitions of hypertension according to the correspondence of home and ambulatory BP values with office BP

Method	SBP (mmHg)		DBP (mmHg)
Office BP ^a	≥140	and/or	≥90
Ambulatory BP			
Awake mean	≥135	and/or	≥85
Asleep mean	≥120	and/or	≥70
24 h mean	≥130	and/or	≥80
Home BP mean	≥135	and/or	≥85

^aRefers to standard office BP measurements (not unattended measurements). Data compare the averages from cohorts of untreated and treated individuals. Given the low correlation between office and out-of-office BP values, individuals can have considerable discrepancies from the averages.

HYPERTENSION MANAGEMENT

Monitoring

Target

- BP <130/80 mmHg
- Individualise for elderly based on frailty

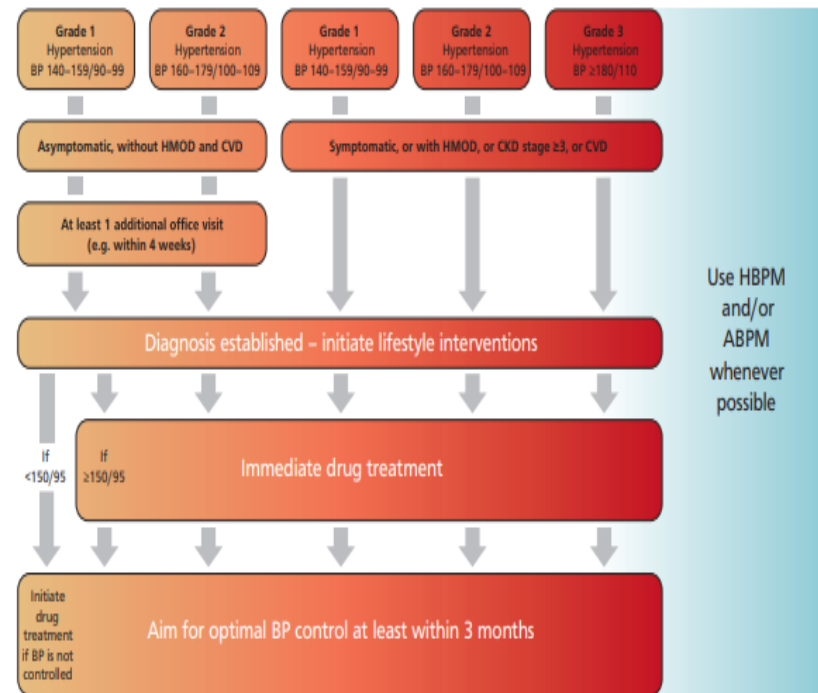
Monitor

- BP control (achieve target within 3 months)
- Adverse effects
- Long-term adherence

Referral

- If BP still uncontrolled, or other issue, refer to care provider with hypertension expertise

2023 ESH Guidelines for the management of arterial hypertension



Diagnosis by office BP and initial management of hypertension.

Recommendations and statements	CoR	LoE
In patients 18 to 79 years, the recommended office threshold for initiation of drug treatment is 140 mmHg for SBP and/or 90 mmHg for DBP.	I	A
In patients ≥80 years, the recommended office SBP threshold for initiation of drug treatment is 160 mmHg.	I	B
However, in patients ≥80 years a lower SBP threshold in the range 140 – 160 mmHg may be considered.	II	C
The office SBP and DBP thresholds for initiation of drug treatment in frail patients should be individualized.	I	C
In adult patients with a history of CVD, predominantly CAD, drug treatment should be initiated in the high-normal BP range (SBP ≥130 or DBP ≥80 mmHg).	I	A

Recommendations and statements	CoR	LoE
Patients 18 to 64 years old		
The goal is to lower office BP to <130/80mmHg	I	A
Patients 65 to 79 years old		
The primary goal of treatment is to lower BP to <140/80mmHg	I	A
However, lowering BP to below 130/80mmHg can be considered if treatment is well tolerated.	I	B
Patients 65 to 79 years old with ISH		
The primary goal of treatment is to lower SBP in the 140 to 150 mmHg range.	I	A
However, a reduction of office SBP in the 130 to 139 mmHg range may be considered if well tolerated, albeit cautiously if DBP is already below 70 mmHg.	II	B
Patients ≥80 years old		
Office BP should be lowered to a SBP in the 140 to 150 mmHg range and to a DBP <80mmHg.	I	A

Additional safety recommendations		
In frail patients, the treatment target for office SBP and DBP should be individualised.	I	C
Do not aim to target office SBP below 120 mmHg or DBP below 70 mmHg during drug treatment.	III	C
However, in patients with low office DBP, i.e. below 70 mmHg, SBP should be still lowered, albeit cautiously, if on-treatment SBP is still well above target values	II	C
Reduction of treatment of can be consider in patient aged 80 years or older with a low SBP (< 120 mmHg) or in the presence of severe orthostatic hypotension or a high frailty level	III	C

Prescribing patterns:

- Start with dual combination therapy in most patients
- Uptitrate to maximum well tolerated doses and to triple therapy if needed
- Once daily (preferred in the morning)
- Add further drugs if needed
- Preferred use of SPCs at any step



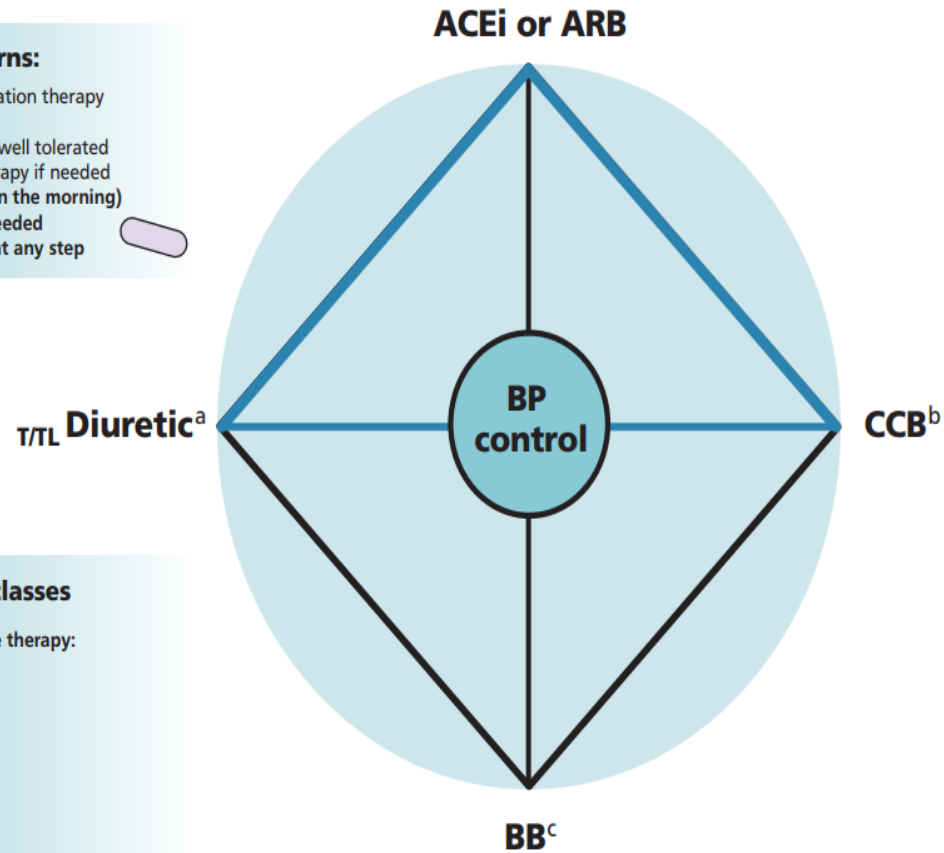
Additional drug classes

General antihypertensive therapy:

- Steroidal MRA
- Loop Diuretic
- Alpha-1 Blocker
- Centrally acting agent
- Vasodilator

Special comorbidities:

- ARNi
- SGLT2i
- Non-Steroidal MRA



General recommendations for antihypertensive drug treatment

Recommendations and statements	CoR	LoE
BP lowering should be prioritized over the selection of specific antihypertensive drug classes because treatment benefit largely originates from BP reduction.	I	A
Five major drug classes including, ACEis, ARBs, BBs, CCBs, and Thiazide/Thiazide-like diuretics have effectively reduced BP and CV events in RCTs. These drugs and their combinations are recommended as the basis of antihypertensive treatment strategies.	I	A
Initiation of therapy with a two-drug combination is recommended for most hypertensive patients. Preferred combinations should comprise a RAS blocker (either an ACE inhibitor or an ARB) with a CCB or Thiazide/Thiazide-like diuretic. Other combinations of the five major drug classes can be used.	I	A

**SINGLE PILL COMBINATION
OR
MONOTHERAPY STRATEGY**

Initiation with monotherapy can be considered in patients with: • grade 1 hypertension and low-risk if BP is only marginally elevated (less than 150 mmHg SBP and 95 mmHg DBP) • high-normal BP and very high CV risk, • frailty and/or and advance age.	I	C
If BP is not controlled with the initial two-drug combination by using the maximum recommended and tolerated dose of the respective components, treatment should be increased to a three-drug combination, usually a RAS blocker + CCB + Thiazide/Thiazide-like diuretic.	I	A
If BP is not controlled with a three-drug combination by using the maximum recommended and tolerated dose of the respective components, it is recommended to extend treatment according to the recommendations for resistant hypertension.	I	A
The use of single pill combinations (SPCs) should be preferred at any treatment step, i.e. during initiation of therapy with a two-drug combination and at any other step of treatment.	I	B

BBs should be used at initiation of therapy or at any treatment step as GDMT, examples:	I	A
• Heart failure with reduced ejection fraction HFrEF • Anti-ischemic therapy in chronic coronary syndromes • Heart rate control in atrial fibrillation		
BBs can be considered in the presence of several other conditions in which their use can be favorable as summarized in Table xx.	I	C
The combination of two RAS blockers is not recommended due to increased risk of adverse events, in particular AKI.	III	A

OPTIMAL ANTIHYPERTENSIVE DRUG

- Lower blood pressure to the adequate level with once daily use.
- Protecting target organs: Heart, kidneys, brain, especially in non-dipping.
- Beyond blood pressure control, favorite metabolic effects: insulin resistance and blood lipid abnormalities.

Any question?



