ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
ΚΑΡΔΙΟΜΕΤΑΒΟΛΙΚΗ ΙΑΤΡΙΚΗ

Θεραπεία Αρτηριακής Υπέρτασης σε Προδιαβήτη και Διαβήτη

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Ειδικευόμενος Καρδιολογίας

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ΓΕΝΙΚΟ ΝΟΣΟΚΟΜΕΙΟ ΑΘΗΝΩΝ
ΙΠΠΟΚΡΑΤΕΙΟ

Δήλωση Σύγκρουσης Συμφερόντων

Καμία

Endless Guidelines…


ESH Guidelines

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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See related papers on pages 1873, 2072, 2074, 2088 and 2113

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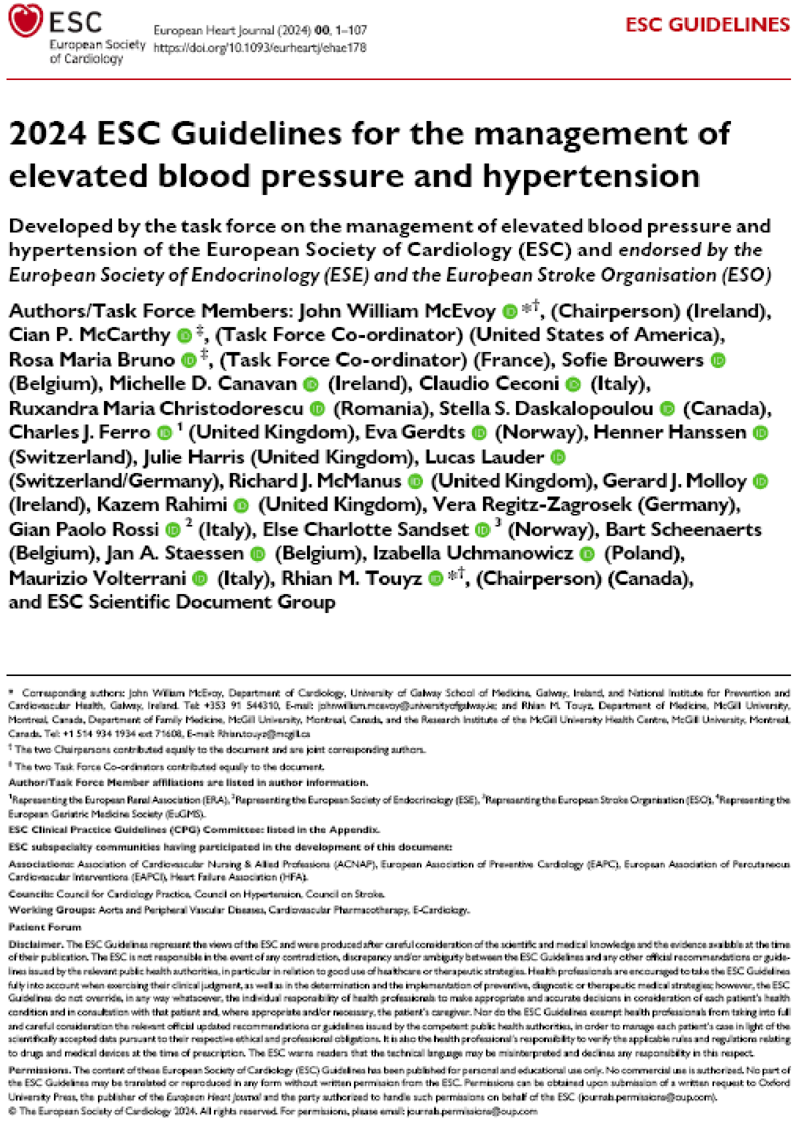
1874 www.jhypertension.com Volume 41 • Number 12 • December 2023


ESC European Society of Cardiology

European Heart Journal (2024) 00, 1–107
https://doi.org/10.1093/eurheartj/ehae178

ESC GUIDELINES

2024 ESC Guidelines for the management of elevated blood pressure and hypertension

Developed by the task force on the management of elevated blood pressure and hypertension of the European Society of Cardiology (ESC) and *endorsed by the European Society of Endocrinology (ESE) and the European Stroke Organisation (ESO)*

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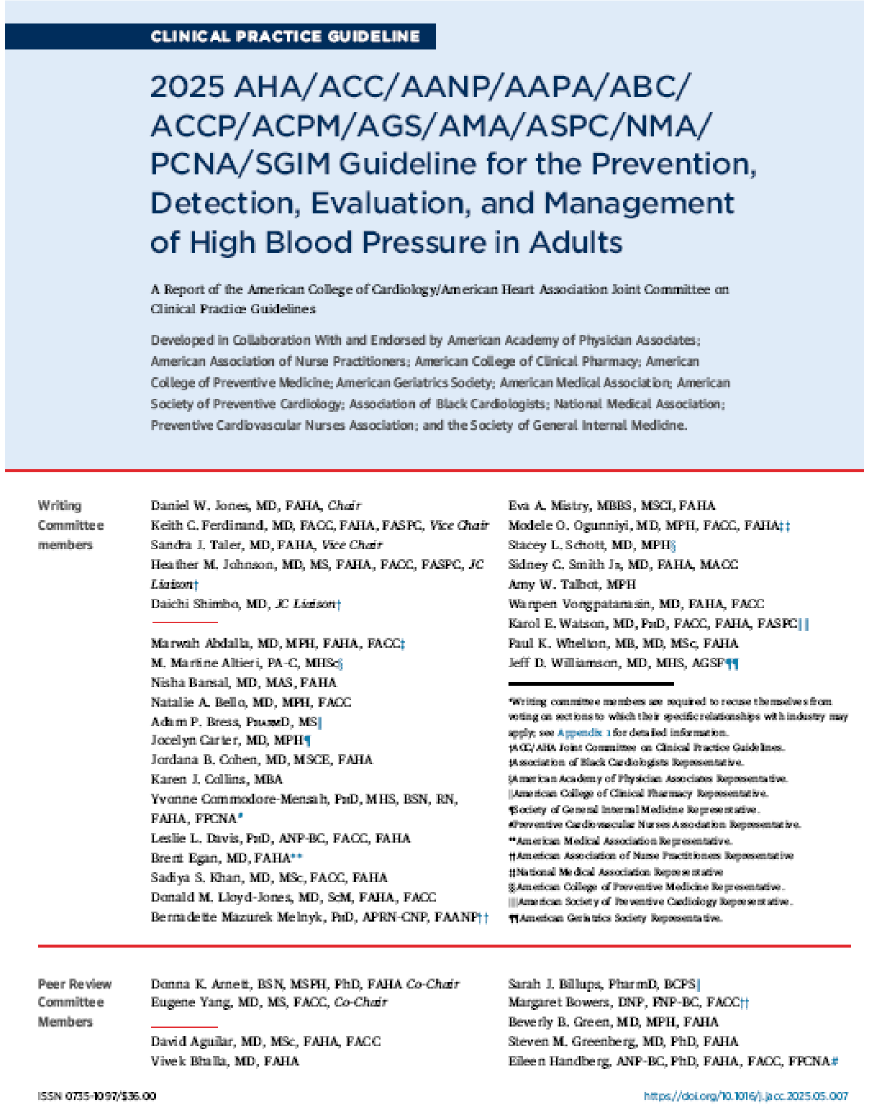
CLINICAL PRACTICE GUIDELINE

2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGIM 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 Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by American Academy of Physician Associates; American Association of Nurse Practitioners; American College of Clinical Pharmacy; American College of Preventive Medicine; American Geriatrics Society; American Medical Association; American Society of Preventive Cardiology; Association of Black Cardiologists; National Medical Association; Preventive Cardiovascular Nurses Association; and the Society of General Internal Medicine.

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Endless Guidelines…

ESC European Society of Cardiology
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ESC GUIDELINES

2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes

Developed by the task force on the management of cardiovascular disease in patients with diabetes of the European Society of Cardiology (ESC)

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‡ The two Task Force Co-ordinators contributed equally to the document.

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ESC Clinical Practice Guidelines (CPG) Committee: listed in the Appendix.

ESC subspecialty communities having participated in the development of this document:

Associations: Association of Cardiovascular Nursing & Allied Professions (ACNAP), Association for Acute CardioVascular Care (ACVC), European Association of Cardiovascular Imaging (EACVI), European Association of Preventive Cardiology (EAPC), European Association of Percutaneous Cardiovascular Interventions (EAPCI), European Heart Rhythm Association (EHRA), and Heart Failure Association (HFA).

Councils: Council for Cardiology Practice, Council on Hypertension.

Working Groups: Aorta and Peripheral Vascular Diseases, Cardiovascular Pharmacotherapy, Cardiovascular Surgery, Thrombosis.

Patient Forum

10. Cardiovascular Disease and Risk Management: Standards of Care in Diabetes—2026

*American Diabetes Association Professional Practice Committee for Diabetes**

Diabetes Care 2026;49(Suppl. 1):S216–S245 | https://doi.org/10.2337/dc26-S010

The American Diabetes Association (ADA) "Standards of Care in Diabetes" includes the ADA's current clinical practice recommendations and is intended to provide the components of diabetes care, general treatment goals and guidelines, and tools to evaluate quality of care. Members of the ADA Professional Practice Committee for Diabetes, an interprofessional expert committee, are responsible for updating the Standards of Care annually, or more frequently as warranted. For a detailed description of ADA standards, statements, and reports, as well as the evidence-grading system for ADA's clinical practice recommendations and a full list of Professional Practice Committee members, please refer to Introduction and Methodology. Readers who wish to comment on the Standards of Care are invited to do so at professional.diabetes.org/SOC.

For prevention and management of diabetes complications in children and adolescents, please refer to section 14, "Children and Adolescents."

Cardiovascular disease (CVD) is a broad term that includes atherosclerotic cardiovascular disease (ASCVD) and heart failure, two CVDs common among people with diabetes. ASCVD broadly refers to a history of acute coronary syndrome, myocardial infarction (MI), stable or unstable angina or coronary or other arterial revascularization, stroke, or peripheral artery disease (PAD) including aortic aneurysm and is the leading cause of morbidity and mortality in people with diabetes (1). Diabetes itself confers independent ASCVD risk, and among people with diabetes, all major cardiovascular risk factors, including hypertension, hyperlipidemia, and obesity, are clustered and common (2). Numerous studies have shown the efficacy of managing individual cardiovascular risk factors in preventing or slowing ASCVD in people with diabetes. Furthermore, large benefits are seen when multiple cardiovascular risk factors (glycemic, blood pressure, and lipid management) are addressed simultaneously, with evidence for long-lasting benefits (3–5). Notably, most of the evidence supporting interventions to reduce cardiovascular risk in diabetes comes from trials of people with type 2 diabetes. No randomized trials have been specifically designed to assess the impact of cardiovascular risk reduction strategies in people with type 1 diabetes. Therefore, the recommendations for cardiovascular risk factor modification for people with type 1 diabetes are extrapolated from data obtained in people with type 2 diabetes and are similar to those for people with type 2 diabetes.

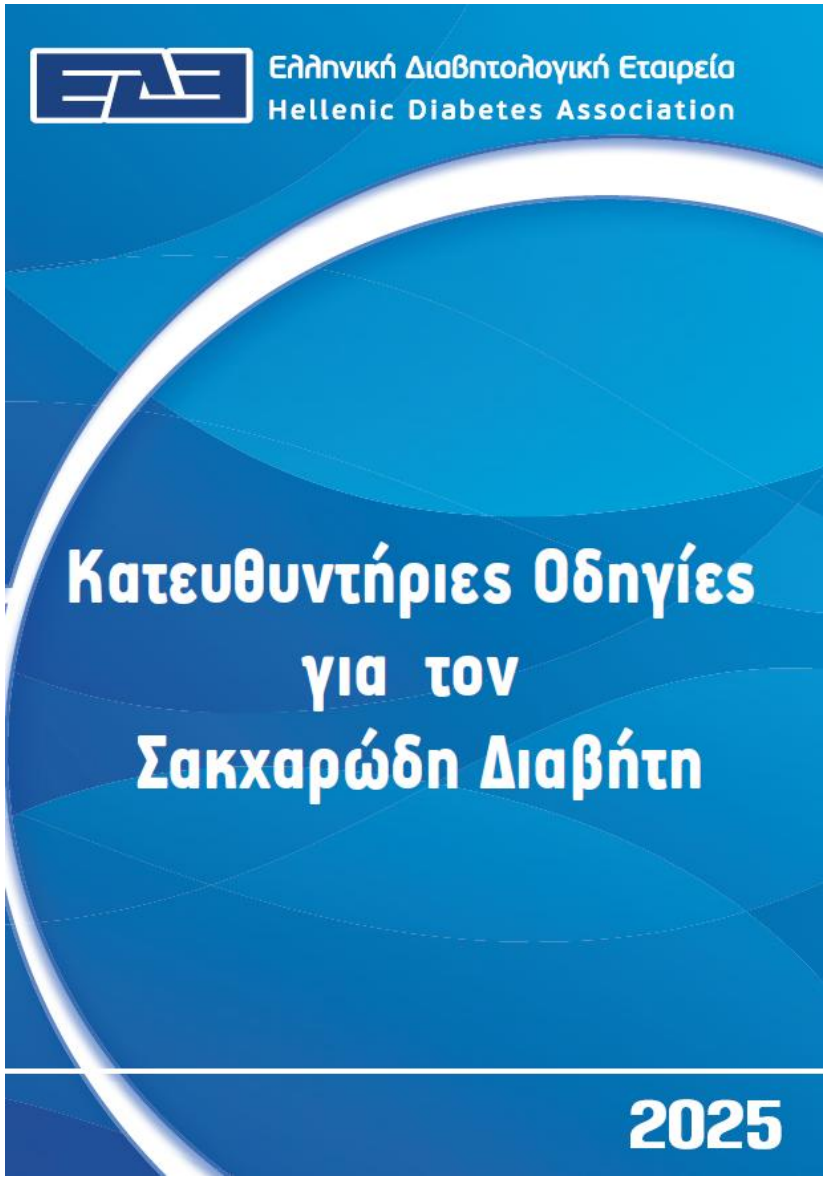
Under the current paradigm of comprehensive risk factor modification, cardiovascular morbidity and mortality have notably decreased in people with both type 1 and type 2 diabetes (1). Indeed, when all major cardiovascular risk factors are treated to within the target ranges, people with type 2 diabetes have risk of death, MI, or stroke similar to that of the general population (6). Despite these encouraging opportunities to reduce morbidity and mortality, only a minority of people with

**A complete list of members of the American Diabetes Association Professional Practice Committee for Diabetes can be found at https://doi.org/10.2337/dc26-SINT*

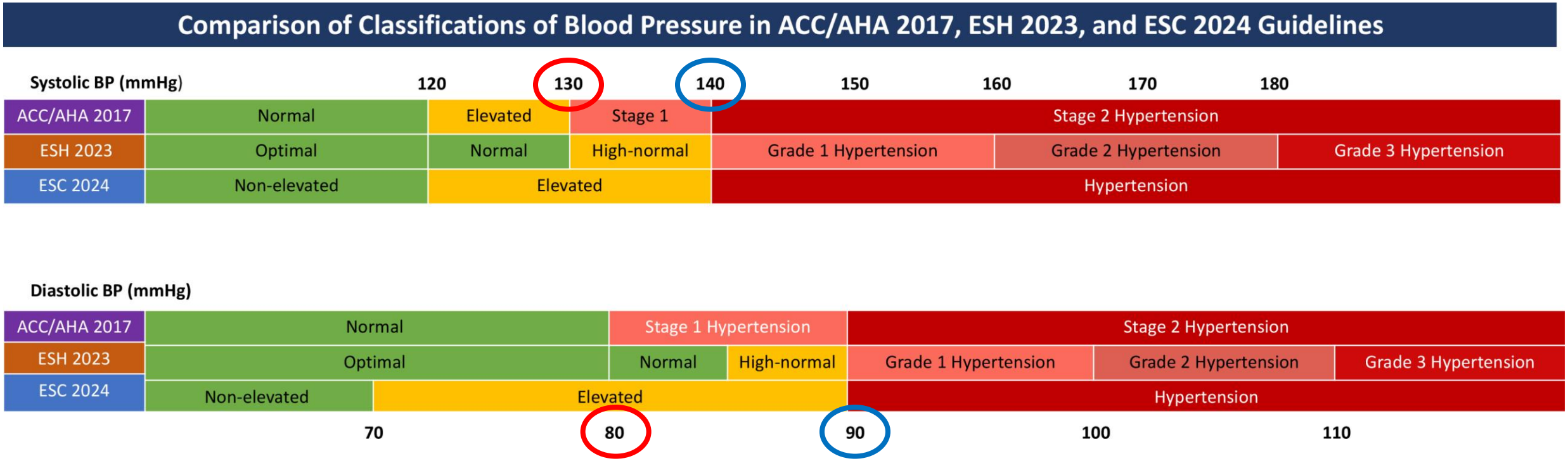
This section has received endorsement from the American College of Cardiology.

Duality of interest information for each contributor is available at https://doi.org/10.2337/dc26-SDIS.

Suggested citation: American Diabetes Association Professional Practice Committee for Diabetes. 10. Cardiovascular disease and risk management: Standards of Care in Diabetes—2026. Diabetes Care 2026;49(Suppl. 1):S216–S245

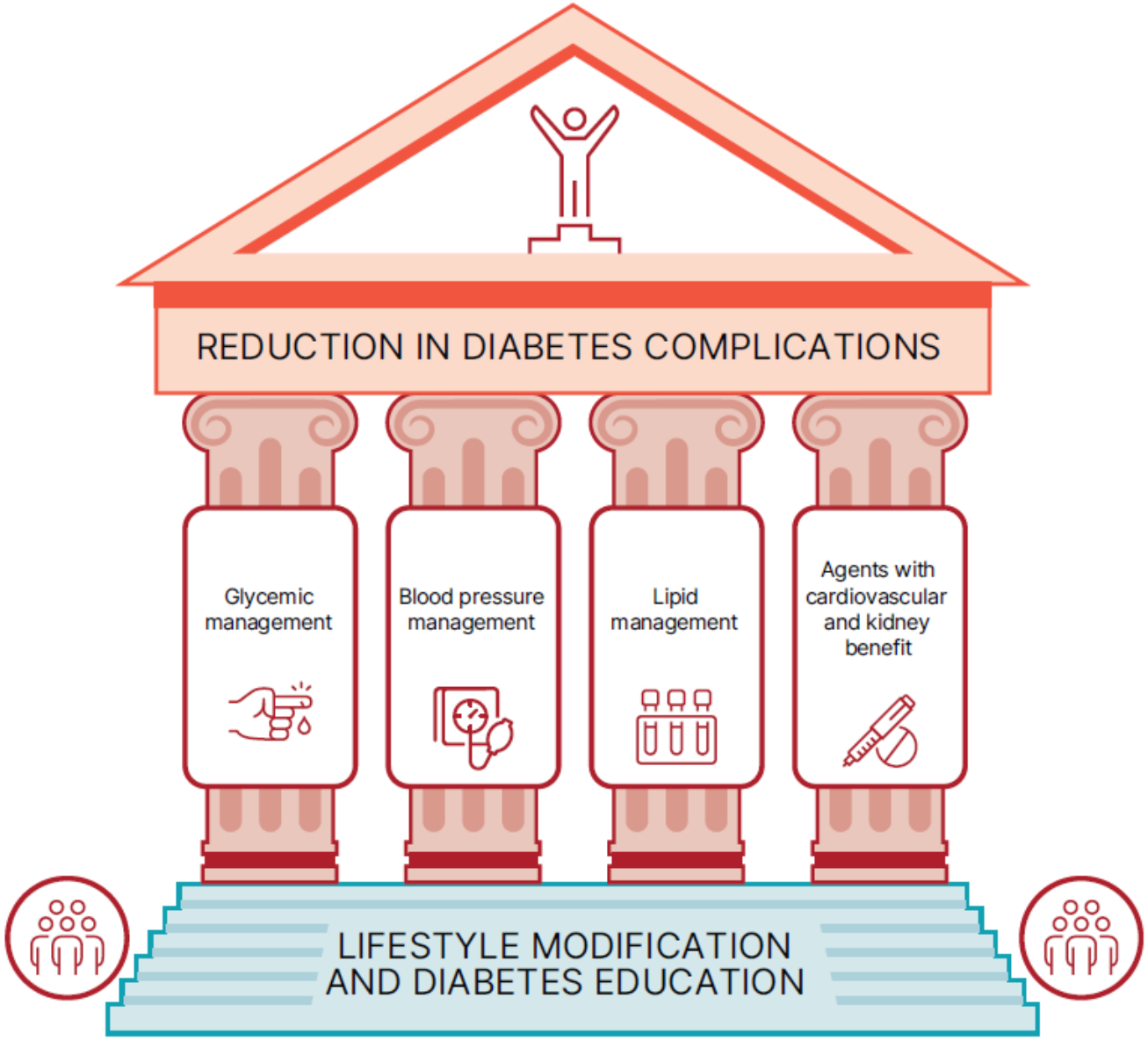


Hypertension - US vs Europe



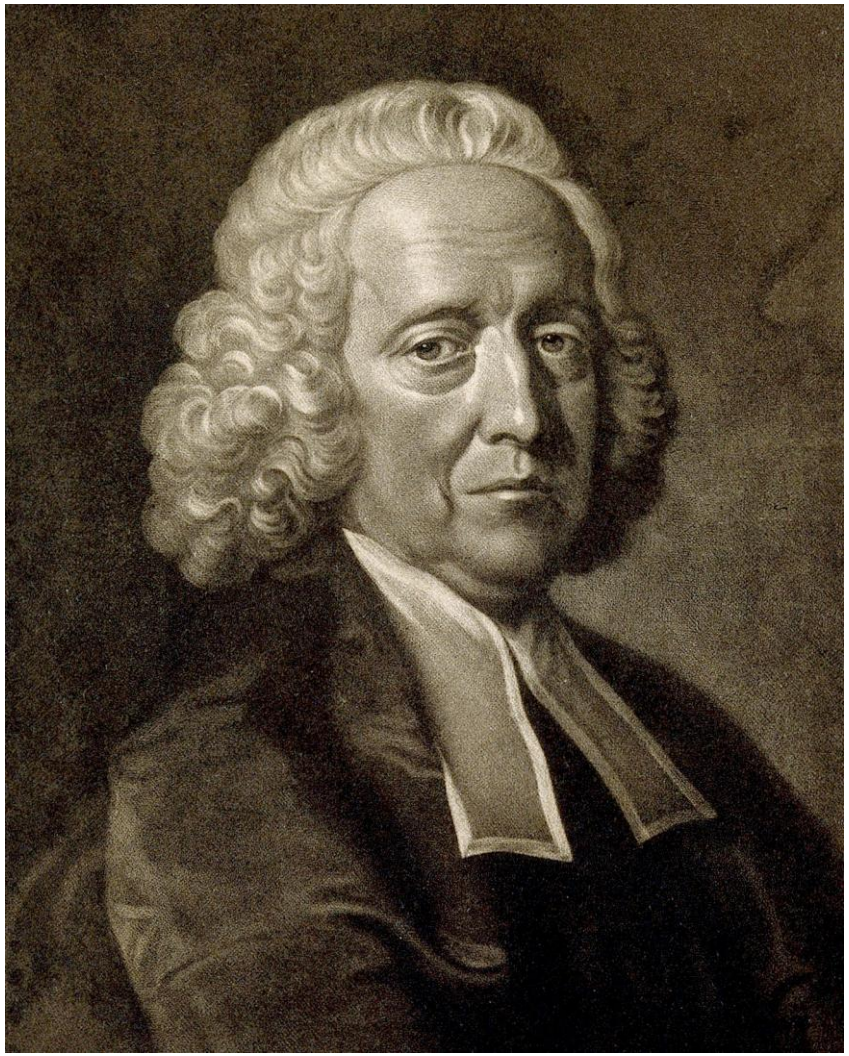
McCarthy CP, et al. Hypertension. 2025;82:432-444.

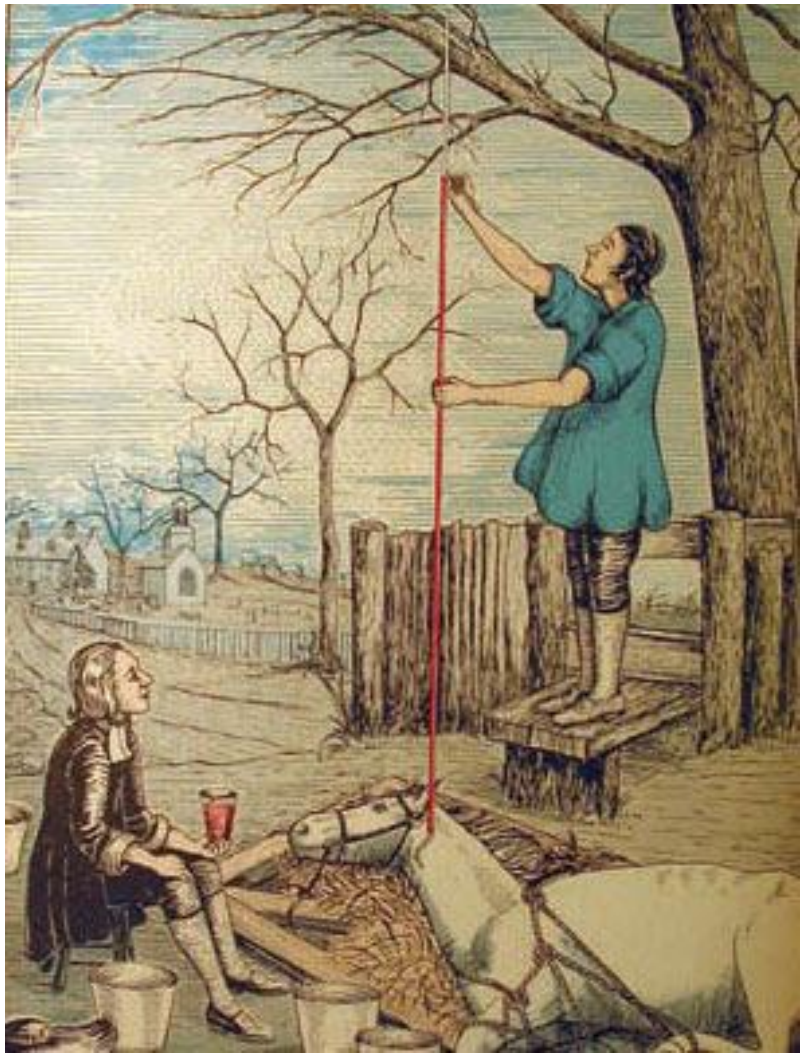
Hypertension… Does it matter?



American Diabetes Association Professional Practice Committee for Diabetes*. Diabetes Care. 2026;49(Supplement_1):S216-S245.

If you can’t measure it… It doesn’t exist…





“…would rise and fall at and after each pulse by 2, 3, or 4 inches…”

(Hales, 1738; 1)

Blood Pressure Monitoring – The 3 METHODS

Blood Pressure Monitoring – The 3 METHODS

Measure Blood Pressure - Diagnose

In Office

Office BP measurement (OBPM)

*SBP ≥140
and/or
DBP ≥90

Conditions

1. Use validated automated electronic upper-arm cuff device[a] (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.

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. 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

- Was used in outcome trials and provides the basis for diagnosis and BP targets.

Out-of-office

Home BP monitoring (HBPM)

*SBP ≥135
and/or
DBP ≥85

Conditions and Posture

1.-9. From OBPM apply also to HBPM.

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.

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.

Ambulatory BP monitoring (ABPM)

*24-h mean BP:
SBP ≥130
and/or
DBP ≥80

*Daytime (awake):
SBP ≥135 mmHg
and/or
DBP t≥85

*Nighttime (asleep):
SBP ≥120 mmHg
and/or
DBP ≥70

Conditions

1.-2. From OBPM applies also to ABPM.
3. Use fully automated devices programmed to record BP automatically at preselected intervals for 24 h.

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.

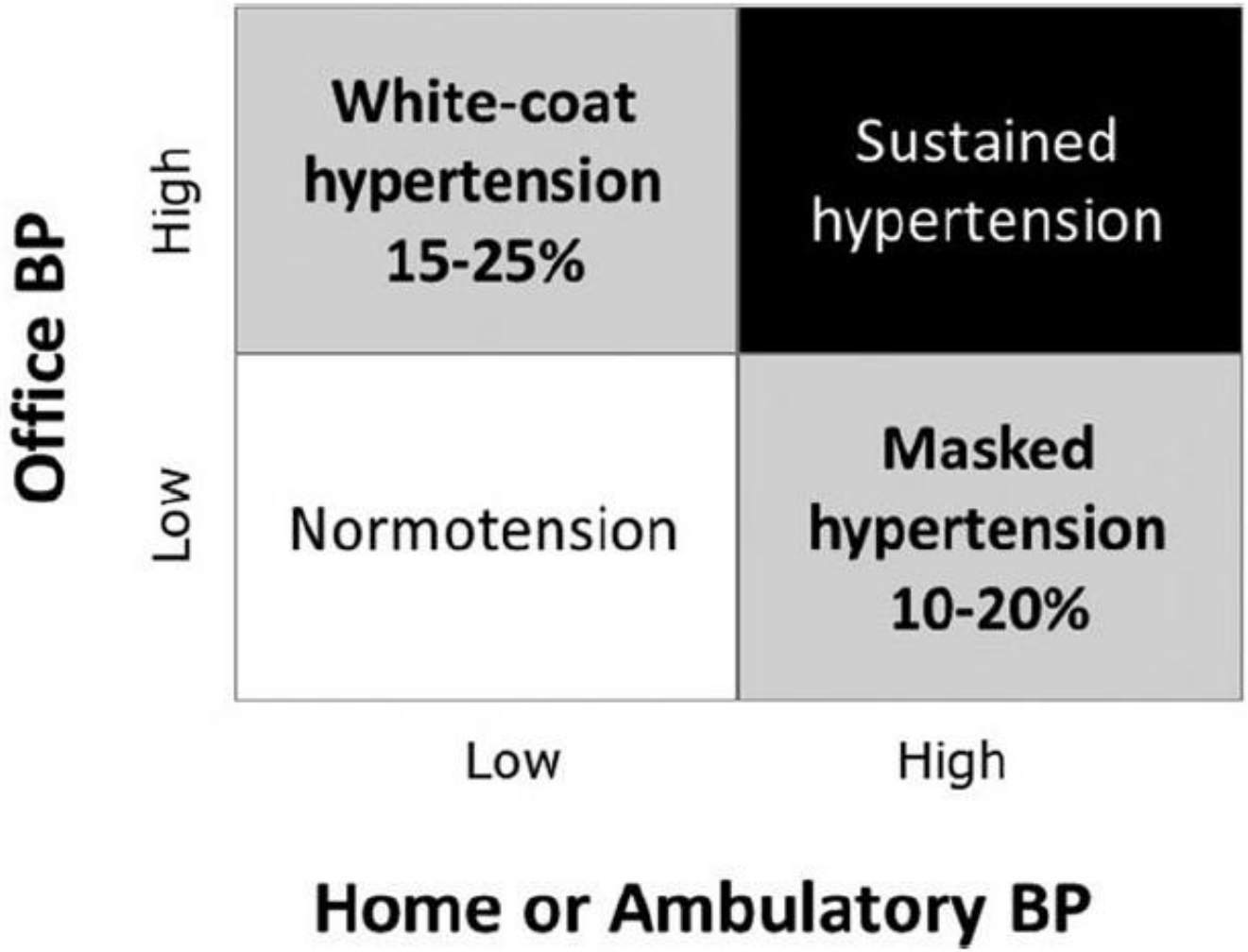
Relevance

- 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.

*Definition of hypertension [a]A device that takes triplicate readings automatically is preferred. [b]The selection of an appropriate cuff size is crucial. A smaller than required cuff overestimates BP and a larger underestimates BP. [c]Use of electronic devices allowing automated storage and data transfer is encouraged. [d]At 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. See also Table 1.

Kreutz R, et al. Eur J Intern Med. 2024;126:1-15.

Blood Pressure Phenotypes



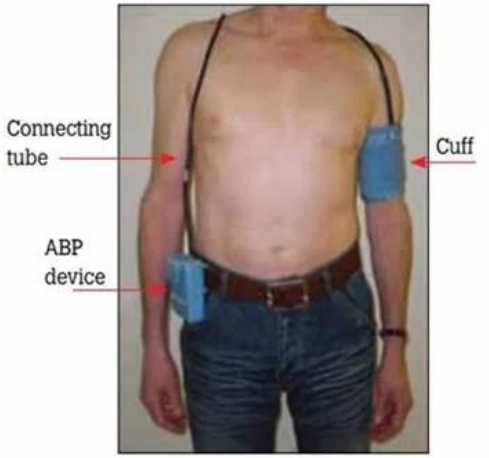
Stergiou GS, et al. J Hypertens. 2021 Jul 1;39:1293-1302.

Blood pressure monitoring devices…

Electronic digital sphygmomanometer

Manual aneroid sphygmomanometer

Manual mercury sphygmomanometer



Blood pressure monitoring devices… More…

(a)

(b)

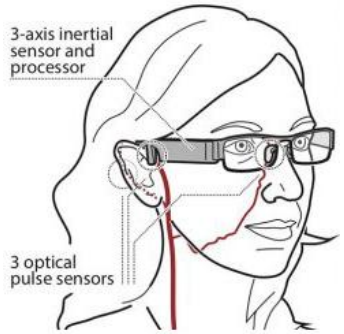
(c)

(d)

(e)

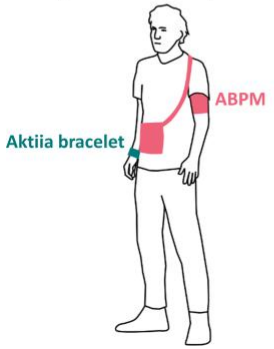
(f)

(g)



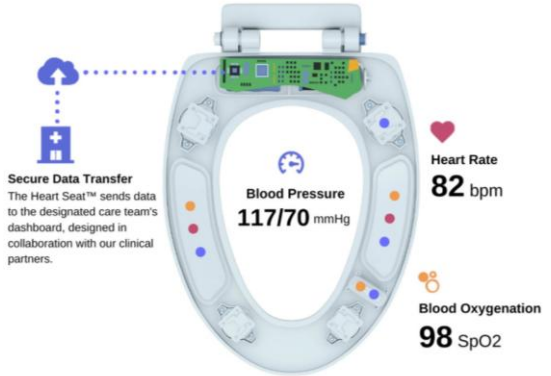
A. Aktiia bracelet

B. Experimental setup



C. Aktiia smartphone app

The Heart Seat



Validated blood pressure monitoring devices

STRIDE BP

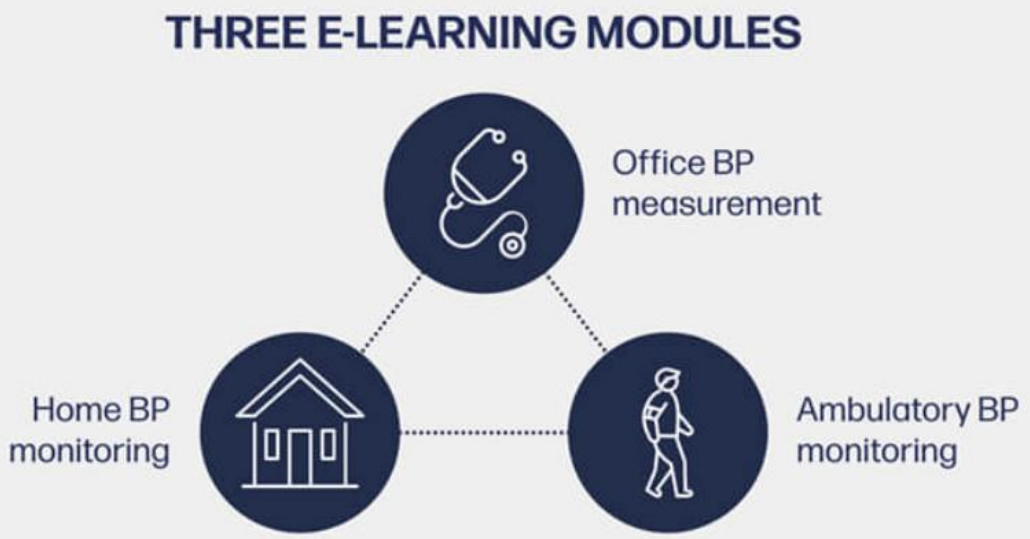
JOINT INITIATIVE WITH

European Society of Hypertension

International Society of Hypertension

World Hypertension League

About us | BP Monitors | Training | Literature | EN ES ZH FR



Certified Blood Pressure Measurement Course

Interactive e-learning platform with practical knowledge and certification

Read more →

www.stridebp.org

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Ambulatory

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Children

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Pregnancy

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www.stridebp.org

Validated blood pressure monitoring devices

Blood pressure monitors

Search e.g. device model

Preferred devices rules

* Equivalent/Identical devices rules

Market Availability | Population | Use | Manufacturer | Measurement Site | Measurement Method

Population: All | Adults | Pregnancy / Preeclampsia | Children | Obese | Elderly | Chronic kidney disease | Diabetics

Device Description	Measurement Site	Use	Population	
A&D TM-2420	Upper arm cuff	24h Ambulatory	Adults	Read more →
A&D TM-2430	Upper arm cuff	24h Ambulatory	Adults Children	Read more →
A&D TM-2440 *	Upper arm cuff	24h Ambulatory	Adults Diabetics	Read more →

www.stridebp.org

Validated blood pressure monitoring devices

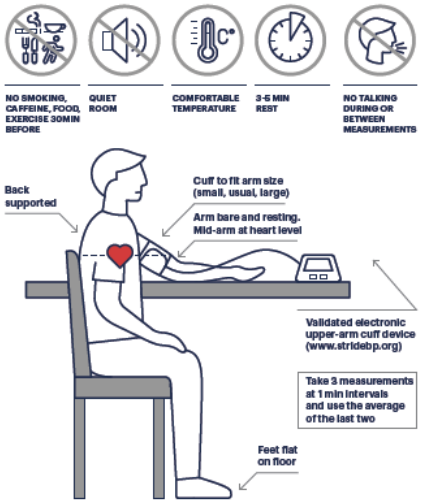
Office Blood Pressure Measurement

DEVICE

- Use validated automated electronic upper-arm cuff device.
- Prefer a device that takes triplicate readings automatically.
- If validated automated devices not available, use a manual electronic auscultatory device (LCD or LED display, or digital countdown, or good quality aneroid). Deflate at 2-3 mmHg/sec rate. Use 1st and 5th Korotkoff sound for systolic and diastolic BP.
- Annual maintenance of device is necessary.

CUFF

- Select cuff size according to the individual's arm circumference.
- *Automated electronic devices:* select cuff size according to device instructions. Each electronic device has its own cuffs, which are not interchangeable with those of other devices.
- *Manual auscultatory devices:* use a cuff with bladder length at 75-100% of individual's arm circumference and width 37-50%.



MEASUREMENTS

- 2-3 office visits at 1-4-week intervals are usually required.
- At initial visit measure BP in both arms.
- Measure standing BP in treated hypertensives when there are symptoms suggesting postural hypotension.

INTERPRETATION

Office BP (mmHg)	Diagnosis	Action
Normal-Optimal BP (<130/85)	Normotension highly probable	Remeasure after 1 year (6 months if other risk factors).
High-normal BP (130-139/85-89)	Consider masked hypertension	Perform home and/or ambulatory BP monitoring. If not available confirm with repeated office visits.
Hypertension Grade 1 (140-159/90-99)	Consider white-coat hypertension	
Hypertension Grade 2-3 (≥160/100)	Sustained hypertension highly probable	Confirm within a few days or weeks*. Ideally use home or ambulatory BP monitoring.

** Treat immediately if office BP is very high (e.g. ≥180/110 mmHg) and there is evidence of target organ damage or cardiovascular disease.*

Stergiou G, Palatini P, Parati G, O'Brien E, Januszewicz A, Lurbe E, Persu A, Mancia G, Kreutz R. 2021 European Society of Hypertension Practice Guidelines for Office and Out-of-office Blood Pressure Measurement. J Hypertens 2021; 39:1293-1302.

24h Ambulatory Blood Pressure Monitoring (ABPM)

DEVICE

- Use validated automated electronic upper-arm cuff device.
- Select cuff size according to device instructions.
- Each device has its own cuffs, which are not interchangeable with those of other devices.
- Annual maintenance of device is necessary.

IMPLEMENTATION

- Perform ABPM preferably on a routine working day.
- 10-15 min needed to initialise and fit the device.
- Frequency of measurement 20-30 min during day and night.
- Fit cuff on bare non-dominant arm.
- Select cuff size according to device instructions.
- Take a test measurement.
- Remove the monitor after 24 hours.

INSTRUCTIONS TO PATIENT

- Explain the device function and procedure.
- Advise to follow usual daily activities and to remain still with arm relaxed at each measurement.
- Advise not to drive. If this is necessary, then stop if possible or ignore measurement.
- Advise to avoid taking a shower or bath during ABPM.
- Provide a form to record sleeping times, drug intake, and any symptoms or problems during the recording.
- Mark the brachial artery so that if the cuff becomes loose the patient can refit it.
- Explain how to switch off the monitor in case of malfunctioning.

EVALUATION OF RECORDING

- Determine day (awake) and night (asleep) periods only according to patient's report.
- Repeat ABPM if <20 valid awake or <7 asleep BP readings.

INTERPRETATION

ABPM thresholds for hypertension diagnosis		
24h average:	≥130/80 mmHg	Primary criterion
Daytime (awake) average:	≥135/85 mmHg	Daytime hypertension[1]
Night-time (asleep) average:	≥120/70 mmHg	Night-time hypertension[1]
Asleep BP dip compared to awake BP (systolic and/or diastolic)		
Asleep BP fall	≥10%	Dipper[1,2]
	<10%	Non-dipper[1,2]

[1] Apply only if day/night BP is calculated using the individuals' sleeping times.
[2] The diagnosis must be confirmed with repeat ABPM.

Stergiou G, Palatini P, Parati G, O'Brien E, Januszewicz A, Lurbe E, Persu A, Mancia G, Kreutz R. 2021 European Society of Hypertension Practice Guidelines for Office and Out-of-office Blood Pressure Measurement. J Hypertens 2021; 39:1293-1302.

Home Blood Pressure Monitoring (HBPM)

DEVICE

- Use validated automated upper-arm cuff device.
- Select cuff size according to device instructions. Each device has its own cuffs, which are not interchangeable with those of other devices.
- Prefer devices with automated storage and averaging of multiple readings, or with mobile phone, PC or internet link connectivity enabling data transfer.
- Manual auscultatory devices, automated wrist devices, finger-cuff devices, wristband wearables and cuffless devices are generally not recommended.

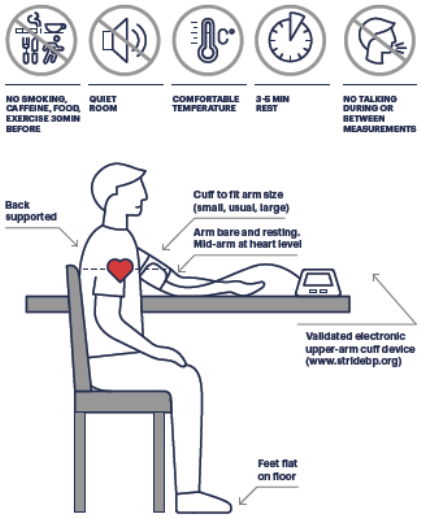
HBPM SCHEDULE

For diagnosis and before each office visit

- Measurements for 7 days (at least 3).
- Morning and evening measurements.
- Before drug intake if treated and before meals.
- Two measurements on each occasion with 1 min between them.

Long-term follow-up of treated hypertension

- Make duplicate measurements once or twice per week (most frequent) or per month (minimum requirement).



PATIENT TRAINING

- Use a reliable device.
- Conditions and posture for measurement.
- Measurement schedule before office visit and between visits.
- Interpretation of measurements. Inform patients about usual BP variability.
- Action if BP is too high or too low.

INTERPRETATION

- Prefer automated report and averaging of readings stored in device memory (or mobile). Otherwise, review readings reported in a logbook.
- Assess home measurements of 7 days (at least 3 days with at least 12 readings).
- Discard the first day and calculate the average of all the other readings.
- Average home BP ≥135/85 mmHg indicates hypertension. Individual readings have little diagnostic accuracy.

Stergiou G, Palatini P, Parati G, O'Brien E, Januszewicz A, Lurbe E, Persu A, Mancia G, Kreutz R. 2021 European Society of Hypertension Practice Guidelines for Office and Out-of-office Blood Pressure Measurement. J Hypertens 2021; 39:1293-1302.

www.stridebp.org; Stergiou GS, et al. J Hypertens. 2021;39:1293-1302.

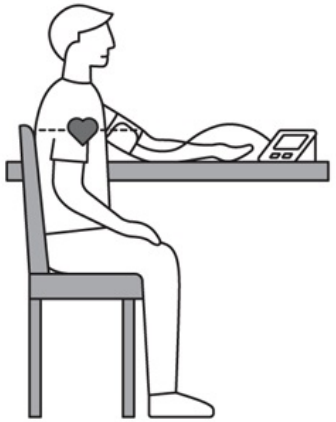
Validated blood pressure monitoring devices

Home Blood Pressure Monitoring

Name: _____

Date of birth: ____/____/_____ Device: _____

			Time	Systolic-Diastolic	(Pulse rate)
DAY 1 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
DAY 2 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
DAY 3 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
DAY 4 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
DAY 5 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)



Validated electronic arm-cuff device

Before each office visit:

→ 7-day monitoring (at least 3)

→ Morning and evening, before drug intake

→ After 5 min sitting rest

→ 2 measurements with 1 min interval

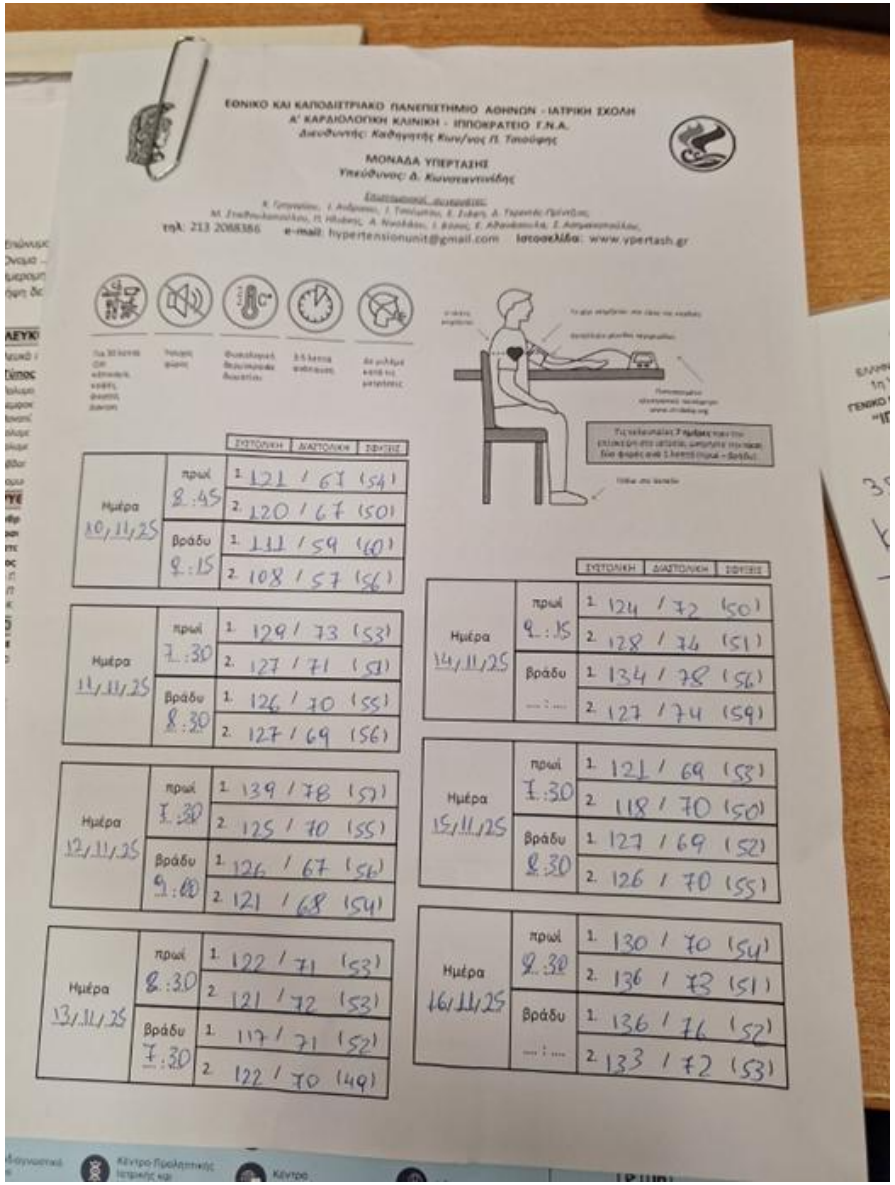
Long-term follow-up:
Duplicate measurement once or twice per week or month

			Time	Systolic-Diastolic	(Pulse rate)
DAY 6 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
DAY 7 ___/___/ 202_	Morning	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)
	Evening	1st	__:__	_____ - _____	(_____)
		2nd		_____ - _____	(_____)

WRITE HERE THE AVERAGE OF ALL READINGS EXCEPT OF DAY 1: _____ - _____ (_____)

www.stridebp.org; Stergiou GS, et al. J Hypertens. 2021;39:1293-1302.

Blood Pressure Monitoring – The 3 METHODS



Recording information

Start:	5/5/2025 8:15:00 πμ	Ambulatory Arterial Stiffness Index (AASI):	0,43
End:	6/5/2025 7:54:00 πμ	Morning Surge Index (MSI):	0,00
Duration:	23:39:00	Comfort mode max. pressure:	170
Successful readings:	57 (90,48%)	Child mode:	Disabled
Systolic > limits:	8,77%	Serial number:	90227-023013
Diastolic > limits:	17,54%		

Overall summary - Successful: 90,48% (57 of 63), Avg.: 118/75 mmHg

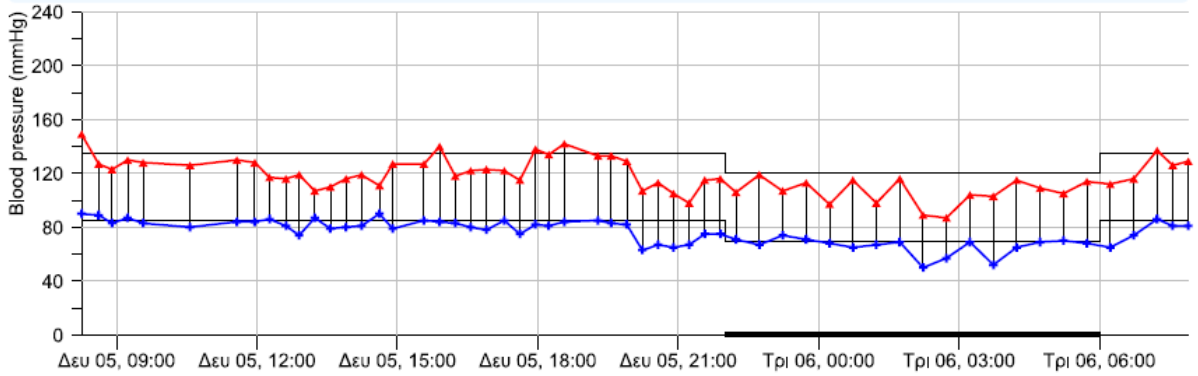
	Hourly avg.	Std. dev.	Min.	Max.	Dipping
Systolic (mmHg)	118	12,91	87 (02:44 Τρι)	149 (08:15 Δευ)	13,60 %
Diastolic (mmHg)	75	9,38	50 (02:14 Τρι)	90 (08:15 Δευ)	17,89 %
MAP (mmHg)	90	9,12	69	111	14,27 %
Pulse pressure (mmHg)	42	8,43	20	59	
Heart rate (BPM)	75	15,42	55	107	
Systolic > limits	8,77%	Diastolic > limits	17,54%	AASI: 0,43	MSI: 0,00

Wake periods summary - Successful: 87,23% (41 of 47), Normal values: 135/85 mmHg, Avg.: 124/80 mmHg

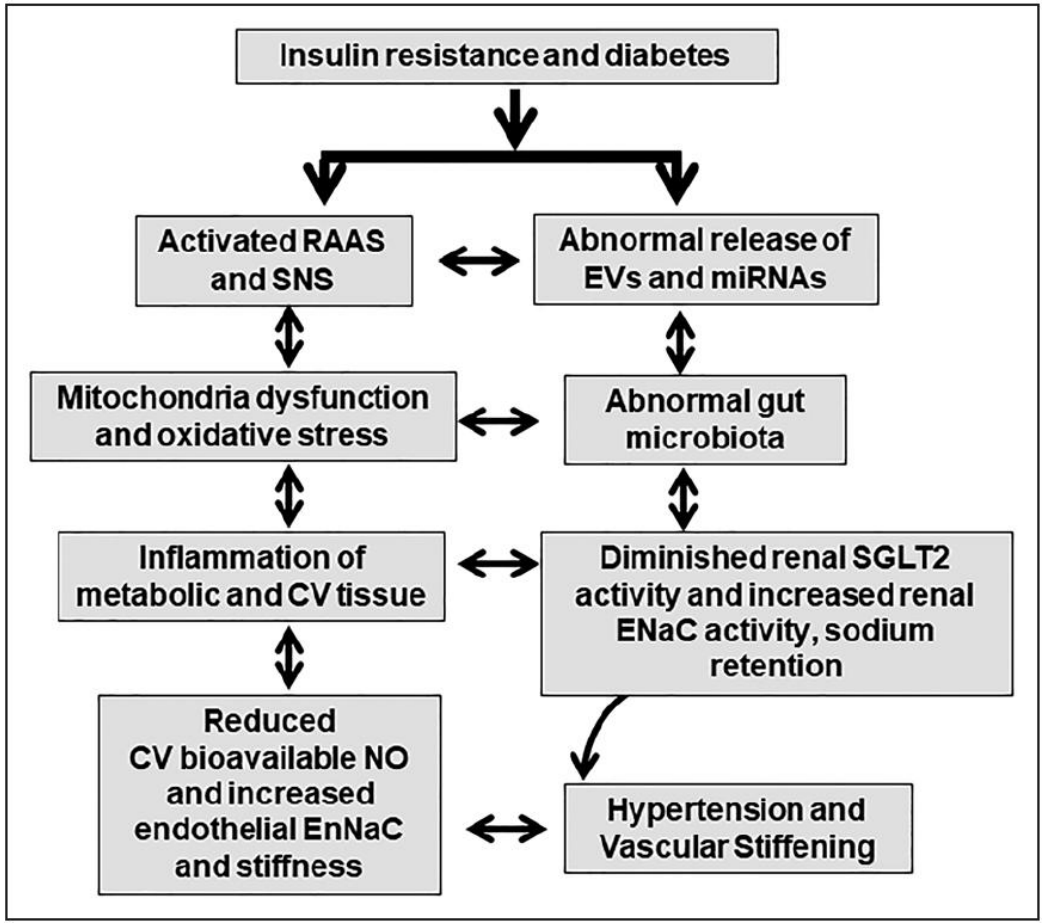
	Hourly avg.	Std. dev.	Min.	Max.
Systolic (mmHg)	124	10,92	98 (21:14 Δευ)	149 (08:15 Δευ)
Diastolic (mmHg)	80	6,84	63 (20:14 Δευ)	90 (08:15 Δευ)
MAP (mmHg)	94	7,18	77	111
Pulse pressure (mmHg)	43	8,56	20	59
Heart rate (BPM)	82	14,34	56	107
Systolic > 135 mmHg	12,20%	Diastolic > 85 mmHg		17,07%

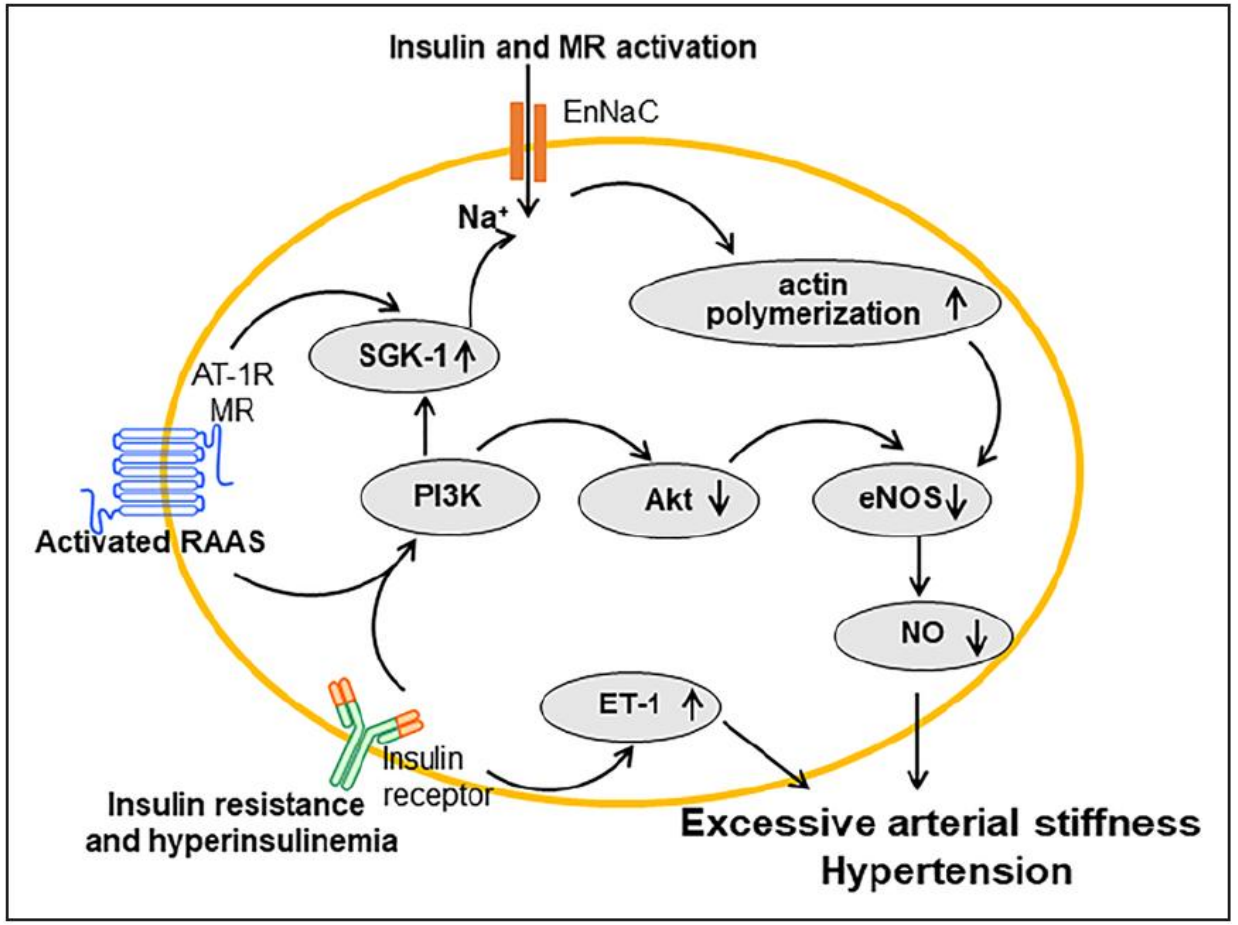
Sleep periods summary - Successful: 100,00% (16 of 16), Normal values: 120/70 mmHg, Avg.: 106/66 mmHg

	Hourly avg.	Std. dev.	Min.	Max.
Systolic (mmHg)	106	9,53	87 (02:44 Τρι)	119 (22:44 Δευ)
Diastolic (mmHg)	66	6,84	50 (02:14 Τρι)	74 (23:14 Δευ)
MAP (mmHg)	81	5,85	69	89
Pulse pressure (mmHg)	40	8,08	29	52
Heart rate (BPM)	62	4,65	55	69
Systolic > 120 mmHg	0,00%	Diastolic > 70 mmHg		18,75%



Hypertension – Diabetes interplay





Jia G, et al. Hypertension. 2021;78:1197-1205.

Masked Hypertension and Diabetes

Editorial > Blood Press. 2022 Dec;31(1):207-209. doi: 10.1080/08037051.2022.2107483.

Masked hypertension in type 2 diabetes: never take normotension for granted and always assess out-of-office blood pressure

Krzysztof Narkiewicz [1], Sverre E Kjeldsen [2], Brent M Egan [3], Reinhold Kreutz [4], Michel Burnier [5]

Affiliations + expand

PMID: 35941816 DOI: 10.1080/08037051.2022.2107483

Free article

Narkiewicz K, et al. Blood Press. 2022;31:207-209.

Nocturnal Hypertension and Diabetes (also Pulse Pressure)

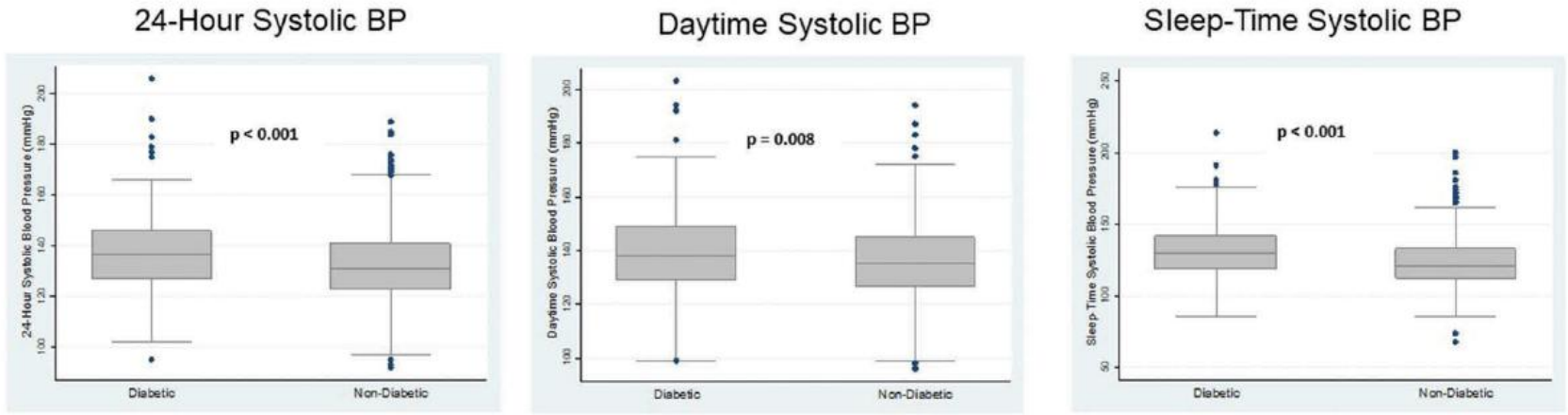


Figure 1. 24-hour, daytime, and sleep-time systolic blood pressure.

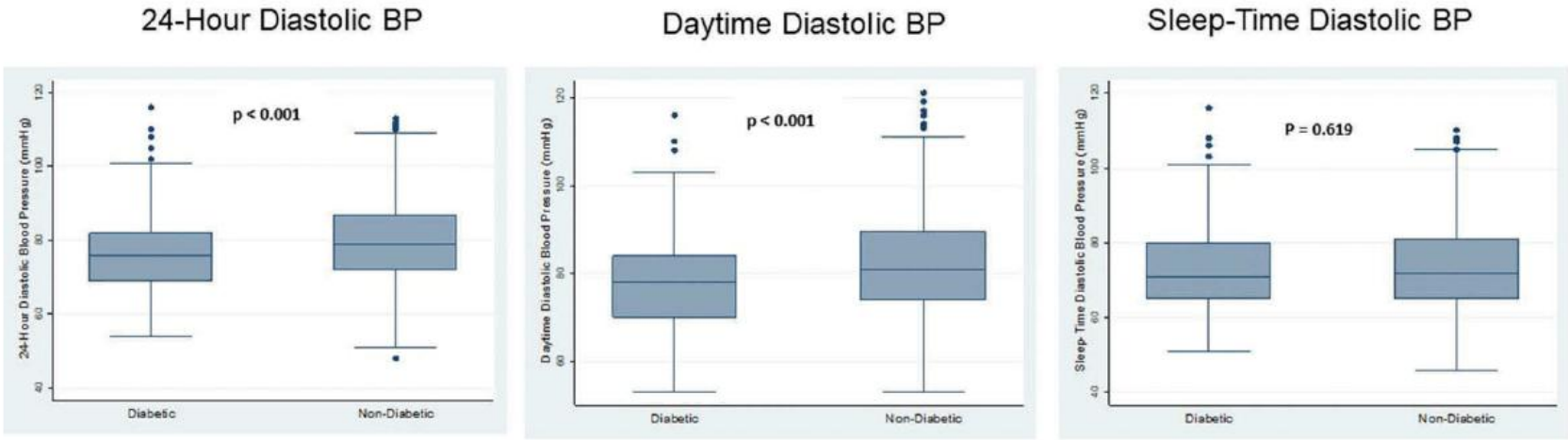


Figure 2. 24-hour, daytime, and sleep-time diastolic blood pressure.

Aung AT, et al. 2020;132:346-351.

Hypertension – Diabetes and CV risk

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[a]	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	60–69 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/SCOR2-OP

Mancia G, et al. J Hypertens. 2023;41:1874-2071.

Hypertension – Diabetes and CV risk

Table 7 Cardiovascular risk categories in type 2 diabetes

Very high CV risk	Patients with T2DM with: • Clinically established ASCVD or • Severe TOD or • 10-year CVD risk ≥20% using SCORE2-Diabetes
High CV risk	Patients with T2DM not fulfilling the very high-risk criteria and a: • 10-year CVD risk 10 to <20% using SCORE2-Diabetes
Moderate CV risk	Patients with T2DM not fulfilling the very high-risk criteria and a: • 10-year CVD risk 5 to <10% using SCORE2-Diabetes
Low CV risk	Patients with T2DM not fulfilling the very high-risk criteria and a: • 10-year CVD risk <5% using SCORE2-Diabetes

Marx N, et al. Eur Heart J. 2023;44:4043-4140.

Hypertension – Diabetes and CV risk

ESC European Society of Cardiology

European Heart Journal (2023) **44**, 2544–2556
https://doi.org/10.1093/eurheartj/ehad260

CLINICAL RESEARCH
Epidemiology, prevention, and health care policies

SCORE2-Diabetes: 10-year cardiovascular risk estimation in type 2 diabetes in Europe

SCORE2-Diabetes Working Group and the ESC Cardiovascular Risk Collaboration[*†]

Received 10 June 2022; revised 6 April 2023; accepted 17 April 2023; online publish-ahead-of-print 29 May 2023

See the editorial comment for this article 'Risk prediction in patients with diabetes: is SCORE 2D the perfect solution?', by L. Rydén *et al.*, https://doi.org/10.1093/eurheartj/ehad263.

Abstract

Aims To develop and validate a recalibrated prediction model (SCORE2-Diabetes) to estimate the 10-year risk of cardiovascular disease (CVD) in individuals with type 2 diabetes in Europe.

Methods and results SCORE2-Diabetes was developed by extending SCORE2 algorithms using individual-participant data from four large-scale datasets comprising 229 460 participants (43 706 CVD events) with type 2 diabetes and without previous CVD. Sex-specific competing risk-adjusted models were used including conventional risk factors (i.e. age, smoking, systolic blood pressure, total, and HDL-cholesterol), as well as diabetes-related variables (i.e. age at diabetes diagnosis, glycated haemoglobin [HbA1c] and creatinine-based estimated glomerular filtration rate [eGFR]). Models were recalibrated to CVD incidence in four European risk regions. External validation included 217 036 further individuals (38 602 CVD events), and showed good dis-

Hypertension – Diabetes and CV risk

[1305]. Furthermore, in patients with type 2 diabetes, the prevalence of MH is much higher than in the general population [1306]. Finally, type 2 diabetes is associated with a higher rate of resistant hypertension and is recognized to be one of the most important factors that can make achievement of BP control difficult [538]. The presence of diabetes mellitus in patients with hypertension has an important influence on CV risk "per se", regardless of the concomitance of HMOD, CVD or CKD. Only diabetic patients with well controlled, short-standing duration of the disease (less than 10 years) with no evidence of HMOD and no additional CV risk factors are categorized as being at moderate risk [33]. Otherwise patients with diabetes are considered to be at high CV risk or even at very-high risk in the presence of established CVD or advanced CKD. Consequently, hypertensive patients with diabetes are candidates for immediate initiation of antihypertensive drug treatment together with lifestyle interventions.

Mancia G, et al. J Hypertens. 2023;41:1874-2071.

Hypertension – Diabetes and CV risk

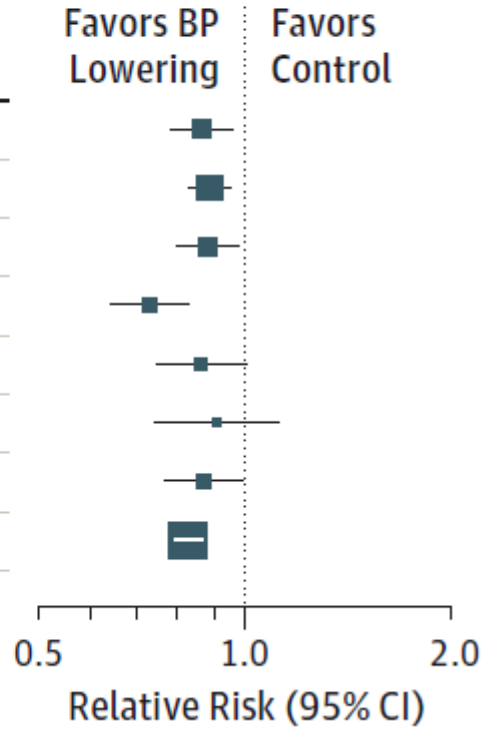
Patients with type 2 diabetes mellitus			
Patients with type 1 DM above **40 years of age may also be classified** according to these criteria	Patients with well controlled short-standing DM (e.g. <10 years), no evidence of TOD and no additional ASCVD risk factors	**Moderate-risk**	N/A
	Patients with DM without ASCVD and/or **severe TOD, and not fulfilling the moderate** risk criteria.	**High-risk**	Residual 10-year CVD risk estimation after general prevention goals (e.g. with the ADVANCE risk score or **DIAL model). Consider lifetime CVD risk and benefit** estimation of risk factor treatment (e.g. DIAL model).
	Patients with DM with established ASCVD and/or severe TOD:[87, 93-95] • eGFR <45 mL/min/1.73 m^2 irrespective of albuminuria • eGFR 45-59 mL/min/1.73 m^2 and microalbuminuria (ACR 30 -300 mg/g) • Proteinuria (ACR >300 mg/g) • Presence of microvascular disease **in at least 3 different sites (e.g.** microalbuminuria plus retinopathy plus neuropathy)	**Very high-risk**	Residual 10-year CVD risk estimation after general prevention goals (e.g. with the SMART risk score for established CVD or with the ADVANCE risk score or with the DIAL model). Consider lifetime CVD risk and **benefit estimation of risk factor treatment (e.g. DIAL** model).

Visseren FLJ, et al. Eur Heart J. 2021;42:3227-3337.

Blood Pressure Lowering in Diabetes

Figure 2. Standardized Associations Between 10-mm Hg Lower Systolic BP and All-Cause Mortality, Macrovascular Outcomes, and Microvascular Outcomes in Diabetic Patients

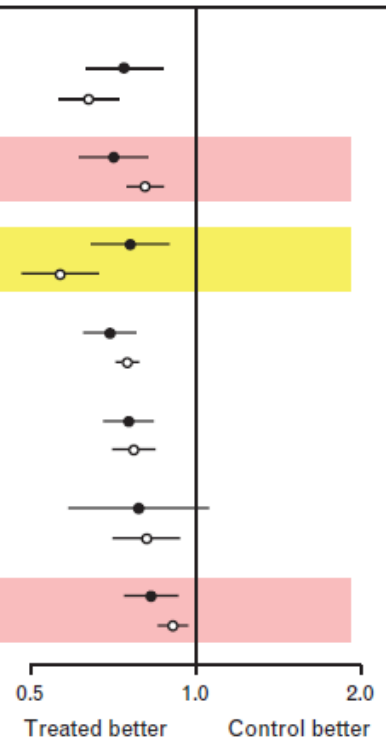
Outcome	No. of Studies	BP Lowering		Control		Relative Risk (95% CI)
		Events	Participants	Events	Participants	
Mortality	20	2334	27693	2319	25864	0.87 (0.78-0.96)
Cardiovascular disease	17	3230	25756	3280	24862	0.89 (0.83-0.95)
Coronary heart disease	17	1390	26150	1449	24761	0.88 (0.80-0.98)
Stroke	19	1350	27614	1475	26447	0.73 (0.64-0.83)
Heart failure	13	1235	21684	1348	20791	0.86 (0.74-1.00)
Renal failure	9	596	19835	560	18912	0.91 (0.74-1.12)
Retinopathy	7	844	9781	905	9566	0.87 (0.76-0.99)
Albuminuria	7	2799	13804	3163	12821	0.83 (0.79-0.87)



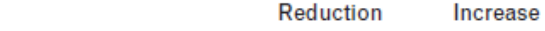
Emdin CA, et al. JAMA. 2015;313:603-15.

Blood Pressure Lowering in Diabetes

Outcome	DM status	Trials (*n*)	SBP/DBP diff (mmHg)	Events (*n*/patients) Treated	Events (*n*/patients) Controls	I^2	Standardized RR (95% CI)	*P*–value interaction
Stroke	DM	30	–5.8/–2.6	1184/25989	1342/25716	15%	0.73 (0.63–0.86)	0.17
	noDM	31	–7.4/–3.4	2232/77817	2931/83391	45%	0.65 (0.58–0.75)	
CHD	DM	27	–5.8/–2.6	1146/22547	1292/22138	0%	0.71 (0.61–0.81)	0.039
	noDM	28	–7.7/–3.5	2076/67370	2458/72640	15%	0.81 (0.74–0.88)	
HF	DM	19	–6.2/–2.7	866/19377	901/18501	0%	0.75 (0.64–0.91)	0.003
	noDM	18	–7.0/–2.7	921/42085	1229/42078	1%	0.57 (0.48–0.66)	
Stroke + CHD	DM	30	–5.7/–2.6	2180/24687	2469/23709	0%	0.70 (0.62–0.77)	0.15
	noDM	28	–7.5/–3.5	3872/70203	4899/75940	19%	0.75 (0.72–0.79)	
Stroke + CHD + HF	DM	26	–5.9/–2.6	3761/23588	4012/22738	29%	0.76 (0.68–0.83)	0.79
	noDM	27	–7.6/–3.4	5870/68862	6895/68070	53%	0.77 (0.72–0.84)	
CV Death	DM	26	–5.7/–2.6	1020/23483	1097/22463	50%	0.77 (0.58–1.02)	0.65
	noDM	23	–7.5/–3.5	1492/59451	1778/65201	41%	0.81 (0.70–0.93)	
All Death	DM	31	–5.7/–2.6	2074/24843	2139/24277	15%	0.82 (0.72–0.93)	0.015
	noDM	29	–7.5/–3.7	3692/70099	4181/75795	9%	0.91 (0.85–0.96)	

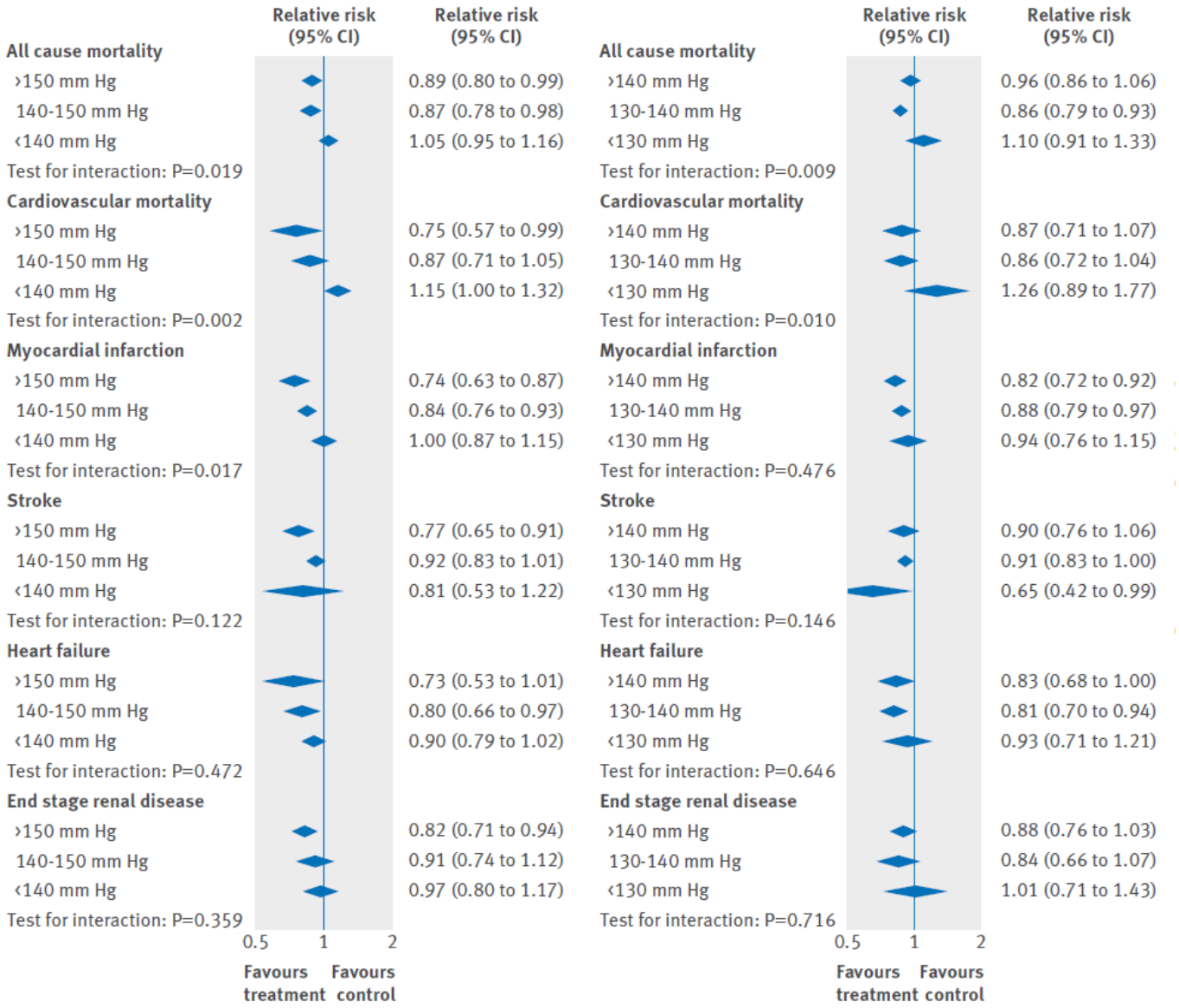


Absolute risk reduction 1000 pts/5 years (95% CI)	*P*–value interaction
–18	0.11
–14	
–19	<0.001
–7	
–14	0.68
–13	
–35	<0.001
–18	
–51	<0.001
–27	
–13	0.006
–6	
–18	<0.001
–5	



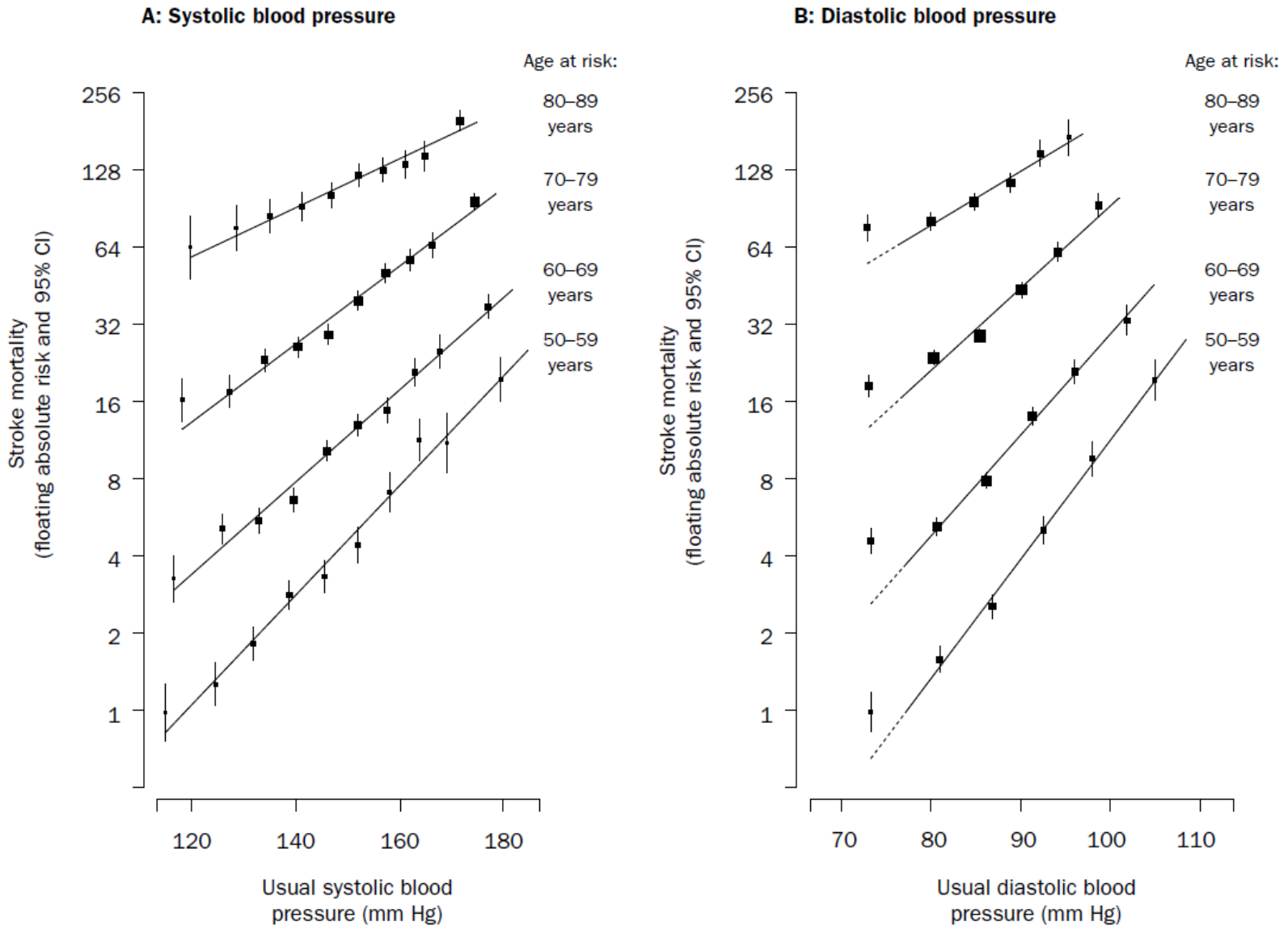
Thomopoulos C, et al. J Hypertens. 2017;35:922-944.

Blood Pressure Lowering in Diabetes



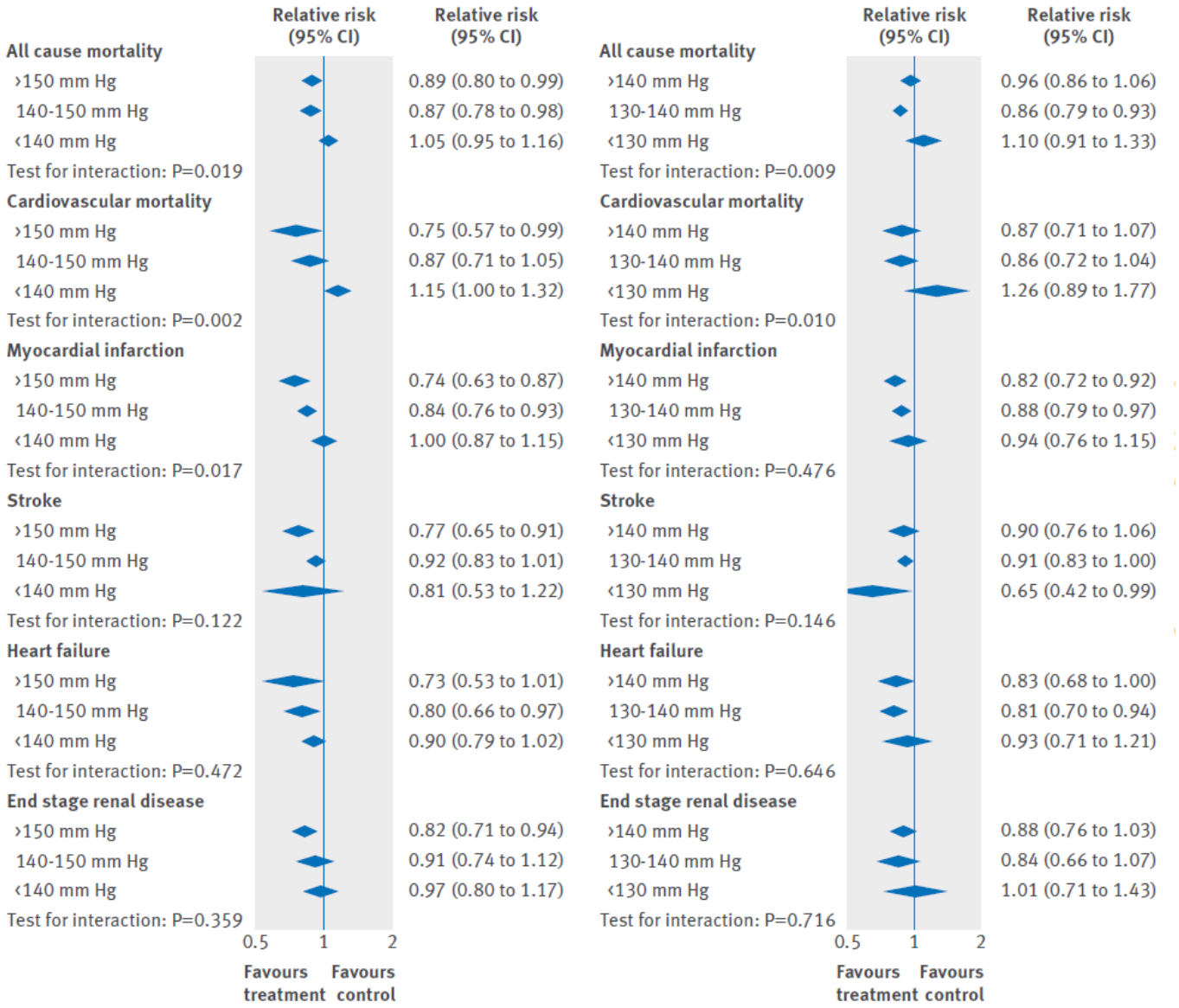
Brunström M, et al. BMJ. 2016;352:i717.

Blood Pressure and Outcome



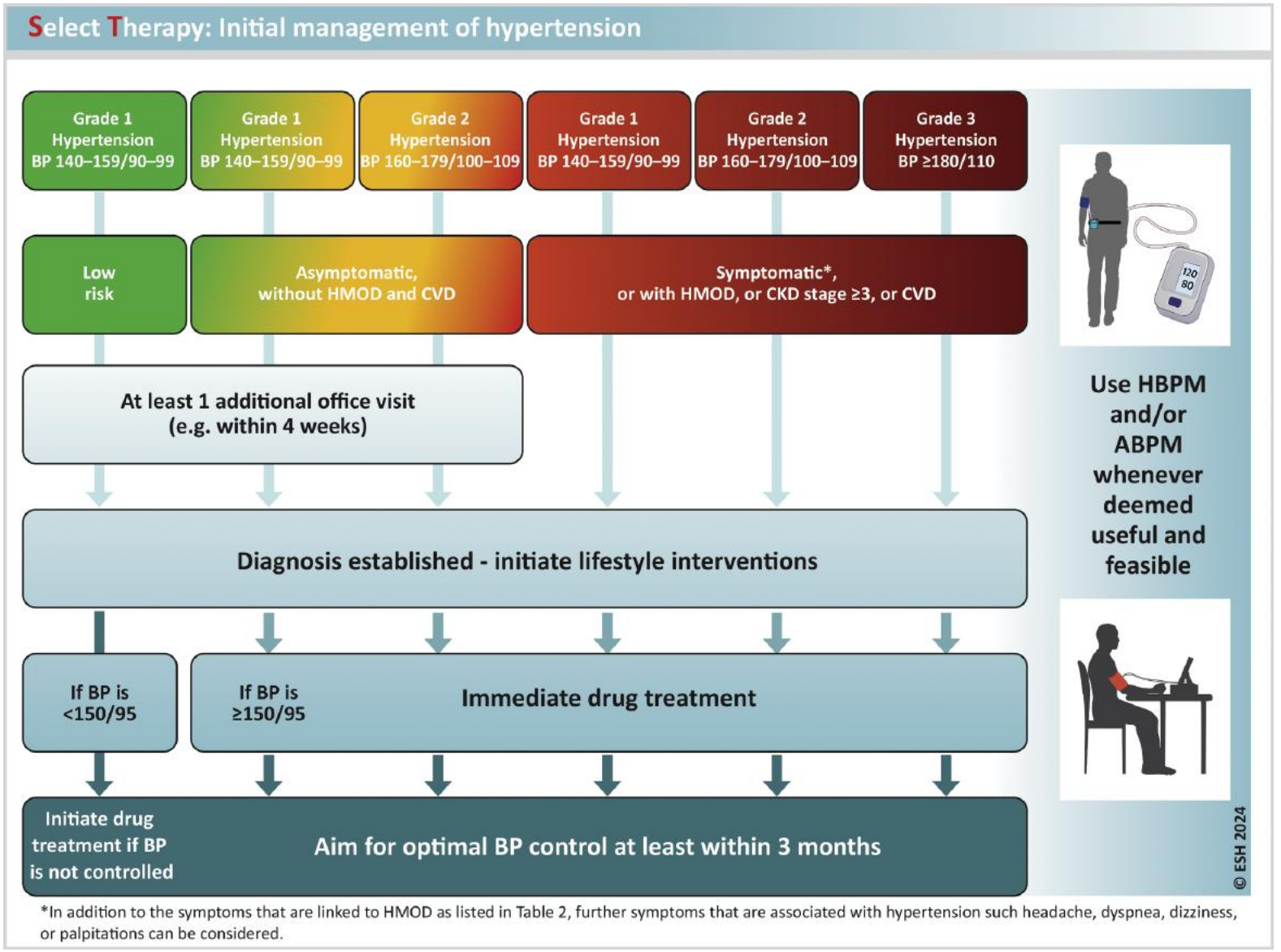
Lewington S, et al. Lancet. 2002;360(9349):1903-13.

Blood Pressure Lowering in Diabetes



Brunström M, et al. BMJ. 2016;352:i717.

When to start treatment

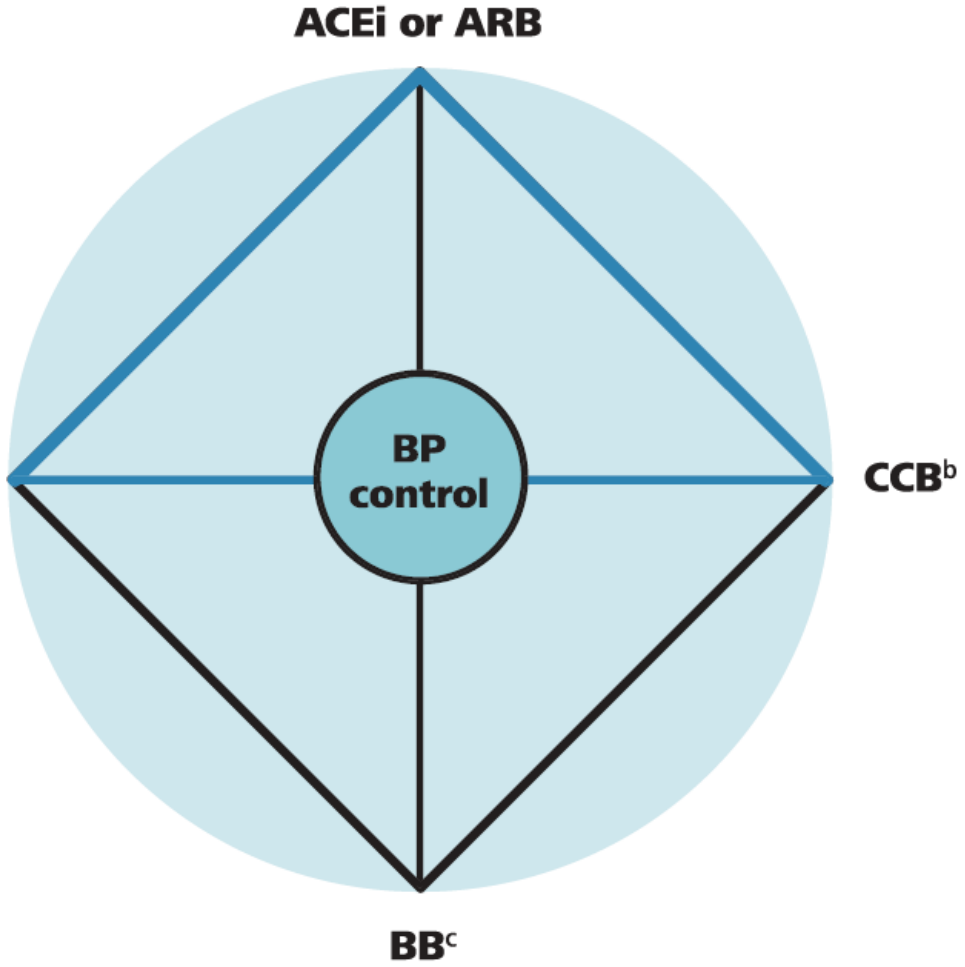


Kreutz R, et al. Eur J Intern Med. 2024;126:1-15.

Drugs to reduce BP

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:

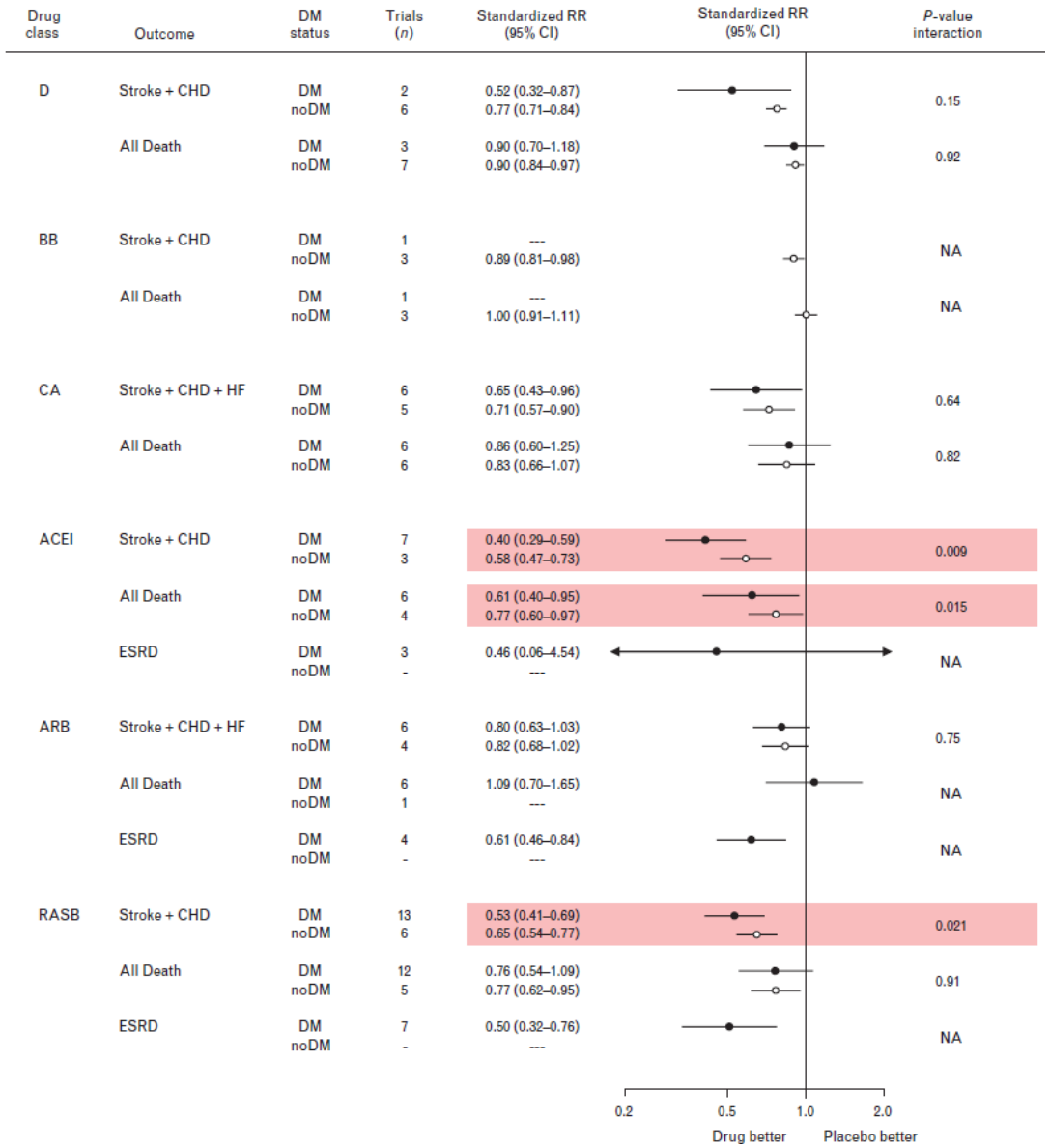
- Steroidal MRA
- Loop Diuretic
- Alpha-1 Blocker
- Centrally acting agent
- Vasodilator

Special comorbidities:

- ARNi
- SGLT2i
- Non-Steroidal MRA

Mancia G, et al. J Hypertens. 2023;41:1874-2071.

Drugs to reduce BP in Diabetes



Thomopoulos C, et al. J Hypertens. 2017;35:922-944.

Lifestyle measures to reduce BP in Diabetes

Select Therapy: Lifestyle Interventions

Relevance

- 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

Prescribing

- 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

Supportive additional interventions

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

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

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 (~2g sodium) or 1 teaspoon per day is recommended

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

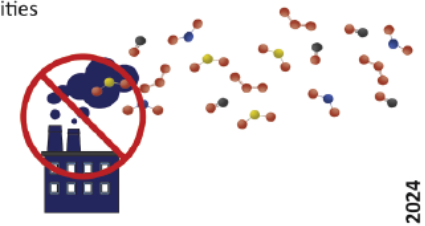
- Limit alcohol intake close to abstinence, particularly if intake is ≥3 drinks/day[a]
- Avoid excessive (binge) drinking

Improve stress management

- Reduce stress by use of
  -Regular physicial 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

Minimize exposure to noise and air pollution

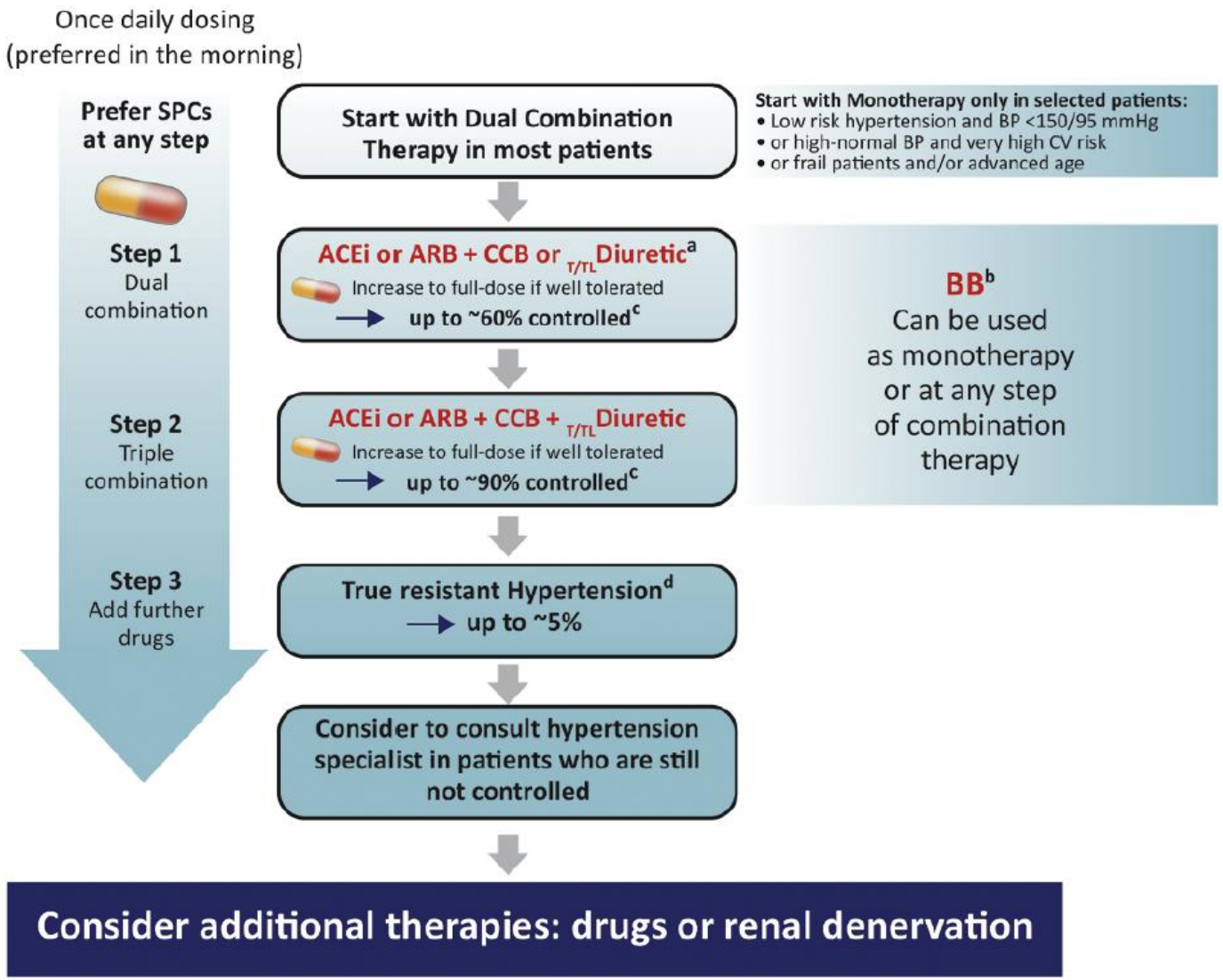
- Reduce indoor exposure to noise and air pollution.
- Consider to reduce exposure to air pollution by modifying the location, timing and type of outdoor activities



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

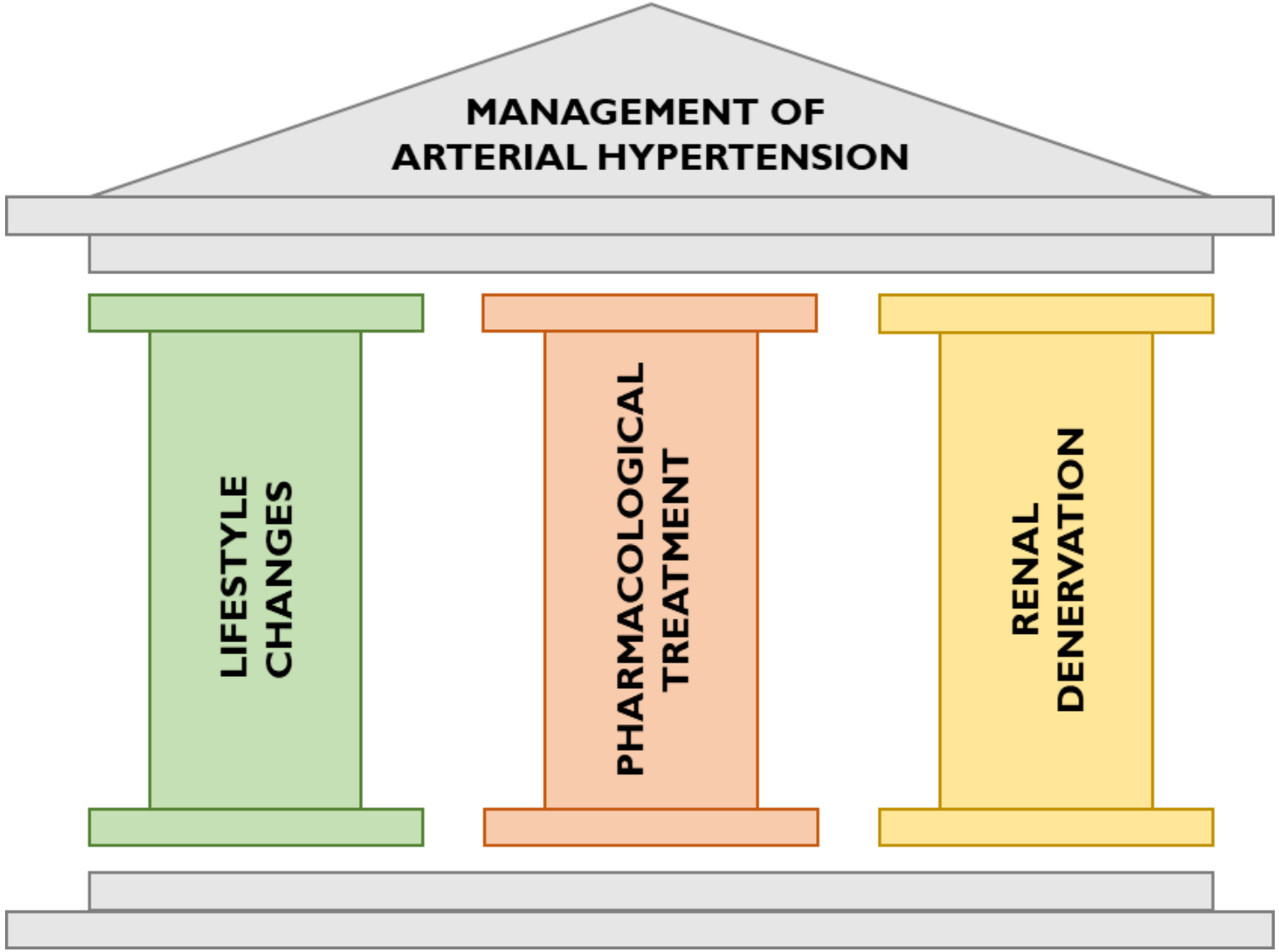
Kreutz R, et al. Eur J Intern Med. 2024;126:1-15.

BP reduction algorithm in Diabetes



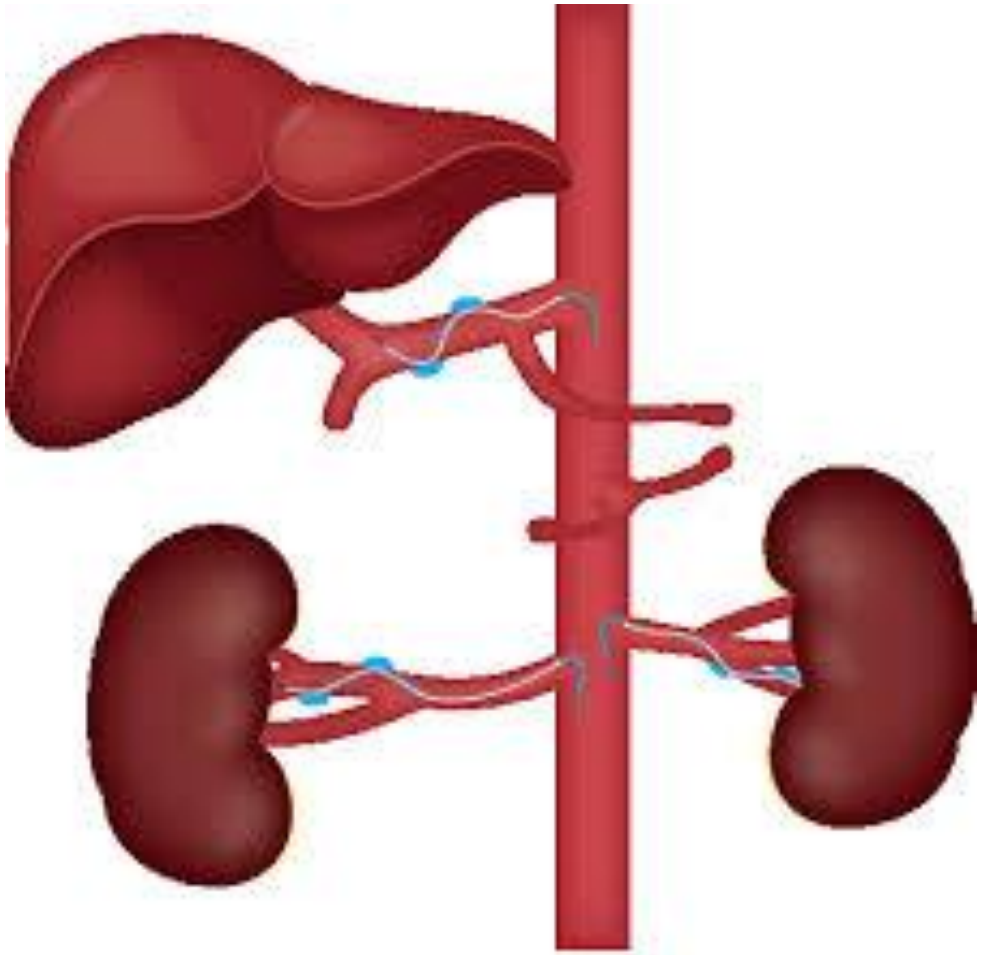
Kreutz R, et al. Eur J Intern Med. 2024;126:1-15.

The three pillars of BP lowering strategy

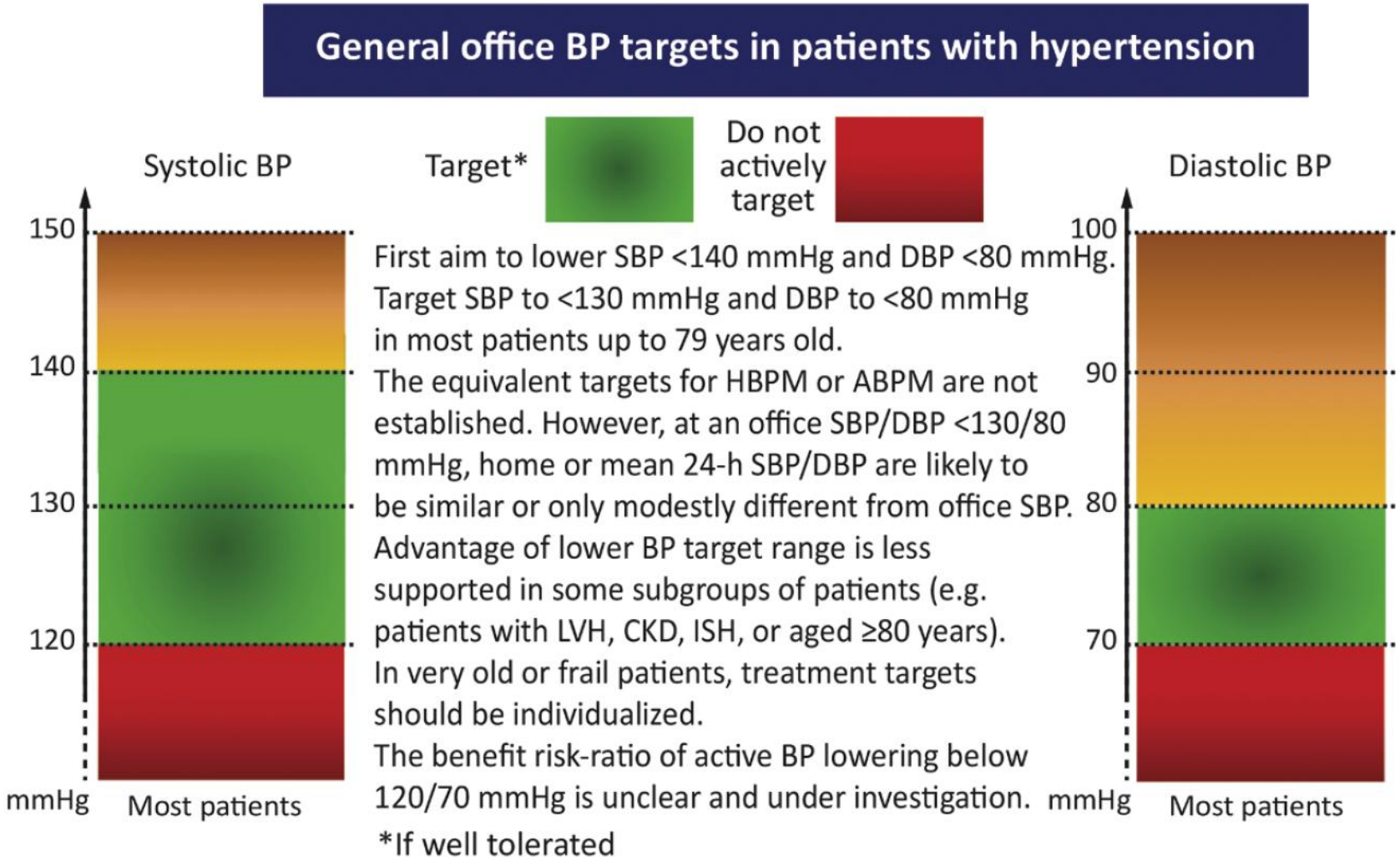


Tsioufis et al. Hellenic J Cardiol. 2026:S1109-9666(25)00280-5.

Renal or multivessel denervation



BP targets



Kreutz R, et al. Eur J Intern Med. 2024;126:1-15.

BP targets

The NEW ENGLAND JOURNAL of MEDICINE

CURRENT ISSUE SPECIALTIES TOPICS

ORIGINAL ARTICLE

Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus

Author: The ACCORD Study Group* Author Info & Affiliations

Published April 29, 2010 | N Engl J Med 2010;362:1575-1585 | DOI: 10.1056/NEJMoa1001286 | VOL. 362 NO. 17

The NEW ENGLAND JOURNAL of MEDICINE

CURRENT ISSUE SPECIALTIES TOPICS

ORIGINAL ARTICLE

Intensive Blood-Pressure Control in Patients with Type 2 Diabetes

Authors: Yufang Bi, M.D., Ph.D., Mian Li, M.D., Ph.D., Yan Liu, M.D., Tingzhi Li, M.D., Jieli Lu, M.D., Ph.D. , Peng Duan, M.D., Fengmei Xu, M.D., +39 , for the BPROAD Research Group* Author Info & Affiliations

Published November 16, 2024 | N Engl J Med 2025;392:1155-1167 | DOI: 10.1056/NEJMoa2412006

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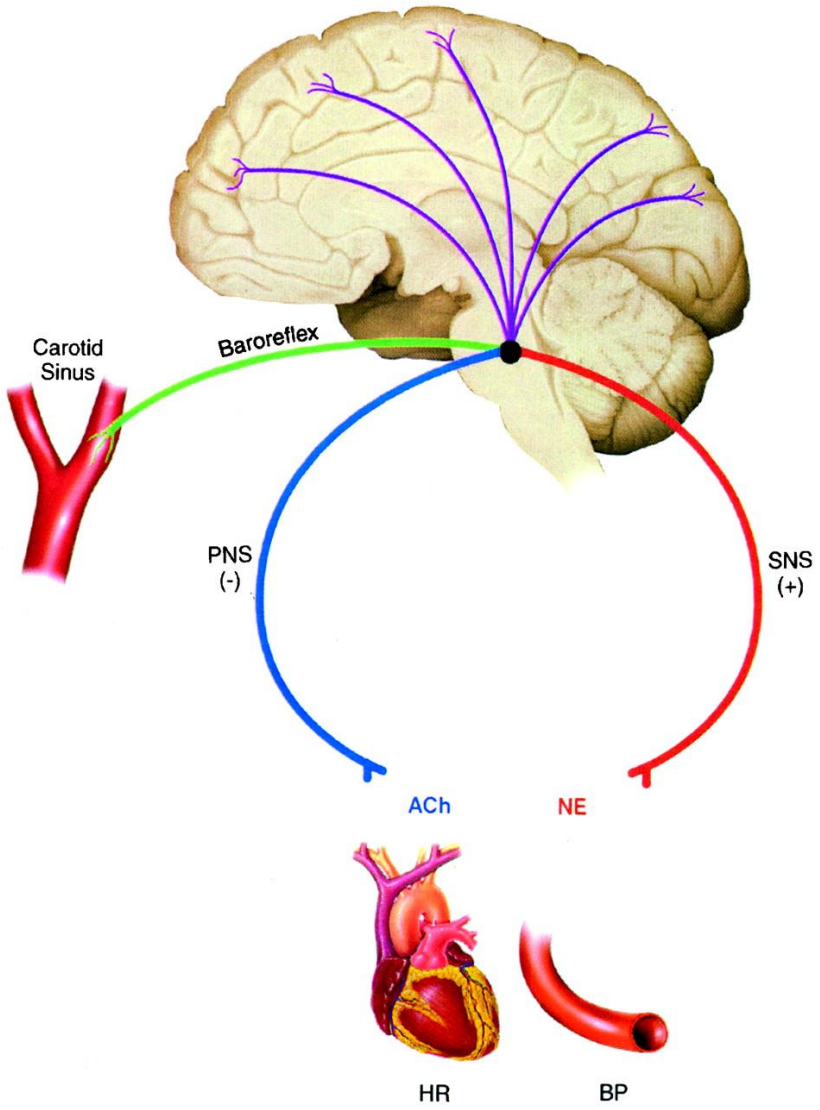
Diabetes and Hypertension ESH Guidelines

Treatment strategies in diabetes

Recommendations and statements	CoR	LoE
BP should be monitored to detect hypertension in all patients with diabetes, because it is a frequent comorbidity associated with an increase CV risk and risk for kidney events.	I	A
Non-dipping or elevated night-time BP are frequent in type 2 diabetes and should be monitored by ABPM or HBPM.	I	B
Antihypertensive treatment in type 2 diabetes is recommended to protect against macrovascular and microvascular complications.	I	A
Immediate lifestyle interventions and antihypertensive drug treatment are recommended for people with type 2 diabetes when office SBP is ≥ 140 mmHg and DBP is ≥ 90 mmHg.	I	A
Drug treatment strategies in patients with type 2 diabetes should be the same as for patients without diabetes and the primary aim is to lower BP below <130/80 mmHg.	I	A
SGLT2is are recommended to reduce cardiac and kidney events in type 2 diabetes.	I	A
The non-steroidal MRA finerenone can be used, because of its nephroprotective and cardioprotective properties in patients with diabetic CKD and moderate to severe albuminuria.	I	A
There are only limited data on the potential benefits of combining SGLT2is and finerenone.	II	C

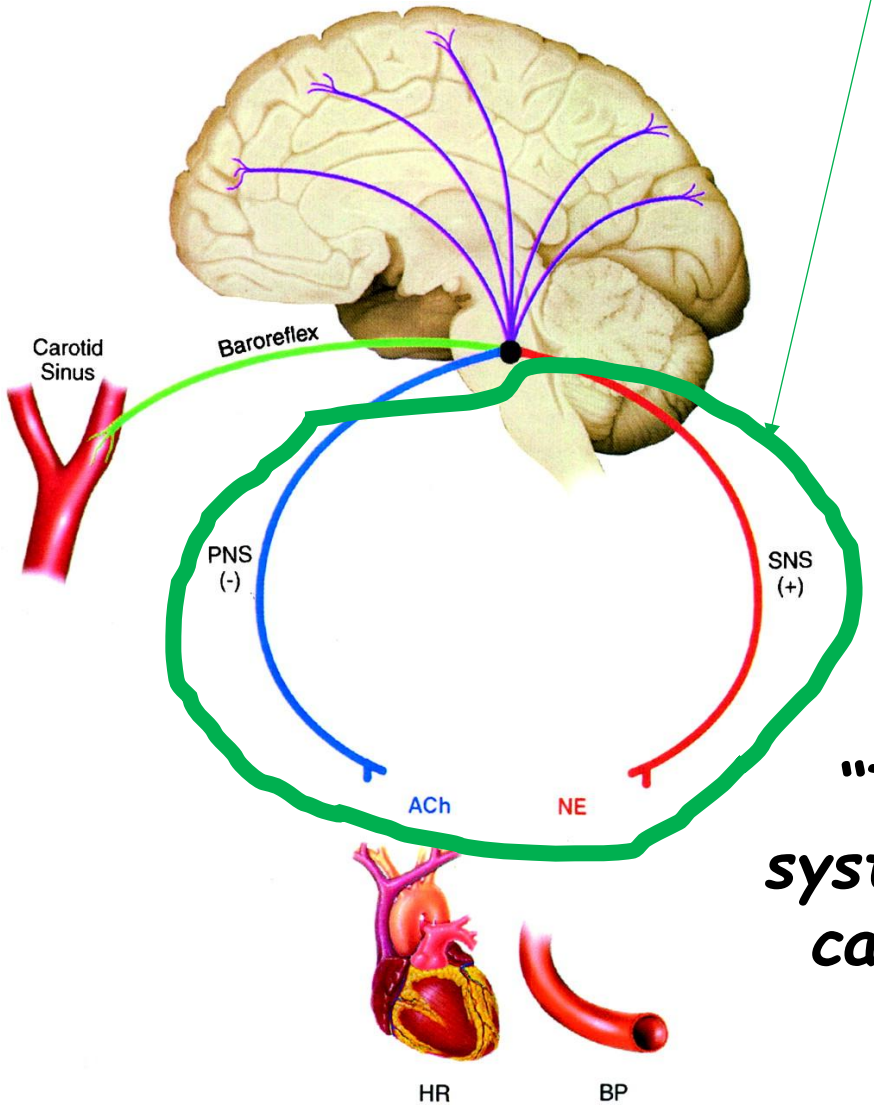
Mancia G, et al. J Hypertens. 2023;41:1874-2071.

Diabetes and Dysautonomia - Normal Baroreflex



Ketch T, et al. Circulation. 2002;105:2518-23.

Baroreflex failure and efferent autonomic failure



Διαταραχή του αυτόνομου νευρικού συστήματος

"The brain knows about systemic blood pressure but cannot do what it wants"

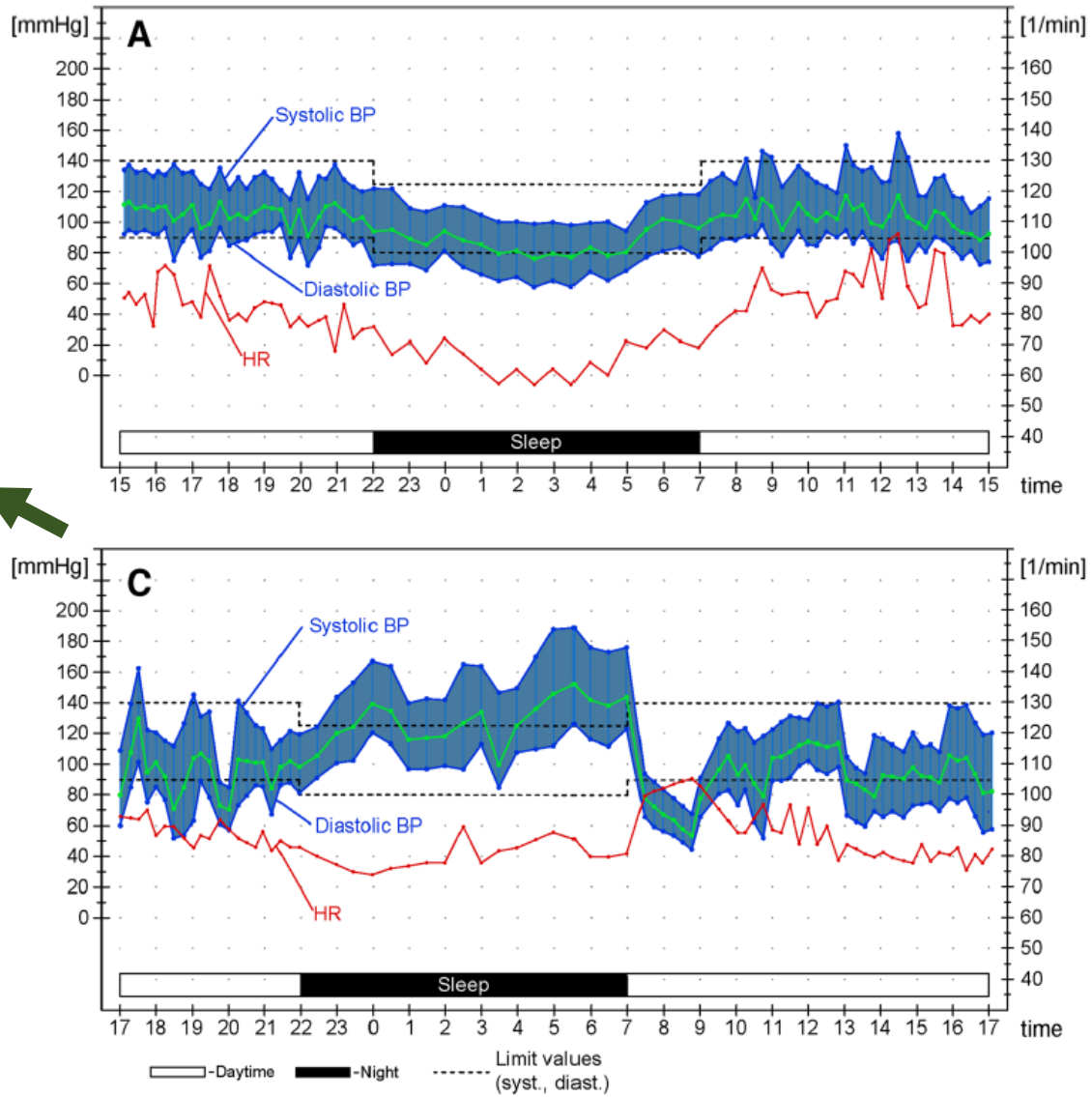
Ketch T, et al. Circulation. 2002;105:2518-23.

Efferent (Autonomic) failure

Orthostatic Hypotension

+

Supine Hypertension



Normal

Diabetic

Fanciulli A, et al. J Neurol. 2014;261:1291-1299.

Diabetes and Chronotherapy in Hypertension

Diabetes and Chronotherapy in Hypertension

Vigo, Spain

Diabetes and Chronotherapy in Hypertension

Randomized Controlled Trial > Chronobiol Int. 2010 Sep;27(8):1629-51.
doi: 10.3109/07420528.2010.510230.

Influence of circadian time of hypertension treatment on cardiovascular risk: results of the MAPEC study

Ramón C Hermida [1], Diana E Ayala, Artemio Mojón, José R Fernández

Affiliations + expand
PMID: 20854139 DOI: 10.3109/07420528.2010.510230

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Controlled Clinical Trial > Eur Heart J. 2020 Dec 21;41(48):4565-4576.
doi: 10.1093/eurheartj/ehz754.

Bedtime hypertension treatment improves cardiovascular risk reduction: the Hygia Chronotherapy Trial

Ramón C Hermida [1], Juan J Crespo [1 2], Manuel Domínguez-Sardiña [2], Alfonso Otero [3], Ana Moyá [4], María T Ríos [1 2], Elvira Sineiro [1 4], María C Castiñeira [1 5], Pedro A Callejas [1 2], Lorenzo Pousa [1 2], José L Salgado [1 2], Carmen Durán [2], Juan J Sánchez [1 6], José R Fernández [1], Artemio Mojón [1], Diana E Ayala [1]; Hygia Project Investigators

Affiliations + expand
PMID: 31641769 DOI: 10.1093/eurheartj/ehz754

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Diabetes and Chronotherapy in Hypertension

Bedtime Dosing

Growing evidence suggests that there is an association between absence of nocturnal blood pressure dipping and the incidence of ASCVD. A randomized controlled trial of 448 participants with type 2 diabetes and hypertension demonstrated reduced cardiovascular events and mortality with median follow-up of 5.4 years if at least one antihypertensive medication was given at bedtime (38). Consider administering one or more antihypertensive medications at bedtime (39).

American Diabetes Association. Diabetes Care. 2017;40(Suppl 1):S75-S87.

Diabetes and Chronotherapy in Hypertension

Oxford Academic
https://academic.oup.com › ... · Μετάφραση αυτής της σελίδας

Hygia trial: Discussions about surprising results

από TF Lüscher · 2020 · Γίνεται αναφορά σε 11 — An astonishing 45% reduction in the primary outcome of cardiovascular death, myocardial infarction, coronary revasculari-zation, heart failure, or stroke.

National Institutes of Health (NIH) | (.gov)
https://pmc.ncbi.nlm.nih.gov › ... · Μετάφραση αυτής της σελίδας

Missing Verification of Source Data in Hypertension Research

από M Brunström · 2021 · Γίνεται αναφορά σε 48 — BP indicates blood pressure; and CV, cardiovascular. A **problem** with **HYGIA** is the large growth over time in the number of participants…

European Society of Cardiology
https://www.escardio.org › ... · Μετάφραση αυτής της σελίδας

Timing of dosing of blood-pressure medication makes no ...

31 Αυγ 2024 — The BedMed, BedMed-Frail and TIME trials were judged to be at overall low risk of bias, while there were some bias **concerns** with **Hygia** and MAPEC ...

hypertasi.gr
https://hypertasi.gr › images › news › Kreutz-HY... PDF

Blood pressure medication should not be routinely dosed ...

από R Kreutz · Γίνεται αναφορά σε 61 — Bedtime hypertension treatment improves cardiovascular risk reduction: the **Hygia** Chronotherapy Trial. Eur Heart J. 2019; 20(11):97. doi: 10.1093 ...
3 σελίδες

American Heart Association Journals
https://www.ahajournals.org › doi › pdf › HYPERTEN...

Lowering Nighttime Blood Pressure With Bedtime Dosing ...

από RD Turgeon · 2021 · Γίνεται αναφορά σε 51 — Indeed, several groups have raised a multitude of **concerns** about the conduct and reporting of the **Hygia** Chronotherapy Trial,3 leading the editors of…

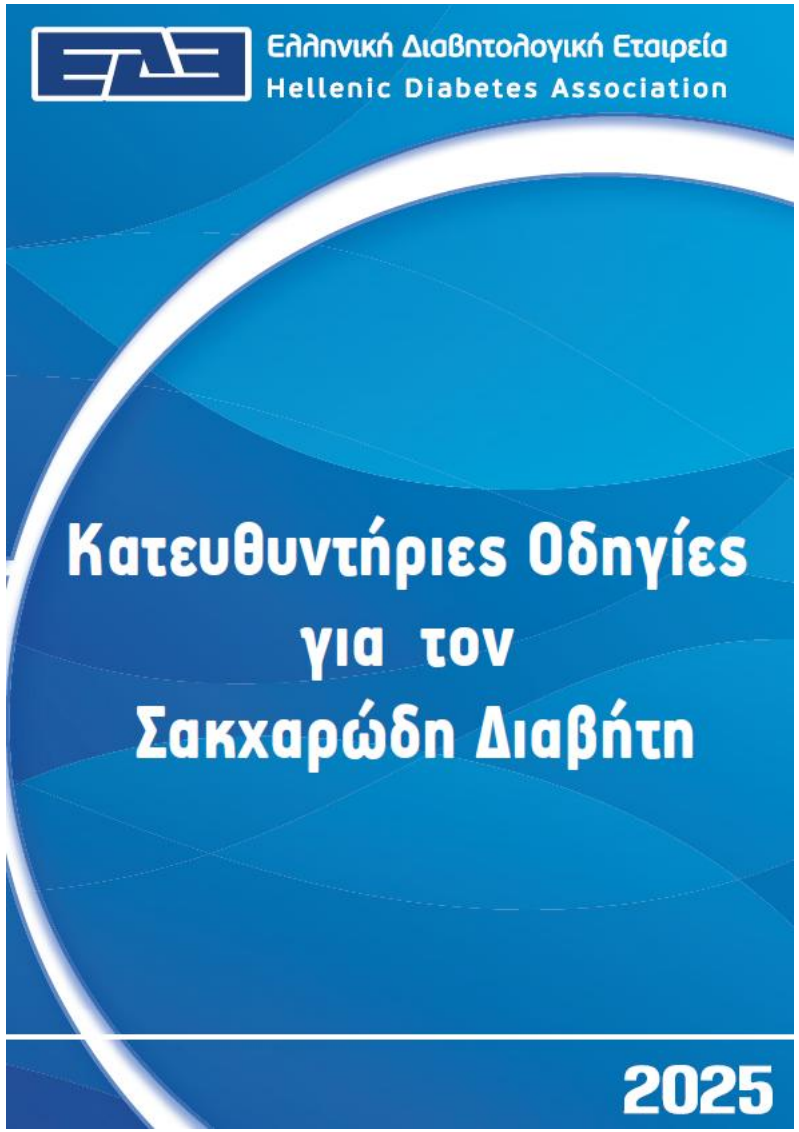
Diabetes and Chronotherapy in Hypertension

Consensus Document

Bedtime dosing of antihypertensive medications: systematic review and consensus statement: International Society of Hypertension position paper endorsed by World Hypertension League and European Society of Hypertension

George Stergiou[a], Mattias Brunström[b], Thomas MacDonald[c], Konstantinos G. Kyriakoulis[a], Michael Bursztyn[d], Nadia Khan[e], George Bakris[f], Anastasios Kollias[a], Ariadni Menti[a], Paul Muntner[g], Marcelo Orias[h], Neil Poulter[i], Daichi Shimbo[j], Bryan Williams[k], Abiodun Moshood Adeoye[l], Albertino Damasceno[m], Lyudmila Korostovtseva[n], Yan Li[o], Elizabeth Muxfeldt[p], Yuqing Zhang[q], Giuseppe Mancia[r], Reinhold Kreutz[s], and Maciej Tomaszewski[t,u]

Take Home Messages – EDE Document



Take Home Messages – EDE Document

17. Αντιμετώπιση της υπέρτασης στον Σακχαρώδη Διαβήτη

Ορισμός και διάγνωση

- Η αρτηριακή υπέρταση (ΑΥ) αποτελεί σημαντικό παράγοντα κινδύνου για την εμφάνιση και εξέλιξη των επιπλοκών του ΣΔ, τόσο των μικροαγγειακών (ιδιαίτερα της νεφροπάθειας), όσο και των καρδιαγγειακών.
- Στο πιο πρόσφατο ESC/EURObservational Research Program (EORP) EUROSPIRE, αναφέρεται ότι 80% των ανδρών και 87% των γυναικών με γνωστό **ΣΔ τύπου 2** έχει και ΑΥ.
- Η διάγνωση της υπέρτασης στα άτομα με ΣΔ τίθεται όταν η συστολική αρτηριακή πίεση (ΣΑΠ) είναι ≥140 mm Hg ή/και η διαστολική αρτηριακή πίεση (ΔΑΠ) είναι ≥90 mm Hg και υπό την προϋπόθεση ότι το εύρημα θα επιβεβαιωθεί με μια δεύτερη μέτρηση άλλη ημέρα καθώς και με μετρήσεις στο σπίτι.
- Η περιχειρίδα πρέπει να είναι κατάλληλου μεγέθους ανάλογα με την περιφέρεια του βραχίονα του ατόμου με ΣΔ.
- Η ΑΠ πρέπει να προσδιορίζεται και σε όρθια θέση για τον εντοπισμό εκείνων με ορθοστατική υπόταση.
- Μείωση της αρτηριακής πίεσης (ΑΠ) συνδυάζεται με μείωση της επίπτωσης και επιβράδυνση της εξέλιξης της διαβητικής μικροαγγειοπάθειας, αλλά και μείωση της καρδιαγγειακής νοσηρότητας και της θνητότητας.

Στόχος της θεραπείας της ΑΥ *(τα κατωτέρω όρια της αρτηριακής πίεσης αναφέρονται σε μετρήσεις αυτής στο ιατρείο)* είναι:

- Από τυχαιοποιημένες μελέτες, γνωρίζουμε ότι μείωση της ΣΑΠ <140 mm Hg και της ΔΑΠ <90 mm Hg, μειώνει τα συμβάντα των στεφανιαίων, τα ΑΕΕ και τη νεφρική νόσο στα άτομα με ΣΔ. Ωστόσο ο βέλτιστος στόχος ΑΠ στα άτομα με ΣΔ να είναι θέμα debate.
- Σε άτομα >65 ετών ο στόχος της ΣΑΠ είναι μεταξύ 130-139 mm Hg.
- Σε άτομα<65 ετών <130 mm Hg αλλά όχι <120 mm Hg με την προϋπόθεση ότι επιτυγχάνεται χωρίς ιδιαίτερη επιβάρυνση.
- Διαστολική αρτηριακή πίεση <80 mm Hg αλλά όχι <70 mm Hg.
- Νεότερα στοιχεία τονίζουν την ανάγκη εξατομίκευσης του στόχου.

Θεραπευτική αγωγή της ΑΥ στον ΣΔ

- Έναρξη αντιυπερτασικής φαρμακευτικής αγωγής όταν ΑΠ ≥140/90 mm Hg
- Απαιτείται συνδυασμός υγιεινοδιαιτητικής και φαρμακευτικής αγωγής.

Υγιεινοδιαιτητική αγωγή

- Εκτός από τις υγιεινοδιαιτητικές οδηγίες που αφορούν όλα τα άτομα με ΣΔ, τονίζεται ιδιαίτερα η αξία των κάτωθι:
  - *Απώλεια βάρους*. Υπολογίζεται ότι κάθε 1 kg απώλειας σωματικού βάρους, ανεξαρτήτως της πρόσληψης νατρίου, μειώνει τη μέση αρτηριακή πίεση κατά ~5 mm Hg. Μέση Πίεση = [ΣΑΠ + (2×ΔΑΠ)] / 3.
  - *Μείωση της ημερήσιας πρόσληψης νατρίου* τουλάχιστον σε ποσά <1,5 g, που αντιστοιχεί σε περίπου 3,5 g χλωριούχου νατρίου. Για κάθε μείωση της πρόσληψης χλωριούχου νατρίου κατά 1 g την ημέρα μπορεί να επιτευχθεί μείωση της ΣΑΠ κατά 4 mm Hg και της ΔΑΠ κατά 2 mm Hg
  - *Άσκηση*. Συνιστάται μέτριας έντασης σωματική άσκηση π.χ. ταχύ βάδισμα 30-45 λεπτά τουλάχιστον 4 φορές την εβδομάδα.
  - Διακοπή του καπνίσματος.
  - *Περιορισμός στη χρήση οινοπνεύματος* σε 20 g/ημέρα για τους άνδρες και 10 g/ημέρα για τις γυναίκες.
  - *Αναπροσαρμογή του διαιτολογίου για τον ΣΔ* με αύξηση των λαχανικών και των φρούτων, ιδιαίτερα των πλούσιων σε κάλιο, μέσα όμως στα πλαίσια των επιτρεπόμενων θερμίδων.

Φαρμακευτική αγωγή

- Ως αρχική αγωγή χορηγείται ένας αναστολέας του μετατρεπτικού ενζύμου (αΜΕΑ) ή ένας αποκλειστής των υποδοχέων της αγγειοτασίνης ΙΙ (αΑΤ1) μαζί με διουρητικό ή αναστολέα των διαύλων ασβεστίου. Συνιστάται μονοθεραπεία σε χαμηλού κινδύνου ασθενών με αρτηριακή υπέρταση σταδίου Ι ή σε ασθενείς >80 ετών.
- Αντενδείκνυται η συγχορήγηση αΜΕΑ, αΑΤ1 ή αναστολέων της ρενίνης.
- Τα διουρητικά, θειαζίδες, ινδαπαμίδη και χλωροθαλιδόνη, χορηγούνται, σε σχετικά μικρές δόσεις και υπό την προϋπόθεση ότι η σπειραματική διήθηση (estimated-Glomerular Filtration Rate - eGFR), όπως υπολογίζεται με τους τύπους, MDRD ή CKD-EPI, είναι >30 mL/min/1,73 m^2 επιφανείας σώματος.

- Εάν το eGFR <30 mL/min/1,73 m^2 επιφανείας σώματος συνιστάται η χορήγηση διουρητικού της αγκύλης δύο ή τρεις φορές την ημέρα.
- Οι αποκλειστές των β-υποδοχέων αποτελούν απαραίτητη συνιστώσα τη αντιυπερτασικής αγωγής σε άτομα με ιστορικό εμφράγματος του μυοκαρδίου, ιδιαίτερα για τα δύο πρώτα έτη μετά από το έμφραγμα. Γενικά, ωστόσο δεν συνιστώνται ως πρώτη επιλογή στα άτομα χωρίς επιπλοκές.
- Ιδιαίτερη προσοχή απαιτείται στη συγχορήγηση των αποκλειστών των β-υποδοχέων με μη διυδροπυρηνικούς ανταγωνιστές των διαύλων ασβεστίου λόγω κινδύνου κολποκοιλιακού αποκλεισμού.
- Το θεραπευτικό σχήμα πρέπει να αναπροσαρμόζεται αποβλέποντας απαραιτήτως στην επίτευξη και διατήρηση του θεραπευτικού στόχου. Προς τούτο συνιστάται στις περισσότερες περιπτώσεις η χρήση δύο ή περισσοτέρων φαρμάκων στις μέγιστες δόσεις προς επίτευξη του στόχου.
- Οι αναστολείς SGLT2 ασκούν και ήπια αντιυπερτασική δράση, ιδιότητα τη οποία μπορούμε να εκμεταλλευτούμε σε δύσκολα ρυθμιζόμενη αρτηριακή υπέρταση.
- Η φινερενόνη, ένας μη στεροειδικός, εκλεκτικός ανταγωνιστής του υποδοχέα των αλατοκορτικοειδών (MR), με βάση τα αποτελέσματα δύο μεγάλων πολυκεντρικών μελετών σε ασθενείς με χρόνια νεφρική νόσο και ΣΔτ2, και/ή εμμένουσα λευκωματουρία, FIDELIO/FIGARO DKD, οδηγεί σε επιβράδυνση της νεφρικής νόσου αλλά και σε μείωση των καρδιαγγειακών συμβαμάτων. Ως εκ τούτου η φινερενόνη συστήνεται σε ασθενείς με τα ανωτέρω χαρακτηριστικά αυτών των μελετών και αρτηριακή υπέρταση παρόλο ότι η αντιυπερτασική της δράση δεν είναι μεγάλη.

Παρακολούθηση

- Εκτός της μέτρησης της ΑΠ σε κάθε επίσκεψη στο ιατρείο, συνιστάται και η παρακολούθηση της ΑΠ και στο σπίτι με ορθή τεχνική και αξιόπιστο πιεσόμετρο (πληροφορίες στο dableducational.org). Μετρήσεις στο σπίτι παρέχουν στοιχεία για την παρουσία υπέρτασης λευκής μπλούζας ή καλυμμένη υπέρταση, και βελτιώνει τη συμμόρφωση και την τακτική λήψη αγωγή συμβάλλοντας στη μείωση του καρδιαγγειακού κινδύνου.
- Η 24ωρη καταγραφή της ΑΠ χρειάζεται μόνο για τη διευκρίνιση αμφιβολιών περί τη διάγνωση και περί την καθ' όλο το 24ωρο ρύθμιση της υπέρτασης
- Κατά τη χορήγηση αΜΕΑ, αΑΤ1, διουρητικά ή αγωνιστές των υποδοχέων των αλατοκορτικοειδών συνιστάται παρακολούθηση του καλίου και της κρεατινίνης. Εάν η αύξηση της κρεατινίνης μέσα στις επόμενες 1-2 εβδομάδες

υπερβεί το 30% της αρχικής της τιμής ή/και το κάλιο αυξηθεί πάνω από 5,5 mEq/L, συνιστάται επανεκτίμηση της νεφρικής λειτουργίας του ατόμου με ΣΔ, διερεύνηση για τυχόν ύπαρξη στένωσης νεφρικής αρτηρίας και αντικατάσταση του αΜΕΑ ή του αΑΤ1 με αντιυπερτασικό άλλης κατηγορίας.
- Επί χορήγησης διουρητικού συνιστάται ο συχνός έλεγχος νατρίου και καλίου
  - Επί υπονατριαιμίας διακόπτεται το διουρητικό.
  - Επί υποκαλιαιμίας μπορεί να χορηγηθούν καλιοσυντηρητικά (αμιλορίδη, σπιρονολακτόνη).
- Παρότι προηγούμενες τυχαιοποιημένες κλινικές μελέτες έδειξαν όφελος με λήψη μέρος της αντιυπερτασικής αγωγής πριν τον ύπνο σε σχέση με πρωινή λήψη, αυτά τα αποτελέσματα δεν επιβεβαιώθηκαν, ως εκ τούτου δεν συνιστάται η χορήγηση αντιϋπερτασικής αγωγής προ του ύπνου.

Ανθεκτική υπέρταση

- Ορίζεται η ΑΠ με επίπεδα >140/90 mm Hg παρά την υγιεινοδιαιτητική αγωγή και λήψη τριών αντιυπερτασικών από τα οποία ένα διουρητικό, σε μέγιστες ανεκτές δόσεις και εφόσον αποκλειστούν άλλες αιτίες.
- Οι ανταγωνιστές των αλατοκορτικοειδών αποτελούν αποτελεσματικά αντιυπερτασικά στην ανθεκτική υπέρταση όταν προστεθούν στον τριπλό συνδυασμό αΜΕΑ ή αΑΤ1, ανταγωνιστή των διαύλων ασβεστίου και διουρητικού με τακτική όμως παρακολούθηση του καλίου και κρεατινίνης ορού.
- Εφόσον δεν επιτευχθεί ο στόχος της ΑΠ γίνεται παραπομπή σε εξειδικευμένο κέντρο.

Υπέρταση στην έγκυο με Σακχαρώδη Διαβήτη

- Συνιστάται αντιυπερτασική αγωγή εφόσον η ΑΠ βρίσκεται σε επίπεδα ΣΑΠ >140 ή και ΔΑΠ >90 mm Hg και στόχος 110-135/80 mm Hg. Η άμεση αντιμετώπιση υπέρτασης σχετίζεται με καλύτερη πρόγνωση, τόσο για την έγκυο όσο και για το έμβρυο, σε σχέση με τηναντιμετώπιση βαριάς υπέρτασης.
- Σε επίπεδα ΑΠ 90-60 mm Hg πρέπει να αποεντατικοποιείται η θεραπεία.
- Απόλυτη αντένδειξη αποτελούν οι αΜΕΑ και αΑΤ1, και σπειρονολακτόνη. Συνιστάται η χορήγηση α-μεθυλντόπα, λαβεταλόλη, ανταγωνιστές διαύλων ασβεστίου (νιφεδιπίνη), ενώ η υδραλαζίνη μπορεί να χορηγηθεί σε οξείες καταστάσεις και σοβαρή προεκλαμψία.

https://www.ede.gr/%ce%ba%ce%b1%cf%84%ce%b5%cf%85%ce%b8%cf%85%ce%bd%cf%84%ce%ae%cf%81%ce%b9%ce%b5%cf%82-%ce%bf%ce%b4%ce%b7%ce%b3%ce%af%ce%b5%cf%82-%ce%b5%ce%b4%ce%b5/

ΣΑΣ ΕΥΧΑΡΙΣΤΩ ΓΙΑ ΤΗΝ ΠΡΟΣΟΧΗ ΣΑΣ...

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I'm not ill, my pancreas is just lazy.