2018 ESC/ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH)

Authors/Task Force Members: Bryan Williams* (ESC Chairperson) (UK), Giuseppe Mancia* (ESH Chairperson) (Italy), Wilko Spiering (The Netherlands), Enrico Agabiti Rosei (Italy), Michel Azizi (France), Michel Burnier (Switzerland), Denis L. Clement (Belgium), Antonio Coca (Spain), Giovanni de Simone (Italy), Anna Dominiczak (UK), Thomas Kahan (Sweden), Felix Mahfoud (Germany), Josep Redon (Spain), Luis Ruilope (Spain), Alberto Zanchetti[†] (Italy), Mary Kerins (Ireland), Sverre E. Kjeldsen (Norway), Reinhold Kreutz (Germany), Stephane Laurent (France), Gregory Y. H. Lip (UK), Richard McManus (UK), Krzysztof Narkiewicz (Poland), Frank Ruschitzka (Switzerland), Roland E. Schmieder (Germany), Evgeny Shlyakhto (Russia), Costas Tsioufis (Greece), Victor Aboyans (France), and Ileana Desormais (France)

ESC
European Society
of Cardiology

ESH European Society of Hypertension

Classification of office BP and definitions of hypertension grade

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	< 120	and	< 80
Normal	120–129	and/or	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	≥ 140	and	< 90

Definitions of hypertension according to office, ambulatory, and home BP levels

Category	Systolic (mmHg)		Diastolic (mmHg)
Office BP	≥ 140	and/or	≥ 90
Ambulatory BP			
Daytime (or awake) mean	≥ 135	and/or	≥ 85
Night-time (or asleep) mean	≥ 120	and/or	≥ 70
24-h mean	≥ 130	and/or	≥ 80
Home BP mean	≥ 135	and/or	≥ 85

Office BP measurement

Seated comfortably, quiet environment for 5 min before beginning BP measurements.
3 measurements, 1–2 min apart. Additional measurements if the first 2 readings differ by > 10 mmHg. BP = the average of the last two BP readings.
Additional measurements if: unstable BP values due to arrhythmias (AF), manual auscultatory methods should be used as most automated devices have not been validated for BP measurement in patients with AF.
Use a standard bladder cuff (12–13 cm wide and 35 cm long) for most patients, but have larger and smaller cuffs available for larger and thinner arms
The cuff should be positioned at the level of the heart with the back and arm supported, to avoid muscle contraction and isometric-exercise dependant increases in BP.
Measure BP in both arms at the first visit to detect possible between-arm differences. Use the arm with the higher value as the reference.
Measure BP 1 minute and 3 min after standing from seated position in all patients at the first measurement to exclude orthostatic hypotension. Lying and standing BP measurements should also be considered in subsequent visits in older people, with diabetes, and other conditions in which orthostatic hypotension may frequently occur.
Record heart rate and use pulse palpation to exclude arrhythmia.

Comparison of ABPM and HBPM

ABPM	HBPM
Advantages	**Advantages**
• Can identify white-coat and masked hypertension	• Can identify white-coat and masked hypertension
• Stronger prognostic evidence	• Cheap and widely available
• Night-time readings	• Measurement in a home setting, which may be more relaxed than the doctor's office
• Measurement in real-life settings	
• Additional prognostic BP phenotypes	• Patient engagement in BP measurement
• Abundant information from a single measurement session, including short-term BP variability	• Easily repeated and used over longer periods to assess day-to-day BP variability
Disadvantages	**Disadvantages**
• Expensive and sometimes limited availability	• Only static BP is available
• Can be uncomfortable	• Potential for measurement error
	• No nocturnal readings

Clinical indications for HBPM or ABPM

| |
|---|
| Conditions in which white-coat hypertension is more common, e.g.
 •Grade I hypertension on office BP measurement
 •Marked office BP elevation without HMOD |
| Conditions in which masked hypertension is more common, e.g.
 •High-normal office BP
 •Normal office BP in individuals with HMOD or at high total CV risk |
| Postural and post-prandial hypotension in untreated and treated patients |
| Evaluation of resistant hypertension |
| Evaluation of BP control, especially in treated higher-risk patients |
| Exaggerated BP response to exercise |
| When there is considerable variability in the office BP |
| Evaluating symptoms consistent with hypotension during treatment |
| Specific indications for ABPM rather than HBPM:
 •Assessment of nocturnal BP values and dipping status (e.g. suspicion of nocturnal hypertension, such as in sleep apnoea, CKD, diabetes, endocrine hypertension, or autonomic dysfunction) |

Screening & Diagnostic strategy
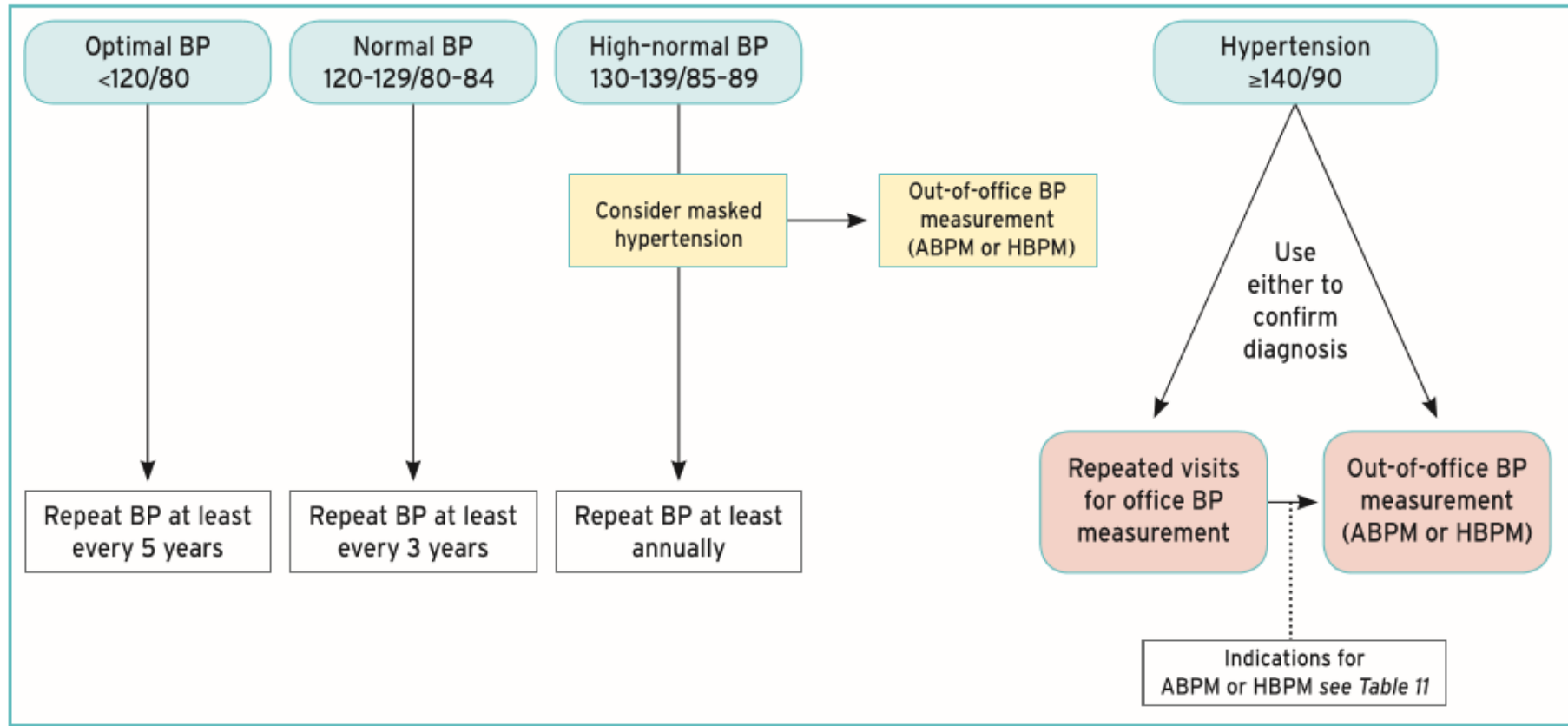
Figure 2 Screening and diagnosis of hypertension. ABPM = ambulatory blood pressure monitoring; BP = blood pressure; HBPM = home blood pressure monitoring.
[a]After detecting a specific BP category on screening, either confirm BP elevation with repeated office BP measurements on repeat visits or arrange use of out-of-office BP to confirm the diagnosis of hypertension.

Factors influencing CV risk in patients with hypertension - 1

Demographic characteristics and laboratory parameters
Sex (men > women)
Age
Smoking – current or past history
Total cholesterol and HDL-C
Uric acid
Diabetes
Overweight or obesity
Family history of premature CVD (men aged < 55 years and women aged < 65 years)
Family or parental history of early onset hypertension
Early onset menopause
Sedentary lifestyle
Psychosocial and socioeconomic factors
Heart rate (resting values > 80 beats per min)

Factors influencing CV risk in patients with hypertension - 2

Asymptomatic HMOD
Arterial stiffening: Pulse pressure (in older people) ≥ 60 mmHg / Carotid–femoral PWV > 10 m/s
ECG LVH
Echocardiographic LVH
Microalbuminuria or elevated albumin–creatinine ratio
Moderate CKD with eGFR > 30–59 mL/min/1.73 m^2 (BSA) or severe CKD eGFR < 30 mL/min)
Ankle−brachial index < 0.9
Advanced retinopathy: haemorrhages or exudates, papilloedema
Established CV or renal disease
Cerebrovascular disease: ischaemic stroke, cerebral haemorrhage, TIA
CAD: myocardial infarction, angina, myocardial revascularization
Presence of atheromatous plaque on imaging
Heart failure, including HFpEF
Peripheral artery disease
Atrial fibrillation

Assessment of HMOD

Basic screening tests for HMOD	Indication and interpretation
12-lead ECG	Screen for LVH and other possible cardiac abnormalities and to document heart rate and cardiac rhythm
Urine albumin:creatinine ratio	To detect elevations in albumin excretion indicative of possible renal disease
Blood creatinine and eGFR	To detect possible renal disease
Fundoscopy	To detect hypertensive retinopathy, especially in patients with grade 2 or 3 hypertension
More detailed screening for HMOD	
Echocardiography	To evaluate cardiac structure and function, when this information will influence treatment decisions
Carotid ultrasound	To determine the presence of carotid plaque or stenosis, particularly in patients with cerebrovascular disease or vascular disease elsewhere
Abdominal ultrasound and Doppler studies	To evaluate renal size and structure (e.g. scarring) and exclude renal tract obstruction as possible underlying causes of CKD and hypertension Evaluate abdominal aorta for evidence of aneurysmal dilatation and vascular disease. Examine adrenal glands for evidence of adenoma or phaeochromocytoma (CT or MRI preferred for detailed examination) Renal artery Doppler studies to screen for the presence of renovascular disease, especially in the presence of asymmetric renal size
PWV	An index of aortic stiffness and underlying arteriosclerosis
ABI	Screen for evidence of PAD
Cognitive function testing	To evaluate cognition in patients with symptoms suggestive of cognitive impairment
Brain imaging	To evaluate the presence of ischaemic or haemorrhagic brain injury, especially in patients with a history of cerebrovascular disease or cognitive decline

Sensitivity to detect treatment-induced changes, reproducibility and operator independence, time to changes, and prognostic value of changes provided by markers of HMOD

Marker of HMOD	Sensitivity to changes	Reproducibility and operator independence	Time to changes	Prognostic value of the change
LVH by ECG	Low	High	Moderate (> 6 months)	Yes
LVH by echo	Moderate	Moderate	Moderate (> 6 months)	Yes
LVH by CMR	High	High	Moderate (> 6 months)	No data
eGFR	Moderate	High	Very slow (years)	Yes
Urinary albumin excretion	High	Moderate	Fast (weeks to months)	Moderate
Carotid IMT	Very low	Low	Slow (> 12 months)	No
PWV	High	Low	Fast (weeks to months)	Limited data
ABI	Low	Moderate	Slow (> 12 months)	Moderate

10-year CV risk categories (SCORE system)

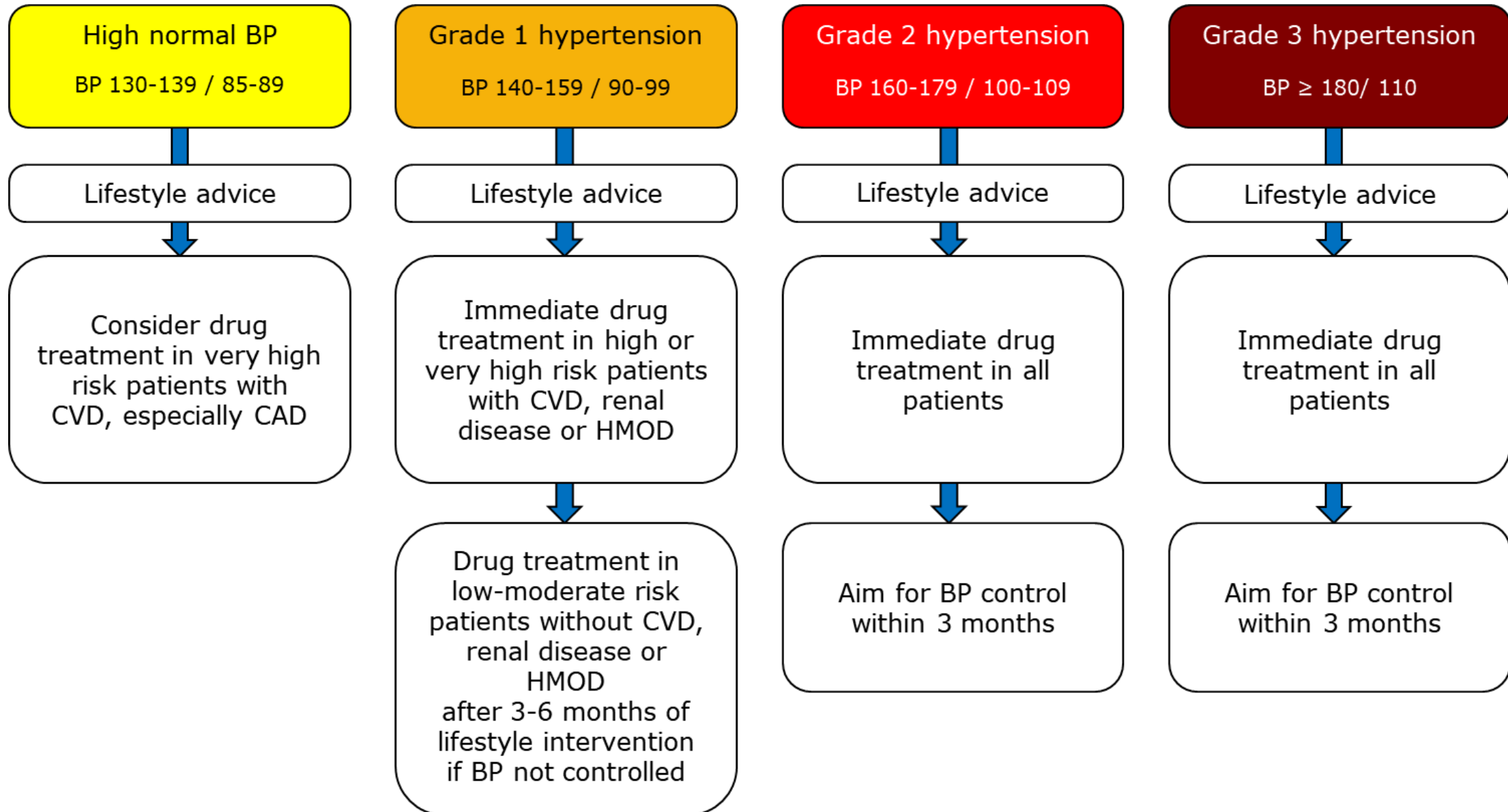|	
Very high risk	**People with any of the following:** **Documented CVD, either clinical or unequivocal on imaging.** •**Clinical CVD** includes; acute myocardial infarction, acute coronary syndrome, coronary or other arterial revascularization, stroke, TIA, aortic aneurysm, PAD. •**Unequivocal documented CVD on imaging** includes: significant plaque (i.e. ≥ 50% stenosis) on angiography or ultrasound. It does not include increase in carotid intima-media thickness. **Diabetes mellitus with target organ damage**, e.g. proteinuria or a with a major risk factor such as grade 3 hypertension or hypercholesterolaemia **Severe CKD** (eGFR < 30 mL/min/1.73 m^2) **A calculated 10-year SCORE of ≥ 10%**
High risk	**People with any of the following:** **Marked elevation of a single risk factor**, particularly cholesterol > 8 mmol/L (> 310 mg/dL) e.g. familial hypercholesterolaemia, grade 3 hypertension (BP ≥ 180/110 mmHg) **Most other people with diabetes mellitus** (except some young people with type 1 diabetes mellitus and without major risk factors, that may be moderate risk) **Hypertensive LVH** **Moderate CKD eGFR 30–59 mL/min/1.73 m²)** **A calculated 10-year SCORE of 5–10%**
Moderate risk	**People with:** **A calculated 10-year SCORE of 1% to < 5%** **Grade 2 hypertension** **Many middle-aged people** belong to this category
Low risk	**People with:** **A calculated 10-year SCORE of < 1%**

Classification of hypertension stages according to BP levels, presence of CV risk factors, HMOD, or comorbidities

Hypertension disease staging	Other risk factors, HMOD, or disease	BP (mmHg) grading			
		High-normal SBP 130−139 DBP 85−89	Grade 1 SBP 140−159 DBP 90−99	Grade 2 SBP 160−179 DBP 100−109	Grade 3 SBP ≥ 180 DBP ≥ 110
Stage 1 (uncomplicated)	**No other risk factors**	Low risk	Low risk	Moderate risk	High risk
	1 or 2 risk factors	Low risk	Moderate risk	Moderate − high risk	High risk
	≥ 3 risk factors	Low − moderate risk	Moderate − high risk	High risk	High risk
Stage 2 (asymptomatic disease)	**HMOD, CKD grade 3, or diabetes mellitus without organ damage**	Moderate − high risk	High risk	High risk	High − very high risk
Stage 3 (symptomatic disease)	**Symptomatic CVD, CKD grade ≥ 4, or diabetes mellitus with organ damage**	Very high risk	Very high risk	Very high risk	Very high risk

Treatment of CV risk factors associated with hypertension

Recommendations	Class	Level
CV risk assessment with the SCORE system is recommended for hypertensive patients who are not already at high or very risk due to established CVD, renal disease, or diabetes.	I	B
For patients at very high CV risk, statins are recommended to achieve LDL-C levels of < 1.8 mmol/L (70 mg/dL), or a reduction of ≥ 50% if the baseline LDL-C is 1.8–3.5 mmol/L (70–135 mg/dL).	I	B
For patients at high CV risk, statins are recommended to achieve an LDL-C goal of < 2.6 mmol/L (100 mg/dL) or a reduction of ≥ 50% if the baseline LDL-C is 2.6–5.2 mmol/L (100–200 mg/dL).	I	B
For patients at low to moderate CV risk, statins should be considered, to achieve an LDL-C value of < 3.0 mmol/L (115 mg/dL).	IIa	C
Antiplatelet therapy, in particular low-dose aspirin, is recommended for secondary prevention in hypertensive patients.	I	A
Aspirin is not recommended for primary prevention in hypertensive patients without CVD.	III	A

Initiation of BP-lowering treatment
(lifestyle changes and medication) at different initial office BP levels

High normal BP	Grade 1 hypertension	Grade 2 hypertension	Grade 3 hypertension
BP 130-139 / 85-89	BP 140-159 / 90-99	BP 160-179 / 100-109	BP ≥ 180/ 110
Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle advice
Consider drug treatment in very high risk patients with CVD, especially CAD	Immediate drug treatment in high or very high risk patients with CVD, renal disease or HMOD	Immediate drug treatment in all patients	Immediate drug treatment in all patients
	Drug treatment in low-moderate risk patients without CVD, renal disease or HMOD after 3-6 months of lifestyle intervention if BP not controlled	Aim for BP control within 3 months	Aim for BP control within 3 months

Initiation of hypertension treatment according to office BP

Recommendations	Class	Level
In fit older patients with hypertension (even if age > 80 years), BP-lowering drug treatment and lifestyle intervention are recommended when SBP is ≥ 160 mmHg.	I	A
BP-lowering drug treatment and lifestyle intervention are recommended in the fit older patients (> 65 years but not over 80 years) when SBP is in the grade 1 range (140–159 mmHg), provided that treatment is well tolerated.	I	A
Antihypertensive treatment may also be considered in frail older patients if tolerated.	IIb	B
Withdrawal of BP-lowering drug treatment on the basis of age, even when patients attain an age of ≥ 80 years, is not recommended, provided that treatment is well tolerated.	III	A
In patients with high-normal BP (130–139/85–89 mmHg):		
• Lifestyle changes are recommended.	I	A
• Drug treatment may be considered when their CV is very high due to established CVD, especially CAD.	IIb	A

BP targets for treatment

**General
hypertensive population**
(regardless the CV risk level)

Elderly patients
(Both below and above
80 years of age)

< 140/90

150-140/90

Risk reduction (%) by 10 mmHg SBP reduction at initial SBP of 130-139 mmHg (RCTs)

CHD +	-12
Stroke *	-27
HF *	-25
Major CV events *	-13
All-cause mortality *	-11

* All statistically significant

Ettehad et al., Lancet 2015; 387: 957

Age group	Office SBP treatment target ranges (mmHg)					Diastolic treatment target range
	Hypertension	+ Diabetes	+ CKD	+ CAD	+ Stroke/TIA	
18−65 years	**Target to 130** *or lower if tolerated* Not < 120	**Target to 130** *or lower if tolerated* Not < 120	**Target to < 140 to 130** *if tolerated*	**Target to 130** *or lower if tolerated* Not < 120	**Target to 130** *or lower if tolerated* Not < 120	< 80 to 70
65−79 years	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	< 80 to 70
≥ 80 years	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	**Target to < 140 to 130** *if tolerated*	< 80 to 70
Diastolic treatment target	< 80 to 70	< 80 to 70	< 80 to 70	< 80 to 70	< 80 to 70	

Home and ambulatory BP targets

- No online-based RCT has used ABPM/HBPM to guide treatment

- ABPM/HBPM targets based on extrapolation of observational data

- Office/out-of-office BP difference decreases as office BP decreases / For 24-h ABP convergence at 115-120/70 mmHg (population and treated patients data)

- An office SBP target of 130 mmHg corresponds to an approximately 125 mmHg mean SBP value - Home SBP target also < 130 mmHg

Lifestyle changes in the 2013 ESH/ESC Guidelines

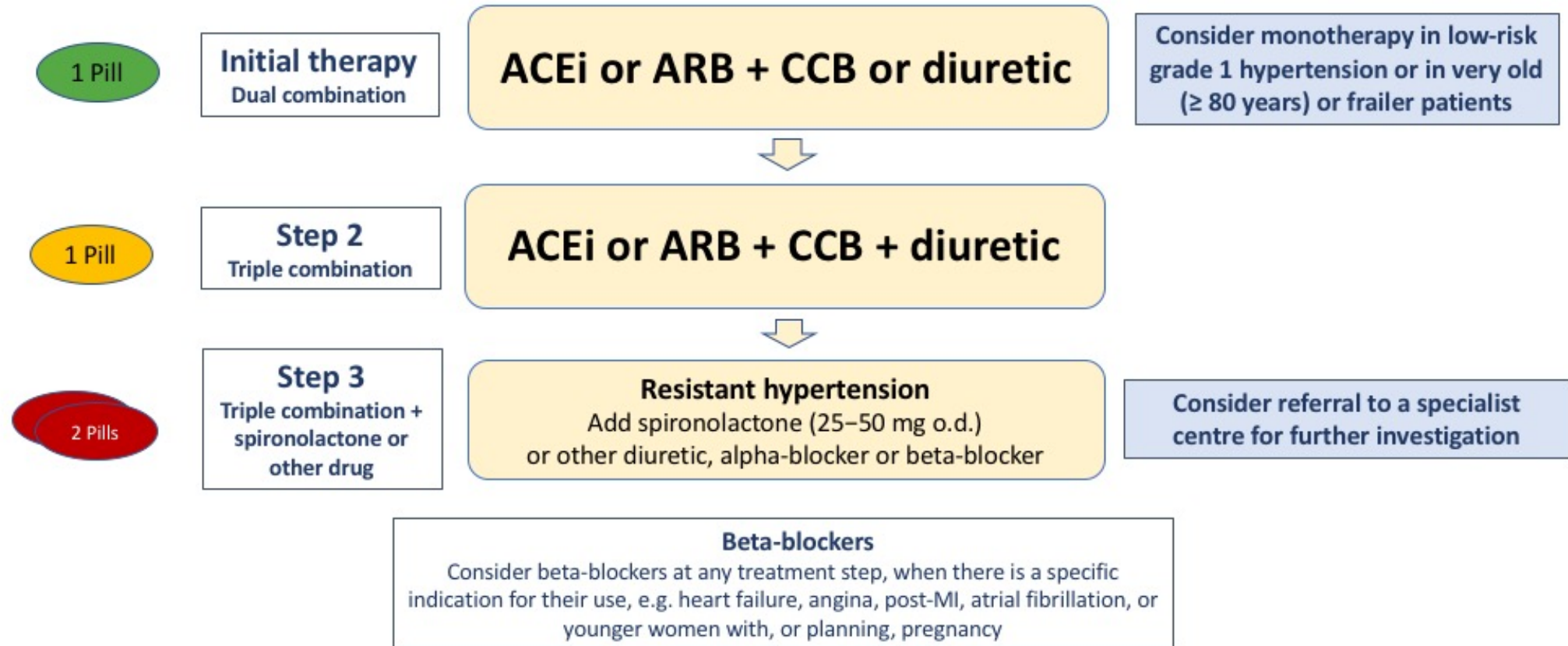| Recommendations	Class	Level*	Level**
Salt restriction to 5-6 g per day	I	A	B
Moderation of alcohol consumption to no more than 20-30 g of ethanol per day in men and to no more than 10-20 g per day in women	I	A	B
Increase the consumption of vegetables, fruits, and low-fat dairy products	I	A	B
Reduction of weight to BMI of 25 Kg/m^2 and of waist circumference to <102 cm in men and <88 cm in women, unless contraindicated	I	A	B
Regular exercise, i.e. at least 30 min of moderate dynamic exercise on 5 to 7 days per week	I	A	B
Give all smokers advise to quit smoking and to offer assistance	I	A	B

* BP reduction; **CV events prevention

Adoption of lifestyle changes in patients with hypertension

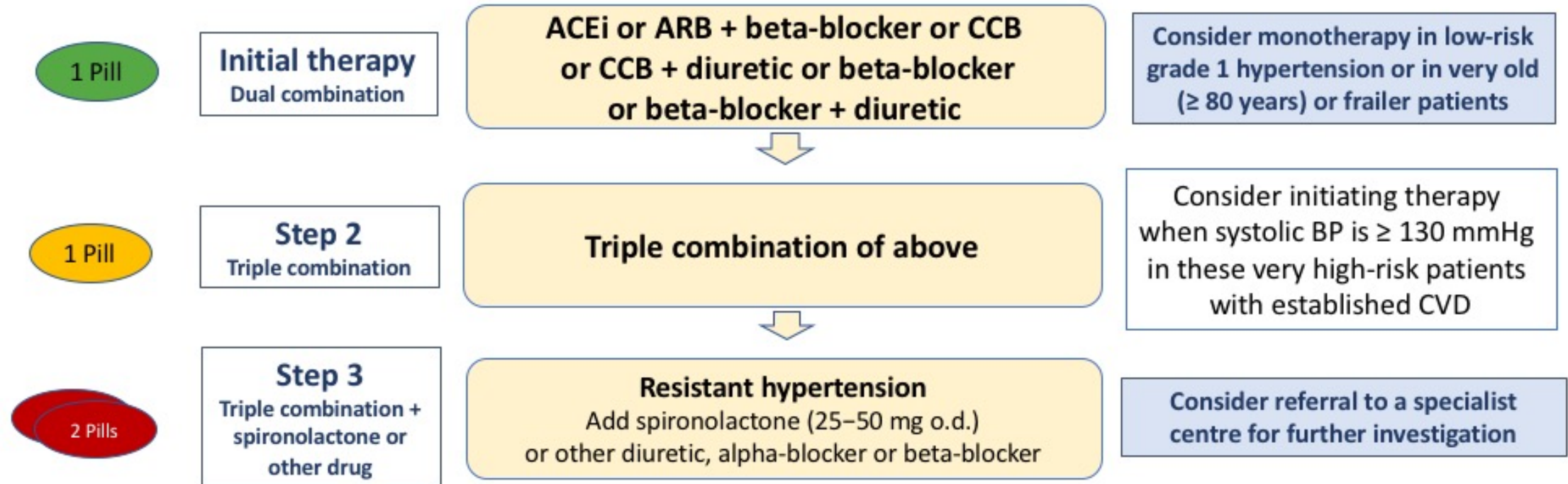| Recommendations	Class	Level
Salt restriction to < 5 g per day is recommended.	I	A
It is recommended to restrict alcohol consumption to: • Less than 14 units per week for men. (1 unit = 125 mL of wine or 250 mL of beer) • Less than 8 units per week for women.	I	A
It is recommended to avoid binge drinking.	III	C
Increased consumption of vegetables, fresh fruits, fish, nuts, unsaturated fatty acids (olive oil), low consumption of red meat, and consumption of low-fat dairy products are recommended.	I	A
Body-weight control is indicated to avoid obesity (BMI > 30 kg/m² or WC > 102 cm in men and > 88 cm in women) and aim at a healthy BMI (about 20–25 kg/m²) and WC values (< 94 cm in men and < 80 cm in women) to reduce BP and CV risk.	I	A
Regular aerobic exercise (e.g. at least 30 min of moderate dynamic exercise on 5–7 days per week) is recommended.	I	A
Smoking cessation and supportive care and referral to smoking cessation programs are recommended.	I	B

The Challenge of improving BP control rates

- BP control rates remain poor - typically <50% of treated patients

- BP control will be even more challenging with new treatment targets

- Most patients require combinations of drugs to control BP - monotherapy is usually ineffective therapy

- The traditional initial monotherapy and stepped-care approach has resulted in too many patients remaining on monotherapy

- Poor compliance with multiple pill treatment is also major factor contributing to poor BP control

Core drug-treatment strategy for uncomplicated hypertension

1 Pill — Initial therapy Dual combination — **ACEi or ARB + CCB or diuretic** — Consider monotherapy in low-risk grade 1 hypertension or in very old (≥ 80 years) or frailer patients

1 Pill — Step 2 Triple combination — **ACEi or ARB + CCB + diuretic**

2 Pills — Step 3 Triple combination + spironolactone or other drug — **Resistant hypertension** Add spironolactone (25–50 mg o.d.) or other diuretic, alpha-blocker or beta-blocker — Consider referral to a specialist centre for further investigation

Beta-blockers
Consider beta-blockers at any treatment step, when there is a specific indication for their use, e.g. heart failure, angina, post-MI, atrial fibrillation, or younger women with, or planning, pregnancy

The core treatment algorithm is also appropriate for patients with hypertension-mediated organ damage, cerebrovascular disease, diabetes, or PAD

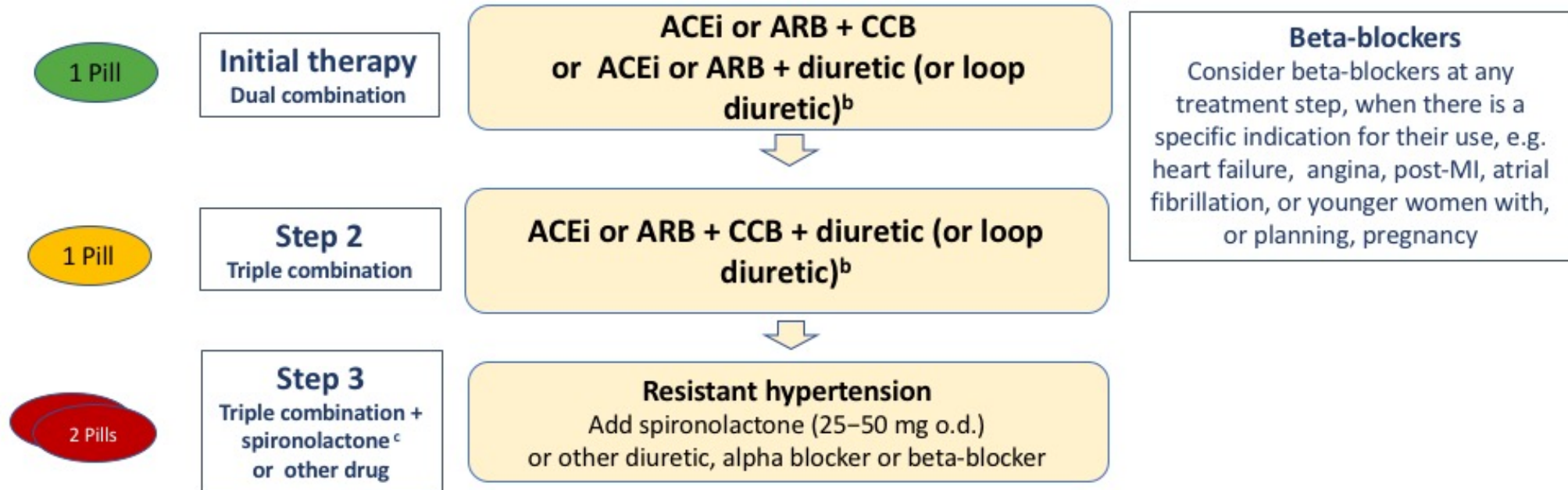# Drug-treatment strategy for hypertension and Coronary Artery Disease

Drug treatment strategy for hypertension

Recommendations	Class	Level
ACE inhibitors, ARBs, beta-blockers, CCBs, and diuretics (thiazides and thiazide-like such as chlortalidone and indapamide) have demonstrated effective reduction of BP and CV events in RCTs, and thus are indicated as the basis of treatment strategies.	I	A
Combination treatment is recommended for most hypertensive patients, as initial therapy. Preferred combinations should comprise a RAS blocker (either an ACE inhibitor or an ARB) with a CCB or diuretic. Other combinations of the 5 major classes can be used.	I	A
It is recommended that beta-blockers are combined with any of the other major drug classes when there are specific clinical situations, e.g. angina, post-myocardial infarction, heart failure, or heart-rate control.	I	A
It is recommended to initiate an antihypertensive treatment with a two-drug combination, preferably in a SPC. Exceptions are frail older patients and those at low risk and with grade 1 hypertension (particularly if SBP is < 150 mmHg).	I	B
It is recommended that if BP is not controlled with a two-drug combination, treatment should be increased to a three-drug combination, usually an RAS blocker + CCB + thiazide/thiazide-like diuretic, preferably as an SPC.	I	A
It is recommended that if BP is not controlled with a three-drug combination, treatment should be increased by the addition of spironolactone or, if not tolerated, other diuretics such as amiloride or higher doses of other diuretics, a beta-blocker, or an alpha-blocker.	I	B

Drug-treatment strategy for hypertension and Chronic Kidney Disease[a]

1 Pill (green)	**Initial therapy** Dual combination	**ACEi or ARB + CCB or ACEi or ARB + diuretic (or loop diuretic)[b]**
1 Pill (yellow)	**Step 2** Triple combination	**ACEi or ARB + CCB + diuretic (or loop diuretic)[b]**
2 Pills (red)	**Step 3** Triple combination + spironolactone[c] or other drug	**Resistant hypertension** Add spironolactone (25–50 mg o.d.) or other diuretic, alpha blocker or beta-blocker

Beta-blockers
Consider beta-blockers at any treatment step, when there is a specific indication for their use, e.g. heart failure, angina, post-MI, atrial fibrillation, or younger women with, or planning, pregnancy

A reduction in eGFR and rise in serum creatinine is expected in patients with CKD who receive BP-lowering therapy, especially in those treated with an ACEi or ARB but a rise in serum creatinine of > 30% should prompt evaluation of the patient for possible renovascular disease.

[a] CKD is defined as an eGFR < 60 mL/min/1.72 m^2 with or without proteinuria.
[b] Use loop diuretics when eGFR is < 30 mL/min/1.72 m^2 Thiazide/thiazide-like diuretics are much less effective/ineffective when eGFR is reduced to this level.
[c] Caution: risk of hyperkalaemia with spironolactone, especially when eGFR is < 45 mL/min/1.72 m^2 or baseline K$^+$ ≥ 4.5 mmol/L.

Device-based therapies for hypertension

Recommendation	Class	Level
Use of device-based therapies is not recommended for the treatment of hypertension, unless in the context of clinical studies and RCTs, until further evidence regarding their safety and efficacy becomes available.	III	B

What is new and what has changed in the 2018 ESC/ESH hypertension guidelines? - 3

Changes in recommendations

2013

Resistant hypertension

Mineralocorticoid receptor antagonists, amiloride, and the alpha-1 blocker doxazosin should be considered if no contraindication exists.

Changes in recommendations

2018

Resistant hypertension

Recommended treatment of resistant hypertension is the **addition of low-dose spironolactone** to existing treatment, or the addition of further diuretic therapy if intolerant to spironolactone, with either eplerenone, amiloride, **higher-dose thiazide/thiazide-like diuretic or a loop diuretic**, or the addition of **bisoprolol or doxazosin**.

Resistant hypertension characteristics, secondary causes, and contributing factors

Characteristics of patients with resistant hypertension	Causes of secondary resistant hypertension	Drugs and substances that may cause raised BP
Demographics • Older age (especially > 75 years) • Obesity • More common in black people • Excess dietary sodium intake • High baseline BP and chronicity of uncontrolled hypertension	**More common causes** • Primary hyperaldosteronism • Atherosclerotic renovascular disease • Sleep apnoea • CKD	**Prescribed drugs** • Oral contraceptives • Sympathomimetic agents (e.g. decongestants in proprietary cold remedies) • Non-steroidal anti-inflammatory drugs • Cyclosporin • Erythropoietin • Steroids (e.g. prednisolone, hydrocortisone) • Some cancer therapies
Concomitant disease • HMOD: LVH and/or CKD • Diabetes • Atherosclerotic vascular • disease • Aortic stiffening and isolated systolic hypertension	**Uncommon causes** • Phaeochromocytoma • Fibromuscular dysplasia • Aortic coarctation • Cushing's disease • Hyperparathyroidism	**Non-prescription drugs** • Recreational drugs (e.g. cocaine, amphetamines, anabolic steroids) • Excess liquorice ingestion • Herbal remedies (e.g. ephedra, ma huang)

Therapeutic strategies in hypertensive patients with CAD

Recommendations	Class	Level
In patients with CAD receiving BP-lowering drugs, it is recommended:		
• To target **SBP to 130 mmHg and lower**, if tolerated, *but not lower than 120 mmHg.*	I	A
• In older patients (**aged ≥ 65 years**), to target to a SBP range of *130–140 mmHg.*	I	A
• **To target DBP to < 80 mmHg**, but *not lower than 70 mmHg.*	I	C
In hypertensive patients with a **history of MI** (myocardial infarction), **beta-blockers and RAS blockers** are recommended as part of treatment.	I	A
In patients with **symptomatic angina**, **beta-blockers and/or CCBs** are recommended.	I	A

What is new and what has changed - 1

Changes in recommendations	
2013	**2018**
Diagnosis Office BP is recommended for screening and diagnosis of hypertension.	**Diagnosis** It is recommended to base the diagnosis of hypertension on: •Repeated office BP measurements; or •Out-of-office BP measurement with ABPM and/or HBPM if logistically and economically feasible.
Treatment thresholds High-normal BP (130–139/85–89 mmHg): Unless the necessary evidence is obtained it is not recommended to initiate antihypertensive drug therapy at high-normal BP.	**Treatment thresholds** High-normal BP (130–139/85–89 mmHg): Drug treatment may be considered when CV risk is very high due to established CVD, especially CAD.
Treatment thresholds Treatment of low-risk grade 1 hypertension: Initiation of antihypertensive drug treatment should also be considered in grade 1 hypertensive patients at low to moderate risk, when BP is within this range at several repeated visits or elevated by ambulatory BP criteria, and remains within this range despite a reasonable period of time with lifestyle measures.	**Treatment thresholds** Treatment of low-risk grade 1 hypertension: In patients with grade 1 hypertension at low–moderate risk and without evidence of HMOD, BP-lowering drug treatment is recommended if the patient remains hypertensive, after a period of lifestyle intervention.
Treatment thresholds Older patients Antihypertensive drug treatment may be considered in the elderly (at least when younger than 80 years) when SBP is in the 140–159 mmHg range, provided that antihypertensive treatment is well tolerated.	**Treatment thresholds** Older patients BP-lowering drug treatment and lifestyle intervention is recommended in fit older patients (> 65 years but not > 80 years) when SBP is in the grade 1 range (140–159 mmHg), provided that treatment is well tolerated.

Changes in recommendations

2013	2018
BP treatment targets A SBP goal of < 140 mmHg is recommended.	**BP treatment targets** It is recommended that the first objective of treatment should be to lower BP to < 140/90 mmHg in all patients and provided that the treatment is well tolerated, treated BP values should be targeted to 130/80 mmHg or lower, in most patients. In patients < 65 years it is recommended that SBP should be lowered to a BP range of 120 to < 130 mmHg in most patients.
BP treatment targets in older patients (65–80 years) A SBP target between of 140 and 150 mmHg is recommended for older patients (65–80 years).	**BP treatment targets in older patients (65–80 years)** In older patients (≥ 65 years), it is recommended that SBP should be targeted to a BP range of 130 to < 140 mmHg.
BP treatment targets in patients aged over 80 years A SBP target between 140 and 150 mmHg should be considered in people older than 80 years, with an initial SBP ≥ 160 mmHg, provided that they are in good physical and mental condition.	**BP treatment targets in patients aged over 80 years** A SBP target range of 130 to < 140 mmHg is recommended for people older than 80 years, if tolerated.
DBP targets A DBP target of < 90 mmHg is always recommended, except in patients with diabetes, in whom values < 85 mmHg are recommended.	**DBP targets** A DBP target of < 80 mmHg should be considered for all hypertensive patients, independent of the level of risk and comorbidities.

Recommendation Grading

	Grade I		Grade IIa		Grade IIb		Grade III

Changes in recommendations	
2013	**2018**
Initiation of drug treatment Initiation of antihypertensive therapy with a two-drug combination may be considered in patients with markedly high baseline BP or at high CV risk.	**Initiation of drug treatment** It is recommended to initiate an antihypertensive treatment with a two-drug combination, preferably in a SPC. The exceptions are frail older patients and those at low risk and with grade 1 hypertension (particularly if SBP is < 150 mmHg).
Resistant hypertension Mineralocorticoid receptor antagonists, amiloride, and the alpha-1 blocker doxazosin should be considered if no contraindication exists.	**Resistant hypertension** Recommended treatment of resistant hypertension is the addition of low-dose spironolactone to existing treatment, or the addition of further diuretic therapy if intolerant to spironolactone, with either eplerenone, amiloride, higher-dose thiazide/thiazide-like diuretic or a loop diuretic, or the addition of bisoprolol or doxazosin.
Device-based therapy for hypertension In case of ineffectiveness of drug treatment, invasive procedures such as renal denervation and baroreceptor stimulation may be considered.	**Device-based therapy for hypertension** Use of device-based therapies is not recommended for the treatment of hypertension, unless in the context of clinical studies and RCTs, until further evidence regarding their safety and efficacy becomes available.

Recommendation Grading

	Grade I		Grade IIa		Grade IIb		Grade III

Recommandations ESC/ESH 2018: nouveaux concepts

Mesure
Utilisation large de la mesure ambulatoire

Approche moins conservatrice en vers les sujets âgés/très agés
Niveau d'intervention plus faible, en tenant compte plutôt de l'age phsyiologique que civique (attention fragilité).
Le traitement anti-HTA ne dois jamais être écarté simplement à cause de l'âge.

A SPC treatment strategy to improve BP control
Recours aux combinaisons anti-HTA, en 1ere intention pour la plupart des patients

Algorithme simplifié: IEC/ARA-2 + IC/diurétique pour la plupart des patients.
Bétabloquants quand il y a d'autres indications pour ce traitement.

Recommandations ESC/ESH 2018: nouveaux concepts

Nouvelles cibles tensionnelles
Plutôt une cible qu'un niveau minimal, avec des limites plus basses selon les particularités de chaque patient.

Importance de la détection de mauvaise observance
Cause principale d'échec de traitement

Importance du role des autres personnels soignants (IDE, pharmaciens++) dans la prise en charge au long cours de l'HTA.