2023 ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Hypertension

Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA)

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2023 ESH Hypertension Guidelines

- About 200 pages
- More than 1700 references
- 22 Sections and more than 300 subsections
- 21 Figure
- 27 Tables
- 47 Sets of Recommendations
- About 50 sections on hypertension & comorbidities

Class of recommendation (CoR) and level of evidence (LoE)

Class of Recommendation		Level of Evidence		
	Definition		Definition	Interpretation
I	Evidence or general agreement that a treatment/test/procedure is beneficial, useful or effective AND that potential benefits clearly outweigh potential risks	A	- RCT or meta-analysis of RCTs with CVD outcomes - Single trial enough if sufficient power and without important limitations [a]	Strong evidence. Evidence of high certainty. Unlikely that future studies will change the effect estimate substantially
II	Conflicting evidence or opinion about the benefit, usefulness and effectiveness of a treatment/test/procedure OR uncertainty about benefit-risk balance	B	- RCT with surrogate measures (BP, HMOD) - Observational studies with CVD outcomes and no major limitations[a] - Meta-analyses including the above study types	Moderate evidence. Evidence with some uncertainty. Future studies may modify, at least the magnitude of, the effect estimate
III	Evidence or general agreement that a treatment/test/procedure is not beneficial, useful or effective OR that potential risks outweigh the potential benefit	C	- Observational studies of surrogate measures - Any study type may be downgraded to level C due to limitations[a] - Expert opinion (EO)	Weak evidence. Evidence of low certainty. Future studies may change the effect estimate substantially

Factors that influence CV risk in patients with hypertension

Parameters for risk stratification, which are included in SCORE2 and SCORE2-OP

- Sex (men >women)
- Age
- Level of SBP
- Smoking – current or past history
- Non-HDL cholesterol

Established and suggested novel risk factors

- Family or parental history of early onset hypertension
- Personal history of malignant hypertension
- Family history of premature CVD
- Heart rate (resting values >80 bpm)
- Low birth weight
- Sedentary lifestyle
- Overweight or Obesity
- Diabetes
- Uric acid
- Lp(a)
- Adverse outcomes of pregnancy
- Early-onset menopause
- Frailty
- Psychosocial and socioeconomic factors
- Migration
- Environmental exposure to air pollution or noise

Additional clinical conditions or comorbidities

- Resistant hypertension
- Sleep disorders (including OSA)
- COPD
- Gout
- Chronic inflammatory diseases
- Nonalcoholic fatty liver disease (NASH)
- Chronic infections (including long COVID-19)
- Migraine
- Depressive syndromes
- Erectile dysfunction

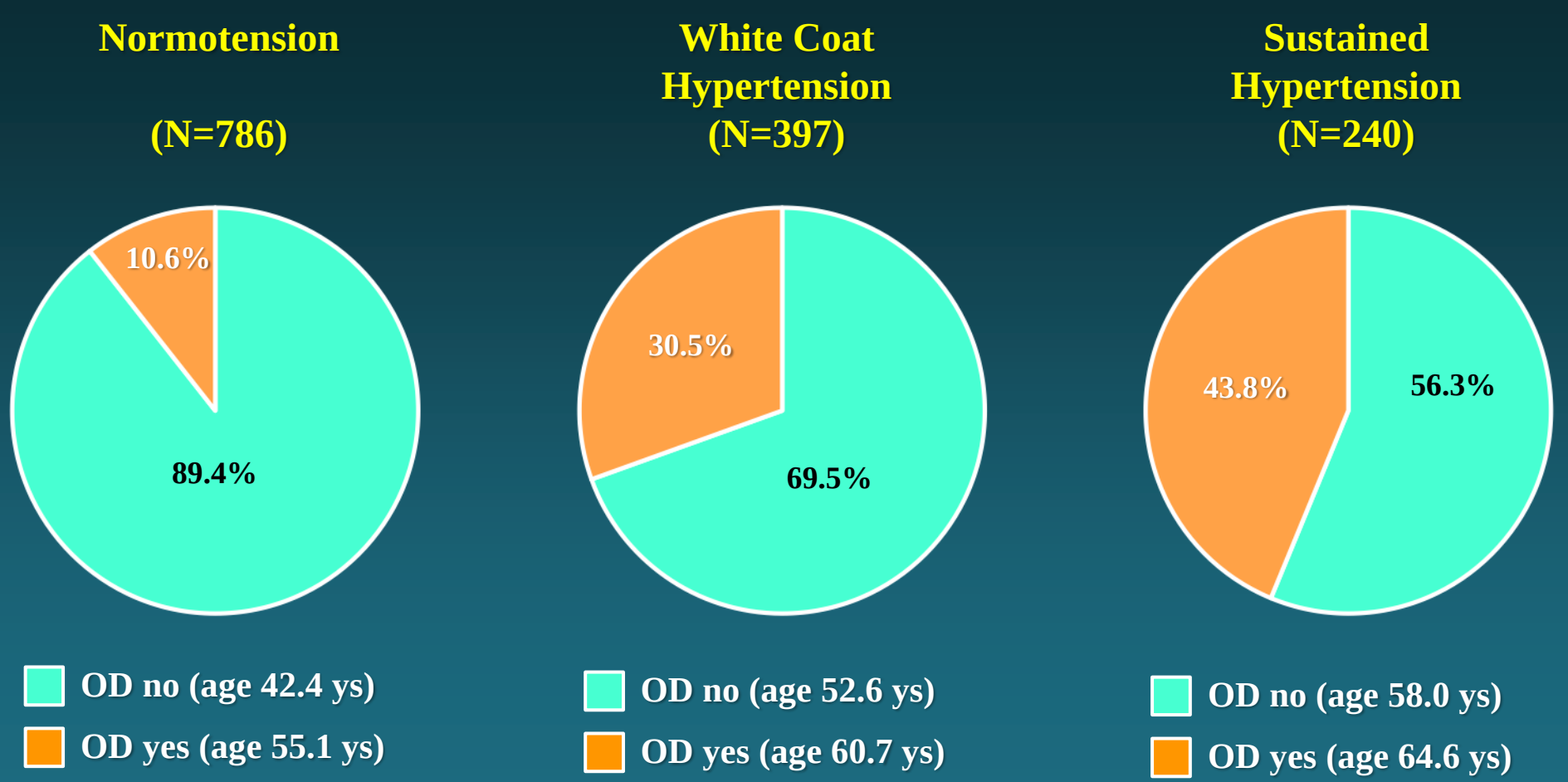
Established cardiovascular and kidney disease

- Cerebrovascular disease: ischemic stroke, cerebral hemorrhage, TIA
- Coronary artery disease: myocardial infarction, angina, myocardial revascularization
- Presence of atheromatous plaque on imaging
- Heart failure, including heart failure with preserved ejection fraction
- Peripheral artery disease
- Atrial fibrillation
- Severe albuminuria > 300 mg/24h or ACR > 300 mg/g
- CKD stage 4 and 5, eGFR < 30 ml/min/1.73m^2

Assessment of hypertension-mediated organ damage (HMOD)

Basic screening tests for HMOD recommended for all hypertensive patients	Aim
12 lead ECG	Measure HR and AV conduction, detect cardiac arrhythmias, myocardial ischemia and infarction, screen for LVH
Urine albumin : creatinine ratio (UACR)	Detect and classify CKD
Serum creatinine and eGFR	Detect and classify CKD
Extended screening for HMOD	
Echocardiography	Evaluate structure and function of the ventricles and left atrium, detect valvular disease, aortic root diameter and ascending aortic aneurysm
cfPWV or baPWV	Evaluate aortic/large artery stiffness
Carotid artery ultrasound	Determine carotid intima-media thickness, plaque and stenosis
Coronary artery calcium scan	Determine the presence and extent of coronary calcium to predict CAD events---
Abdominal aorta ultrasound	Screen for aortic aneurysm
Kidney ultrasound	Evaluate size and structure of kidney, detect renovascular disease, determine RRI (by spectral doppler ultrasonography)
Spectral doppler ultrasonography	Diagnosis of renovascular disease and determination of RRI
ABI	Screen for LEAD
Retina microvasculature	Detect microvascular changes
Cognitive function testing (MMSE, MoCA)	Screen for early stages of dementia
Brain imaging (CT, MRI)	Detect structural brain damage

Prevalence of subjects with vs without baseline organ damage in normotensive, white coat hypertensive and sustained hypertensive individuals



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Mancia et al., Hypertension 2022,79,1057

Characteristics of the most frequent markers of HMOD in hypertension

Marker of HMOD	Sensitivity to changes	Reproducibility and operator independence	Time to changes	Prognostic value of changes
LVH by ECG	Low	High	Moderate (> 6 months)	Yes
LVH by echocardiogram	Moderate	Moderate	Moderate (> 6 months)	Yes
LVH by MRI	High	High	Moderate (> 6 months)	No data
eGFR	Moderate	High	Moderate (> 6 months)	Yes
UACR	High	Moderate	Fast (weeks to months)	Yes
RRI	Low	High	Slow (>12 months)	Yes
Carotid IMT	Very low	Low	Slow (> 12 months)	Limited data
PWV	High	Low	Fast (weeks to months)	Limited data
ABI	Low	Moderate	Slow (> 12 months)	Limited data
Retina Microvasculature[a]	High	High	Moderate (> 6 months)	No data

Rare genetic causes of secondary hypertension

Condition	Phenotype	Mechanism and Treatment
Liddle syndrome	Hypokalemia, metabolic alkalosis, low PRA or PRC, low PAC	Increased renal tubular ENaC activity; responds to treatment with amiloride
Apparent mineralocorticoid excess	Hypokalemia, metabolic alkalosis, low PRA or PRC, low PAC	Decreased 11b-hydroxysteroid dehydrogenase isoenzyme 2; responds to spironolactone
Gordon syndrome	Hyperkaliemia, metabolic acidosis, low PRA or PRC, low/ normal PAC	Overactivity of the sodium-chloride cotransporter; responds to thiazides
Geller syndrome	Pregnancy-exacerbated hypertension, low PRA or PRC, low PAC	Agonist effect of progesterone on the mineralocorticoid receptor; responds to amiloride, spironolactone activates instead of blocking the receptor
Glucocorticoid-remediable aldosteronism (familial hyperaldosteronism type I)	Hypokalemia, metabolic alkalosis, low PRA or PRC, increased PAC	Chimeric *CYP11B1/CYP11B2* gene; responds to glucocorticoids
Familial hyperaldosteronism type 2	Hypokalemia, metabolic alkalosis, low PRA or PRC, increased PAC	Increased activity of CLCN2 chloride channel; responds to steroidal MRA
Familial hyperaldosteronism type 3	Hypokalemia, metabolic alkalosis, low PRA or PRC, increased PAC	Loss of selectivity of KCNJ5 potassium channel; patients who do not respond to steroidal MRA require bilateral adrenalectomy
Familial hyperaldosteronism type 4	Hypokalemia, metabolic alkalosis, low PRA or PRC, increased PAC	Increased activity of CACNA1H calcium channel; responds to steroidal MRA
PASNA syndrome (primary aldosteronism, seizures and neurological abnormalities)	Hypokalemia, metabolic alkalosis, low PRA or PRC, increased PAC; neurological defects coexists	Increased activity of CACNA1D calcium channel; responds to steroidal MRA and CCB
11beta-hydroxylase Deficiency	Hypokalemia, metabolic alkalosis, low PRA or PRC, low PAC, virilization of females	Reduced activity of 11b-hydroxylase with increase of DOC and androgens; responds to glucocorticoids
17alpha-hydroxylase deficiency	Hypokalemia, metabolic alkalosis, low PRA or PRC, low PAC, pseudohermaphroditism in males	Reduced activity of 17a-hydroxylase with increase of DOC and reduction of androgens; responds to glucocorticoids
Autosomal dominant hypertension with brachydactyly	Brachydactyly type E (BDE), short stature, severe hypertension, high risk of death from stroke before 50	PDE3A mutations upregulated the cAMP-hydrolytic activity that results in lower cAMP levels in vascular smooth muscle cells

Pheochromocytoma and Paraganglioma

Prevalence: <1%[a]

Suggestive symptoms and signs[b]

- paroxysmal symptoms (such as headache, sweating, palpitation, increased HR)
- large BP variation
- CV manifestations (e.g. MI, arrhythmias, Takotsubo cardiomyopathy)

1st choice screening test

Plasma or urinary free metanephrines

Further work-up

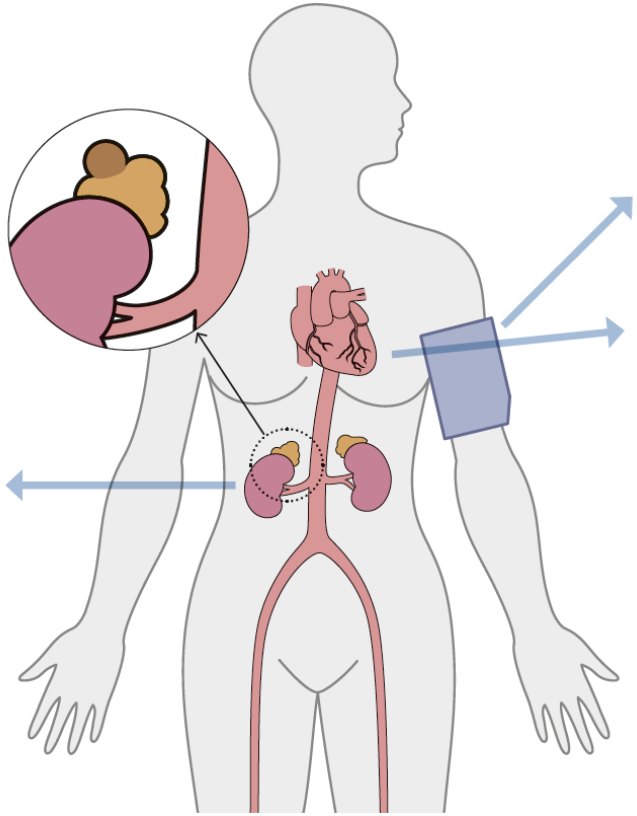
Contrast enchanced CT or MRI
Functional imaging
Genetic testing[c]

Treatment[d]

Surgical resection
(Pheochromocytoma: minimally invasive laparoscopic adrenalectomy)

Follow-up[e]

In most cases > 10 yrs



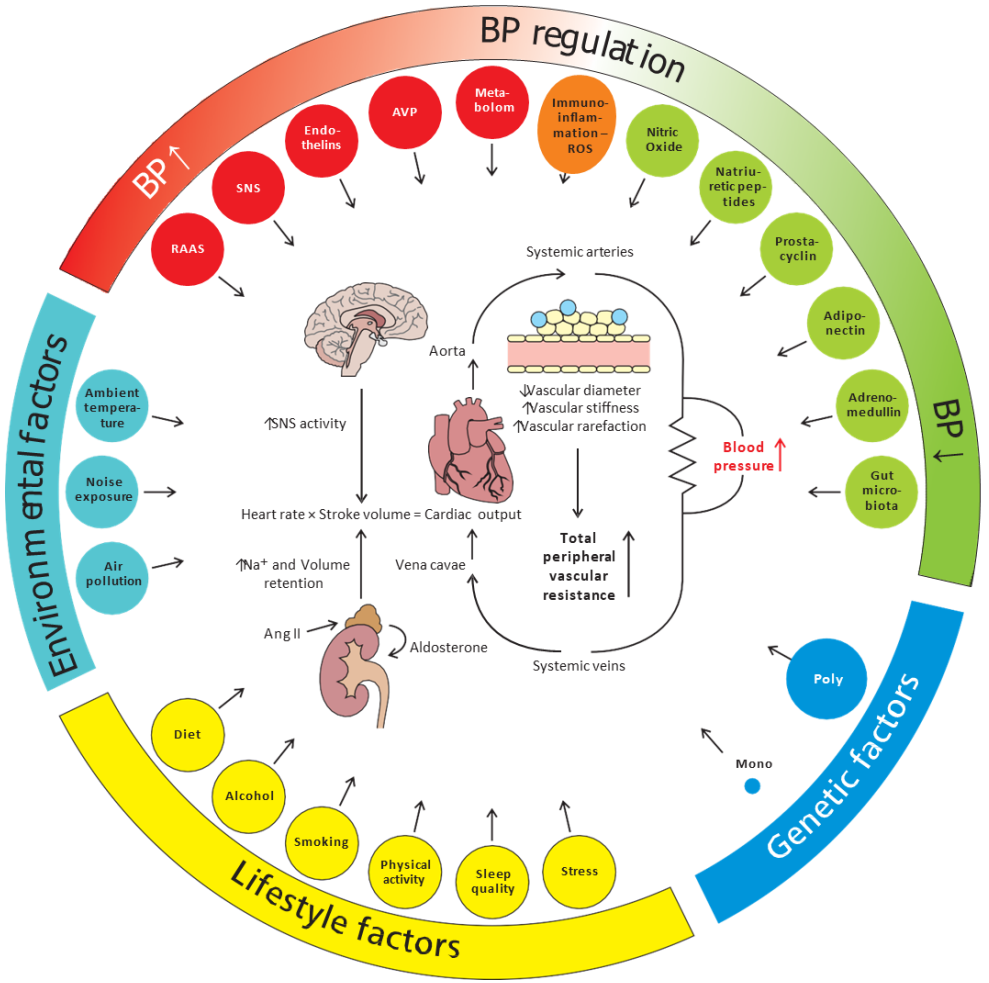
Cardiovascular phenotype

24h ABPM – frequent non-dipping

- LVH
- Decreased systolic function
- Myocardial fibrosis (MRI)

Increased CV Risk and mortality

Mechanisms involved in BP regulation and the pathophysiology of hypertension



BP threshold/target for treatment

Which BP should be used?

MANCIA

Office BP measurements

Recommendations and statements	CoR	LoE
Office BP is recommended for diagnosis of hypertension, because it is the one method by which hypertension-related risk, benefits of antihypertensive treatment, and treatment-related BP thresholds and goals are based.	I	A
Office BP measurements should be performed in standardized conditions, using a standard measurement protocol. Triplicate measurements should be taken and the average of the last two should be referred to as the representative value.	I	C
It is recommended to diagnose hypertension during at least 2 separate office visits (within 4 weeks) unless office BP indicates grade 3 hypertension (≥180/110 mmHg) or patients presents with hypertension related symptoms or there is evidence of HMOD or CVD.	I	C
At the first office visit, BP should be measured in both arms. A consistent between-arm SBP difference >15-20 mmHg suggests atheromatous disease and is associated with increased CV risk. All subsequent measurements should be made on the arm with the highest BP readings.	I	C
Out-of-office BP is a source of multiple BP-related information before and during treatment. It is therefore recommended to obtain additional information on BP values by ABPM or HBPM or both if available.	I	C

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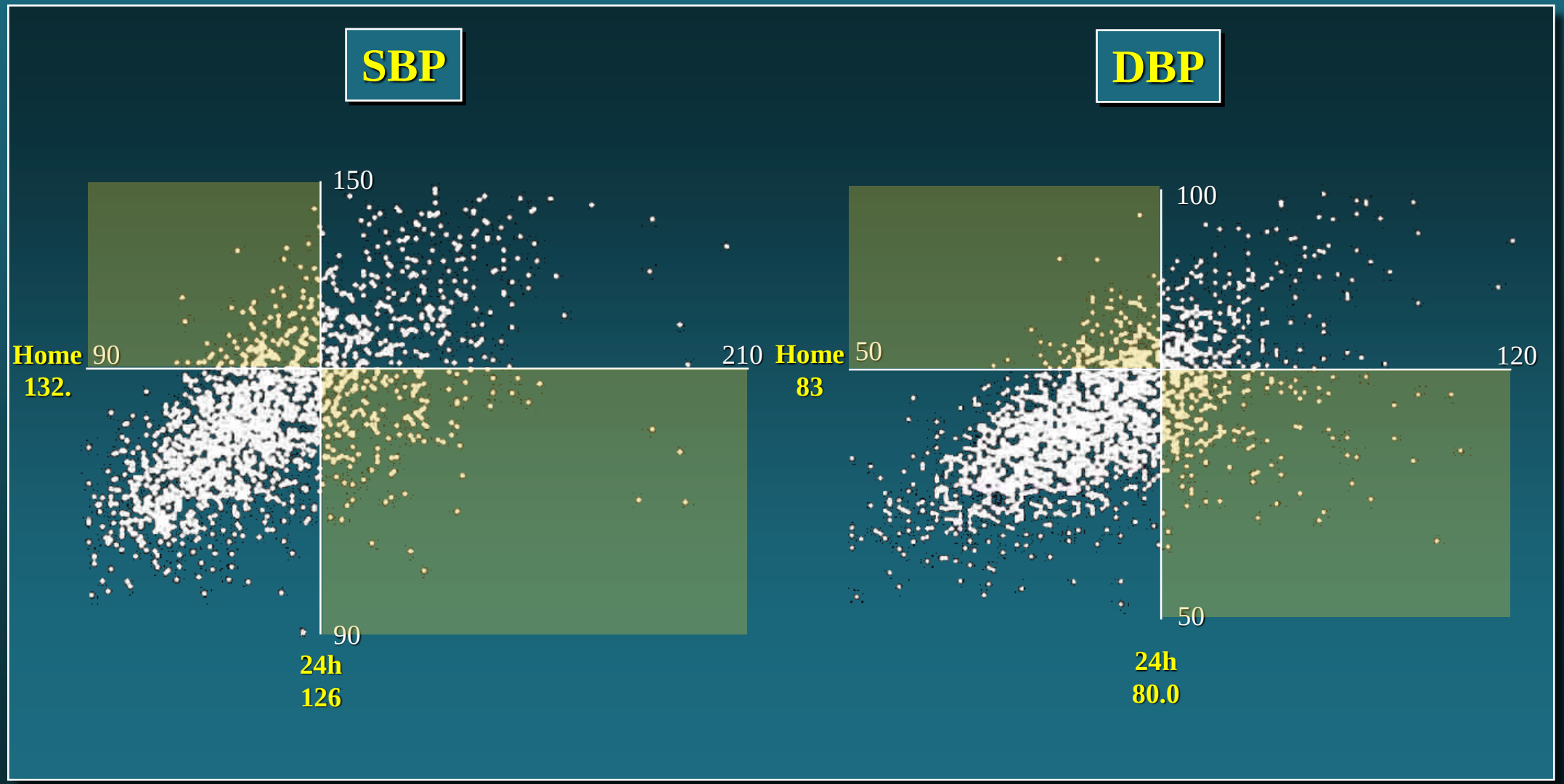
Use of out-of-office BP in 2023 ESH GLs

«Out-of-office BP is a source of multiple BP-related information before and during treatment.It is therefore recommended to obtain additional information on BP by ABPM , HBPM or both if available (IC)»

Mancia, Kreutz et al, ESH Guidelines J Hypertens 2023

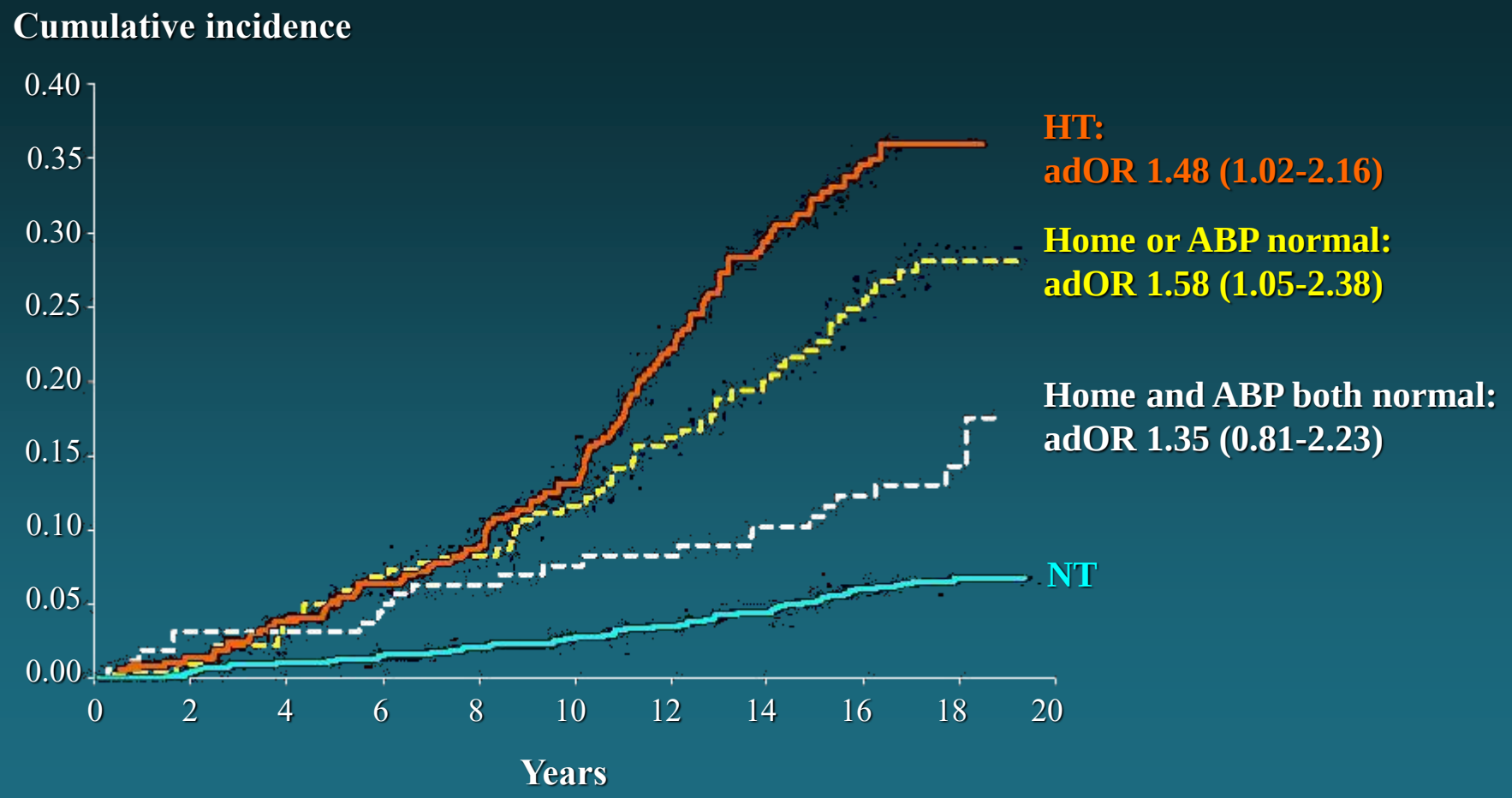
Relationship between 24h and Home BP in PAMELA



19878 = 18395 M mod

Mancia et al., Hypertension 2006; 47: 846; Mancia et al., unpublished data

All cause mortality in WCH diagnosed by normality of one or both 24h and home BP



21188 = 20640 M mod

Mancia et al. Hypertension 2013,62,168

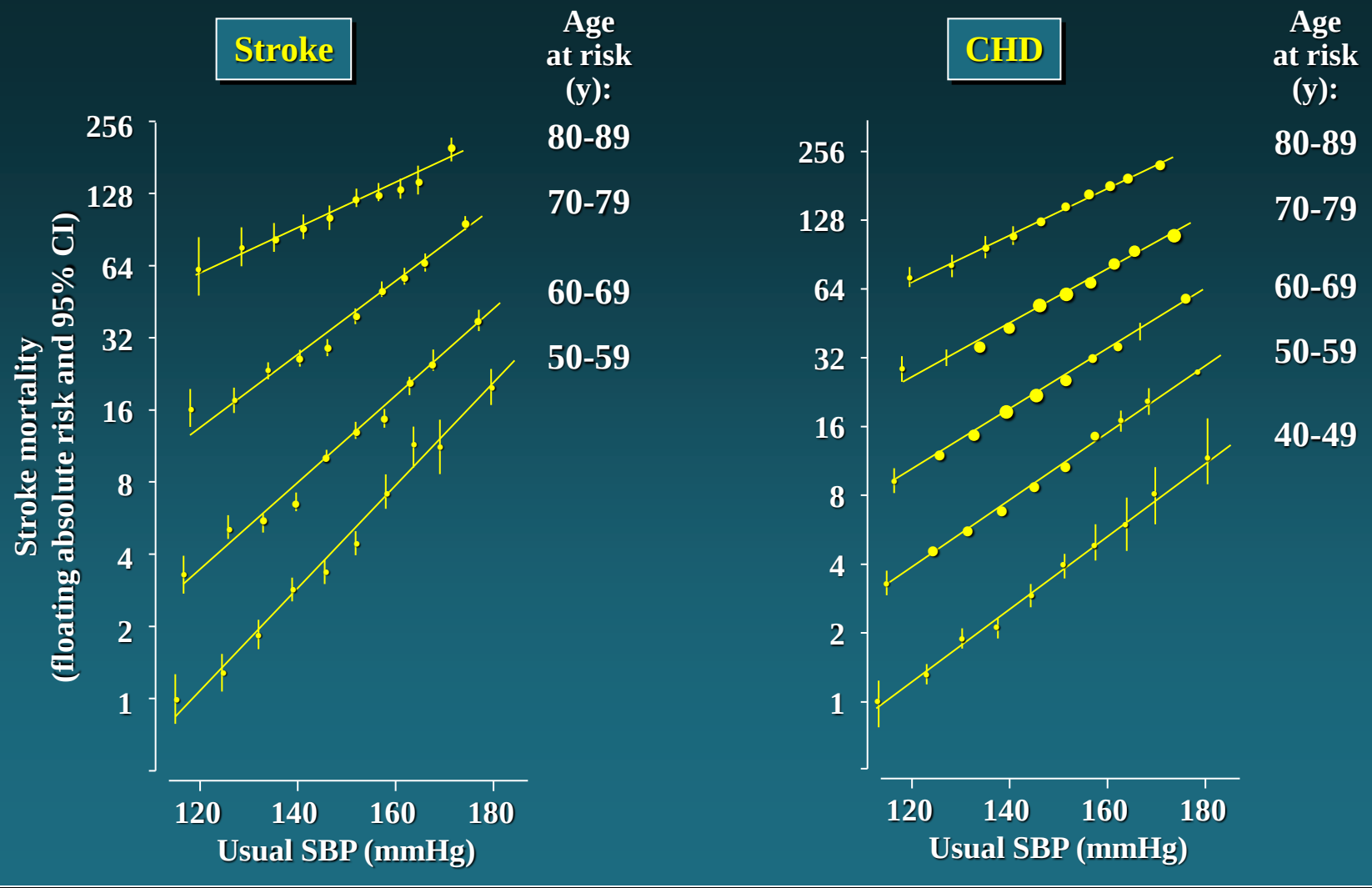
2023 ESH Hypertension Guidelines
Treatment Initiation

- Non-pharmacological measures should be implemented at any BP level if lifestyle is medically inappropriate

  -Reduction of CV risk

  -Reduction of the risk of developing hypertension

Stroke and CHD Mortality Rate in Each Decade of Age versus Usual Systolic Blood Pressure at the Start of That Decade



Lancet 2002; 360: 1903-1913

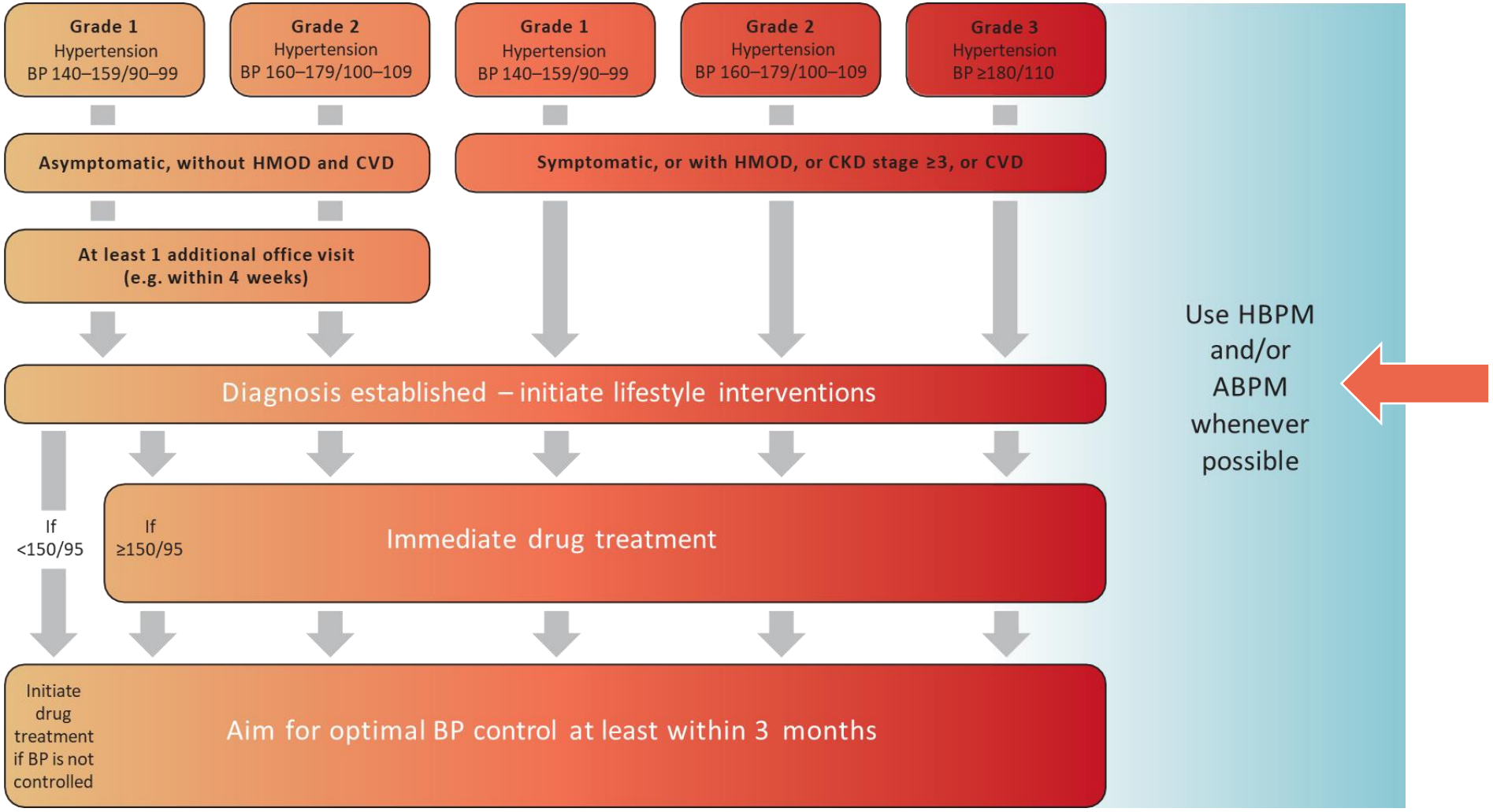
9392 M

BP threshold for drug treatment (age 18-79 years)

- Based on the office BP level at which RCTs have documented the protective effect of BP-lowering treatment
- Office SBP >- 140mmHg and/or DBP>-90mmHg in patients aged 18-79 years (IA)
- To be confirmed by at least 1 more office visit with grade 1-2 uncomplicated hypertension

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

Diagnosis by office BP and initial management of hypertension



Multiple Therapeutic Options

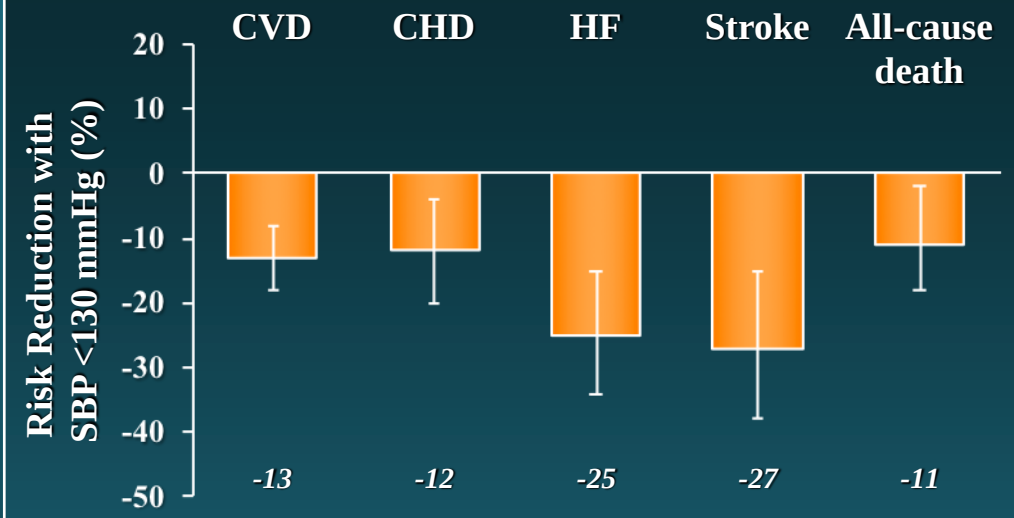
- The Achilles' heel is the low persistence of the prescribed measures
- Some lifestyle measures have a cost, which may not be reimbursed by healthcare providers
- Lifestyle changes should never delay the initiation of drug therapy when BP reduction cannot be obtained
- Physicians should establish a FU program to check whether there is adherence and therapeutic goal is achieved

SBP Threshold (mmHg) for treatment in pt subgroups 2023 ESH Guidelines

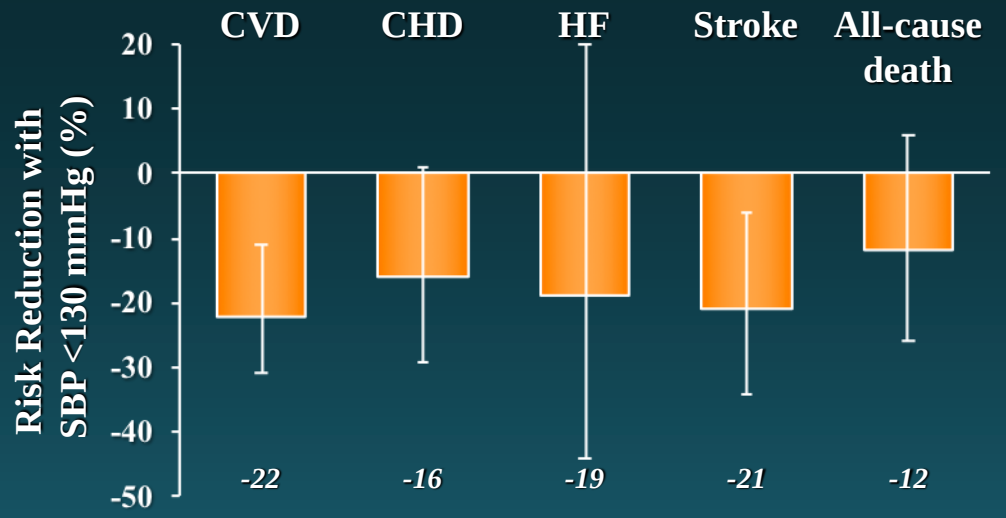
- Age 80+: 160mmHg (IA),but 140-150 to be considered (IIC)
- ISH(65-79ys): 160(IA),but 140-159 to be considered(IB)
- Very high CV risk: High normal BP (IA)
- In frail patients threshold to be individualized (1C)
- In children/adolescents threshold (up to age 16) >- 95th BP percentile (IB) or lower depending on HMOD or complications (mainly renal)

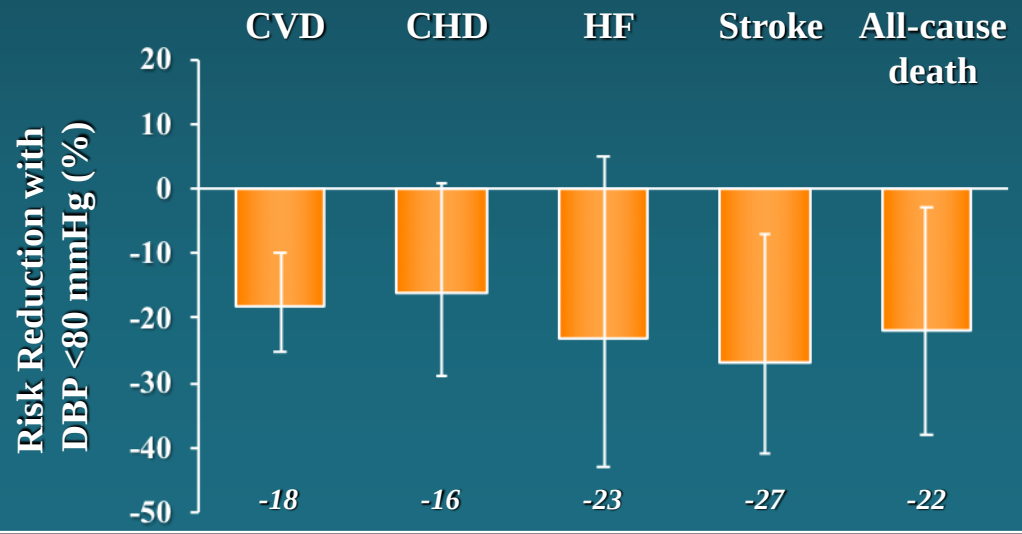
Risk reduction achieved by lowering SBP to <130 or DBP to <80 mmHg vs higher BP values in RT-based meta-analyses

Ettehad et al. (Lancet, 2015)



Thomopoulos et al. (J Hypertens, 2016)





Thomopoulos et al. (J Hypertens, 2016)

20663 M

Redrawn by Mancia, 2019

BP targets in the general hypertensive population

- In pts aged 18-64 ys the BP target is <130/80mmHg (IA)

2023 ESH Hypertension guidelines

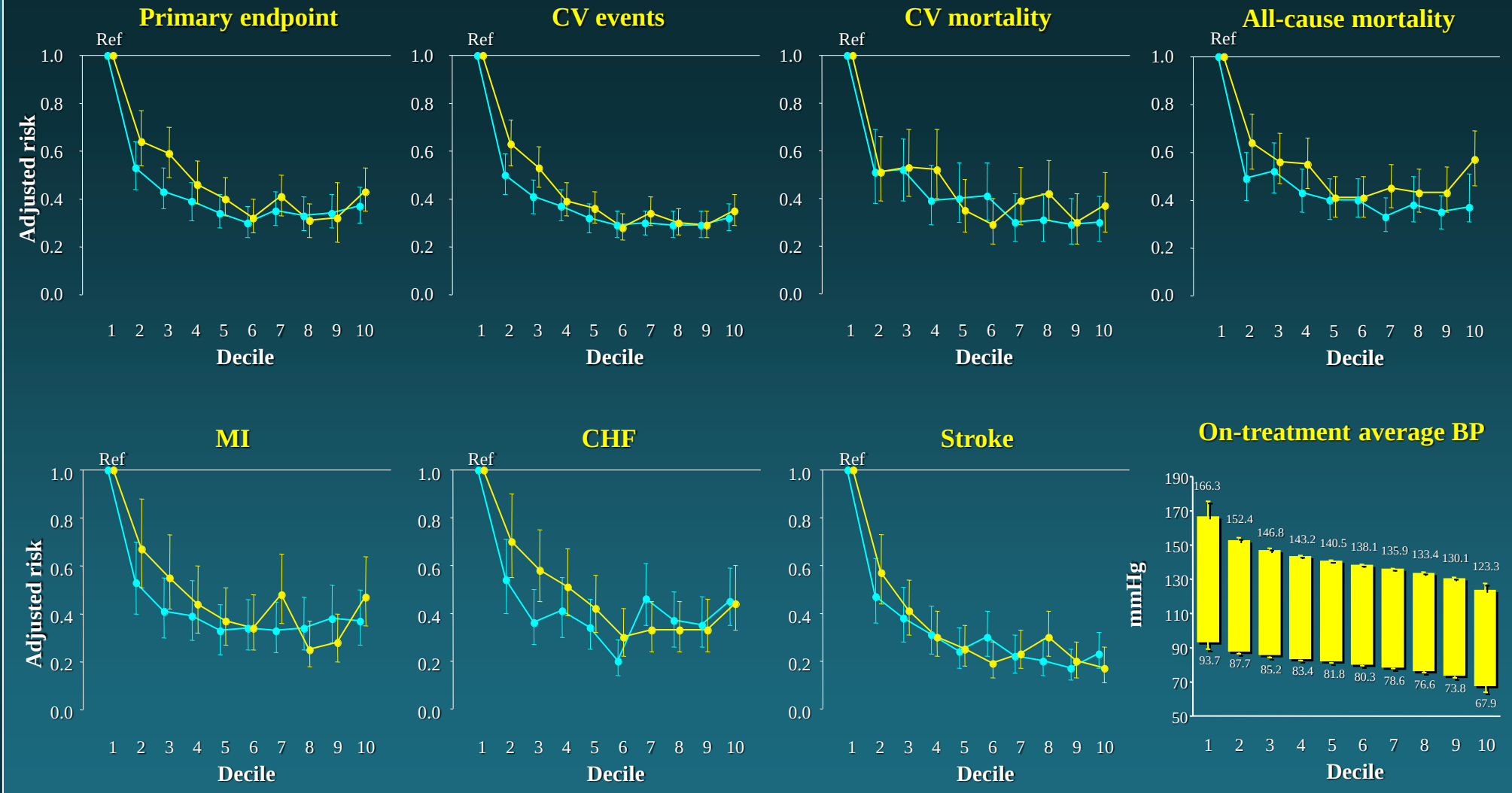
BP targets in the general hypertensive population

- In pts aged 18-64 ys the BP target is <130/80mmHg (IA)
- In pts aged 65-79 ys

-The «must» BP target is to reach < 140/80mmHg (IA)

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

Adjusted hazard ratio for outcomes in deciles (n=15240) of mean on-treatment SBP or DBP



19139 M

Mancia et al., Eur Heart J,2016,37,955

BP targets in the general hypertensive population

- In pts aged 18-64 ys the BP target is <130/80mmHg (IA)
- In pts aged 65-79 ys

-The «must» BP target is to reach < 140/80mmHg (IA)

- BP can be reduced to <130/80 mmHg if treatment is well tolerated (IIC)

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

Office BP targets in the general hypertensive population

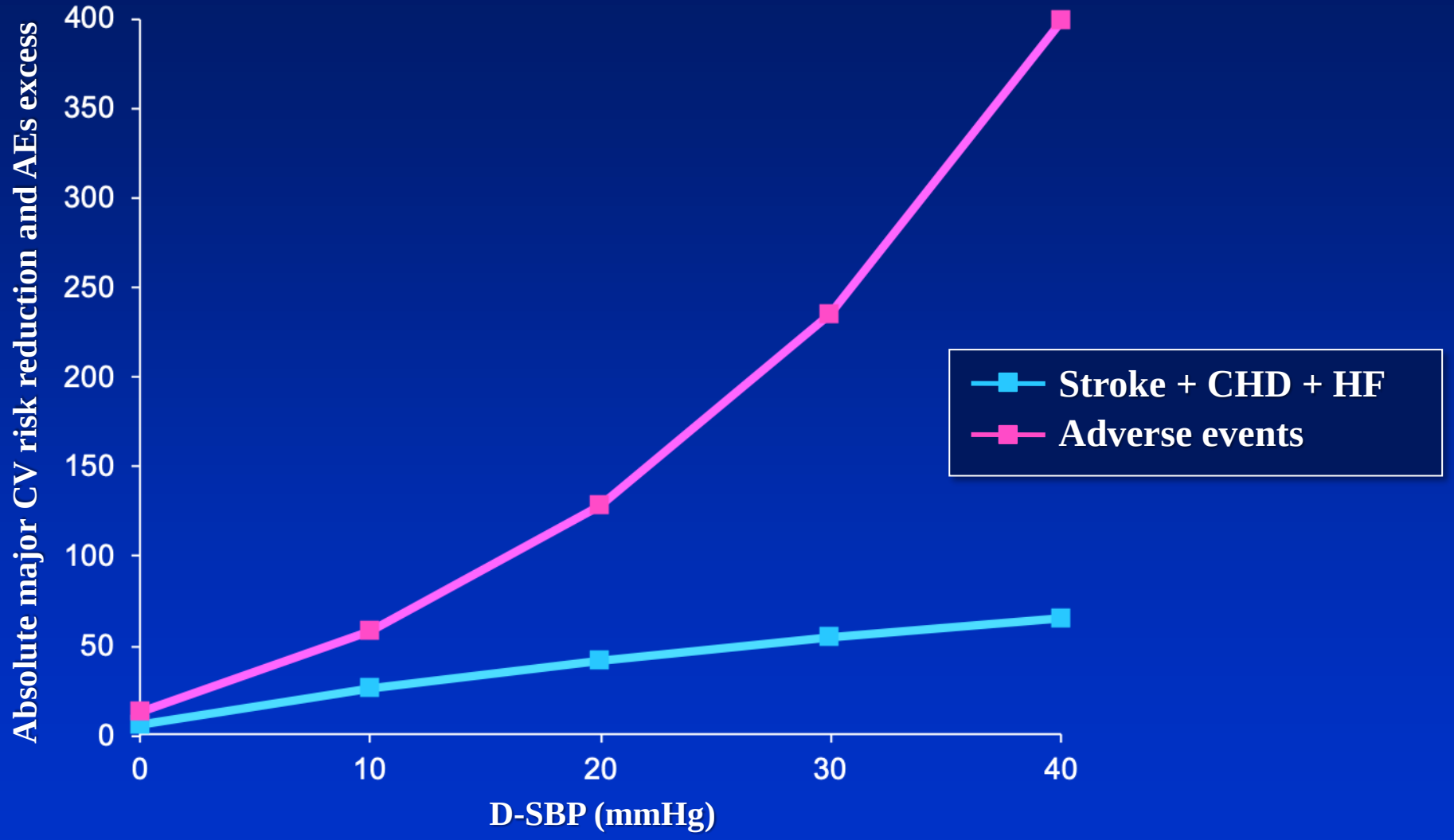
- BP should never be actively reduced to <120/70mmHg (IIIC)

-Marked increase of side effects/treatment discontinuation-

-Possible increase of outcomes (J curve)

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

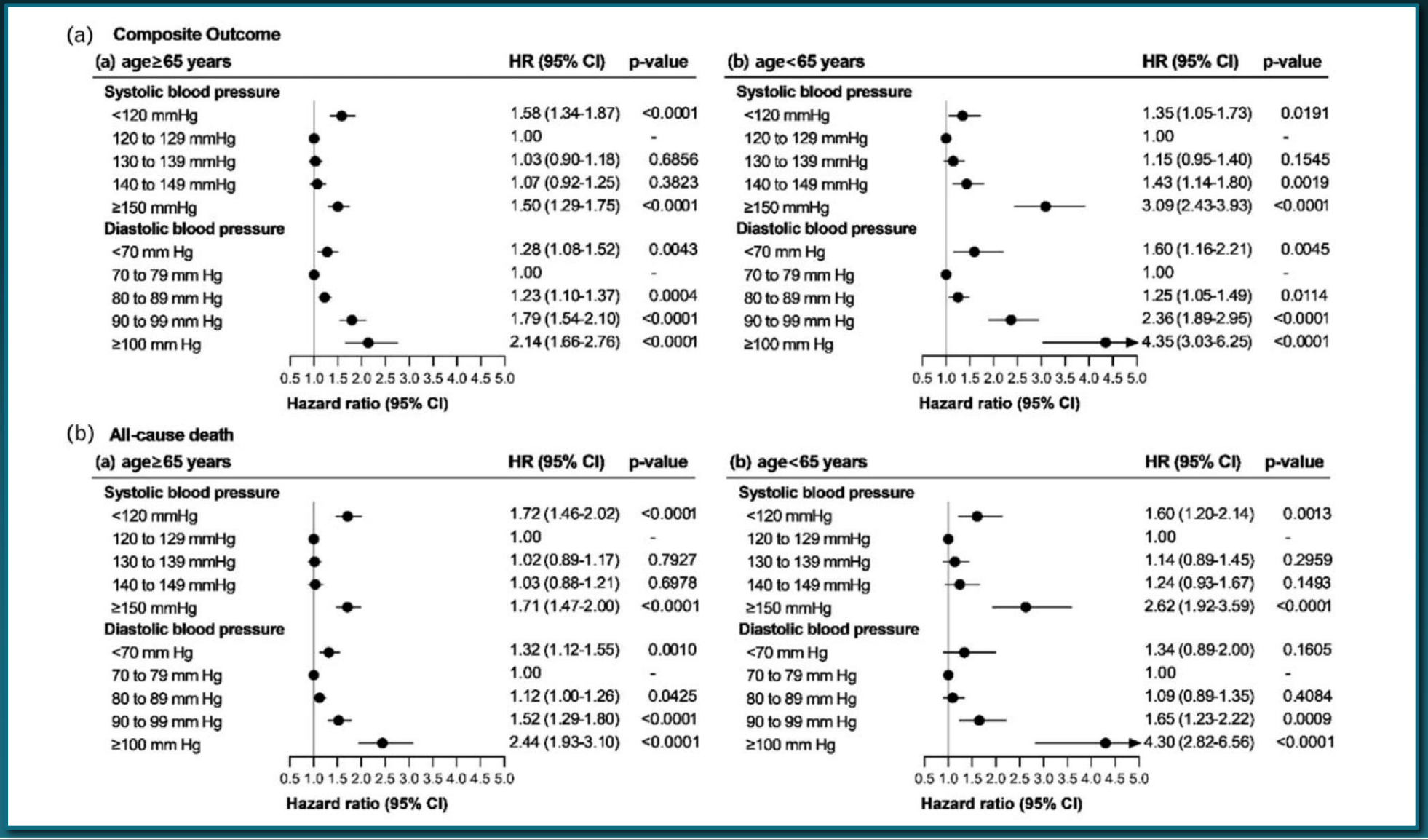
Relationships of Numbers of Outcomes Prevented and Numbers of Excess in Treatment Discontinuations* to the Extent of SBP Reductions



* Attributed to treatment adverse events

Thomopoulos, Parati, Zanchetti, J Hypertens 2016; 34: 1451-1463

Multiple adjusted hazard ratio for composite outcome and all-cause death according to the achieved SBP and DBP levels in elderly and younger patients



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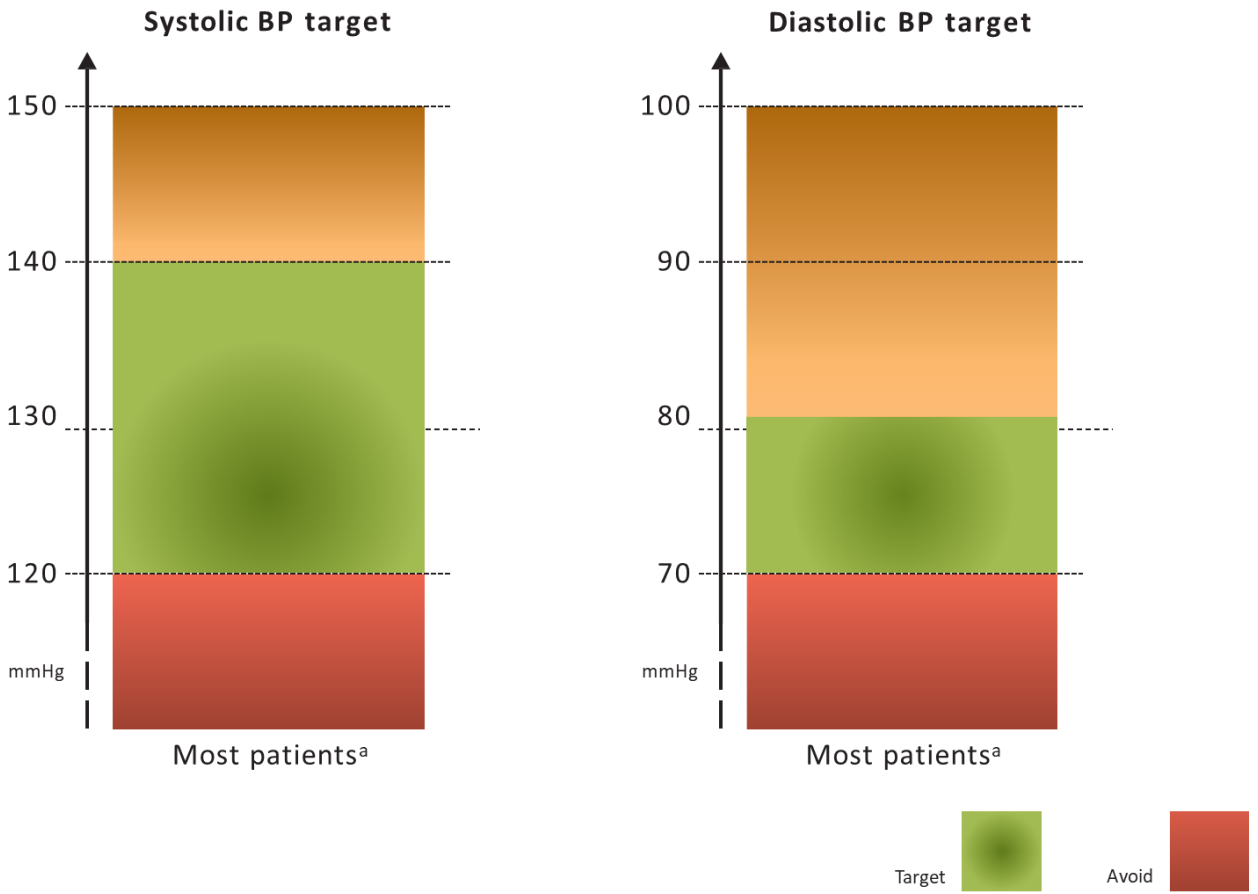
Lim, Park, Kim, Mancia, Cho. J Hypertens 2020; 38: 1559-1566

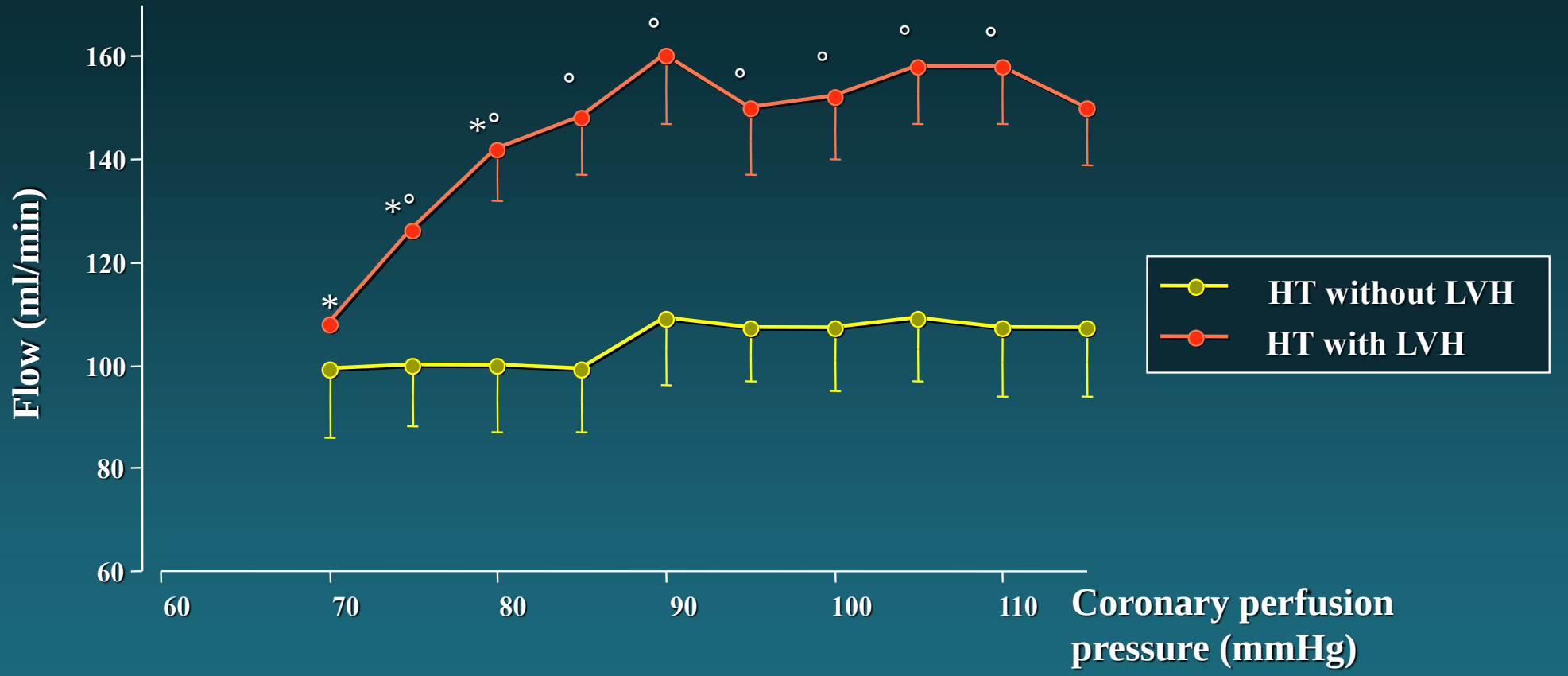
Office BP targets in the general adult hypertensive population



SBP Target (mmHg) for treatment in pt subgroups 2023 ESH Guidelines

- Age 80+: SBP <150,but 130-139 to be considered(IIB
- ISH(65-79ys): 150-140(IA),but 130-139 to be considered (IB)
- In frail patients: Target to be individualized (1C)
- LVH: SBP target not <130mmHg
- CKD: <140/80 (IA) but 120-129 to be considered (IIB)
- In children/adolescents (up to age 16): target <threshold BP percentiles
- Pregnancy: <140/90 / DBP not <80 (IIIC)

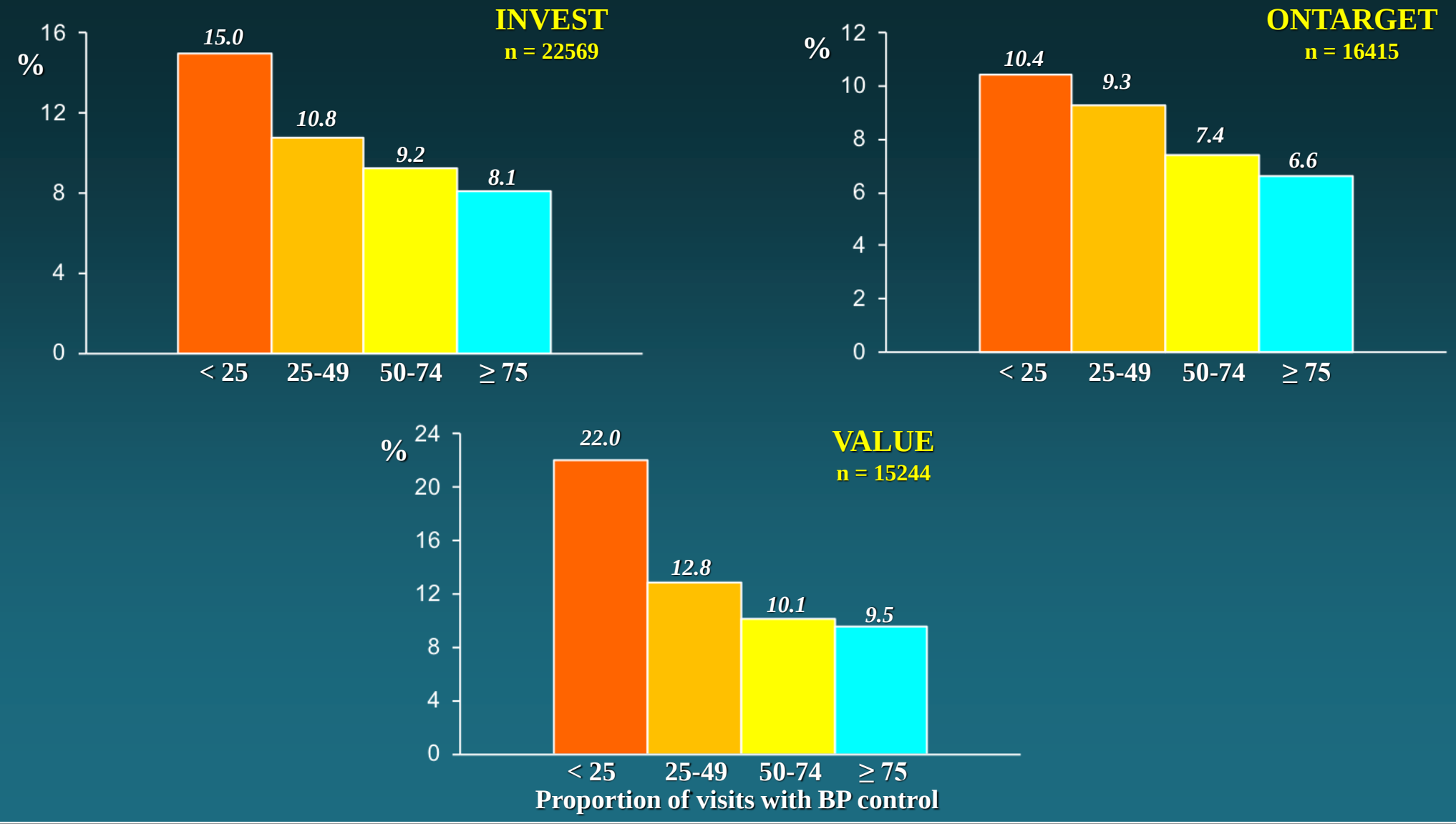
Stepwise Reduction of Coronary Perfusion Pressure in Hypertensives Patients Without and With LVH and Corresponding Flow in Great Cardiac Vein



16482a = 12719 M mod

Polese A et al., Circulation 1991; 83: 845

Incidence of CV events according to % of visits with BP control (<140/90 mmHg) after adjustment for baseline covariates and on-treatment mean BP



22197 M

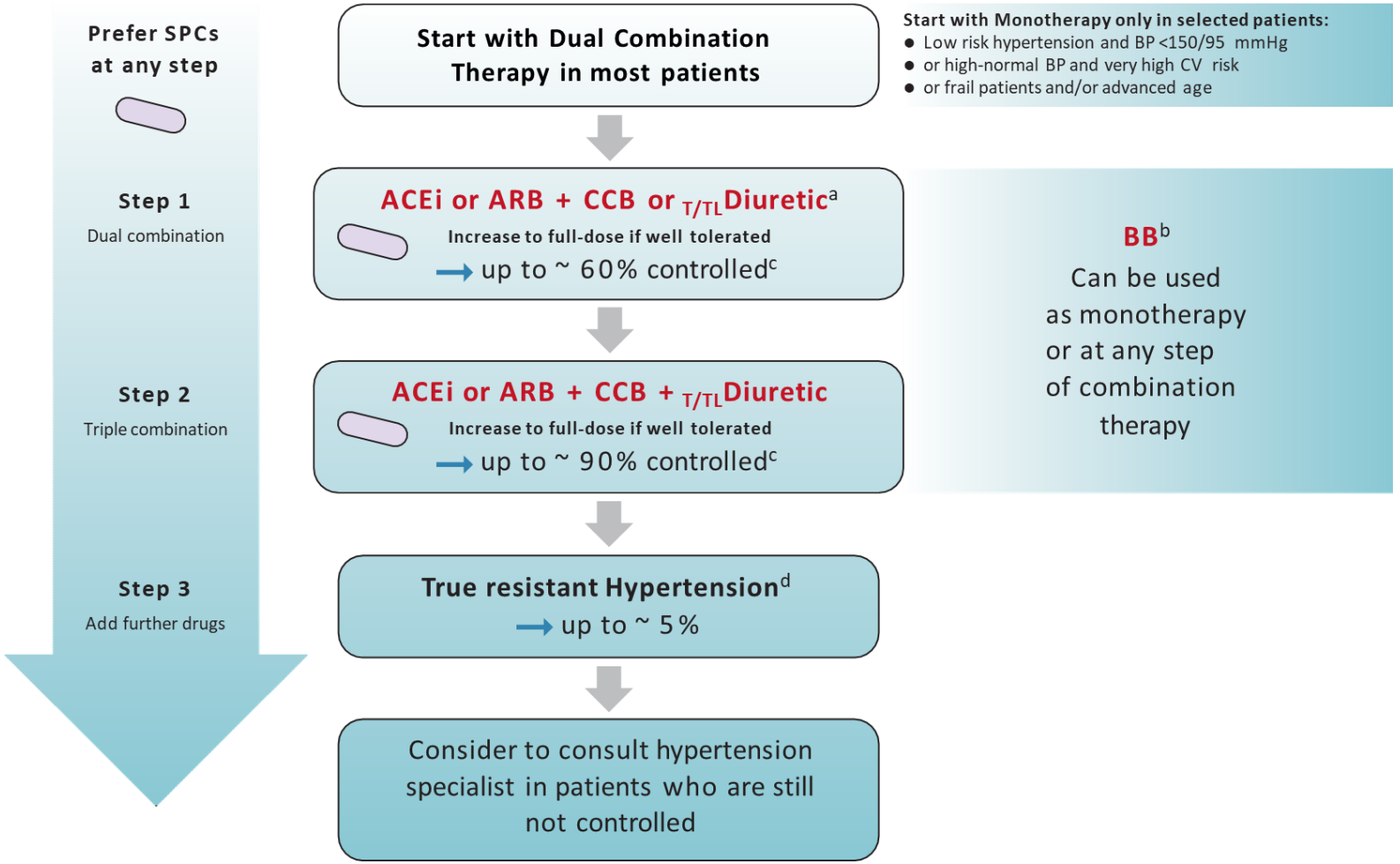
Mancia et al., Hypertension 2007; 50: 299; Circulation 2011; 124: 1727; Eur Heart J 2016; 37: 955

Antihypertensive treatment strategies discussed by 2023 ESH GLs

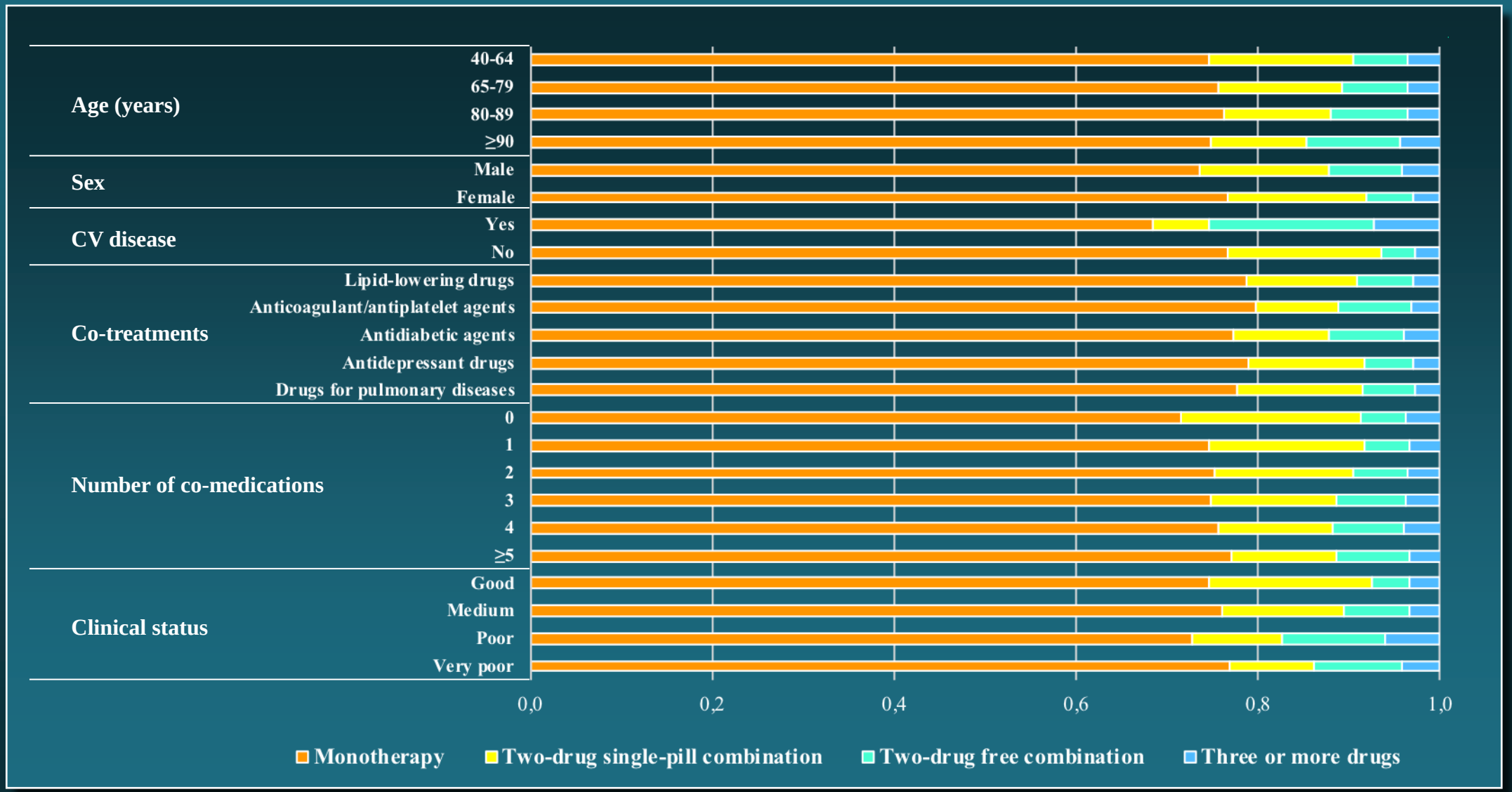
- Sequential monotherapy
- Combination treatment via the Step–Care approach
- **Initial combination therapy (two drugs, SPC)**
- Quadpill low doses (Research phase)
- Polypill (With/without aspirin)
- Renal denervation (True resistance hypertension)

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

General BP-lowering strategy in patients with hypertension



Use of initial antihypertensive monotherapy or combination therapy In the Lombardy population



22180 M

Savarè, Rea, Corrao, Mancia J Hypertens 2022,40,1768

Which drugs/treatment strategies should be used to reach BP targets?

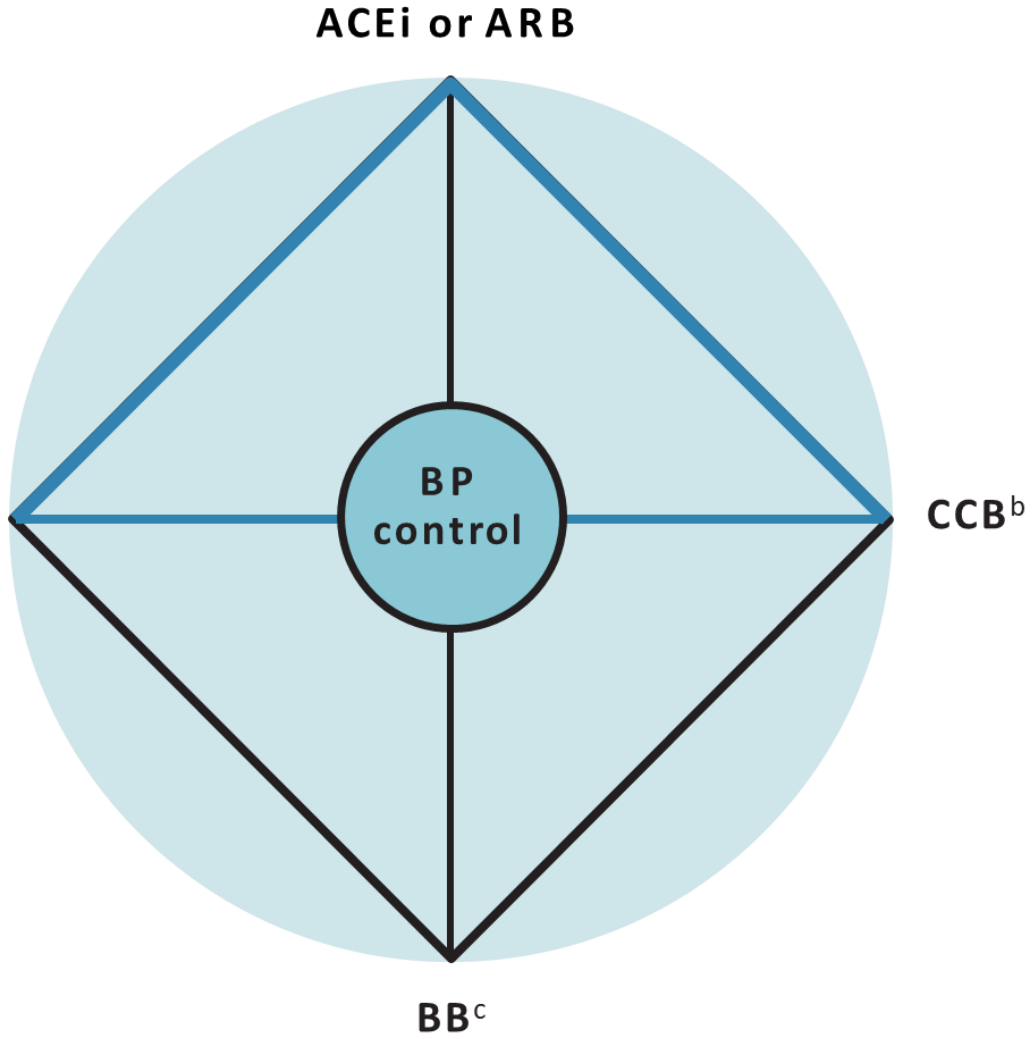
- The greater is the number of available effective antihypertensive drugs or drug combinations the greater is the chance to achieve the recommended BP target by tailored treatment

Mancia, Kreutz et al, ESH Guidelines, J Hypertens 2023

Drug classes for BP-lowering therapy

Prescribing patterns:

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



Additional drug classes

General antihypertensive therapy:

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

Special comorbidities:

- ARNi
- SGLT2i
- Non-Steroidal MRA

The 2018 ESC/ESH Hypertension Guidelines and beta-blocker (BB) treatment

In case of the following concomitant diseases:

- Symptomatic angina
- Postmyocardial infarction
- HFrEF (usable also in HFpEF)
- Aortic dissection
- Heart rate control (<80 beats/min)
- Atrial fibrillation
  - Prevention
  - Rhythm control
  - Heart rate control

Other cardiac indications for treatment with BB

- Acute coronary syndrome
- Chest pain
- LQTS
- HOCM, subaortic stenosis, septal thickness
- Uncontrolled rapid atrial fibrillation combined with diltiazem or verapamil to avoid toxic amiodarone
- Paroxysmal supraventricular arrhythmias, ventricular arrhythmias, other arrhythmias
- Post ICD implantation
- Attacks of tachycardia after PM implantation for tachy-brady syndrome
- After CABG, valve and other major cardiac surgery, consider in HF with medium range (HFmrEF) and HFpEF
- Unpleasant palpitations

Indication for BB treatment related to peripheral circulation

- Emergency, urgency, and parenteral administration of labetalol
- Perioperative hypertension
- Major noncardiac surgery
- Excessive pressor response to exercise and stress
- Hyperkinetic heart syndrome
- POTS
- Orthostatic hypertension
- Obstructive sleep apnea syndrome
- Peripheral arterial disease with claudication
- Portal hypertension, cirrhosis-related oesophageal varices and recurrent variceal bleeding
- Pregnancy related disorders

Other indications for BB treatment not directly related to the heart or peripheral circulation

- COPD
- Diabetes
- Thyrotoxicosis, hyperthyroidism, thyroiditis, and Graves' disease
- Hyperparathyroidism in uremia
- Migraine headache
- Essential tremor
- Glaucoma
- Performance anxiety and anxiety disorders
- Olympic sports (negative) as doping and sabotage
- Psychiatric disorders (posttraumatic stress)

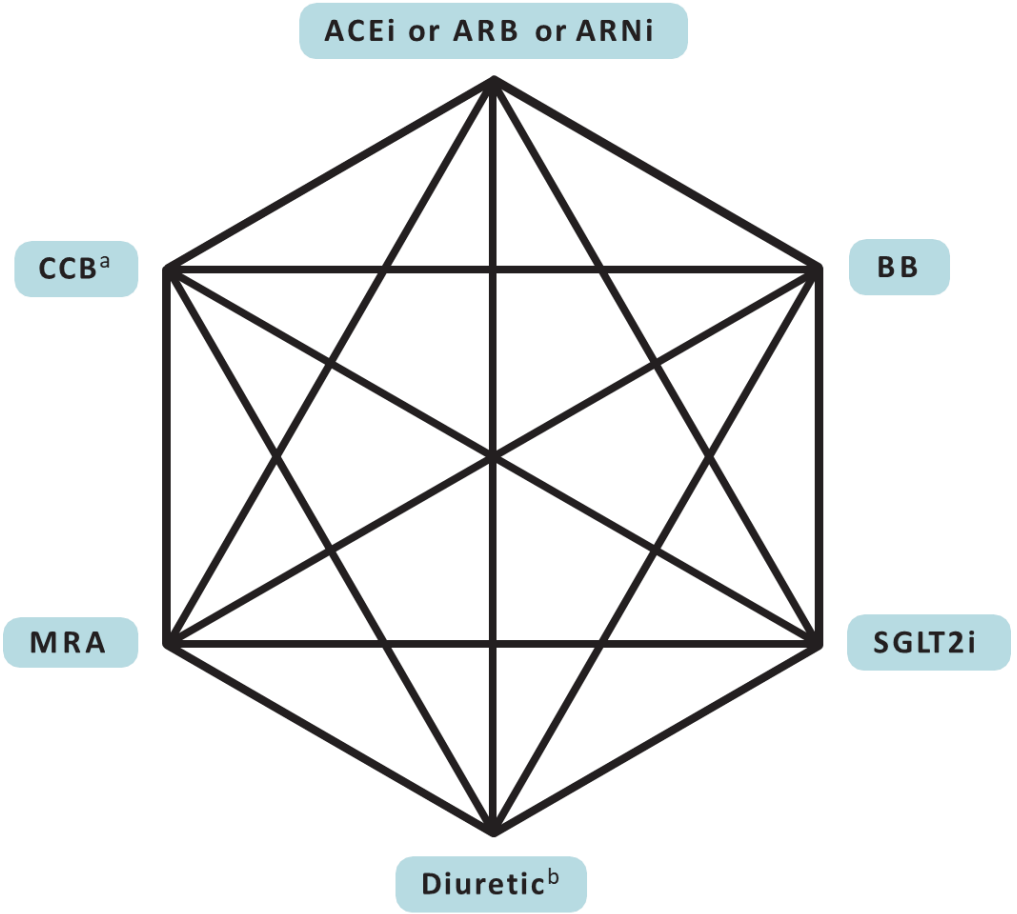
22202a M

Mancia, Kjeldsen, Kreutz, Pathak, Grassi, Esler. Hypertension 2022, 79, 1153

What is new and what has changed in the 2023 ESH arterial hypertension guidelines?

1. Modified and simplified criteria for evidence grading recommendations
2. Pathophysiological background of primary hypertension
3. Clinical BP measurements by different methods and in different settings and clinical conditions
4. Thorough description of office, ambulatory and home BP measurements and value in different demographic and clinical conditions
5. Upgrading of out-of-office BP measurements in hypertension management
6. New HMOD measurements and their clinical value in hypertension work-up
7. New CV risk factors and update on CV risk assessment
8. Update and comprehensive summary of secondary forms of hypertension
9. Update on lifestyle interventions
10. Update on threshold and targets for antihypertensive drug treatment, including their possible heterogeneity in demographic and clinical subgroups of patients
11. Confirmation of preferred use of RAS blockers, CCBs and thiazide/thiazide-like diuretics, and their various combinations for BP-lowering treatment. Inclusion of BBs among the major antihypertensive drugs
12. Update on available combination-based drug treatment strategies, including the quadpill and the polypill
13. Emphasis and update on the diagnosis and management of true-resistant hypertension
14. Update on use and position of renal denervation for antihypertensive treatment
15. Impact of hypertension and its treatment on cognitive dysfunction and dementia
16. Management of hypertension in older people according to frailty and functional level
17. Update on treatment of hypertension in HFrEF and HFpEF
18. New diagnostic approaches to diagnosis and treatment in hypertensive patients with AF
19. Update on treatment in CKD, including kidney transplantation
20. Update and novel treatment approaches to patients with type 2 diabetes
21. Epidemiology, diagnosis and treatment in different BP phenotypes
22. Diagnosis, treatment and follow-up of hypertension in demographic and clinical conditions not or only marginally addressed in previous guidelines:
    a. Children/adolescents and transition to adulthood
    b. Young patients
    c. Sex-related differences
    d. Pregnancy and puerperium
    e. Peripheral artery disease
    f. Aortic aneurysm
    g. Valvular heart disease
    h. Treatment of hypertension in acute cerebrovascular diseases
    i. Hypertensive emergencies/urgencies
    j. Perioperative hypertension
    k. Obesity
    l. COVID-19
    m. Chronic inflammatory diseases
    n. Hypertension in oncology
    o. Baroreflex failure and dysautonomia
    p. Glaucoma
23. Detailed recommendations on patients' follow-up strategies, including assessment and minimization of nonadherence and clinical inertia.
24. Mention of new potential approaches to the treatment of hypertension and containment of hypertension-related workload (tele-health, team-based treatment, role of pharmacists)

BP-lowering drugs in hypertension and heart failure



Suggested follow-up in patients with hypertension

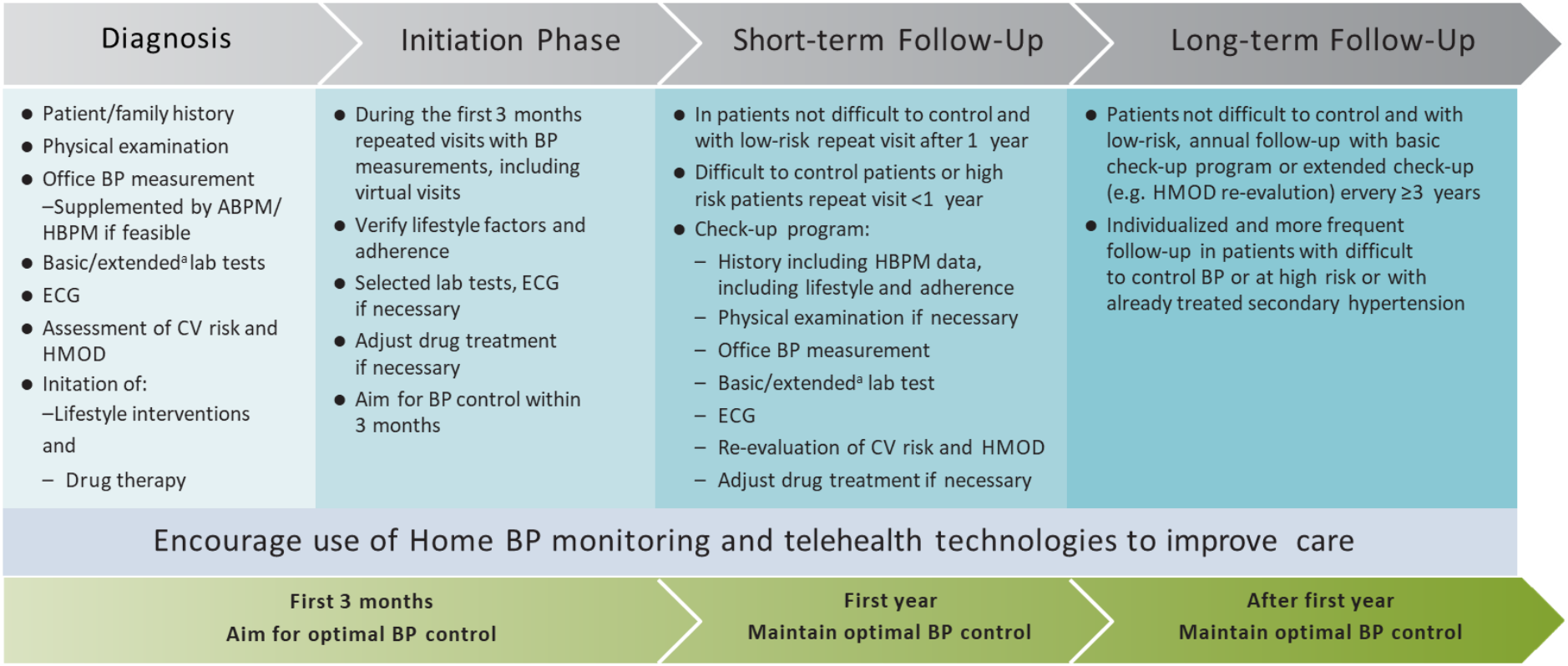


Table of contents

Guidelines should be clear, short and simple!

Gaps in the evidence

Epidemiology and risk

- Association between BP levels in children and adolescents and the risk for clinical CV and kidney outcomes
- Trajectories of BP and hypertension phenotypes throughout life and their association with CV and kidney outcomes
- The optimal SBP and DBP level at different time points in life
- Predictive ability and therapeutic responsiveness of HMOD
- Incremental benefit of more advanced risk estimation (SCORE2 => HMOD => vascular imaging/polygenic risk scores)
- Incremental accuracy of risk estimation by use of short and long term BP variability

Diagnostic procedures

- Benefits of screening
- Optimal interval for reassessment of BP in nonhypertensive patients
- Does the incremental prognostic ability of ABPM and HBPM substantially improve diagnosis and treatment?
- Association of ABPM and HBPM with CV and kidney outcomes by serial ABPM and HBPM measurements
- Validity and application of cuffless BP measurement devices
- Optimal BP measurement methods and interpretation of BP values in AF

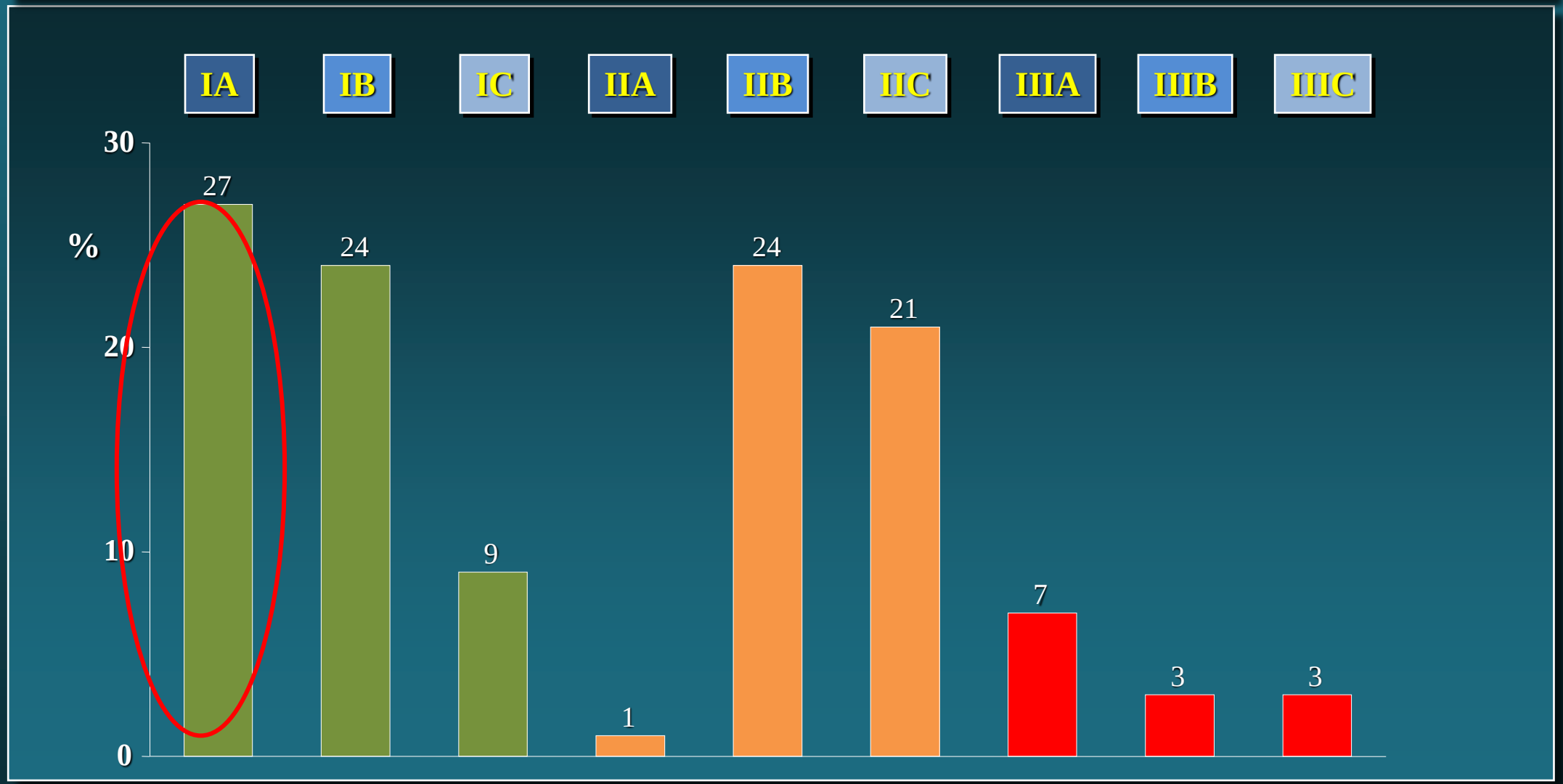
Treatment strategies

- Optimal time-point and BP level to initiate treatment in young patients
- Optimal and safe BP thresholds and targets in very old and frail patients
- Office vs out-of-office guided treatment on clinical outcomes
- BP thresholds and targets in low-to moderate risk individuals
- BP thresholds and targets in specific patient groups (LVH, ISH, CKD, people aged 80 years or older)
- BP thresholds and targets using ABPM and HBPM
- Treatment effect on clinical outcomes in MH and WCH
- BP- vs HBPM- guided antihypertensive treatment
- Effect of nocturnal BP reduction by treatment on clinical outcomes
- Effect of lifestyle interventions of CV outcomes
- Strategies to implement lifestyle recommendations effectively
- Choice of first-line antihypertensive agent and sequence of titration from a population and individual level perspective
- Effectiveness and implementation strategies for individualized antihypertensive treatment
- Effect of device-based therapy (RDN) on CV and kidney outcomes
- Effect of drug treatment of true resistant hypertension on CV and kidney events
- Effects of down-titration and treatment withdrawal in different clinical settings

Follow-up

- Optimal timing and frequency of follow-up
- Optimal BP measurement modality (OBP, HBPM, ABPM) for follow-up
- The role of cuff-less devices for monitoring
- Effect of distance monitoring and digital alert systems on clinical outcomes
- Evaluation of, and interventions to improve, adherence

Distribution of Combined Class / Level of Evidence in ESH/ESC Guidelines



Towsend &Mancia ,in Hypertension,a Braunwald Companion, Elsevier, 2018:459-468

2023 ESH Hypertension Guidelines

- About 200 pages
- More than 1700 references
- 22 Sections and more than 300 subsections
- 21 Figure
- 27 Tables
- 47 Sets of Recommendations
- About 50 sections on hypertension & comorbidities