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Spital Wallis

Hôpitaux Universitaires Genève

UNIVERSITÉ DE GENÈVE
FACULTÉ DE MÉDECINE

HTA 2018

Après-midi de formation continue de médecine interne générale

6 décembre 2018

Prof. Pierre-Auguste Petignat

Médecine interne générale

Diabète

Artériopathie des membres inférieurs

Maladies cardio-vasculaires

Dysfonction sexuelle

HTA

Rétinopathie

Maladies cérébro-vasculaires

Prévalence HTA :

30-45% chez l'adulte

~24 ans, 20%

> 60% si > 60 ans

Néphropathies

NCD Risk Factor Collaboration. Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19.1 million participants. *Lancet* 2017;**389**:37–55.

Objectifs

- **Diagnostic**
- **FRCV**
- **Définition**
- **Seuil de traitement**
- **Habitudes de vie**
- **Traitement**
- **Impacts des nouvelles guidelines**

Référence

2018 ESC/ESH Guidelines for t of arterial hypertension

ESC European Society of Cardiology
European Heart Journal (2018) **39**, 3021–3104
doi:10.1093/eurheartj/ehy339

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)

Référence

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Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended/is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

Diagnostic

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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.

Recommendation Grading							
	Grade I		Grade IIa		Grade IIb		Grade III

Diagnostic est retenu :

- **Mesures répétées de pression artérielle au cabinet**
- **Mesures en dehors du cabinet ambulatoire (Remmler) et / ou à domicile si faisable logistiquement et économiquement**

Table 8 Office blood pressure measurement

Patients should be seated comfortably in a quiet environment for 5 min before beginning BP measurements.	When using auscultatory methods, use phase I and V (sudden reduction/disappearance) Korotkoff sounds to identify SBP and DBP, respectively.
Three BP measurements should be recorded, 1–2 min apart, and additional measurements only if the first two readings differ by >10 mmHg. BP is recorded as the average of the last two BP readings.	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.
Additional measurements may have to be performed in patients with unstable BP values due to arrhythmias, such as in patents with AF, in whom manual auscultatory methods should be used as most automated devices have not been validated for BP measurement in patients with AF.[a]	Measure BP 1 min and 3 min after standing from a 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, people with diabetes, and people with other conditions in which orthostatic hypotension may frequently occur.
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 (arm circumference >32 cm) and thinner arms, respectively.	Record heart rate and use pulse palpation to exclude arrhythmia.
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.	

AF = atrial fibrillation; BP = blood pressure; DBP = diastolic blood pressure; SBP = systolic blood pressure.
[a]Most automatic devices are not validated for BP measurement in patients with AF and will record the highest individual systolic pressure wave form rather than an average of several cardiac cycles. This will lead to overestimation of BP.

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Table 9 Definitions of hypertension according to office, ambulatory, and home blood pressure levels

Category	SBP (mmHg)		DBP (mmHg)
Office BP[a]	≥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

BP = blood pressure; DBP = diastolic blood pressure; SBP = systolic blood pressure.
[a]Refers to conventional office BP rather than unattended office BP.

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Mesures de la pression artérielle

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Tension artérielle à domicile

Home BP is the average of all BP readings performed with a semiautomatic, validated BP monitor for at least 3 days and preferably for 6–7 consecutive days before each clinic visit, with readings in the morning and the evening, taken in a quiet room after 5 min of rest, with the patient seated with their back and arm supported. Two measurements should be taken at each measurement session, performed 1–2 min apart.[57]

Remmler

ABPM provides the average of BP readings over a defined period, usually 24 h. The device is typically programmed to record BP at 15 - 30 min intervals and average BP values are usually provided for daytime, night-time, and 24 h. A diary of the patient's activities and sleep time can also be recorded. A minimum of 70% usable BP recordings are required for a valid ABPM measurement session.

Table 10 Comparison of ambulatory blood pressure monitoring and home blood pressure monitoring

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

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ABPM = ambulatory blood pressure monitoring; BP = blood pressure; HBPM = home blood pressure monitoring.
*Techniques are being developed to enable nocturnal BP measurement with home BP devices.

Mesures de la pression artérielle

Tension artérielle au cabinet | **Tension artérielle à domicile** | **Remmler**

White-coat hypertension

Although the prevalence varies between studies, white-coat hypertension can account for up to 30-40% of people (and >50% in the very old) with an elevated office BP. It is more common with increasing age, in women, and in non-smokers. Its prevalence is lower in

Hypertension-mediated organ damage

Recognised reasons for an absence of nocturnal BP dipping are sleep disturbance, obstructive sleep apnoea, obesity, high salt intake in salt-sensitive subjects, orthostatic hypotension, autonomic dysfunction, CKD, diabetic neuropathy, and old age.[5-4]

Confirmation du diagnostic d'HTA

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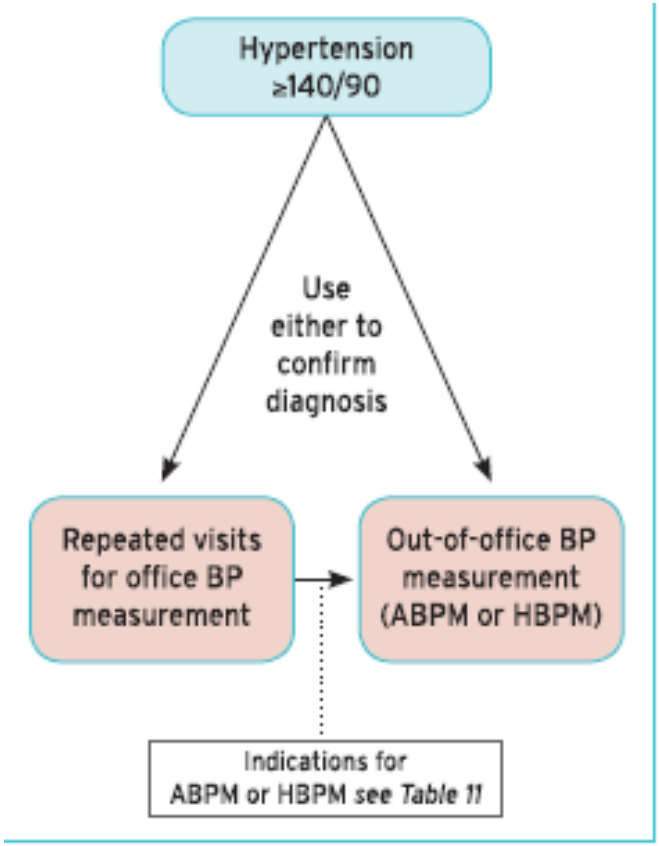

Table 11 Clinical indications for home blood pressure monitoring or ambulatory blood pressure monitoring

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)

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ABPM = ambulatory blood pressure monitoring; BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular; HBPM = home blood pressure monitoring; HMOD = hypertension-mediated organ damage.

Conditions in which white-coat hypertension is more common, e.g.:

Conditions in which masked hypertension is more common, e.g.:

individuals with HMOD or at high total CV risk

HMOD Hypertension-mediated organ damage

Tension artérielle - définition -

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Table 3 Classification of office blood pressure[a] and definitions of hypertension grade[b]

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[b]	≥140	and	<90

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BP = blood pressure; SBP = systolic blood pressure.
[a]BP category is defined according to seated clinic BP and by the highest level of BP, whether systolic or diastolic.
[b]Isolated systolic hypertension is graded 1, 2, or 3 according to SBP values in the ranges indicated.
The same classification is used for all ages from 16 years.

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.

Recommendation Grading: Grade I | Grade IIa | Grade IIb | Grade III

ESC European Society of Cardiology

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Anamnèse en cas d'HTA

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Table 12 Key information to be collected in personal and family medical history

Risk factors
Family and personal history of hypertension, CVD, stroke, or renal disease
Family and personal history of associated risk factors (e.g. familial hypercholesterolaemia)
Smoking history
Dietary history and salt intake
Alcohol consumption
Lack of physical exercise/sedentary lifestyle
History of erectile dysfunction
Sleep history, snoring, sleep apnoea (information also from partner)
Previous hypertension in pregnancy/pre-eclampsia
History and symptoms of HMOD, CVD, stroke, and renal disease
Brain and eyes: headache, vertigo, syncope, impaired vision, TIA, sensory or motor deficit, stroke, carotid revascularization, cognitive impairment, dementia (in the elderly)
Heart: chest pain, shortness of breath, oedema, myocardial infarction, coronary revascularization, syncope, history of palpitations, arrhythmias (especially AF), heart failure
Kidney: thirst, polyuria, nocturia, haematuria, urinary tract infections
Peripheral arteries: cold extremities, intermittent claudication, pain-free walking distance, pain at rest, peripheral revascularization
Patient or family history of CKD (e.g. polycystic kidney disease)
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 renal/urinary tract disease
Recreational drug/substance abuse/concurrent therapies: corticosteroids, nasal vasoconstrictor, chemotherapy, yohimbine, liquorice
Repetitive episodes of sweating, headache, anxiety, or palpitations, suggestive of Phaeochromocytoma
History of spontaneous or diuretic-provoked hypokalaemia, episodes of muscle weakness, and tetany (hyperaldosteronism)
Symptoms suggestive of thyroid disease or hyperparathyroidism
History of or current pregnancy and oral contraceptive use
History of sleep apnoea
Antihypertensive Drug Treatment
Current/past antihypertensive medication including effectiveness and intolerance to previous medications
Adherence to therapy

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AF = atrial fibrillation; BP = blood pressure; CKD = chronic kidney disease; CVD = cardiovascular disease; HMOD = hypertension-mediated organ damage; TIA = transient ischaemic attack.

Examen clinique en cas d'HTA

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Table 13 Key steps in physical examination

Body habitus
Weight and height measured on a calibrated scale, with calculation of BMI
Waist circumference
Signs of HMOD
Neurological examination and cognitive status
Fundoscopic examination for hypertensive retinopathy
Palpation and auscultation of heart and carotid arteries
Palpation of peripheral arteries
Comparison of BP in both arms (at least once)
Secondary hypertension
Skin inspection: cafe-au-lait patches of neurofibromatosis (phaeochromocytoma)
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
Comparison of radial with femoral pulse: to detect radio-femoral delay in aortic coarctation
Signs of Cushing's disease or acromegaly
Signs of thyroid disease

BMI = body mass index; BP = blood pressure; HMOD = hypertension-mediated organ damage.

Laboratoire et tests en cas d'HTA

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Table 14 Routine workup for evaluation of hypertensive patients

Routine laboratory tests
Haemoglobin and/or haematocrit
Fasting blood glucose and glycated HbA_{1c}
Blood lipids: total cholesterol, LDL cholesterol, HDL cholesterol
Blood triglycerides
Blood potassium and sodium
Blood uric acid
Blood creatinine and eGFR
Blood liver function tests
Urine analysis: microscopic examination; urinary protein by dipstick test or, ideally, albumin:creatinine ratio
12-lead ECG

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eGFR = estimated glomerular filtration rate; ECG = electrocardiogram; HbA_{1c} = haemoglobin A1c.

ECG voltage criteria	Criteria for LVH
$S_{V1}+R_{V5}$ (Sokolow–Lyon criterion)	>35 mm
R wave in aVL	≥11 mm

Table 15 Assessment of hypertension-mediated organ damage

Basic screening tests for HMOD			Indication and interpretation
12-lead ECG	I	B	Screen for LVH and other possible cardiac abnormalities, and to document heart rate and cardiac rhythm
Urine albumin:creatinine ratio	I	B	To detect elevations in albumin excretion indicative of possible renal disease
Blood creatinine and eGFR	I	B	To detect possible renal disease
Fundoscopy	I	B	To detect hypertensive retinopathy, especially in patients with grade 2 or 3 hypertension
More detailed screening for HMOD			
Echocardiography	I	B	To evaluate cardiac structure and function, when this information will influence treatment decisions
Carotid ultrasound	I	B	To determine the presence of carotid plaque or stenosis, particularly in patients with cerebrovascular disease or vascular disease elsewhere
Abdominal ultrasound and Doppler studies	IIa	C	• 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); see section 8.2 regarding screening for secondary hypertension • Renal artery Doppler studies to screen for the presence of renovascular disease, especially in the presence of asymmetric renal size
PWV	IIb	B	An index of aortic stiffness and underlying arteriosclerosis
ABI	IIb	B	Screen for evidence of LEAD
Cognitive function testing			To evaluate cognition in patients with symptoms suggestive of cognitive impairment
Brain imaging	IIa	B	To evaluate the presence of ischaemic or haemorrhagic brain injury, especially in patients with a history of cerebrovascular disease or cognitive decline

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ABI = ankle-brachial index; CKD = chronic kidney disease; CT = computed tomography; ECG = electrocardiogram; eGFR = estimated glomerular filtration rate; HMOD = hypertension-mediated organ damage; LEAD = lower extremity artery disease; LVH = left ventricular hypertrophy; MRI = magnetic resonance imaging; PWV = pulse wave velocity.

Seuils de traitement de l'HTA

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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

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.

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 120–129 mmHg in most patients.

Seuils de traitement de l'HTA

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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 130–139 mmHg.

BP treatment targets in patients aged over 80 years

An SBP target range of 130–139 mmHg is recommended for people older than 80 years, if tolerated.

Table 19 Summary of office blood pressure thresholds for treatment

Age group	Office SBP treatment threshold (mmHg)					Office DBP treatment threshold (mmHg)
	Hypertension	+ Diabetes	+ CKD	+ CAD	+ Stroke/TIA	
18 - 65 years	≥140	≥140*	≥140	≥140[a]	≥140[a]	≥90
65 - 79 years	≥140	≥140	≥140	≥140[a]	≥140[a]	≥90
≥80 years	≥160	≥160	≥160	≥160	≥160	≥90
Office DBP treatment threshold (mmHg)	≥90	≥90	≥90	≥90	≥90	

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BP = blood pressure; CAD = coronary artery disease; CKD = chronic kidney disease; DBP = diastolic blood pressure; SBP = systolic blood pressure; TIA = transient ischaemic attack.
*Treatment may be considered in these very high-risk patients with high–normal SBP (i.e. SBP 130–140 mmHg).

Changement d'habitudes de vie

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Dietary sodium restriction	**Weight reduction**
Moderation of alcohol consumption	**Regular physical activity**
Other dietary changes The Mediterranean diet	**Smoking cessation**

Lifestyle interventions for patients with hypertension or high-normal BP

Recommendations	Class[a]	Level[b]
Salt restriction to <5 g per day is recommended.[248,250,255,258]	I	A
It is recommended to restrict alcohol consumption to: • Less than 14 units per week for men. • Less than 8 units per week for women.[35]	I	A
It is recommended to avoid binge drinking.	III	C
Increased consumption of vegetables, fresh fruits, fish, nuts, and unsaturated fatty acids (olive oil); low consumption of red meat; and consumption of low-fat dairy products are recommended.[262,265]	I	A
Body-weight control is indicated to avoid obesity (BMI >30 kg/m^2 or waist circumference >102 cm in men and >88 cm in women), as is aiming at healthy BMI (about 20–25 kg/m^2) and waist circumference values (<94 cm in men and <80 cm in women) to reduce BP and CV risk.[262,271,273,290]	I	A
Regular aerobic exercise (e.g. at least 30 min of moderate dynamic exercise on 5–7 days per week) is recommended.[262,278,279]	I	A
Smoking cessation, supportive care, and referral to smoking cessation programs are recommended.[286,288,291]	I	B

BMI = body mass index; BP = blood pressure; CV = cardiovascular.
[a]Class of recommendation.
[b]Level of evidence mostly based on the effect on BP and/or CV risk profile.

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Prise en charge de l'hypertension artérielle

Pr MICHEL BURNIER[3] et Dr GRÉGOIRE WUERZNER[3]

Rev Med Suisse 2018; 14: 46-8

MANGER DES FRUITS ET DES LÉGUMES: QUEL IMPACT SUR LA MORTALITÉ CARDIOVASCULAIRE ?

Etude PURE (Prospective Urban Rural Epidemiology) Risque de complications cardiovasculaires et mortalité chez 135'335 sujets. Risque de complications cardiovasculaires (infarctus, AVC) est réduit après 3 portions de fruits et légumes, et surtout les fruits

Miller V. et al. Fruit, vegetable and legume intake and cardiovascular disease and deaths in 18 countries (PURE) : a prospective cohort study. Lancet 2017;390:2037-49

Traitement de l'HTA

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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).

Single-pill combination

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

Use of device-based therapies is not recommended for the routine 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

Traitement médicamenteux pour HTA

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Drug treatment strategy for hypertension

Recommendations	Class[a]	Level[b]
Among all antihypertensive drugs, ACE inhibitors, ARBs, beta-blockers, CCBs, and diuretics (thiazides and thiazide-like drugs such as chlorthalidone and indapamide) have demonstrated effective reduction of BP and CV events in RCTs, and thus are indicated as the basis of antihypertensive treatment strategies.[2]	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 five major classes can be used.[233,318,327,329,341–345]	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.[300,341]	I	A
It is recommended to initiate an antihypertensive treatment with a two-drug combination, preferably in an SPC. Exceptions are frail older patients and those at low risk and with grade 1 hypertension (particularly if SBP is <150 mmHg).[342,346,351]	I	B
It is recommended that if BP is not controlled[c] with a two-drug combination, treatment should be increased to a three-drug combination, usually a RAS blocker with a CCB and a thiazide/thiazide-like diuretic, preferably as an SPC.[349,350]	I	A
It is recommended that if BP is not controlled[c] 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.[310]	I	B
The combination of two RAS blockers is not recommended.[291,298,299]	III	A

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ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; BP = blood pressure; CCB = calcium channel blocker; CV = cardiovascular; RAS = renin-angiotensin system; RCT = randomized controlled trial; SBP = systolic blood pressure; SPC = single-pill combination.
[a]Class of recommendation.
[b]Level of evidence.
[c]Adherence should be checked.

Traitement pour HTA non compliquée

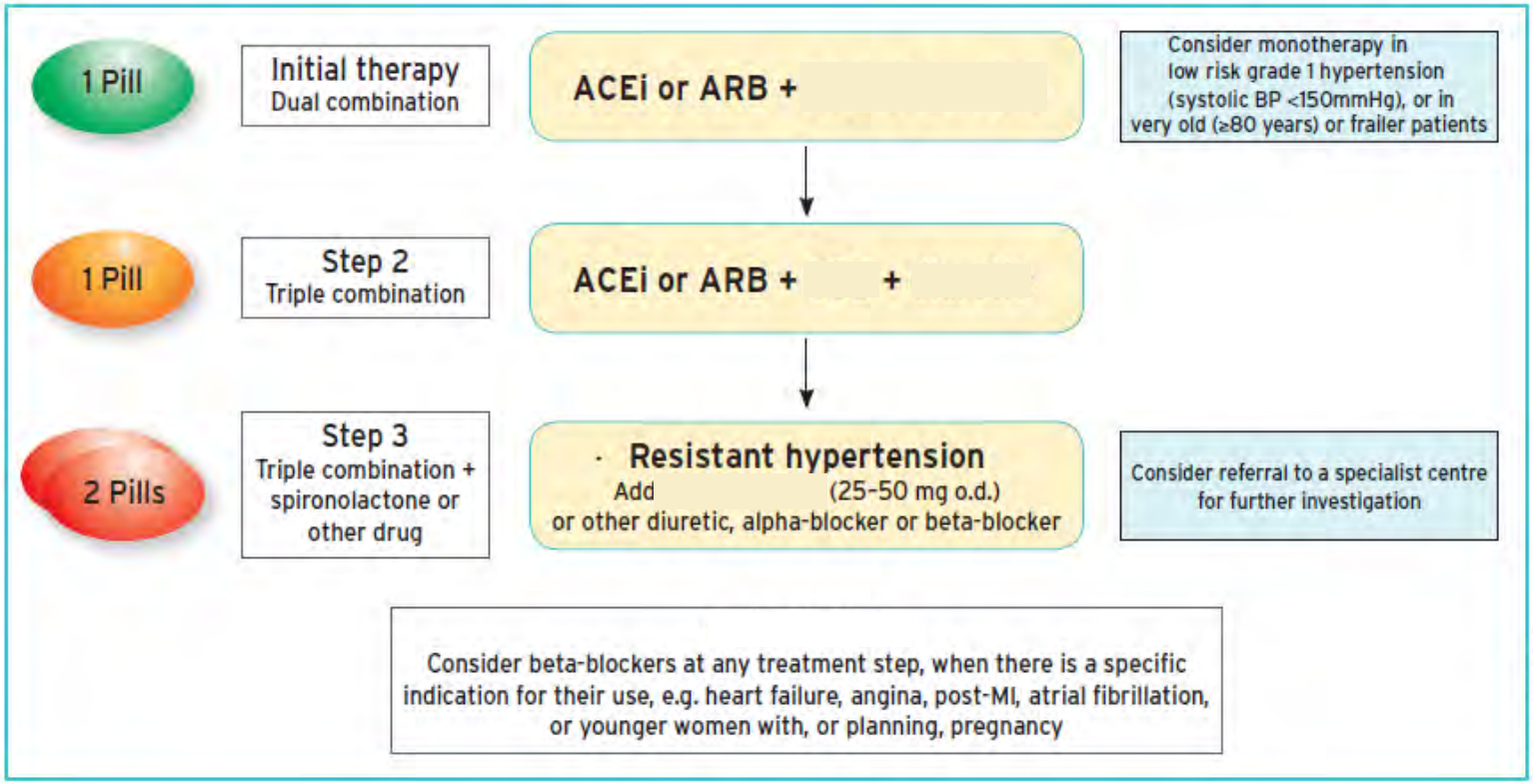


Figure 4 Core drug treatment strategy for uncomplicated hypertension. The core algorithm is also appropriate for most patients with HMOD, cerebrovascular disease, diabetes, or PAD. ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; HMOD = hypertension-mediated organ damage; MI = myocardial infarction; o.d. = omni die (every day); PAD = peripheral artery disease.

Traitement pour HTA non compliquée

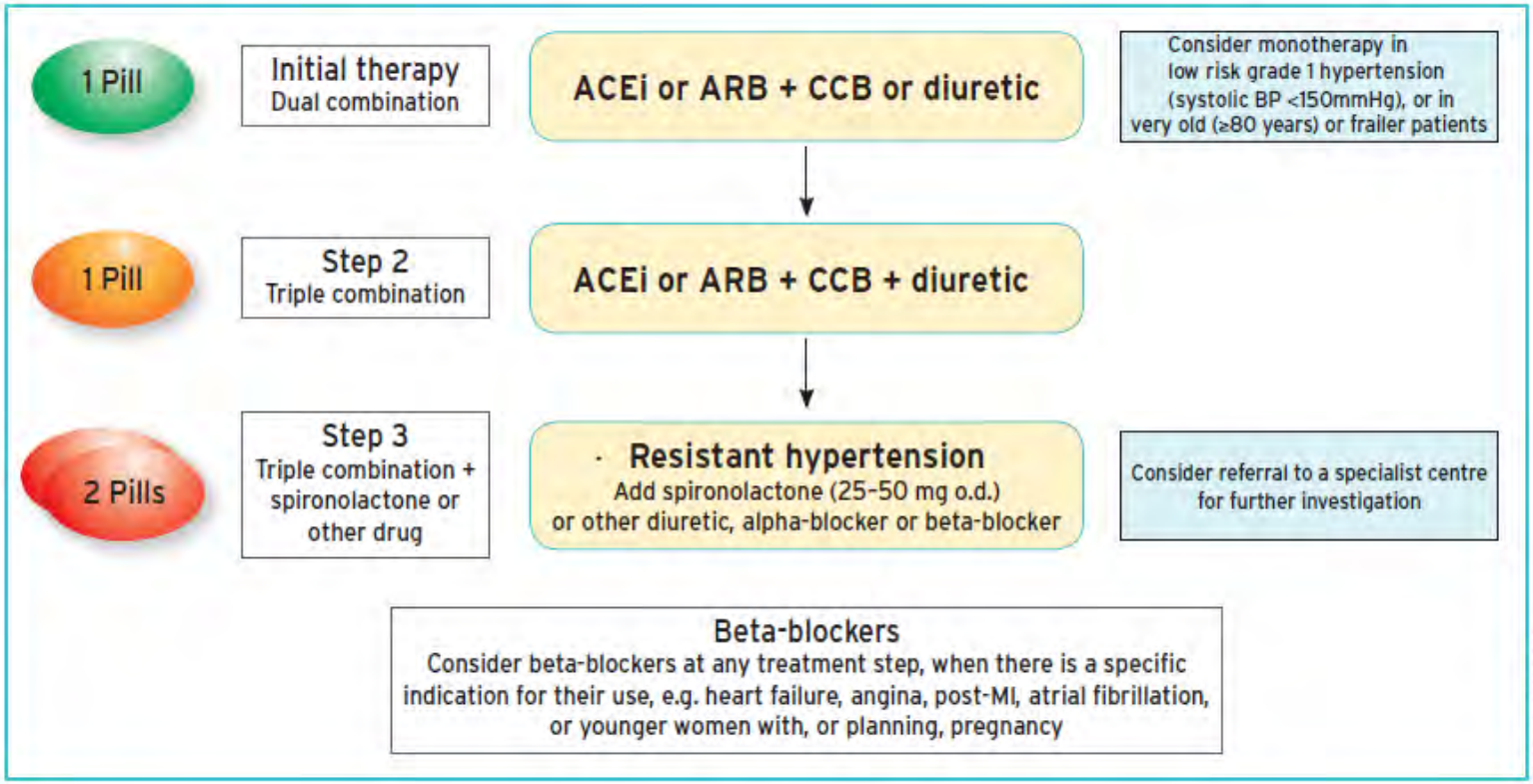


Figure 4 Core drug treatment strategy for uncomplicated hypertension. The core algorithm is also appropriate for most patients with HMOD, cerebrovascular disease, diabetes, or PAD. ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; HMOD = hypertension-mediated organ damage; MI = myocardial infarction; o.d. = omni die (every day); PAD = peripheral artery disease.

Single pill combination

- **Coveram plus®**
  Perindopril Amlodipine Indapamide
- **Exforge HCT®** **Amlodipine Valsartan HCT®**
  Valsartan Amlodipine Hydrochlorothiazide
- **Sevikar HCT®** **Vascord®**
  Olmesartan Amlodipine Hydrochlorothiazide
- **Micardis Amlo®**
  Telmisartan Amlodipine

Traitement pour HTA et coronaropathie

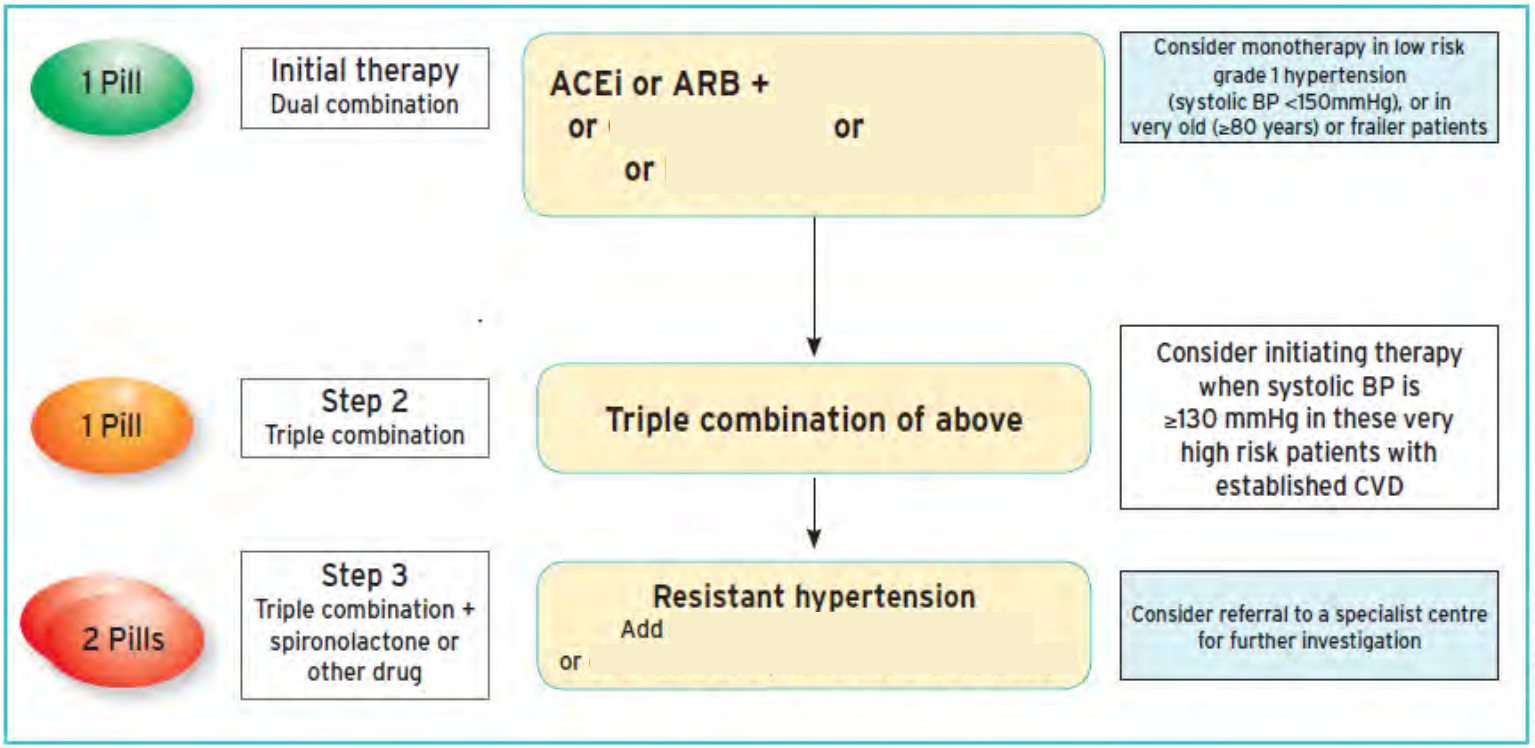
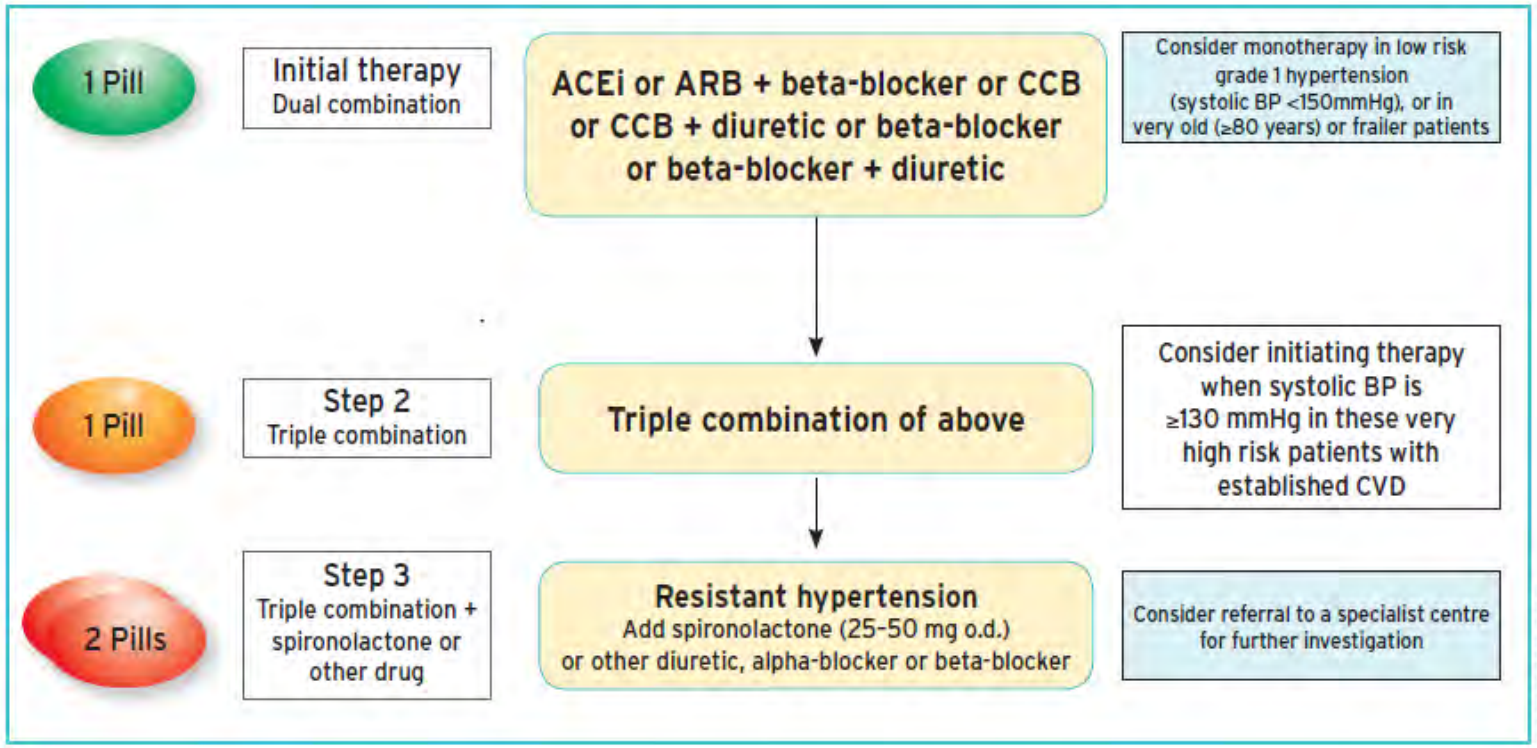


Figure 5 Drug treatment strategy for hypertension and coronary artery disease. ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BP = blood pressure; CCB = calcium channel blocker; CVD = cardiovascular disease; o.d. = omni die (every day).

Traitement pour HTA et coronaropathie



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Traitement pour HTA et néphropathie

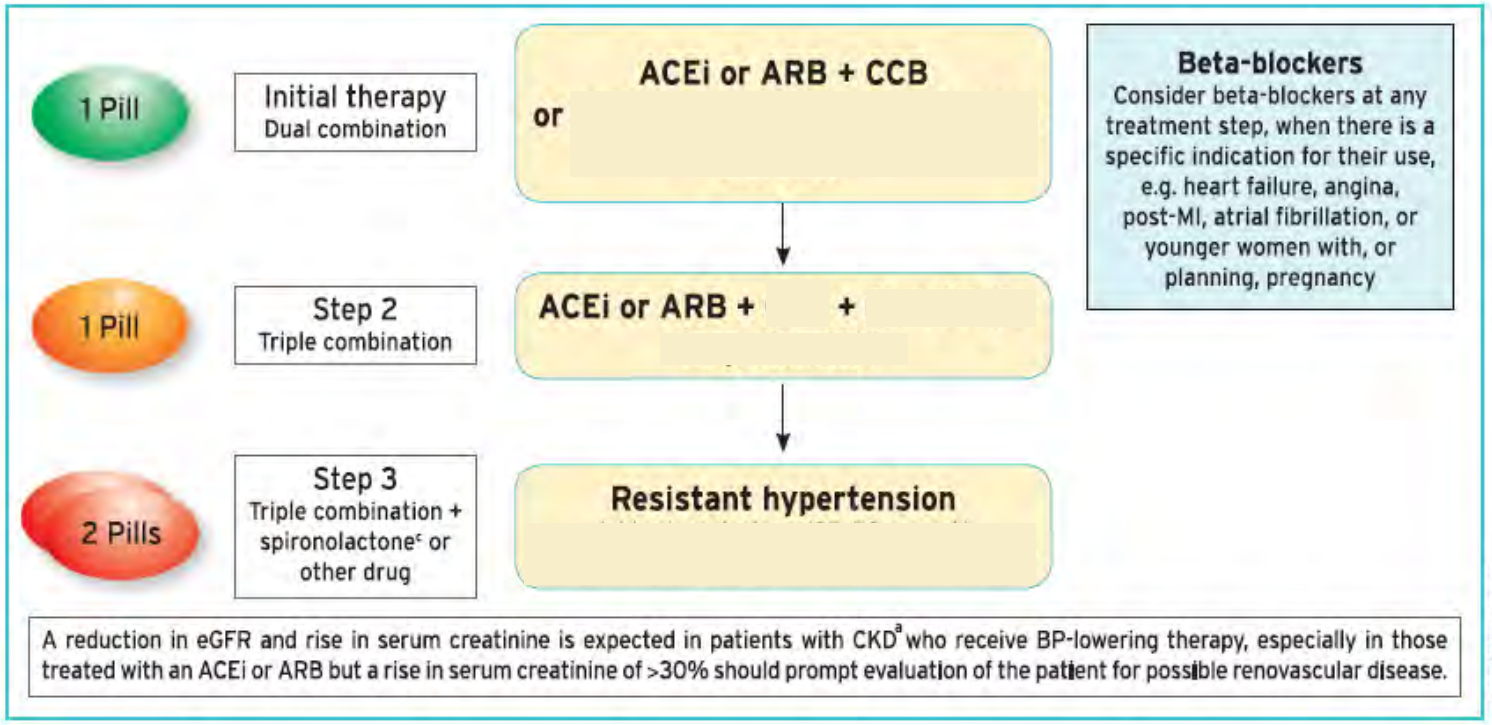
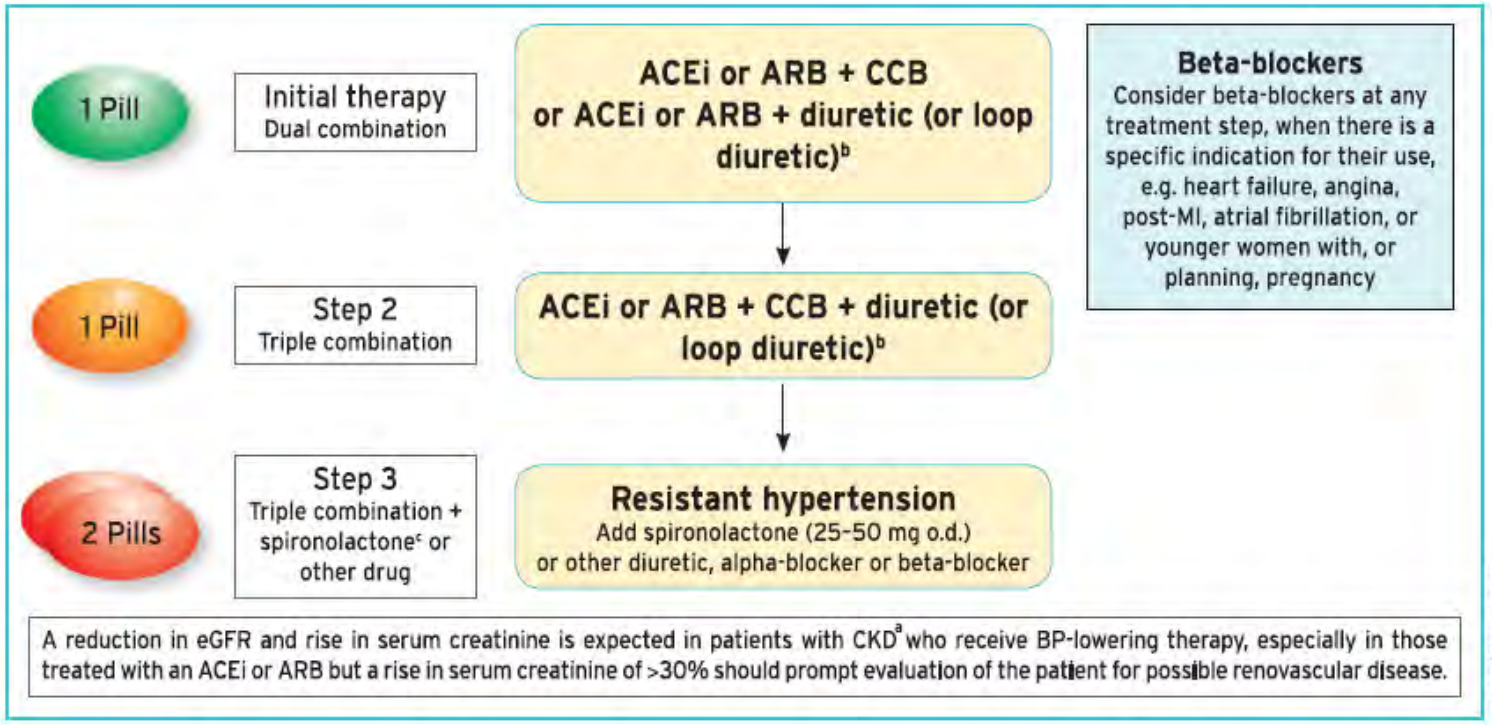


Figure 6 Drug treatment strategy for hypertension and chronic kidney disease. ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BP = blood pressure; CCB = calcium channel blocker; CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; MI = myocardial infarction; o.d. = omni die (every day).
[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, because 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.

Traitement pour HTA et néphropathie



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Traitement pour HTA et insuffisance card.

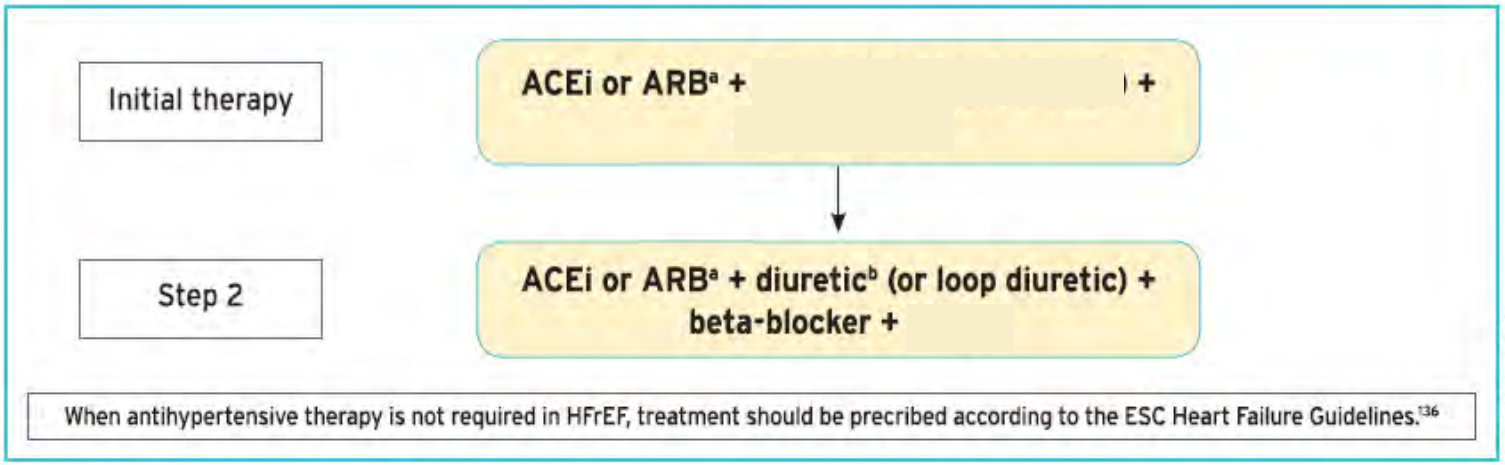
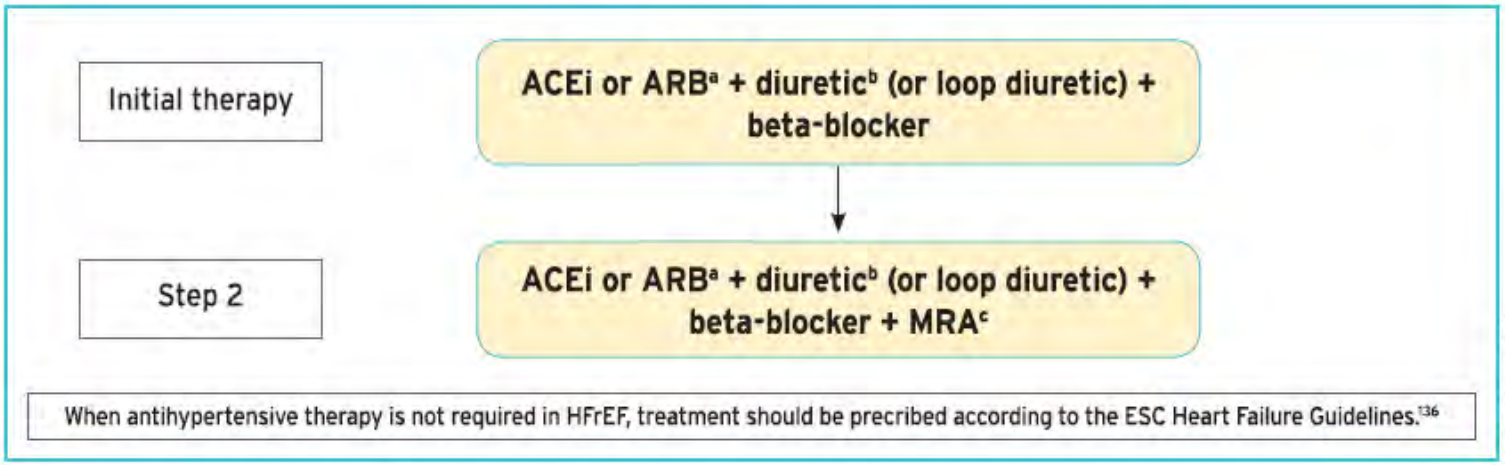


Figure 7 Drug treatment strategy for hypertension and hear failure with reduced ejection fraction. Do not use non-dihydropyridine CCBs (e.g. verapamil or diltiazem). ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; ESC = European Society of Cardiology; HFrEF = heart failure with reduced ejection fraction; MRA = mineralocorticoid receptor antagonist.
[a]Consider an angiotensin receptor/neprilysin inhibitor instead of ACEi or ARB per ESC Heart Failure Guidelines.[136]
[b]Diuretic refers to thiazide/thiazide-like diuretic. Consider a loop diuretic as an alternative in patients with oedema.
[c]MRA (spironolactone or eplerenone).

Traitement pour HTA et insuffisance card.



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Traitement pour HTA et FA

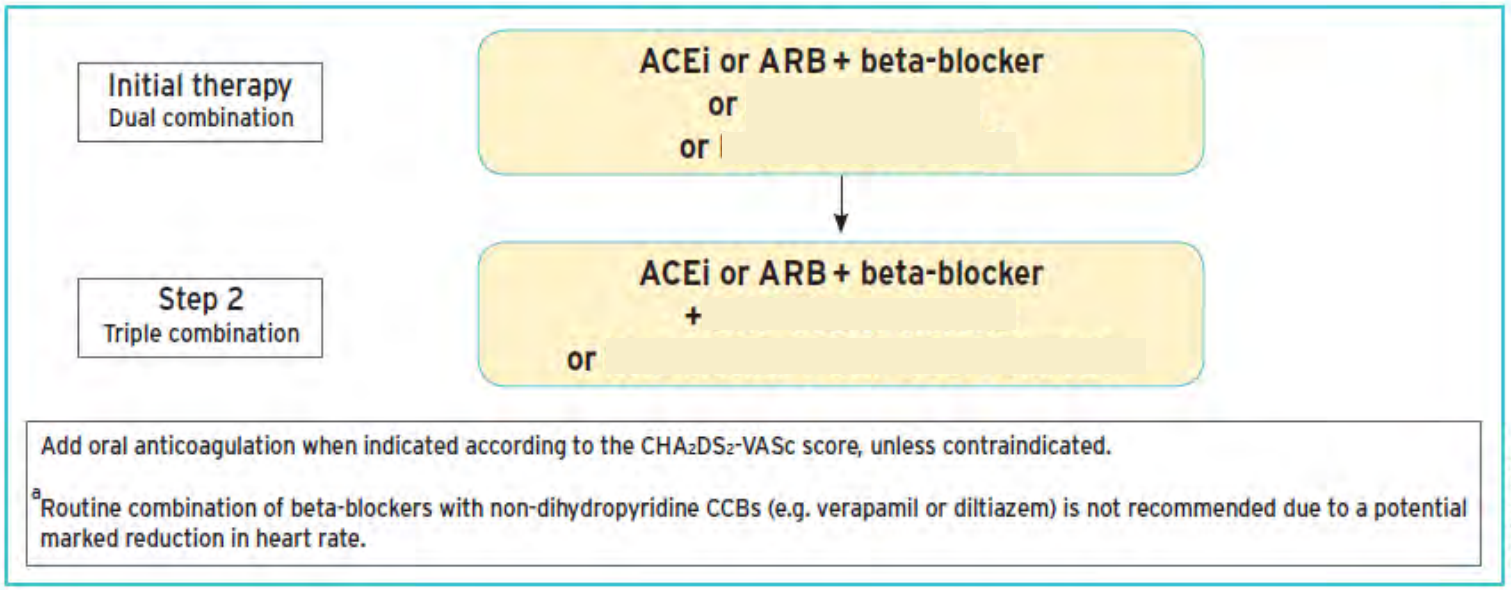
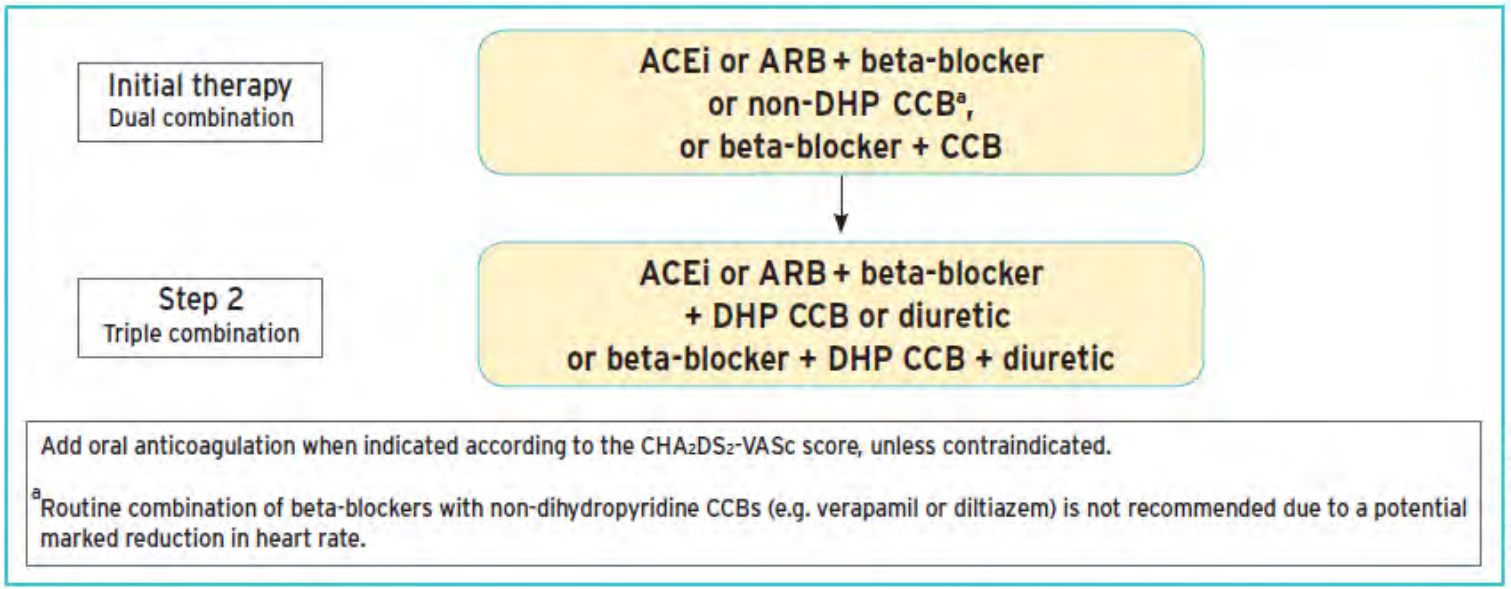


Figure 8 Drug treatment strategy for hypertension and atrial fibrillation. ACEi = angiotensin-converting enzyme inhibitor; AF = atrial fibrillation; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; CHA_2DS_2-VASc = CHA_2DS_2-VASc = Cardiac failure, Hypertension, Age ≥75 (Doubled), Diabetes, Stroke (Doubled) – Vascular disease, Age 65–74 and Sex category (Female); DHP = dihydropyridine. [a]Non-DHP CCB (non-DHP CCB, e.g. verapamil or diltiazem).

Traitement pour HTA et FA



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FRCV pour SCORE

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Tabac

Dyslipidémie

Diabète

AF +

Demographic characteristics and laboratory parameters
Sex[a] (men >women)
Age[a]
Smoking (current or past history)[a]
Total cholesterol[a] and HDL-C
Uric acid
Diabetes[a]
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/min)

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

Asymptomatic HHOD
Arterial stiffening: Pulse pressure (in older people) ≥60 mmHg Carotid–femoral PWV >10 m/s
ECG LVH (Sokolow–Lyon index >35 mm, or R in aVL ≥11 mm; Cornell voltage duration product >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$^{2.7}$ (height in m$^{2.7}$); indexation for BSA may be used in normal-weight patients; LV mass/BSA g/m^2 >115 (men) and >95 (women)]
Microalbuminuria (30–300 mg/24 h), or elevated albumin–creatinine ratio (30–300 mg/g; 3.4–34 mg/mmol) (preferentially on morning spot urine)[b]
Moderate CKD with eGFR >30–59 mL/min/1.73 m^2 (BSA) or severe CKD eGFR <30 mL/min/1.73 m^2 [b]
Ankle-brachial index <0.9
Advanced retinopathy: haemorrhages or exudates, papilloedema

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SCORE Systematic COronary Risk Evaluation

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 or 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 to high risk	High risk
	≥3 risk factors	Low to Moderate risk	Moderate to high risk	High Risk	High risk
Stage 2 (asymptomatic disease)	HMOD, CKD grade 3, or diabetes mellitus without organ damage	Moderate to high risk	High risk	High risk	High to very high risk
Stage 3 (established disease)	Established CVD, CKD grade ≥4, or diabetes mellitus with organ damage	Very high risk	Very high risk	Very high risk	Very high risk

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Figure 1 Classification of hypertension stages according to blood pressure levels, presence of cardiovascular risk factors, hypertension-mediated organ damage, or comorbidities. CV risk is illustrated for a middle-aged male. The CV risk does not necessarily correspond to the actual risk at different ages. The use of the SCORE system is recommended for formal estimation of CV risk for treatment decisions. BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular; DBP = diastolic blood pressure; HMOD = hypertension-mediated organ damage; SBP = systolic blood pressure; SCORE = Systematic COronary Risk Evaluation.

SCORE Systematic COronary Risk Evaluation

Table 5 Ten year cardiovascular risk categories (Systematic COronary Risk Evaluation 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 syndromie, coronary or other arterial revascularization, stroke, TIA, aortic aneurysm, and 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 or 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, who may be at moderate-risk)
	Hypertensive LVH
	Moderate CKD eGFR 30-59 mL/min/1.73 m^2)
	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%**

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BP = blood pressure; CKD = chronic kidney disease; CVD = cardiovascular disease; eGFR = estimated glomerular filtration rate; LVH = left ventricular hypertrophy; TIA = transient ischaemic attack; PAD = peripheral artery disease; SCORE = Systematic COronary Risk Evaluation.

SCORE - European Low Risk Chart

10 year risk of fatal CVD in low risk regions of Europe by gender, age, systolic blood pressure, total cholesterol and smoking status

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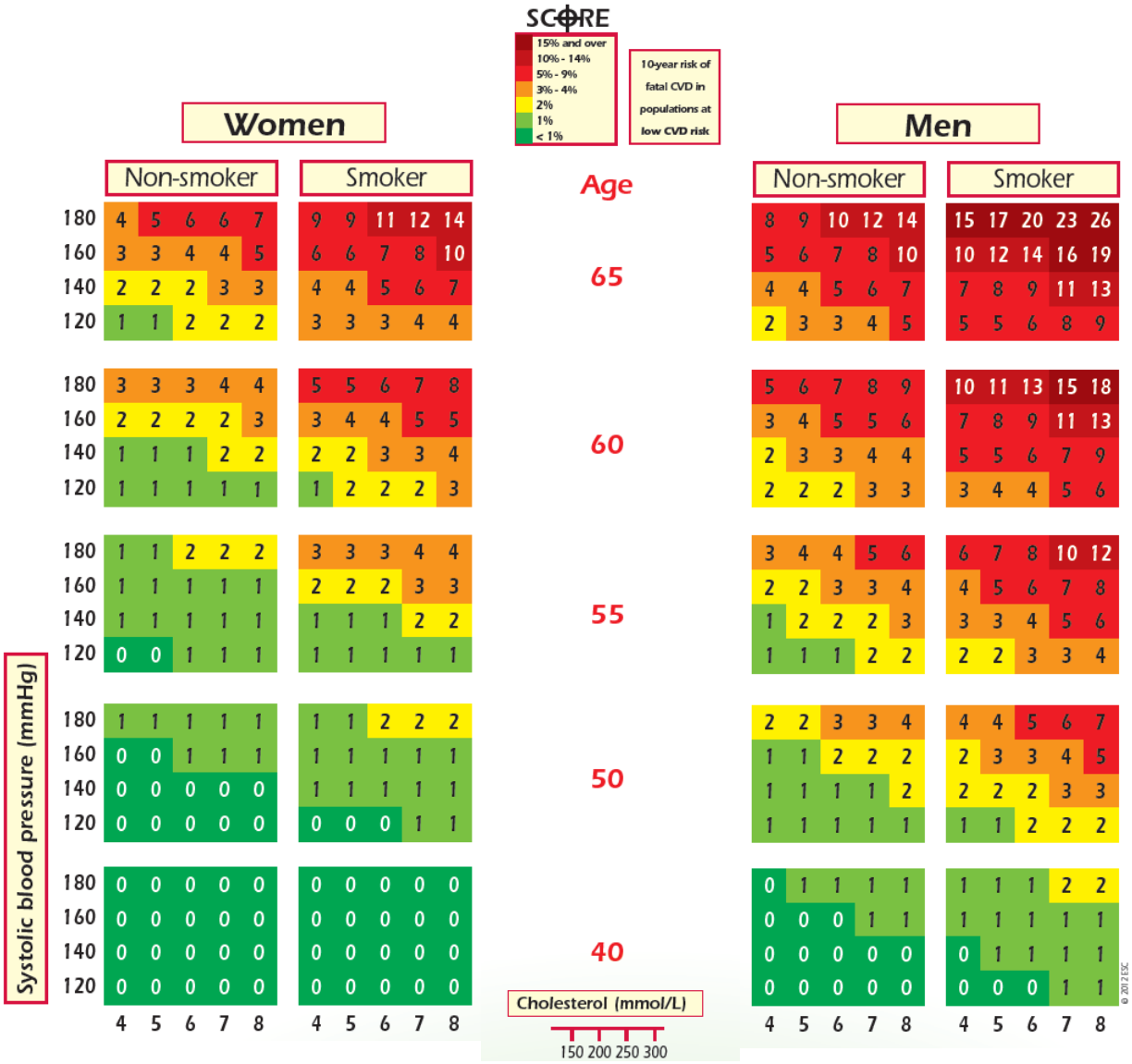
the low risk charts Switzerland



http://www.heartscore.org/static_file/Escardio/Subspecialty/EACPR/Documents/score-charts.pdf

Traitement des FRCV

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Treatment of CV risk factors associated with hypertension

Recommendations	Class[a]	Level[b]
CV risk assessment with the SCORE system is recommended for hypertensive patients who are not already at high or very high risk due to established CVD, renal disease, or diabetes.[33]	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).[596,599,602]	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).[599,602]	I	B
For patients at low–moderate CV risk, statins should be considered to achieve an LDL-C value of <3.0 mmol/L (115 mg/dL).[598]	IIa	C
Antiplatelet therapy, in particular low-dose aspirin, is recommended for secondary prevention in hypertensive patients.[35,604]	I	A
Aspirin is not recommended for primary prevention in hypertensive patients without CVD.[35,604]	III	A

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CV = cardiovascular; CVD = cardiovascular disease; LDL-C = LDL cholesterol; SCORE = Systematic COronary Risk Evaluation.
[a]Class of recommendation.
[b]Level of evidence.

Dyslipidémie et HTA

Prévention primaire

- **Cible LDL < 3.0 mmol/L**

Ridker PM et al. JUPITER Study Group. Rosuvastatin to prevent vascular events in men and women with elevated C-reactive protein. N Engl J Med 2008;359:2195–2207.

Yusuf S et al. HOPE-3 Investigators. Cholesterol lowering in intermediate-risk persons without cardiovascular disease. N Engl J Med 2016;374:2021–2031.

Prévention secondaire

- **Cible LDL < 1.8 mmol/L**

Fulcher J, et al. Efficacy and safety of LDL-lowering therapy among men and women: meta-analysis of individual data from 174,000 participants in 27 randomised trials. Lancet 2015;385:1397–1405.

6 nouveau concepts

ESC European Heart Journal (2018)

New concepts
BP measurement • **Wider use of out-of-office BP measurement with ABPM and/or HBPM, especially HBPM**, as an option to confirm the diagnosis of hypertension, detect white-coat and masked hypertension, and monitor BP control.
Less conservative treatment of BP in older and very old patients • **Lower BP thresholds and treatment targets for older patients**, with emphasis on considerations of biological rather than chronological age (i.e. the importance of frailty, independence, and the tolerability of treatment). • Recommendation that **treatment should never be denied or withdrawn on the basis of age**, provided that treatment is tolerated.
A SPC treatment strategy to improve BP control • **Preferred use of two-drug combination** therapy for the initial treatment of most people with hypertension. • **A single-pill treatment strategy for hypertension** with the preferred use of SPC therapy for most patients. • **Simplified drug treatment algorithms** with the preferred use of an ACE inhibitor or ARB, combined with a CCB and/or a thiazide/thiazide-like diuretic, as the core treatment strategy for most patients, with beta-blockers used for specific indications.
New target ranges for BP in treated patients • **Target *BP ranges* for treated patients** to better identify the recommended BP target and **lower safety boundaries for treated BP**, according to a patient's age and specific comorbidities.
Detecting poor adherence to drug therapy • A strong emphasis on the **importance of evaluating treatment adherence** as a major cause of poor BP control.
A key role for nurses and pharmacists in the longer-term management of hypertension • **The important role of nurses and pharmacists** in the education, support, and follow-up of treated hypertensive patients is emphasized as part of the overall strategy to improve BP control.

Recommandation américaines

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Clinical Practice Guideline

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ ASH/ASPC/NMA/PCNA

Whelton PK et al. Hypertension 2018; 71:1269-324

Recommandation américaines

Clinical Practice Guideline

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

Table 6. Categories of BP in Adults*

BP Category	SBP		DBP
Normal	<120 mm Hg	and	<80 mm Hg
Elevated	120–129 mm Hg	and	<80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	or	80–89 mm Hg
Stage 2	≥140 mm Hg	or	≥90 mm Hg

Whelton PK et al. Hypertension 2018; 71:1269-324

Le critère de décision pour l'initiation du traitement reste une pression artérielle ≥140/90 mm Hg chez les adultes; chez les patients âgés de ≥80 ans, la valeur seuil est de ≥160/90 mm Hg.

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PRIMARY AND HOSPITAL CARE – MÉDECINE INTERNE GÉNÉRALE 2018;18(15):265–269

Qu'est-ce qui change? Qu'est-ce qui demeure?

Des nouvelles lignes directrices européennes sur l'hypertension

Frederick Bierreth[a], Claudia Gregoriano[a], Thomas Dieterle[a,b]

[a] Medizinische Universitätsklinik, Kantonsspital Baselland; [b] Rédacteur Primary and Hospital Care

ESC/ESH				AHA/ACC			
Catégorie	**Systolique**		**Diastolique**	**Catégorie**	**Systolique**		**Diastolique**
Optimale	< 120	et	< 80	Normale	<120	et	<80
Normale	120 – 129	et/ou	80 – 84	Elevée	120-129	et	<80
Limite supérieure de la normale	130 – 139	et/ou	85 – 89	**Stade 1**	**130-139**	**ou**	**80-89**
Hypertension Grade 1	**140 – 159**	**et/ou**	**90 – 99**				
Hypertension Grade 2	**160 – 179**	**et/ou**	**100 – 109**	**Stade 2**	**≥140**	**ou**	**≥ 90**
Hypertension Grade 3	**≥ 180**	**et/ou**	**≥ 110**				
Hypertension systolique isolée	**≥ 140**	**et**	**< 90**				

Raison retrouvée ?

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Recommandations européennes 2018 dans l'hypertension artérielle : la raison retrouvée ?

ESC/ESH 2018 Hypertension guidelines: restored wisdom?

Pr Jacques Blacher,

- Maintien de la définition avec HTA > 140/90mmHg
- Pas d'essai montrant une efficacité thérapeutique si traitement d'une TAS entre 130 et 140mmHg même l'inverse (HOPE-3, Lonn EM et al. NEJM 2016; 374:2009-20)
- Indiquerait que ½ des adultes des pays occidentaux = malades
- Pas de bénéfice si traitement selon SPRINT (NEJM 2015;373:2103-16)

La Lettre du Cardiologue • N° 517 - septembre 2018

Pertinence des recommandations américaines ?

Etude MONICA/KORA, reclassification des 11.603 sujets selon la valeur de leur TA, les sujets avec TA 130-139/80-89mmHg passent au stade 1 HTA, selon ACC/AHA :

- => cela **multiplie par 2** la prévalence de la maladie (63% *vs* 33,7%).
- Le risque de mortalité cardiovasc. après analyse multivariée était de 1,54 (HR [1,04-2,28], p=0,03) pour le groupe **HTA de stade 2**, alors qu'elle était **non significative** pour le groupe HTA stade 1 et les sujets a PA nle haute
- Etre diagnostiqué et traité pour une telle maladie pourrait avoir un effet négatif sur la santé mentale ?
- La présence de symptômes dépressifs, avait une influence plus importante sur le pronostic de MCV que l'HTA (**HR :1,341,05-1,72**).
- Les auteurs mettent en doute la pertinence de cette nouvelle classification en termes de bénéfice-risque.

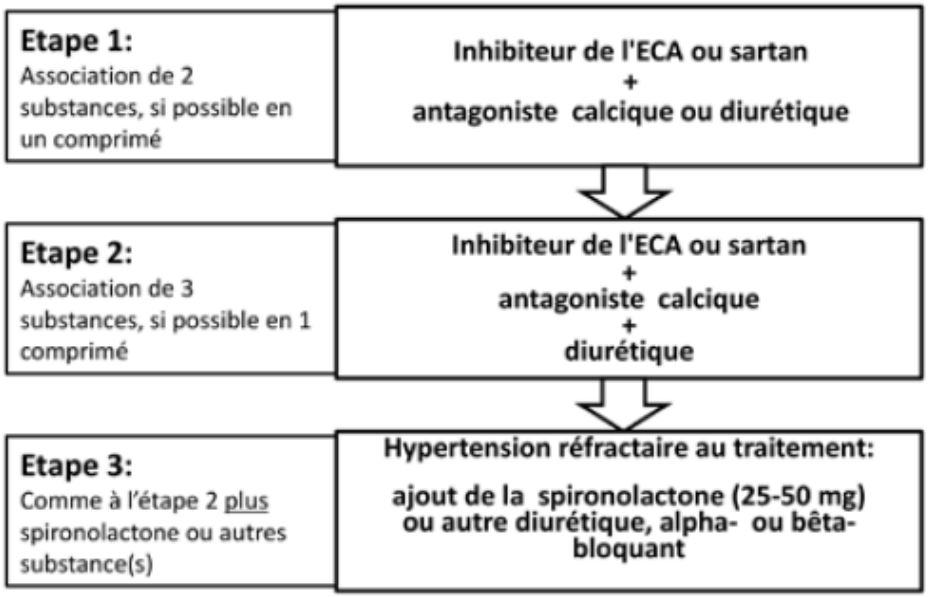
Atasoy S et al. ,Association of hypertension cut-off values with 10-year cardiovascular mortality and clinical consequences: a real-world perspective from the prospective MONICA/KORA study. Eur. Heart J.2018 Nov 21.

Messages clés 1/2

1. HTA est leader contribuant à la mort prématurée de 10 Mio pts en 2015, 4.9 Mio infarctus et 3.5 Mio AVC
2. HTA = principal FR pour IC, FA, IR, AMI, déficit cognitif
3. HTA si TAS ≥140 et/ou TAD ≥90 mmHg
4. HTA doit être recherchée, si présente=>autres FRCV
5. Nouvelles habitudes de vie doivent être proposées
   Restriction sodée, réduction OH, régime Méditerranéen, activité physique régulière, perte poids, arrêt du tabac

Messages clés 2/2

6. Traitement médicamenteux
   - ✓ Débuter avec 2 principes actifs : IEC ou ARA2 et …
   - ✓ Favoriser les «single pill combination»
   - ✓ Détecter le manque d'adhérence



7. Attention à l'inertie médicale

Merci de votre attention