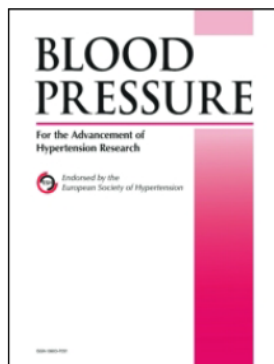


2025 Update of the 2024 European Society of Hypertension (ESH) **MASTER**plan for the management of arterial hypertension

Official ESH slide set



Blood Pressure



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2024 European Society of Hypertension MASTERplan for the management of arterial hypertension

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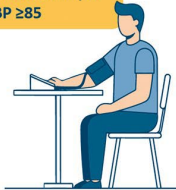
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ESH **MASTER**plan for Hypertension Management



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Measure Blood Pressure – Diagnose

In Office		Out-of-office	
Office BP measurement (OBPM)		Home BP monitoring (HBPM)	Ambulatory BP monitoring (ABPM)
 *SBP ≥ 140 and/or DBP ≥ 90		 *SBP ≥ 135 and/or DBP ≥ 85	 *24-h mean BP: SBP ≥ 130 and/or DBP ≥ 80 * Daytime (awake): SBP ≥ 135 mmHg and/or DBP ≥ 85 * Nighttime (asleep): SBP ≥ 120 mmHg and/or DBP ≥ 70
Conditions 1. Use validated automated electronic upper-arm cuff device* (www.stridebp.org). 2. Select appropriate cuff to fit arm size according to instructions by device manufacturer^b. 3. Quiet room with comfortable temperature. 4. No smoking, caffeine, food, or exercise 30 min before measurement. 5. Start measurement after patient remained seated and relaxed for 3-5 min^c. 6. No talking during and between measurements.		Conditions and Posture 1.-9. From OBPM apply also to HBPM.	Conditions 1.-2. From OBPM applies also to ABPM. 3. Use fully automated devices programmed to record BP automatically at preselected intervals or 24 h.
Posture 7. Sitting with back supported on chair. 8. Legs uncrossed, feet flat on floor. 9. Bare arm resting on table with mid-arm at heart level.		Measurement 10. Propose a standardized protocol to the patient: • Educate the patient on how to use a validated device and report the data. • Take 2 readings with 1 min intervals between them. • Measure in the morning and the evening (before drug intake if treated). Measure for 3–7 days before office visits. Use the average of all readings excluding the first day for both BP and pulse rate. 11. For long-term follow-up of treated hypertension, make duplicate measurements once or twice per week or month.	Measurement 4. The recommended optimal time interval between measurements should be 20 minutes during day (awake) and night (sleep). 5. Measure during a routine workday for 24 h. 6. Instruct patients to keep a diary of their activities, symptoms, meals, drug intake times, sleep times or any unusual problems.
Measurement 10. Take 3 readings with 1 min intervals between them. Use the average of the last 2 readings for BP and also for pulse rate^d.		Relevance • Recommended for long-term follow-up of treated hypertension, because it improves BP control, especially when combined with education and counseling. • Confirmation of hypertension diagnosis and of true resistant hypertension, particularly if ABPM is not available.	Relevance • Obtaining 24-h BP profile and especially BP during night (sleep) not captured by OBPM or HBPM • Confirmation of hypertension diagnosis and of true resistant hypertension.
Relevance • Was used in outcome trials and provides the basis for diagnosis and BP targets.			

*Definition of hypertension. ^aA device that takes triplicate readings automatically is preferred. ^bThe selection of an appropriate cuff size is crucial. A smaller than required cuff overestimates BP and a larger underestimates BP. ^cUse of electronic devices allowing automated storage and data transfer is encouraged. ^dAt initial visit measure on both arms. An interarm SBP difference >10 mmHg must be confirmed with repeated measurements. If confirmed, the arm with the higher BP should be used for all subsequent measurements. If any two sequential BP readings in one arm differ by >10 mmHg, additional measurements are recommended.

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Clinical indications for home and ambulatory BP monitoring*

Clinical Context	Examples
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
In treated individuals	- Confirmation of uncontrolled and true resistant hypertension - Evaluation of 24 h BP control (especially in high-risk patients) - Evaluating symptoms suggestive of hypotension (especially in older patients)
Suspected postural or postprandial hypotension in treated patients	—
Exaggerated BP response to exercise	—
Considerable variability in office BP measurements	—
Specific indications for ABPM rather than HBPM	- Assessment of nocturnal BP and dipping status (e.g. sleep apnea, CKD, diabetes, endocrine hypertension, or autonomic dysfunction) - Patients incapable or unwilling to perform reliable HBPM, or anxious with self-measurement - Evaluation of patients considered for renal denervation - Children - Pregnancy
Specific indications for HBPM rather than ABPM	- Long-term follow-up of treated individuals to improve adherence with treatment and hypertension control - Patients unwilling to perform ABPM, or with considerable discomfort during the recording
Indications for repeat out-of-office BP evaluation (same or alternative method – HBPM/ABPM)	Confirmation of white-coat hypertension or masked hypertension in untreated or treated individuals

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*Using validated devices
as listed at <https://www.stridebp.org>

Assess Patient

Assessment of patients should be adapted according to the severity of hypertension and clinical circumstances.

Basic	Extended	When to refer a patient
 History - Personal - Hypertension related, including sex-specific aspects, e.g. HDP - Co-morbidities - Cardiovascular risk factors - Symptoms of HMOD, CVD, stroke or CKD - Possible secondary hypertension - Other drug treatments or use including OTCs	HMOD Select if deemed necessary and available  Echocardiography - MRI - Coronary calcium score  Ultrasound - Doppler ultrasound  Carotid ultrasound  Pulse wave velocity - Ankle-brachial index  CT - MRI - Cognitive function tests  Fundoscopy - Retina microvasculature	 To a specialist - Suspected secondary hypertension - To exclude secondary hypertension in younger patients (<40 years) with grade 2 or 3 hypertension - Sudden onset or aggravation of hypertension - Patients with treatment resistant hypertension - Need of more detailed assessment of HMOD, which might influence decision making (treatment and follow-up) - Hypertension in pregnancy - Requirement of more in-depth specialist evaluation from the referring physician
 Physical Examination - Body habitus and BMI - Signs of HMOD - Signs of secondary hypertension - Resting pulse rate (see BP measurement) - Level of frailty/functionality in older persons (e.g. >80 years)		 To a hospital - Hypertensive emergencies, i.e. in severe hypertension (grade 3) associated with acute symptomatic HMOD - Severe hypertension with conditions that need intensified BP management: - Acute stroke - Complicated aortic aneurysm - Acute heart failure - Acute coronary syndrome - Acute kidney failure - Hypertension caused by pheochromocytoma or exogenous sympathomimetic substances (e.g. substance abuse) - Severe forms of HDP including preeclampsia/eclampsia
 Lab Test Blood (serum/plasma) - Creatinine, eGFR - Potassium and sodium (Fasting) glucose and HbA1c - Total-, LDL-, HDL-Cholesterol		
 Urine - Urine analysis multicomponent dipstick test - Urinary albumin-creatinine ratio		
 Other Investigations 12 lead ECG		

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Medical and family history*

Category	Details
Personal history	• Time of the first diagnosis of hypertension, including records of any previous medical screening, hospitalization • Stable or rapidly increasing BP • Recordings of current and past HBPM values • Current/past antihypertensive medications including their effectiveness and intolerance • Adherence to therapy • Previous hypertension in pregnancy/preeclampsia
Risk factors^a	• Family history of hypertension, CVD, stroke or kidney disease • Smoking history • Dietary history, alcohol consumption • High volume of sedentary behavior and lack of physical activity • Weight gain or loss in the past • History of erectile dysfunction • Sleep history, snoring, sleep apnea (information also from partner) • Stress • Long-term cancer survivor
Drug treatments or use (other than antihypertensive drugs)	• Recreational drug/substance abuse, concurrent therapies including nonprescription drugs, e.g. glucocorticoids, NSAIDs/COX-2 inhibitors, paracetamol (acetaminophen), immunosuppressive drugs, anticancer drugs, nasal decongestants
History, signs and symptoms of HMOD, CVD, stroke and kidney disease	• Brain and eyes: headache, vertigo, syncope, impaired vision, TIA, sensory or motor deficit, stroke, carotid revascularization, cognitive impairment, memory loss, dementia (in older people) • Heart: chest pain, shortness of breath, edema, myocardial infarction, coronary revascularization, syncope, history of palpitations, arrhythmias (especially AF), heart failure • Kidney: thirst, polyuria, nocturia, hematuria, urinary tract infections • Peripheral arteries: cold extremities, intermittent claudication, pain-free walking distance, pain at rest, ulcer or necrosis, peripheral revascularization
History of possible secondary hypertension	• Young onset of grade 2 or 3 hypertension (<40 years), or sudden development of hypertension or rapidly worsening BP in older patients • History of repetitive renal/urinary tract disease • Repetitive episodes of sweating, headache, anxiety or palpitations, suggestive of pheochromocytoma • History of spontaneous or diuretic-provoked hypokalemia, episodes of muscle weakness and tetany (hyperaldosteronism) • Symptoms suggestive of thyroid disease or hyperparathyroidism • History of or current pregnancy, postmenopausal status and oral contraceptive use or hormonal substitution

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*Additional factors to be considered are listed in the following slide

Factors that influence CV risk in patients with hypertension

Risk factors	Details
Parameter for risk stratification, which are included in SCORE2 and SCORE2-OP	• Sex (men >women) • Age • Level of SBP^a • Smoking – current or past history • Non-HDL cholesterol
Established and suggested novel factors	• Family or parental history of early onset hypertension • Personal history of malignant hypertension • Family history of premature CVD (men aged <55 years; women aged <65 years) • Heart rate (resting values >80 bpm) • Low birth weight • Sedentary lifestyle • Overweight or Obesity • Diabetes • Dyslipidemia • Lp(a) • Uric acid • Adverse outcomes of pregnancy (recurrent pregnancy loss, preterm delivery, hypertensive disorders, gestational diabetes) • Early-onset menopause • Frailty, functional capacities and autonomy status • Psychosocial and socioeconomic factors • Migration • Environmental exposure to air pollution or noise • Additional clinical conditions or comorbidities • True resistant hypertension • Sleep disorders (including OSA) • COPD • Gout • Chronic inflammatory diseases • Metabolic dysfunction-associated sclerotic liver disease (MASLD) • Chronic infections (including long COVID-19) • Migraine • Depressive syndromes • Erectile dysfunction
Hypertension-mediated organ damage (HMOD)	• Increased large artery stiffness • Pulse pressure (in older people) ≥60 mmHg • Carotid–femoral PWV >10 m/s in middle-aged people • Presence of non-hemodynamically significant atheromatous plaque (stenosis) on imaging • ECG LVH (Sokolow–Lyon index >35 mm, or R in aVL ≥11 mm; Cornell voltage-duration product (+6 mm in women) >2440 mm*ms, or Cornell voltage >28 mm in men or >20 mm in women) • Echocardiographic LVH (LV mass index: men >50 g/m^{2.7}; women >47 g/m^{2.7} (m = height in meters); indexation for BSA may be used in normal-weight patients: >115 g/m² in men and >95/m² in women) • Moderate increase of albuminuria 30–300 mg/24 h or elevated UACR (preferably in morning spot urine) 30–300 mg/g • CKD stage 3 with eGFR 30–59 mL/min/1.73 m² • Ankle–brachial index <0.9 • Advanced retinopathy: hemorrhages or exudates, papilledema
Established cardiovascular and kidney disease	• Cerebrovascular disease: ischemic stroke, cerebral hemorrhage, TIA • Coronary artery disease: myocardial infarction, angina, myocardial revascularization • Presence of hemodynamically significant atheromatous plaque (stenosis) on imaging • Heart failure • Peripheral artery disease • Atrial fibrillation • Severe albuminuria > 300 mg/24 h or UACR (preferably in morning spot urine) >300 mg/g • CKD stage 4 and 5, eGFR < 30 mL/min/1.73m²

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^aDBP is not included in the SCORE2/SCORE2-OP tool to estimate CV ris

Category	Assessment
Body habitus	• Weight and height measured on a calibrated scale, with calculation of BMI • Waist circumference
Signs of hypertension-mediated organ damage	• Neurological examination and cognitive status • Fundoscopic examination for hypertensive retinopathy in emergencies • Auscultation of heart and carotid arteries • Palpation of carotid and peripheral arteries • Ankle–brachial index
Signs of secondary hypertension	• Skin inspection: cafe-au-lait patches of neurofibromatosis (pheochromocytoma) • Kidney palpation for signs of renal enlargement in polycystic kidney disease • Auscultation of heart and renal arteries for murmurs or bruits indicative of aortic coarctation, or renovascular hypertension • Signs of Cushing’s disease or acromegaly • Signs of thyroid disease

*Can be adapted according to the clinical circumstance

	Group 1	Group 2	Group 3
Characteristics	Fit	Slowed but autonomous for most activities	Severely dependent
Diagnosis	• ADL (Katz) ≥ 5 <i>and</i> • absence of clinically significant dementia (MMSE >20) <i>and</i> • routine walking activities	Profile between groups 1 and 3	• ADL (Katz): ≤ 2 <i>or</i> • severe dementia (MMSE ≤ 10) <i>or</i> • chronic bedridden <i>or</i> • end of life

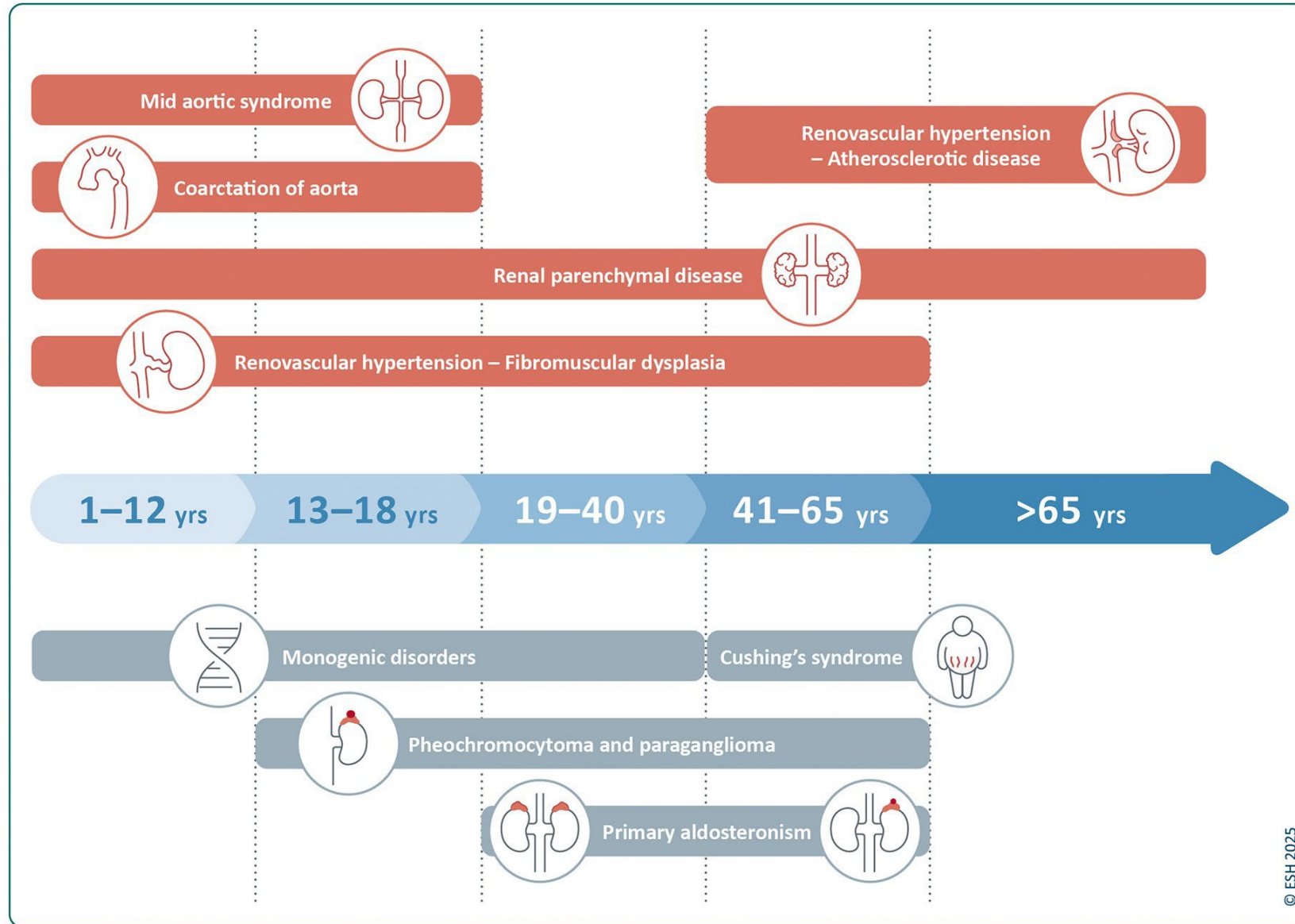
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ADL: Activities of Daily Living (Katz Index) scaled rated from 0 (completely dependent) to 6 (completely autonomous). This scale comprises 6 ADL: Bathing, Dressing, Toileting, Transferring, Feeding and Continence. For each ADL '0' means that the person is unable to do it without assistance, 0.5 need of some assistance, 1 no need of any assistance. MMSE: Mini mental state examination. Score 0-30, 30 best, 0-10 severe dementia, 11-20 moderate dementia, 21-30 absence of clinically significant dementia. The assessment is used to guide treatment as shown in pillar 3.

Sample	Laboratory tests
 Blood (serum/ plasma)	• Hemoglobin and/or hematocrit • Fasting blood glucose and HbA1c • Lipids: total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides • Potassium and sodium • Uric acid • Creatinine (and/or cystatin C) for estimating GFR with eGFR formulas • Calcium
 Urine	Urine analysis (first voided urine in the morning), multicomponent dipstick test in all patients, UACR, microscopic examination in selected patients

*Can be adapted according to the clinical circumstance.

Typical incidences of selected forms of secondary hypertension according to age*



*Clinical manifestations may also be observed at other ages.

Risk stratification according to grade and stage of hypertension

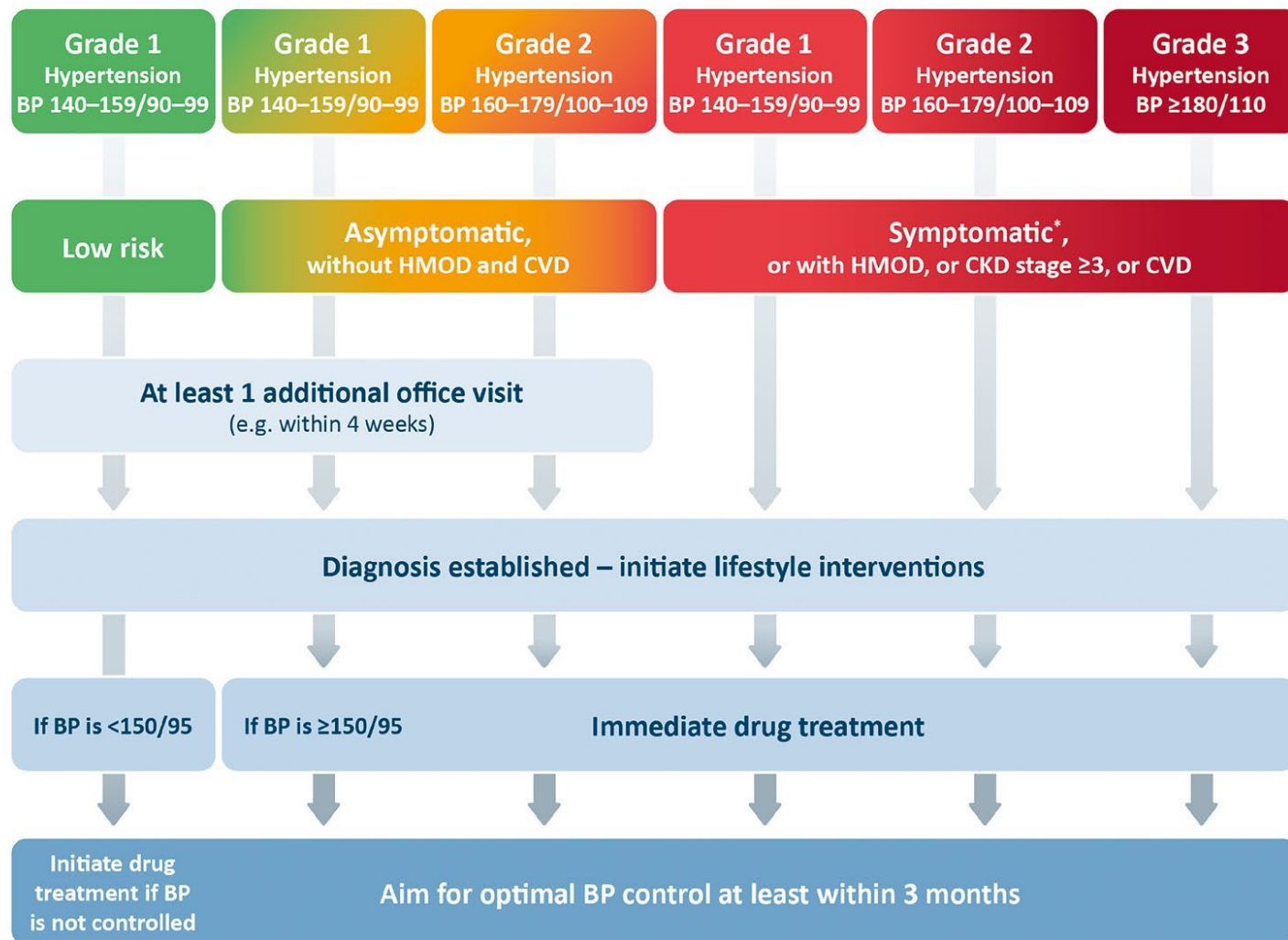
Hypertension disease staging	Other risk factors, HMOD, CVD or CKD	BP (mmHg) grading			
		High-normal SBP 130–139 DBP 85–89	Grade 1 SBP 140–159 DBP 90–99	Grade 2 SBP 160–179 DBP 100–109	Grade 3 SBP ≥ 180 DBP ≥ 110
Stage 1	No other risk factors	Low risk	Low risk	Moderate risk	High risk
	1 or 2 risk factors	Low risk	Moderate risk	Moderate to high risk	High risk
	≥3 risk factors	Low to moderate risk	Moderate to high risk	High risk	High risk
Stage 2	HMOD, CKD grade 3, or diabetes mellitus	Moderate to high risk	High risk	High risk	Very high risk
Stage 3	Established CVD or CKD grade ≥4	Very high risk	Very high risk	Very high risk	Very high risk

	<50 years	50-69 years	≥70 years
	<2.5%	<5%	<7.5%
	2.5 to <7.5%	5 to <10%	7.5 to <15%
	≥7.5%	≥10%	≥15%

Complementary risk estimation in Stage 1 with SCORE2/SCORE2-OP

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Select Therapy: Initial management of hypertension



Use HBPM
and/or ABPM
whenever
deemed useful
and feasible



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*In addition to the symptoms that are linked to HMOD, further symptoms that are associated with hypertension such as headache, dyspnoea, dizziness, or palpitations can be considered.

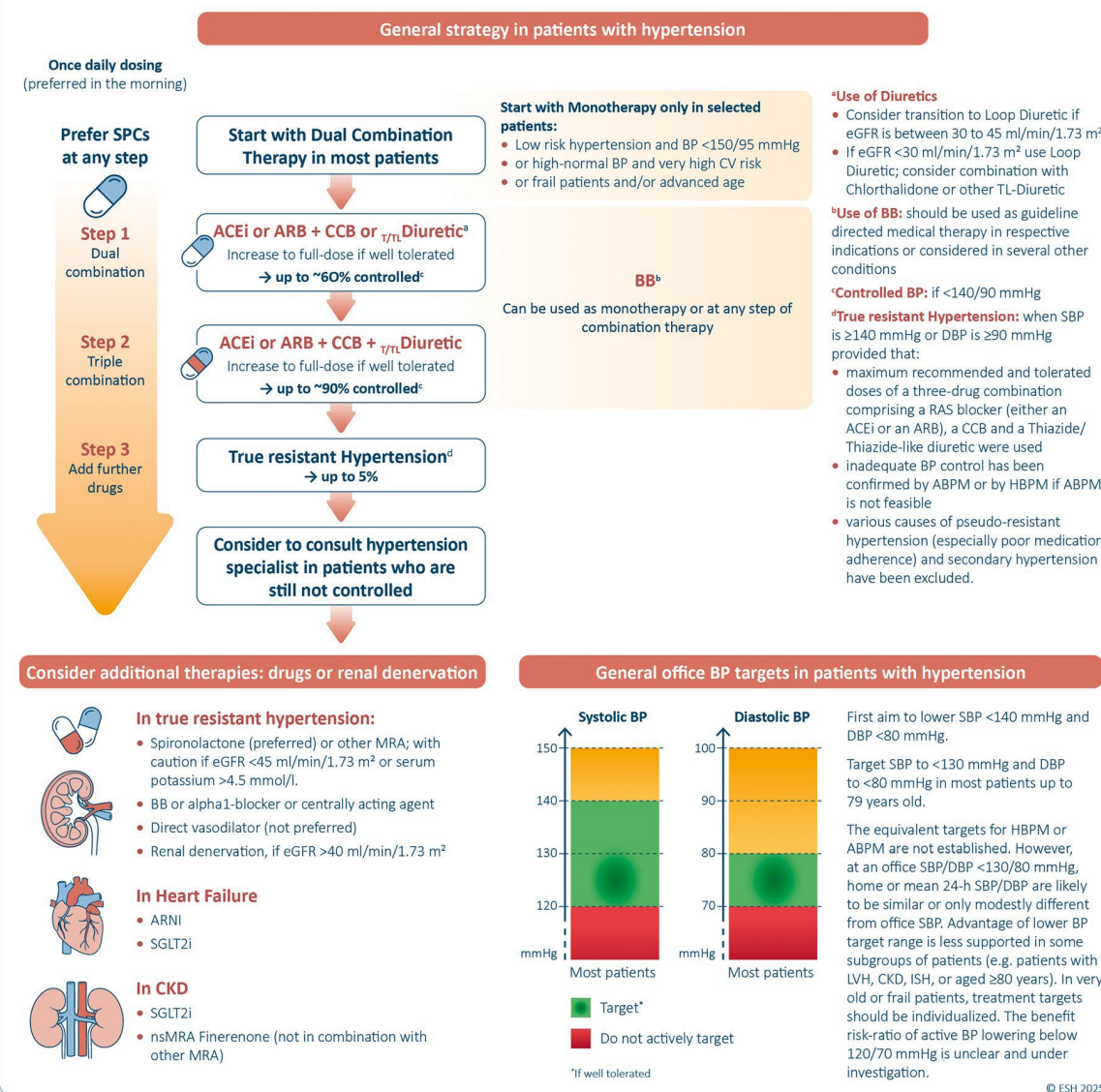
Select Therapy: Lifestyle Interventions

Relevance	Prescribing	Supportive additional interventions
- Prevent or delay onset of hypertension - Improve overall/CV health and well-being - Reduce BP - Booster BP lowering effects of medications - Reduce the number/dose of drugs needed for BP control	- To all patients with diagnosed hypertension - To patients with white-coat or masked hypertension - To patients with high-normal BP - Individual patient counseling and support - Prescribe with specific instructions, e.g. intensity and type of exercise - Assess, adapt, and reinforce during follow-up	 Smoking cessation Smoking cessation, supportive care and referral to smoking cessation programs are recommended for all smokers
Key interventions to reduce BP		
 Healthy diet Prefer: - DASH or Mediterranean type diets - A healthy dietary pattern including more plant-based and less animal-based food - Vegetables, fruits, beans, nuts, seeds, and vegetable oils - Lean protein (e.g. fish, poultry) Limit: - Fatty meats, full-fat dairy - Sugar, sweets and sweetened beverages	 Weight reduction - Combine a low-caloric diet with daily physical activity in patients with overweight or obesity - Monitor waist circumference and weight  Restriction of sodium intake - Sodium is mainly consumed as salt, which comes from processed foods or is added to the food during cooking or at the table - Salt (NaCl) restriction to < 5 g (~2 g sodium) or 1 teaspoon per day is recommended	 Improve stress management - Reduce stress by use of - Regular physical activity - Mindfulness-based exercise - Relaxation techniques, e.g. deep breathing, meditation, yoga or Tai Chi - Get enough sleep (7-9 hours) - Find individual ways to cope with stress, e.g. practicing mindfulness, engaging in hobbies or talking to a therapist - Moderate alcohol and caffeine intake, avoid drugs
 Daily physical activity and regular exercise - Incorporate physical activity (e.g. walking, cycling) into everyday life and reduce sedentary behavior (e.g. sit less) - Aim for: 150-300 min of aerobic exercise per week performed at a moderate intensity or 75-150 min of aerobic exercise per week performed at a vigorous intensity or - an equivalent combination of moderate and vigorous physical activities - Add dynamic resistance (muscle strengthening) exercise 2-3 times per week - Start slow and gradually to build up the amount/intensity of activity	 Augmentation of potassium intake - Increase potassium consumption, preferably via dietary modification, except for hypertensive patients with advanced CKD - Foods high in potassium are for example white cannellini beans (1200 mg/cup), unsalted boiled spinach (840 mg/cup), avocado (708 mg/cup) and bananas (450 mg per medium fruit) - Use salt substitutes replacing NaCl with KCl in patients consuming a high sodium diet  Limit alcohol intake - Limit alcohol intake close to abstinence, particularly if intake is ≥ 3 drinks/day* - Avoid excessive (binge) drinking	 Minimize exposure to noise and air pollution - Reduce indoor exposure to noise and air pollution - Consider to reduce exposure to air pollution by modifying the location, timing and type of outdoor activities

*About 350 ml of regular beer containing 5% alcohol by volume or 150 ml of wine containing 12% alcohol by volume per drink.

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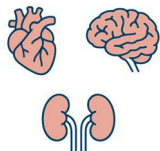
Select Therapy: Pharmacological Treatment



Select Therapy: Older patients (>80 years)

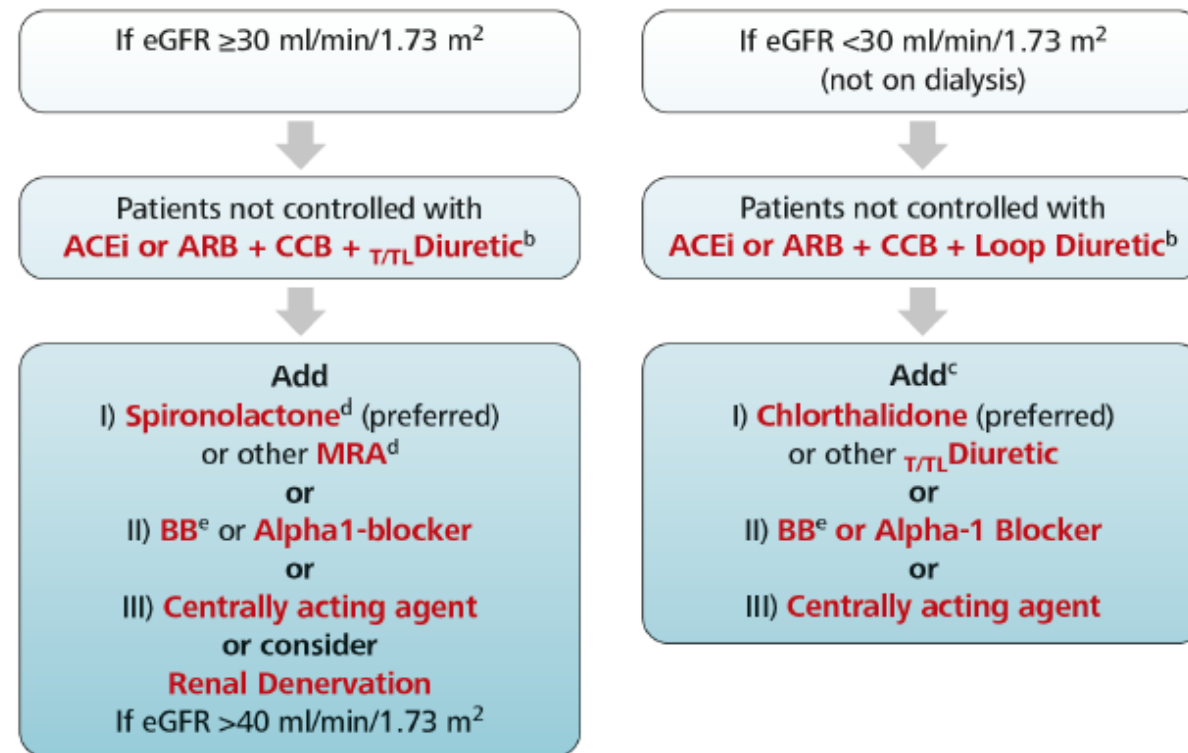
	 Fit*	 Slowed but autonomous for most activities*	 Severely Dependent
 Treatment initiation	1. If office SBP ≥ 160 mmHg. 2. Consider also in most cases if office SBP is between 140 and 159 mmHg.	1. If office SBP ≥ 160 mmHg. 2. Consider also in most cases if office SBP is between 140 and 159 mmHg.	1. According to comorbidities and polypharmacy. 2. Consider treatment if office SBP ≥ 160 mmHg.
 Target BP	3. Office SBP in the range of 140 to 150 mmHg. 4. A range of 130-139 mmHg may be considered if well tolerated. 5. Be cautious if DBP is already below 70 mmHg.	3.-5. from Fit apply also.	3. Office SBP in the range of 140 to 150 mmHg.
 Strategy	6. Consider starting with monotherapy.	6. Consider starting with monotherapy. 7. Uptitrate cautiously. 8. Reduce treatment if SBP is very low (<120 mmHg) or in patients with orthostatic hypotension. 9. Consider a detailed assessment of functional status with the tools below or equivalent: • Mobility (Short Physical Performance Battery) • Muscular force (Handgrip) • Depression (Mini Geriatric Depression Scale) • Nutrition (Mini Nutritional Assessment Short Form)	4. Start treatment cautiously. 5. Reduce treatment if SBP is very low (<120 mmHg) or in patients with orthostatic hypotension. 6. Correct other factors and medications lowering BP.

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Evaluate Response			
	Initiation (3 months)	Short-term FU (3 months–1 year)	Long-term FU (>1 year)
Objective	Aim for BP control	Establish optimal BP control	Maintain optimal BP control
	1-2 visits (within 4-6 weeks)	1-2 visits depending on CV risk (within 4-6 weeks). More frequently in patients with high-risk and difficult to control BP.	Low-risk: 1 visit per year High risk and difficult to control BP: more frequent visits (2-3/year).
	Office BP and Home BP	Office BP and Home BP (before visits); verify consistency of BP control; consider seasonal variability. ABPM in apparent treatment resistance hypertension; consider to refer to a specialist.	
	Selected lab tests to address safety of drug therapy or risk factors	Depending on baseline profile and condition periodic re-assessment of parameters with impact on drug safety and selection, e.g. eGFR, potassium or important risk factors, e.g. glucose, HbA1c, LDL-cholesterol.	
	Re-Assess modifiable risk factors and HMOD	In patients with pre-existing HMOD verify BP-induced changes (depending on sensitivity to change), e.g. eGFR, albuminuria, pulse wave velocity or left ventricular hypertrophy.	In patients without pre-existing HMOD re-assess in longer intervals, e.g. every 3 years In patients with pre-existing HMOD more frequent re-assessments of BP-induced changes.
	Verify and adapt lifestyle interventions and recommended drug therapy prescribing patterns	Support implementation of lifestyle interventions. Consider adjustment of medications depending on BP control, tolerability and change in co-morbidities, avoid inertia. Consider deprescribing in symptomatic very old and frail patients with low BP.	
	Verify initiation and discuss adherence	Monitor adherence/persistence to drug therapy: assess barriers, e.g. changes in co-morbidities, side-effects, polypharmacy including OTC use.	
	Support individual needs and shared decision making	Organize and implement patient support: consider use of team-based care, telehealth, virtual visits, self-monitoring and patient empowerment.	Maintain patient support.

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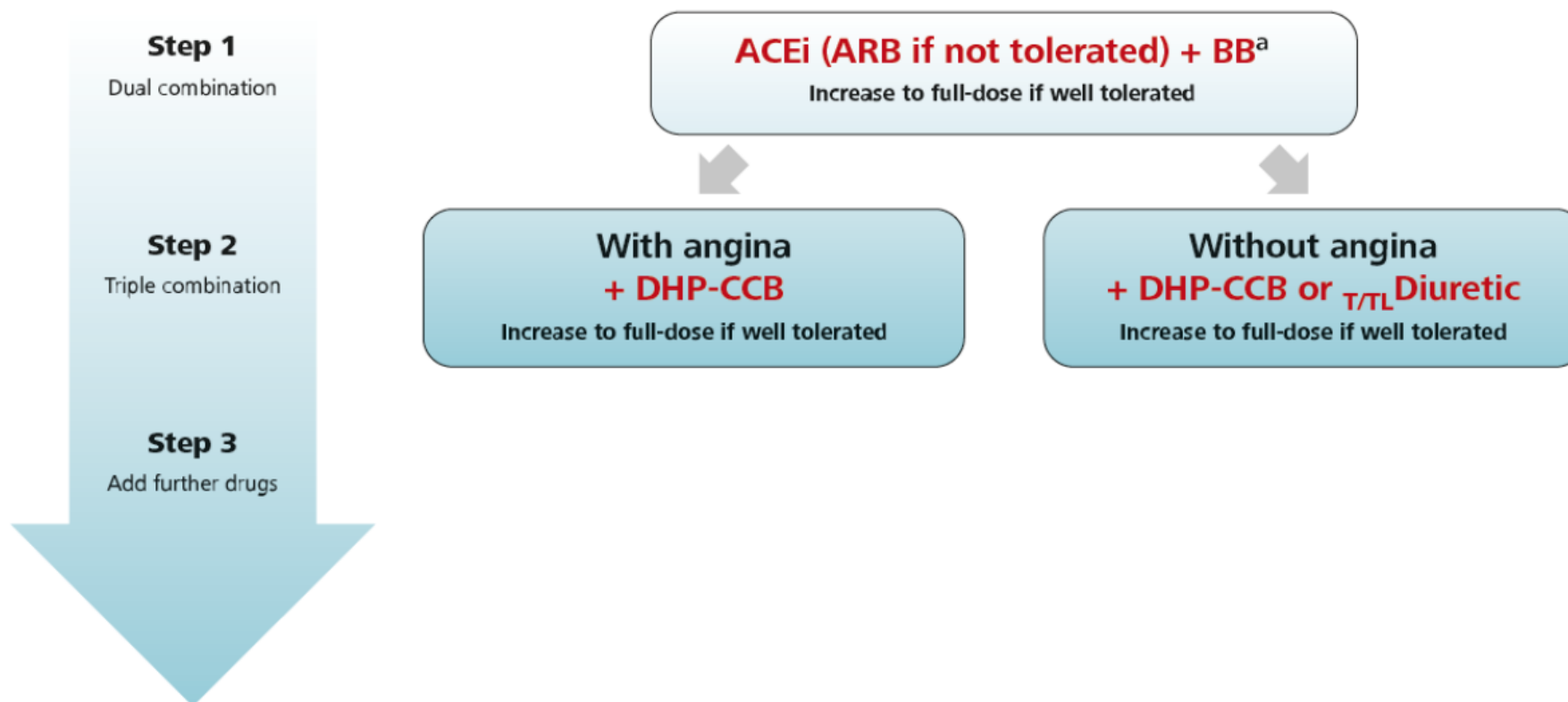
BP-lowering therapy in true resistant hypertension^a



suppl. Figure 1.

BP-lowering strategy in true resistant hypertension according to renal function. (a) When SBP is ≥140mmHg or DBP is ≥90 mmHg provided that: maximum recommended and tolerated doses of a three-drug combination comprising a RAS blocker (either an ACEi or an ARB), a CCB and a T/TL Diuretic were used, inadequate BP control has been confirmed by ABPM or by HBPM if ABPM is not feasible, various causes of pseudo-resistant hypertension (especially poor medication adherence) and secondary hypertension have been excluded. (b) Use of Diuretics: Use T/TL Diuretic if eGFR >45 ml/min/1.73 m². Consider transition to Loop Diuretic if eGFR is between 30 to 45 ml/min/1.73 m². Use loop Diuretic if eGFR <30 ml/min/1.73 m². (c) MRA contraindicated. (d) Caution if eGFR <45 ml/min/1.73 m² or serum potassium >4.5 mmol/l. (e) Should be used earlier at any step as guideline directed medical therapy in respective indications or considered in several other conditions.

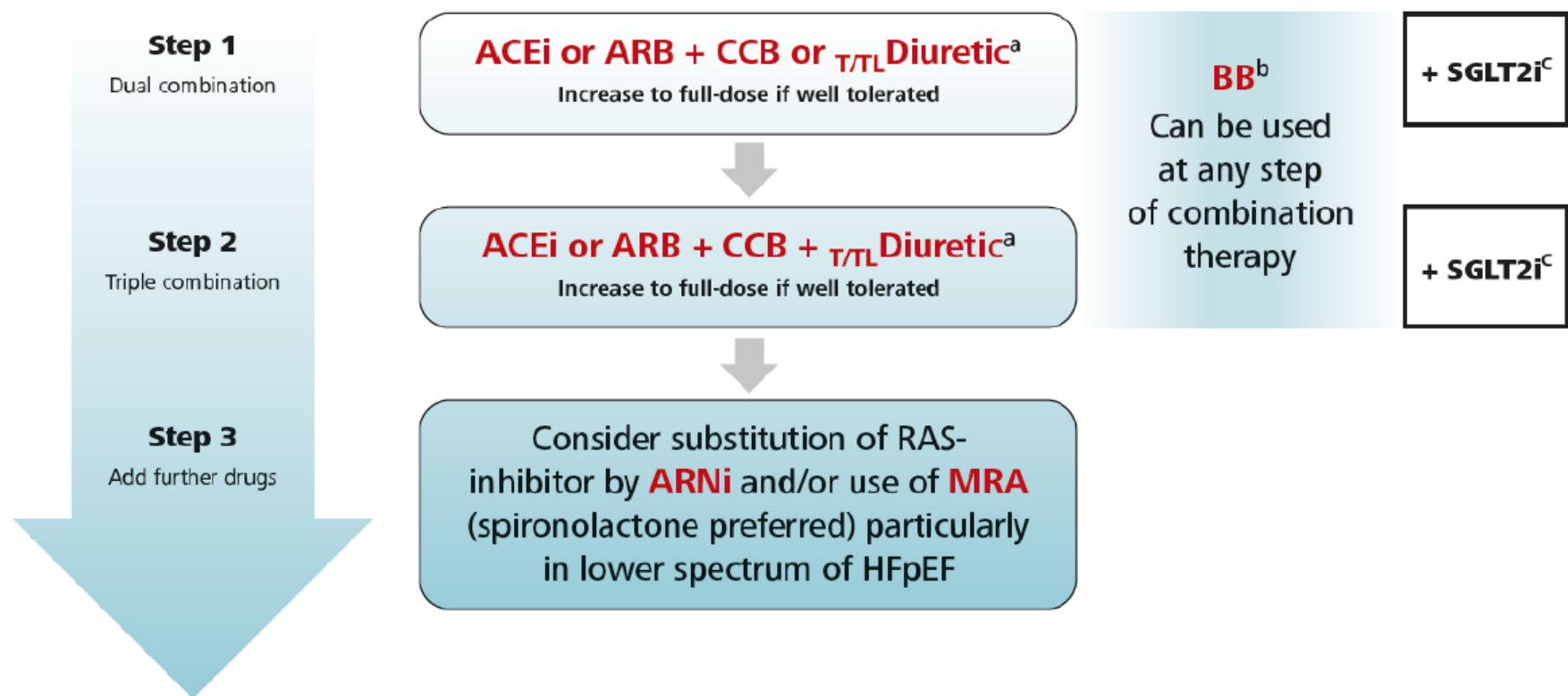
BP-lowering therapy in patients with hypertension and coronary artery disease



suppl. Figure 2

^aTarget heart rate below 80 beats per minute, if BBs are contraindicated or not tolerated consider use of non-DHP CCB at any step instead of DHP-CCB

BP-lowering therapy in patients with hypertension and HFpEF

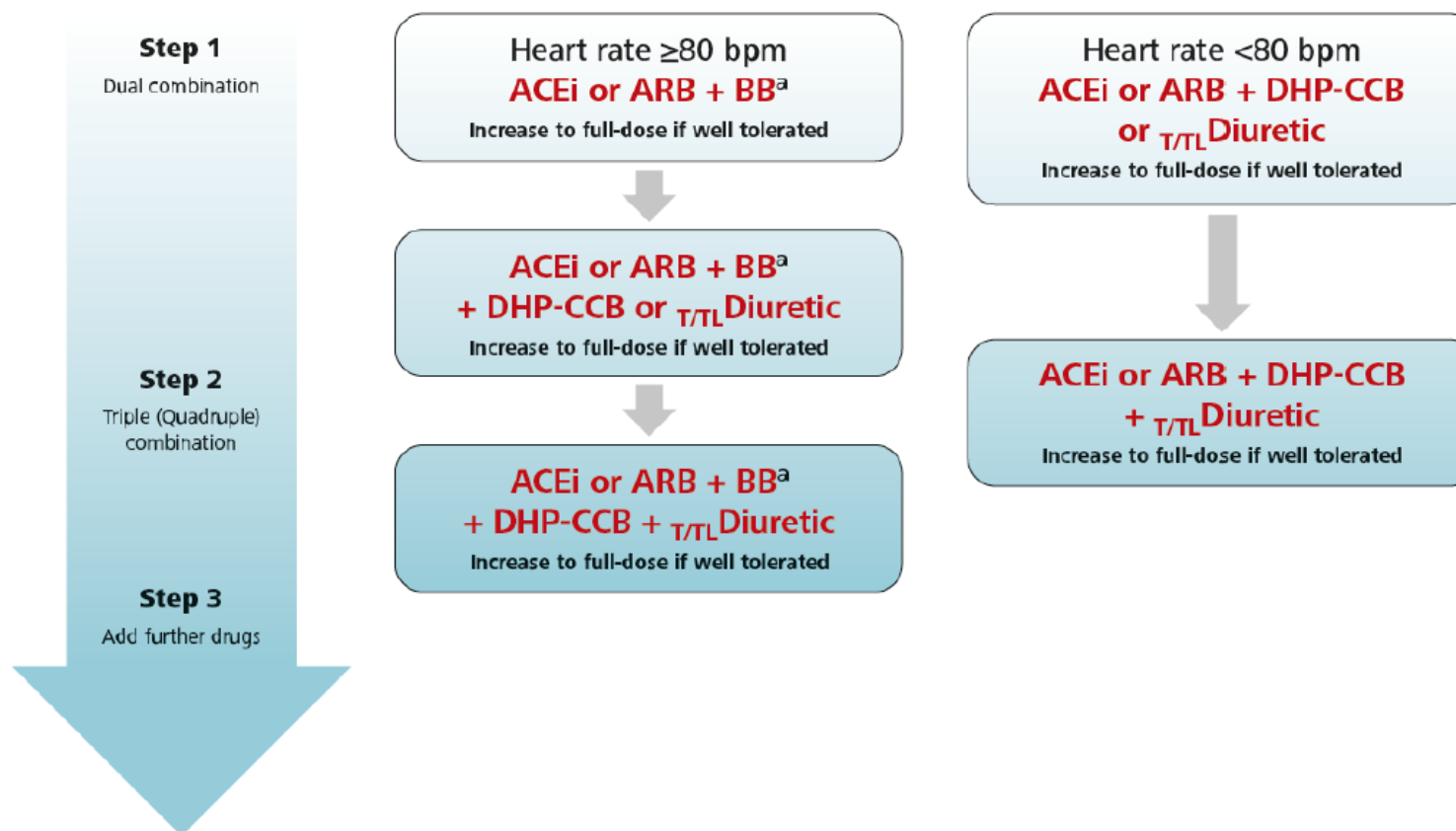


suppl. Figure 3

(a) Use of Diuretics: Use T/TL Diuretic if eGFR >45 ml/min/1.73 m². Consider transition to Loop Diuretic if eGFR is between 30 to 45 ml/min/1.73 m². Use loop Diuretic if eGFR <30 ml/min/1.73 m² or in patients with fluid retention/edema. (b) BB should be used as guideline directed medical therapy in respective indications or considered in several other conditions. (c) Use SGLT2i according to approval.

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BP-lowering therapy in patients with hypertension and atrial fibrillation

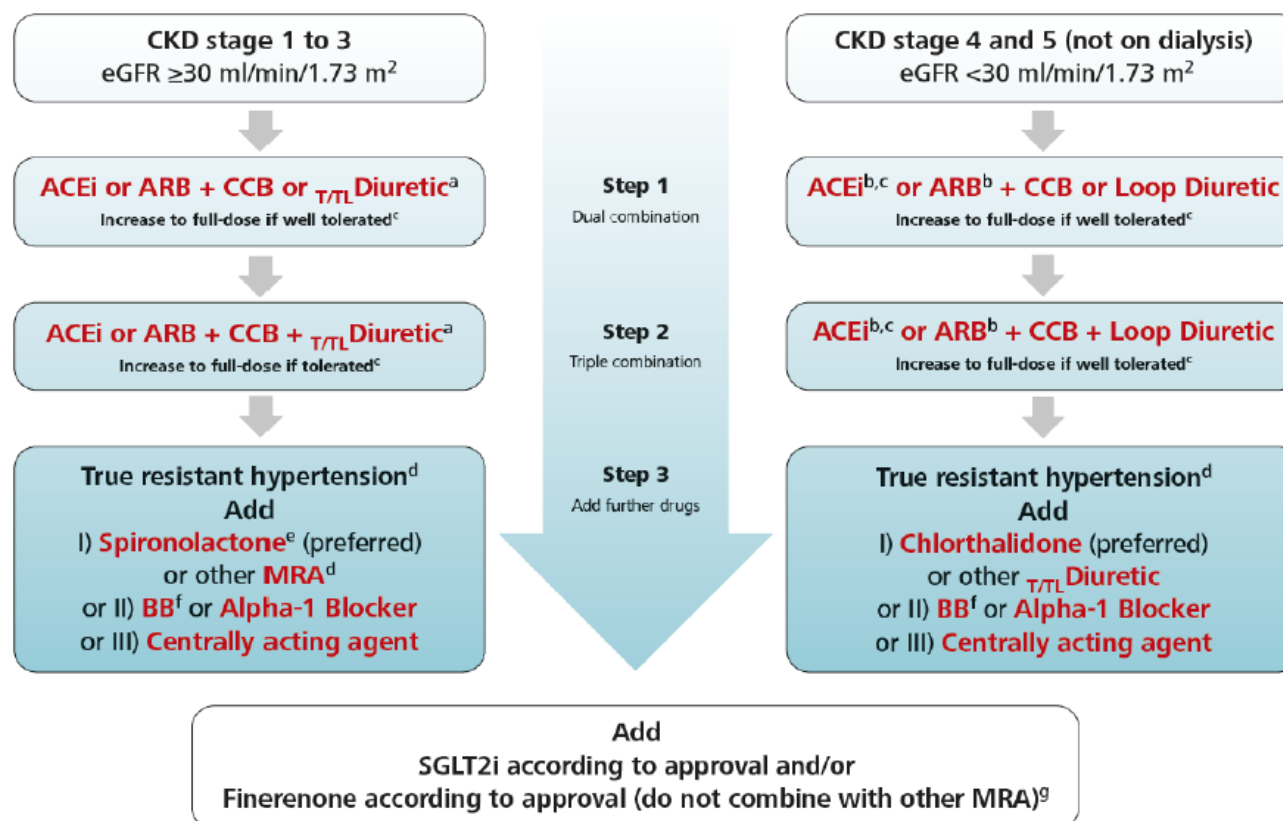


suppl. Figure 4

(a) Target heart rate below 80 beats per minute, if BBs are contraindicated or not tolerated consider use of non-DHP CCB at any step instead of DHP-CCB.

Journal of hypertension 2023; 41:1874–2071

BP-lowering therapy in patients with hypertension and chronic kidney disease



suppl. Figure 5

(a) Transition from T/TL Diuretic to Loop Diuretic should be individualized in patients with eGFR < 45 ml/min/1.73 m². (b) Cautious start with low-dose. (c) Check for dose adjustment according to renal impairment for drugs with relevant renal excretion rate. (d) When SBP is ≥ 140 mmHg or DBP is ≥ 90 mmHg provided that: maximum recommended and tolerated doses of a three-drug combination comprising a RAS blocker (either an ACEi or an ARB), a CCB and a T/TL Diuretic were used, inadequate BP control has been confirmed by ABPM or by HBPM if ABPM is not feasible, various causes of pseudo-resistant hypertension (especially poor medication adherence) and secondary hypertension have been excluded. (e) Caution if eGFR < 45 ml/min/1.73 m² or serum potassium > 4.5 mmol/l. (f) Should be used at any step as guideline directed medical therapy in respective indications or considered in several other conditions. (g) SGLT2is and Finerenone should be used according to their approval for CKD treatment.

Journal of hypertension 2023; 41:1874–2071

- [1] Kreutz R, Brunström M, Burnier M, et al. 2024 European Society of Hypertension clinical practice guidelines for the management of arterial hypertension. *Eur J Intern Med*. 2024;126:1–15. doi: 10.1016/j.ejim.2024.05.033
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