

ΥΠΕΡΤΑΣΗ 2024

NON-2023-10451_GR_NOV_23

Γ Στεργίου

ΚΕΝΤΡΟ ΥΠΕΡΤΑΣΗΣ - STRIDE-7

**Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών
Ιατρική Σχολή, Γ' Παθολογική Κλινική, ΓΝΑ Σωτηρία**



Hypertension Research

PubMed 2023



National Library of Medicine
National Center for Biotechnology Information

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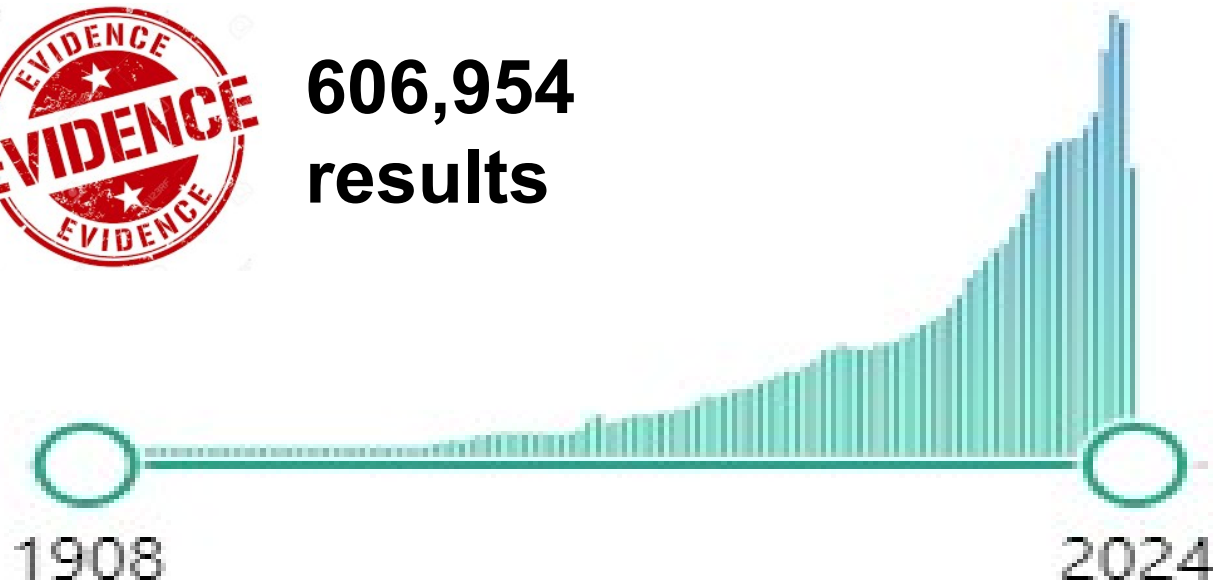
PubMed.gov

arterial hypertension

Search



606,954
results





THE YEAR IN MEDICINE

TIME

THE STEALTH KILLER

America's **HIGH BLOOD PRESSURE** crisis is spinning out of control. Learn about it, treat it—and maybe save your life

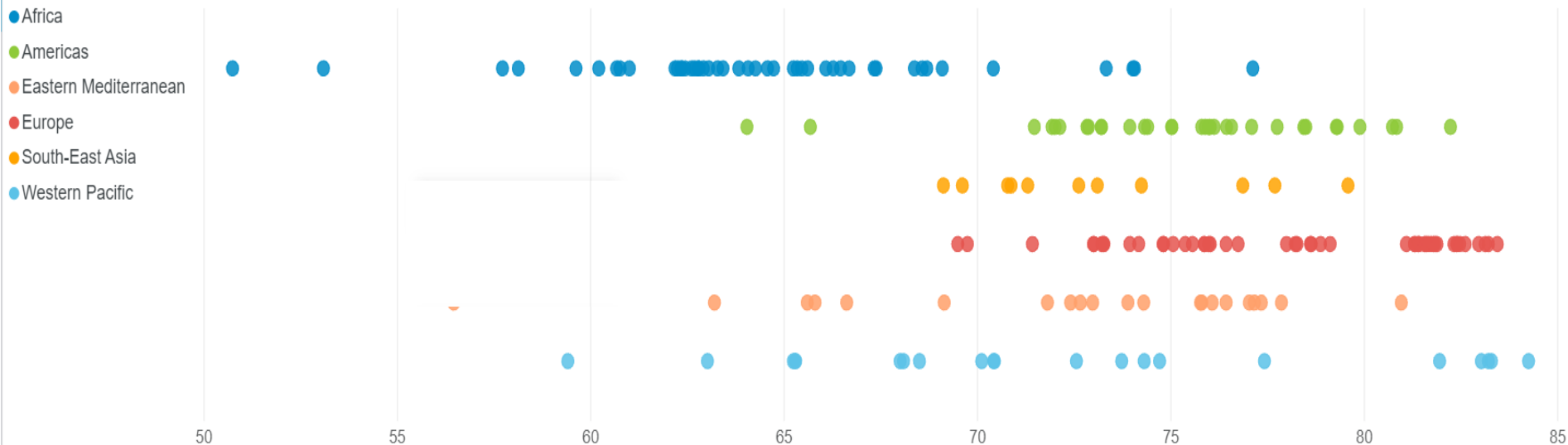




World Health Organization

Life expectancy 2019

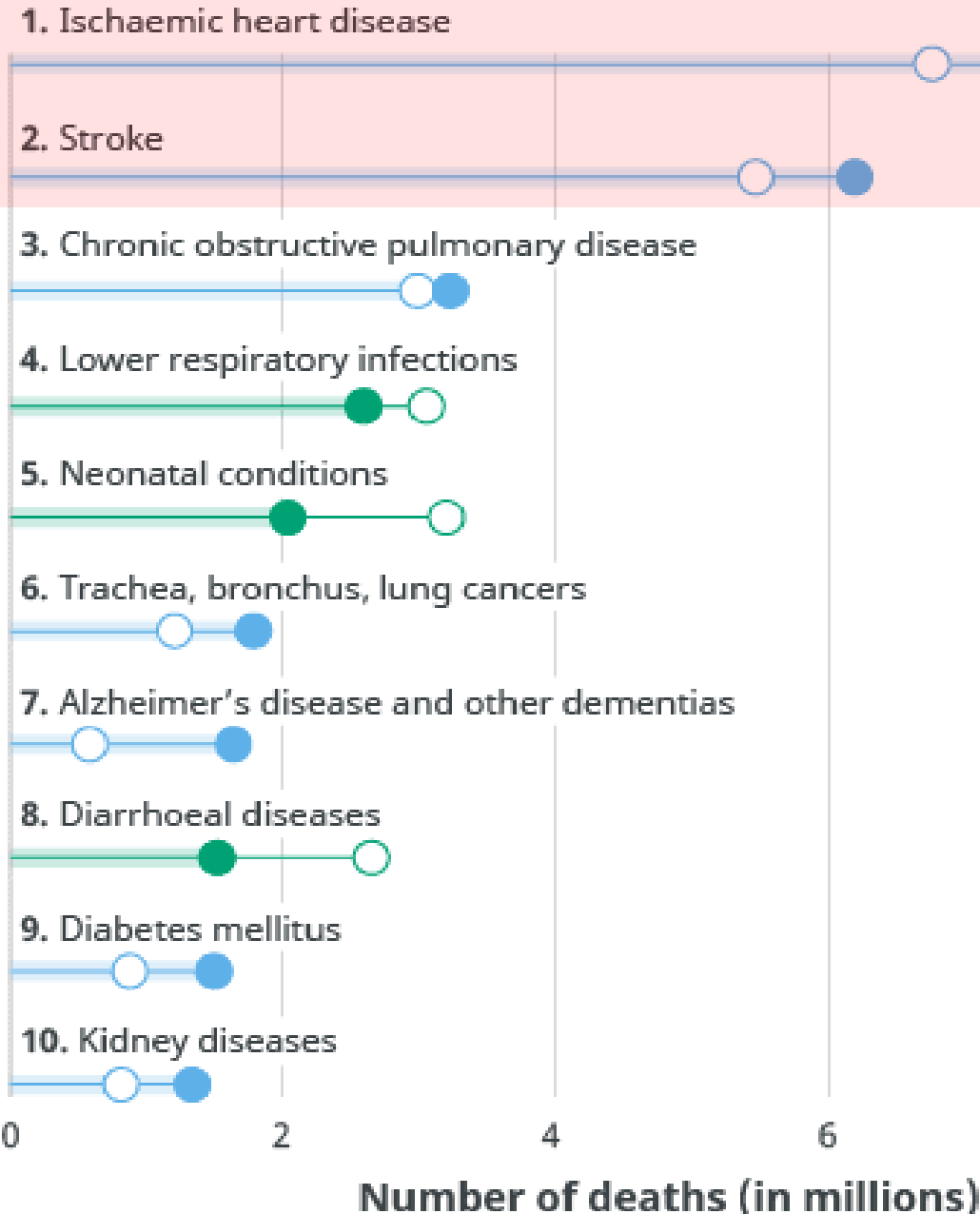
73.4 years



○ 2000 ● 2019

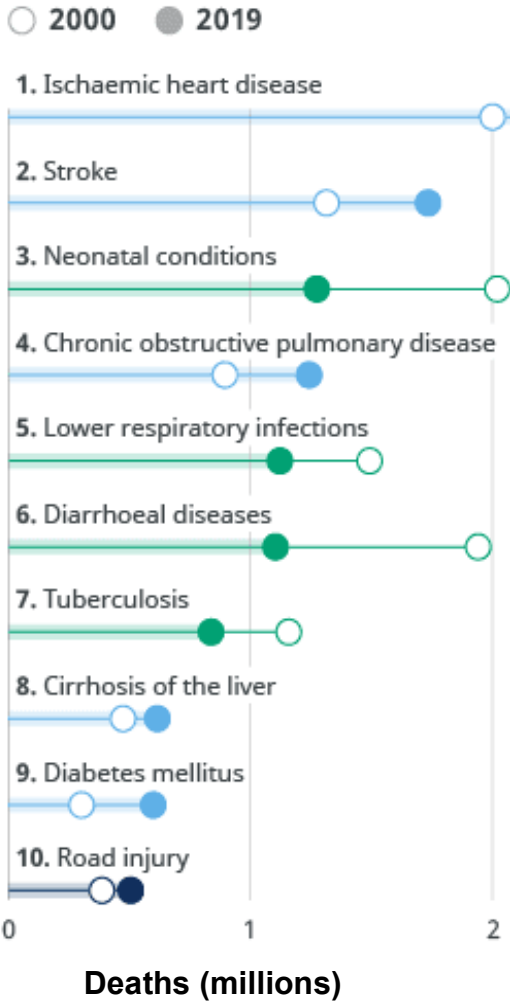
DEATH CAUSES

Top 10



World Health Organization

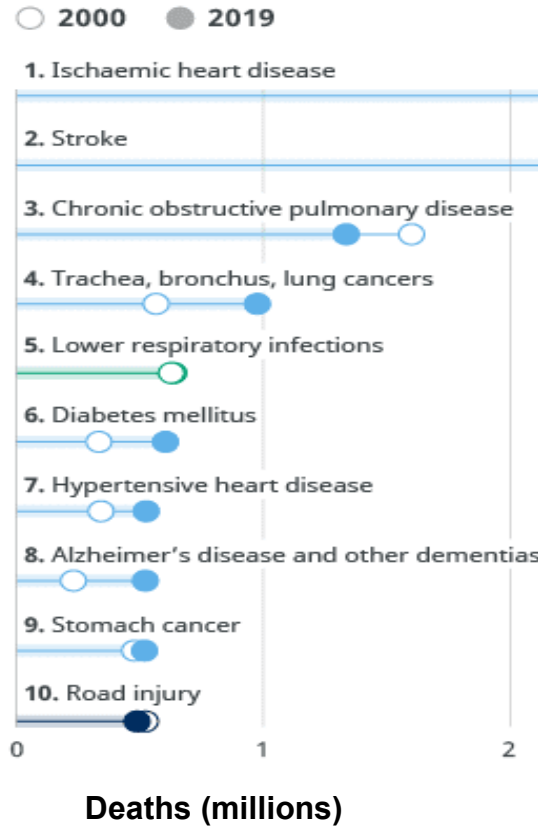
Lower-middle income



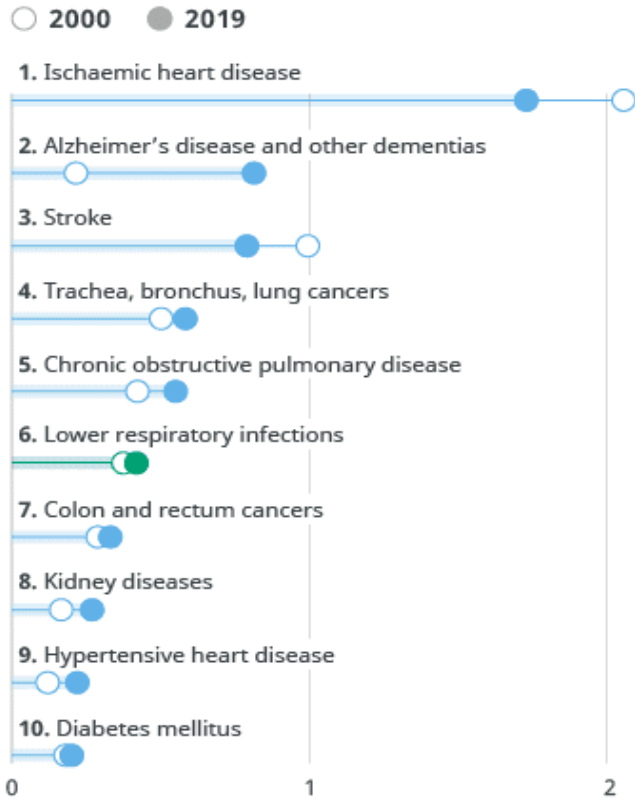
DEATH CAUSES

Top 10

Upper-middle income



High income





World Health
Organization

Global Disease Burden 1990-2010

67 Risk factors – 21 Regions

**Increased blood pressure
leading risk factor for death and disability
globally**

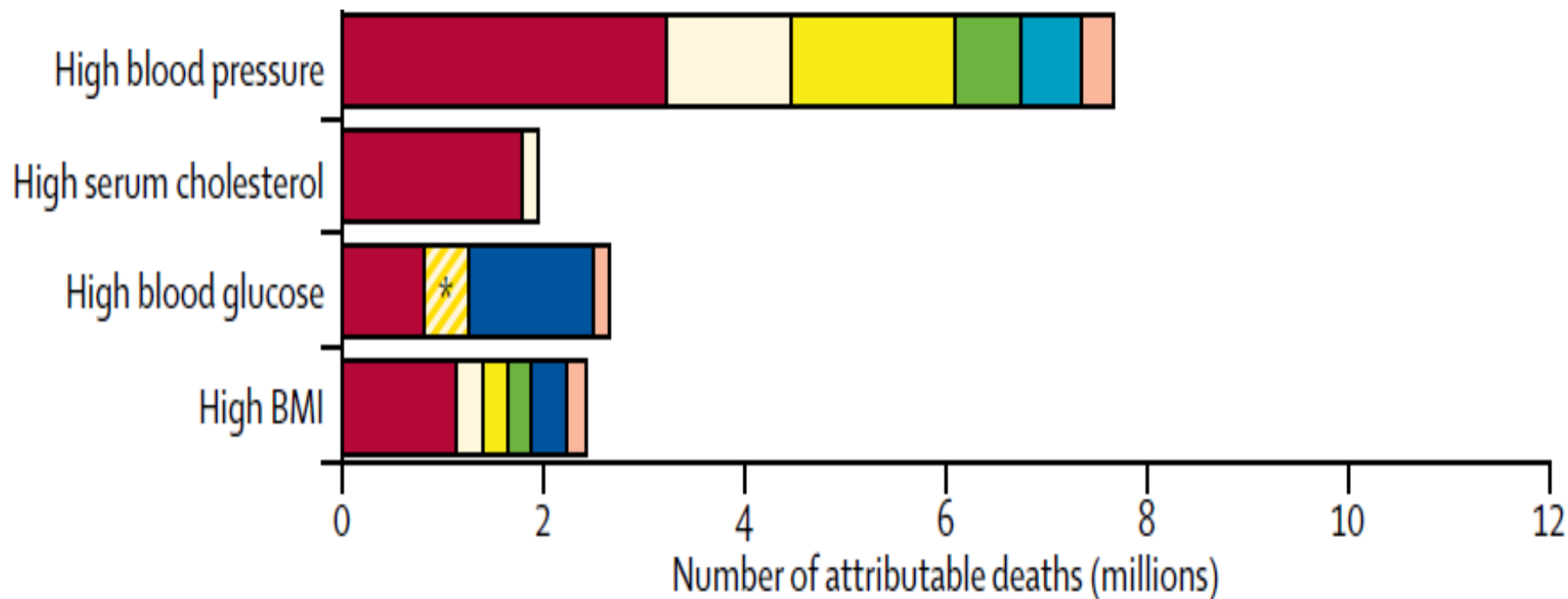


Lancet 2013;380:2224-60.



International
Society of
Hypertension

Deaths Attributed to Risk Factors 2010



■ Ischaemic heart disease

■ Haemorrhagic and other non-ischaemic stroke

■ Diabetes

■ Ischaemic stroke

■ Hypertensive heart disease

■ Other CVDs

■ Chronic kidney disease

The global cost of nonoptimal blood pressure

10% of health care spending

directly related to increased blood
pressure and its
complications

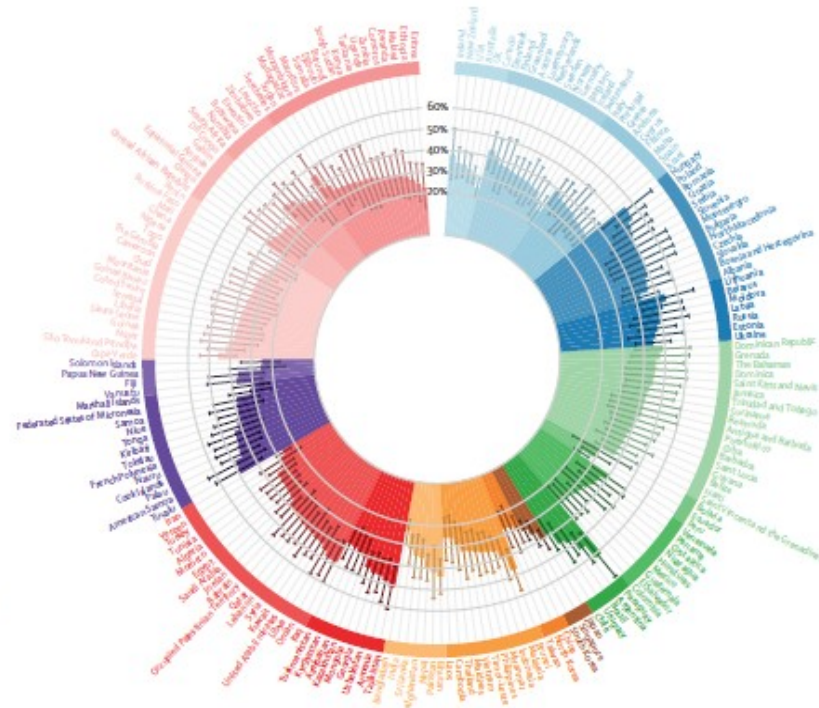
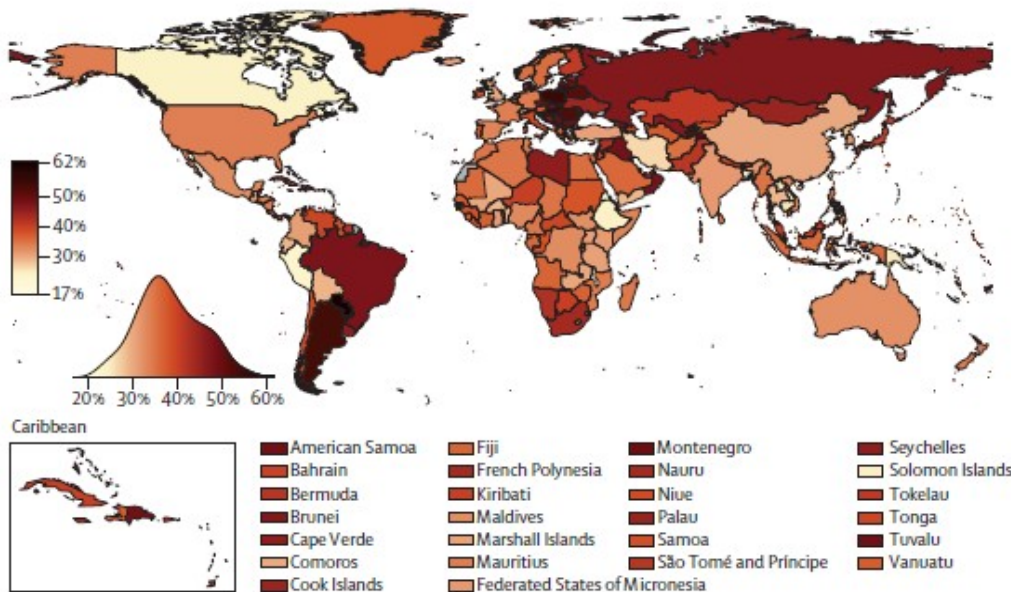
20-25%

in Eastern Europe and Central Asia

Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants

NCD Risk Factor Collaboration (NCD-RisC)*

Lancet 2021;398:957-80.



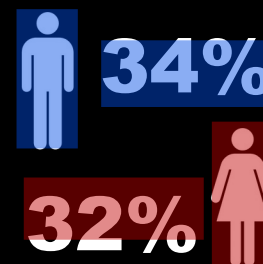
HYPERTENSION WORLDWIDE

Prevalence, Treatment, Control

1990-2019, 1,201 populations, 104 million participants

Prevalence
(Age-standardized)

33%
(stable)



**Absolute
number**

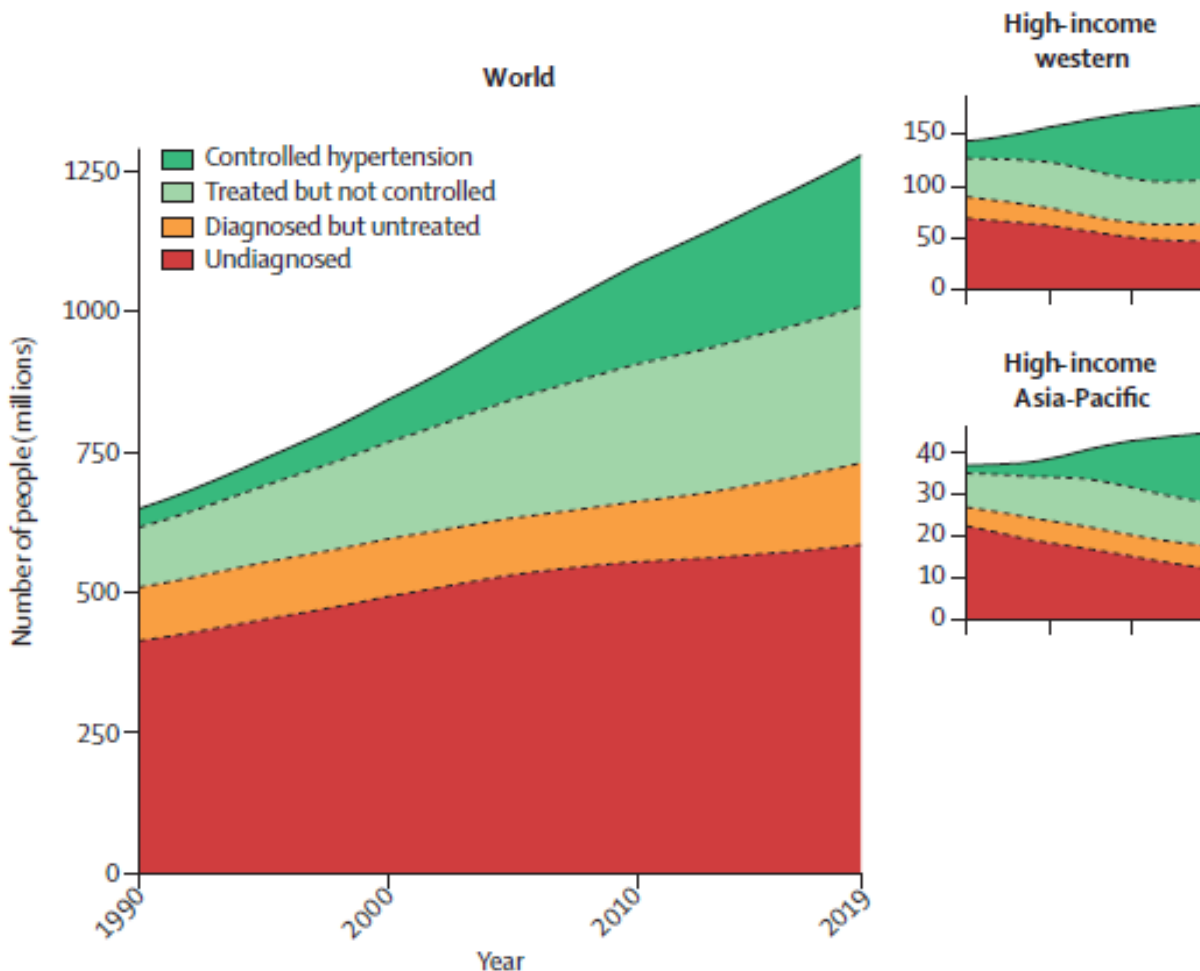
648 mil → 1.3 bil
(population growth, aging, BMI)

Lancet, 2021;398:957-80.

HYPERTENSION WORLDWIDE

Prevalence, Treatment, Control

1990-2019, 1,201 populations, 104 million participants



Lancet, 2021;398:957-80

HYPERTENSION WORLDWIDE

Prevalence, Treatment, Control

1990-2019, 1,201 populations, 104 million participants

DIAGNOSED 54%

TREATED 42%

CONTROLLED 21%

Lancet, 2021



ΥΠΕΡΤΑΣΗ



EMENO

**NATIONAL
EPIDEMIOLOGICAL
STUDY**

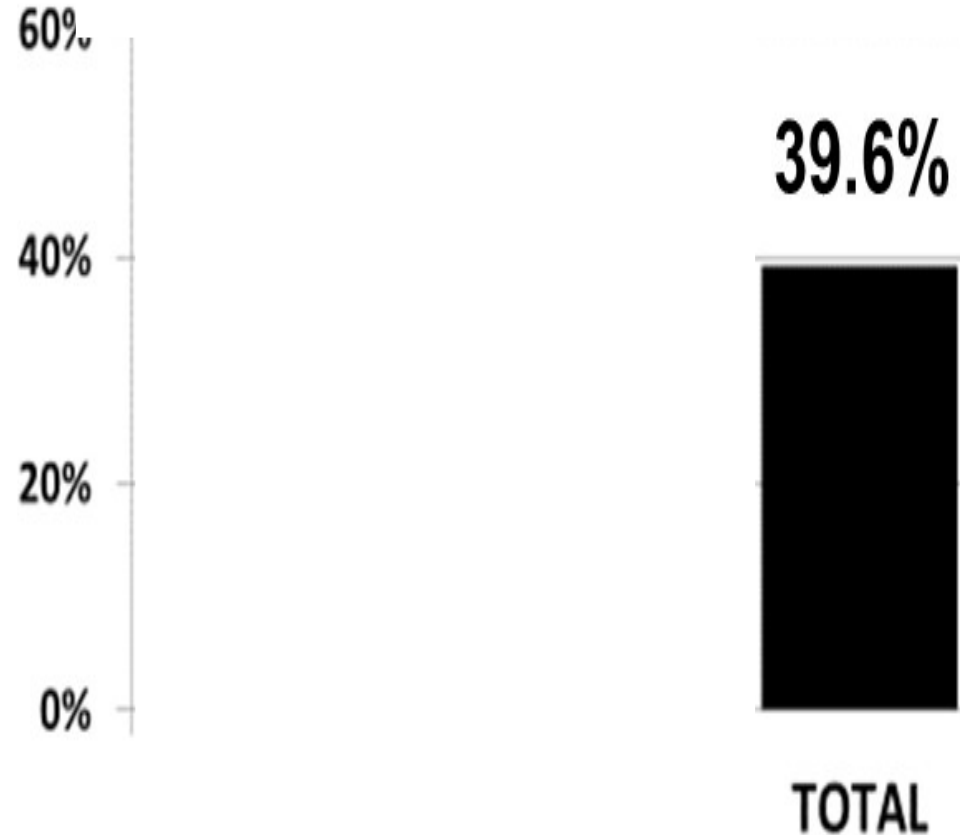
**577 περιοχές
N=6,006**

ΔΕΙΓΜΑΤΟΛΗΨΙΑ

Πολυσταδιακή

Στρωματοποιημένη

Τυχαιοποιημένη

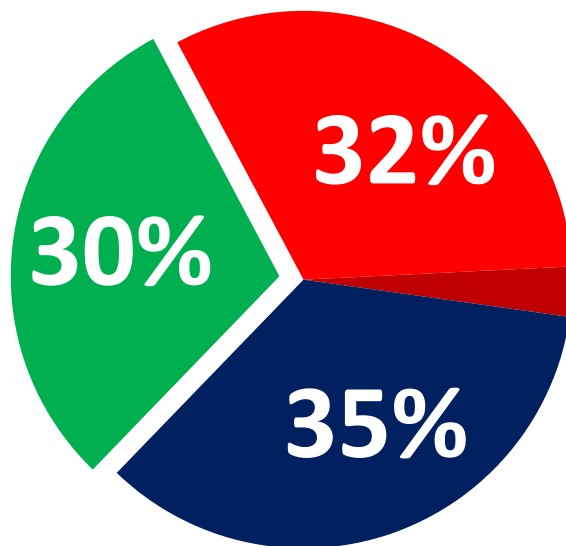


Stergiou GS, et al. *J Hypertens* 2021;39:1034-9.

ΥΠΕΡΤΑΣΗ



Υπό θεραπεία
ρυθμισμένοι



Αδιάγνωστοι

Διαγνωσμένοι
χωρίς θεραπεία

Υπό θεραπεία
αρρυθμιστοι

EMENO: **HYPERTENSION IN GREECE**

Prevalence, Awareness, Treatment, Control
according to age and gender (%)



Age (ys)

Prevalence

Unaware

**Treated
controlled**

18-29

30-39

40-49

50-64

65-79

≥80



EMENO
N=6,006

Treated Uncontrolled Hypertension

Drugs Patients, %

May Measurement Month



>100 Countries

2017: 1.2 million

2018: 1.5 million

2019: 1.5 million

2022: 1.2 million

WORLD'S LARGEST EVER

Screening Programme for Hypertension



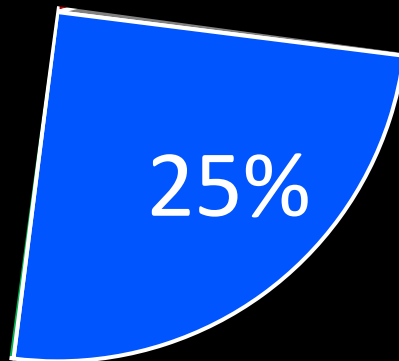
May Measurement Month



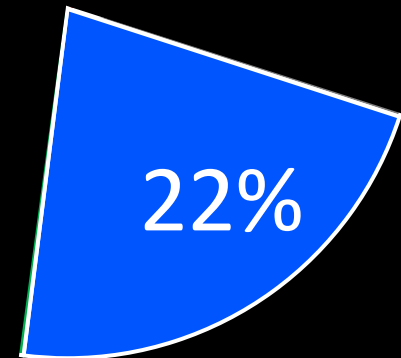
2019
(N=5.700)

2023
(N=5.100)

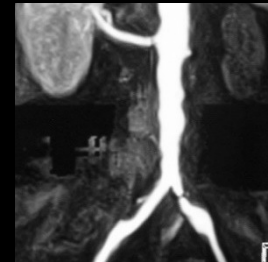
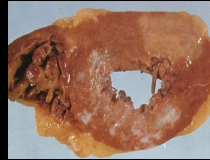
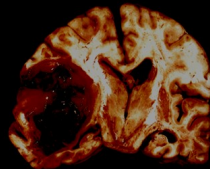
2022
(N=6.300)



■ Treated uncontrolled



Antihypertensive Drug Treatment Prevents Cardiovascular Events



**Dementia
-42**

How to manage hypertension in 2024





2023 ESH Guidelines for the management of arterial hypertension

Mancia G, Kreutz R, Brunström M, Burnier M, Grassi G, Januszewicz A, Muiesan ML, **Tsioufis K**, Agabiti-Rosei E, Algharably EAE, Azizi M, Benetos A, Borghi C, Hitij JB, Cifkova R, Coca A, Cornelissen V, Cruickshank K, Cunha PG, Danser AHJ, de Pinho RM, Delles C, Dominiczak AF, Dorobantu M, **Doumas M**, Fernández-Alfonso MS, Halimi JM, Járαι Z, Jelaković B, Jordan J, Kuznetsova T, Laurent S, Lovic D, Lurbe E, Mahfoud F, **Manolis A**, Miglinas M, Narkiewicz K, Niiranen T, Palatini P, Parati G, Pathak A, Persu A, Polonia J, Redon J, **Sarafidis P**, Schmieder R, Spronck B, **Stabouli S**, **Stergiou G**, Taddei S, **Thomopoulos C**, Tomaszewski M, Van de Borne P, Wanner C, Weber T, Williams B, Zhang ZY, Kjeldsen SE.

J Hypertens. 2023 Jun 21.

Hypertension Consensus





2023 ESH Guidelines
for the management
of arterial hypertension

151 Pages + 1,743 References

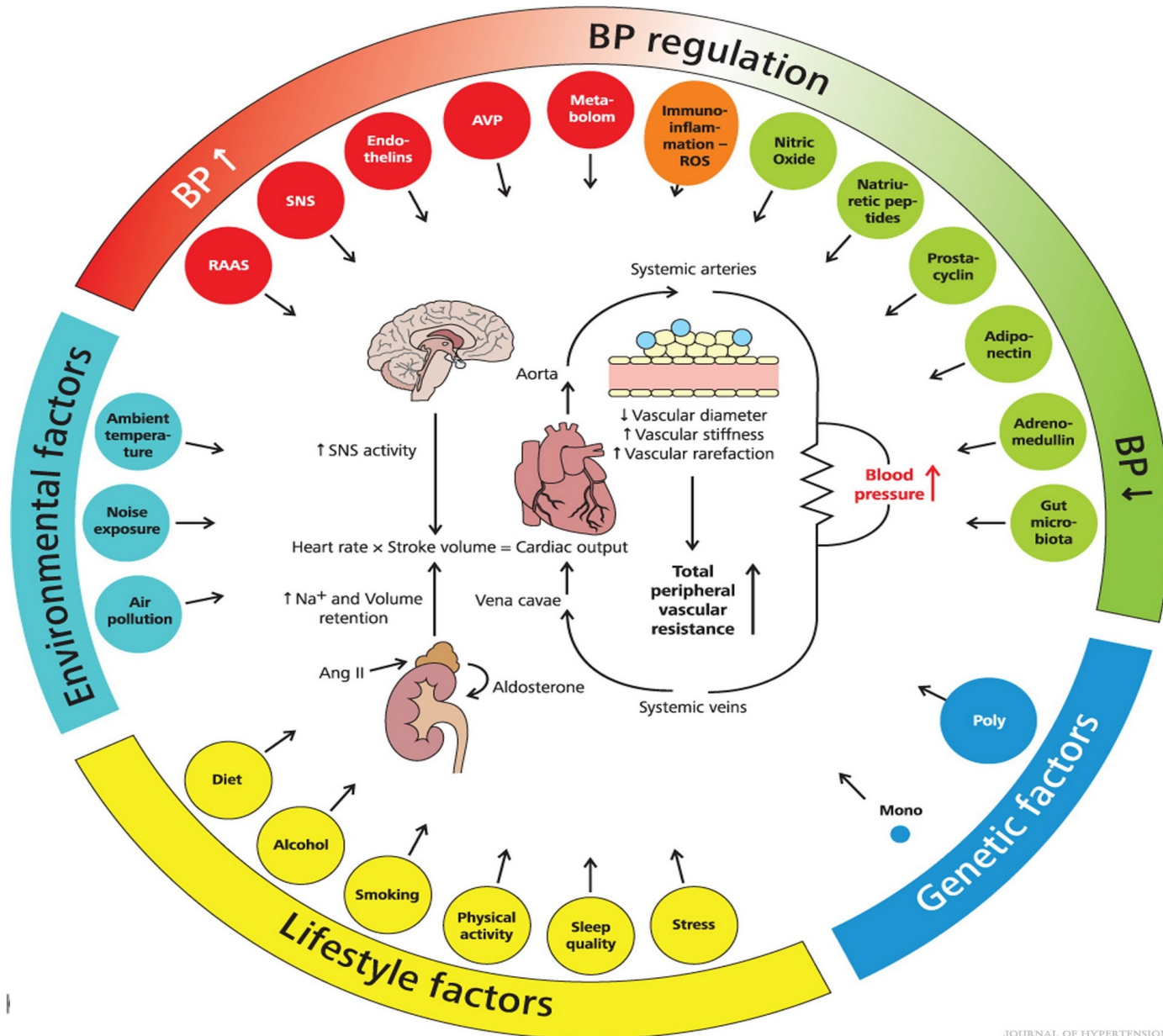
27 Tables + 21 Figures

47 Boxes

**Recommendations &
Statements**

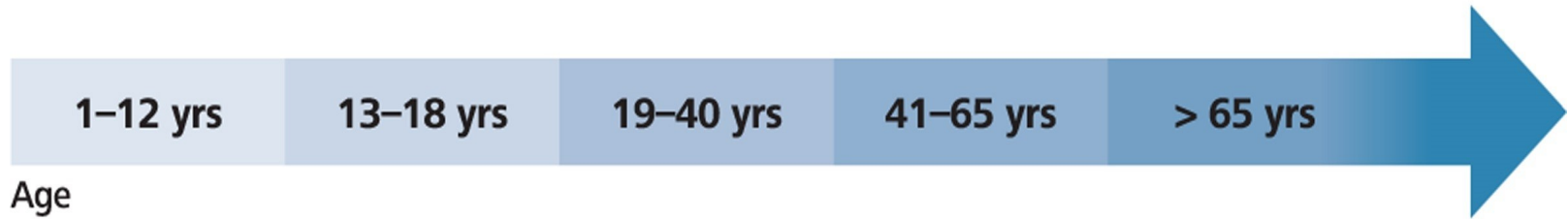
J Hypertens. 2023 Jun 21.

What is the cause of "Essential" HTN?

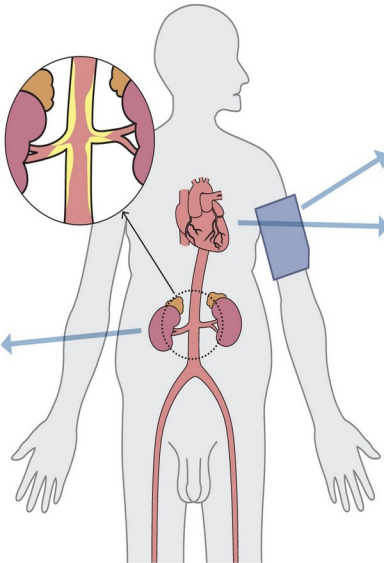




What is the cause of *“Secondary”* HTN?



(a) Atherosclerotic renovascular disease



Prevalence:
6–14%^a

Suggestive symptoms, signs and findings
Resistant hypertension
Flash pulmonary edema
Rapidly declining kidney function
Acute renal function degradation on ACEi or ARB
Generalized atherosclerosis^b

1st choice screening test
Renal artery duplex ultrasound; otherwise CT or MR-angiography

Further work-up
Angio-CT or angio-MR
Invasive catheter angiography

Treatment^{c,d}
Antihypertensive treatment
Strict control of CV risk factors
Revascularization (selected cases)

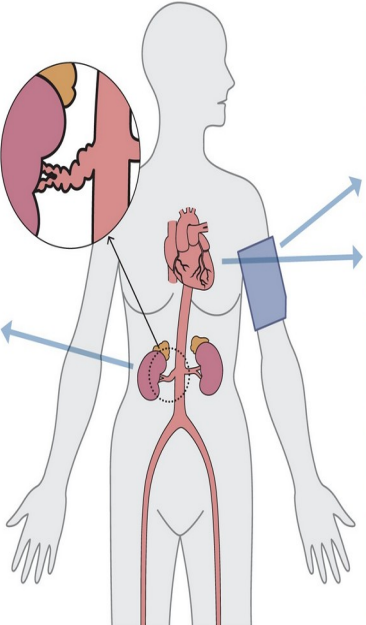
Cardiovascular phenotype

24h ABPM – resistant hypertension, frequent non-reverse dipping

- LVH
- Decreased diastolic function
- Decreased systolic function

Increased CV Risk and mortality

(b) Fibromuscular Dysplasia



Prevalence:
<1 to 6%^a

Suggestive symptoms, signs and findings
Early-onset/ severe hypertension
Migraine
Pulsatile tinnitus

1st choice screening test^b
Renal artery duplex ultrasound; otherwise CT or MR-angiography

Treatment
Antihypertensive treatment
Angioplasty without stenting^{c,d}

Follow-up

- Whole body CT- or MR-angiography at diagnosis^e
- Indefinite follow-up

Cardiovascular phenotype

24h ABPM – early onset or resistant hypertension

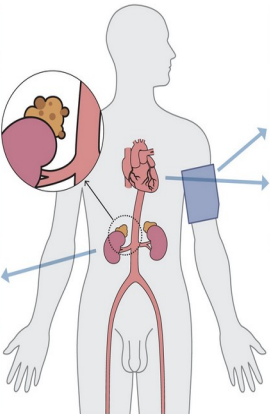
Frequent in patients with Spontaneous Coronary Artery Dissection (SCAD)

May affect all medium sized arteries (most frequent: renal and cervical arteries)

Often associated with arterial dissections and aneurysms

Cardiovascular phenotype:
From asymptomatic to resistant hypertension, stroke, renal, mesenteric or myocardial infarction

(c) Primary aldosteronism



Prevalence:
6–20%^a

Suggestive symptoms, signs and findings
Resistant hypertension
Grade 2 or 3 hypertension
Hypokalemia/Potassium in the low-normal range
Atrial fibrillation
OSA
Adrenal incidentaloma^b
Family history of PA/early stroke

1st choice screening test^c
Plasma aldosterone to renin ratio (ARR)

Further work-up^d
CT scanning
IV saline infusion test (SIT)
Fludrocortisone suppression test (FST)
Oral sodium loading test (SLT)
Captopril challenge test (CCT)
Adrenal vein sampling
Genetic testing in selected cases^e

Treatment
Surgical treatment (laparoscopic adrenalectomy) – unilateral PA
Medical treatment – bilateral adrenal disease^f

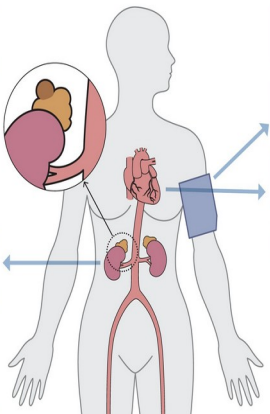
Cardiovascular phenotype

24 ABPM – true resistant hypertension, frequent non-reverse dipping

- LVH
- Decreased diastolic function
- Myocardial fibrosis (MR)

Increased CV Risk and mortality

(d) 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 enhanced 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

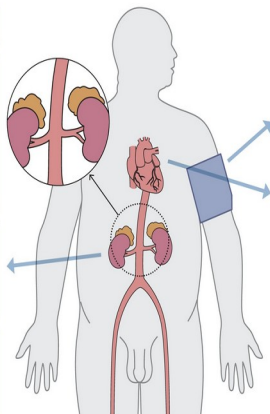
Cardiovascular phenotype

24h ABPM – frequent non-reverse dipping

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

Increased CV Risk and mortality

(e) Cushing's syndrome



Prevalence: 2–5%^a

Suggestive symptoms and signs
Resistant hypertension
Easy bruising, facial plethora, moon face, skin thinning
Proximal myopathy
Weight gain with centripetal distribution of body fat
Diabetes mellitus

1st choice screening test^b
Overnight 1 mg dexamethasone suppression test
24h urinary free cortisol
Late-night salivary cortisol

Further work-up
Morning plasma ACTH
ACTH stimulation by CRH or desmopressin
CT

Treatment
Medical – normalization of cortisol levels
Surgical – first line treatment for Cushing's disease, ectopic Cushing's syndrome and ACTH-independent hypercortisolism

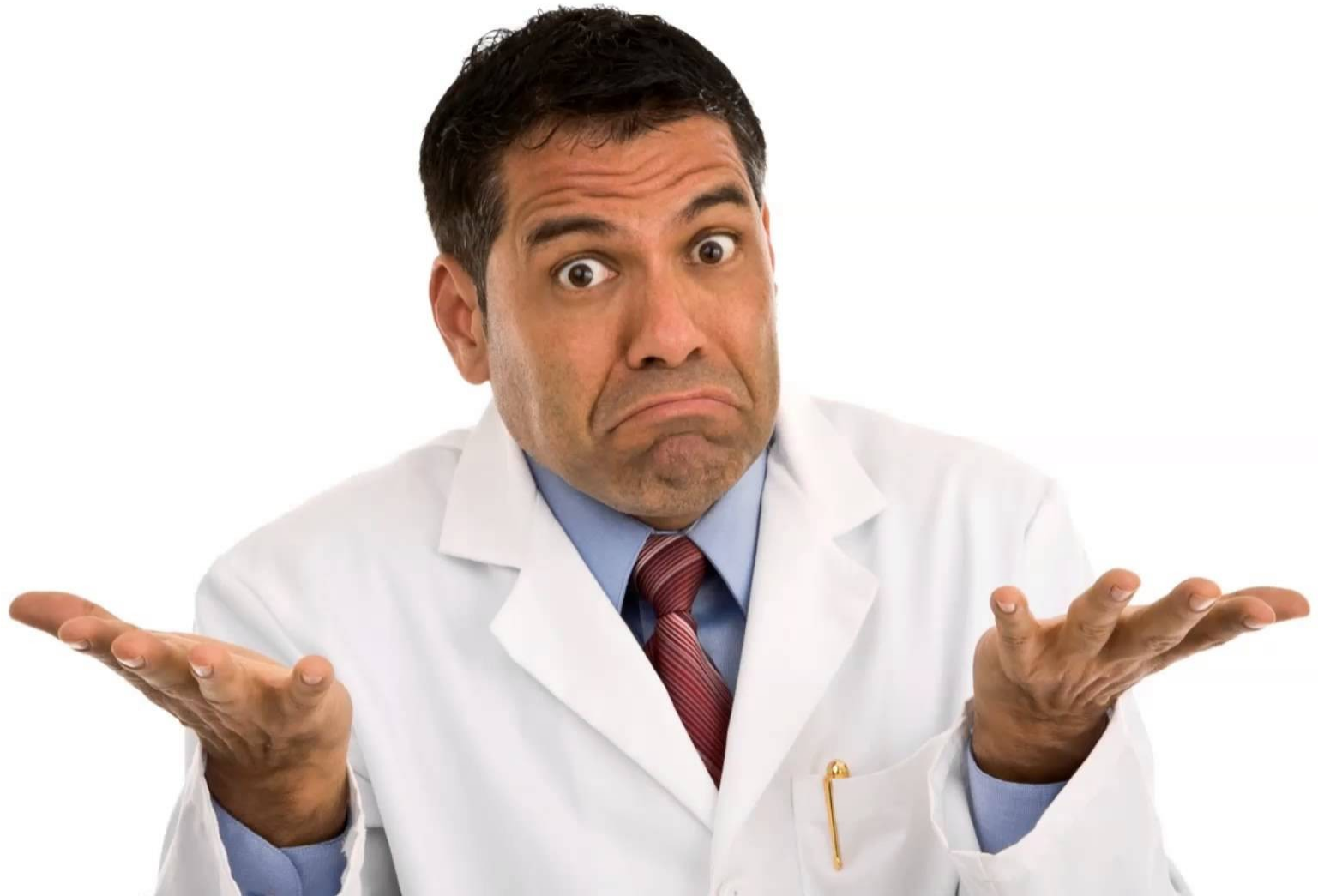
Cardiovascular phenotype

24h ABPM – frequent non-reverse dipping
Short-term BP variability

- LVH
- Decreased systolic function
- Decreased diastolic function

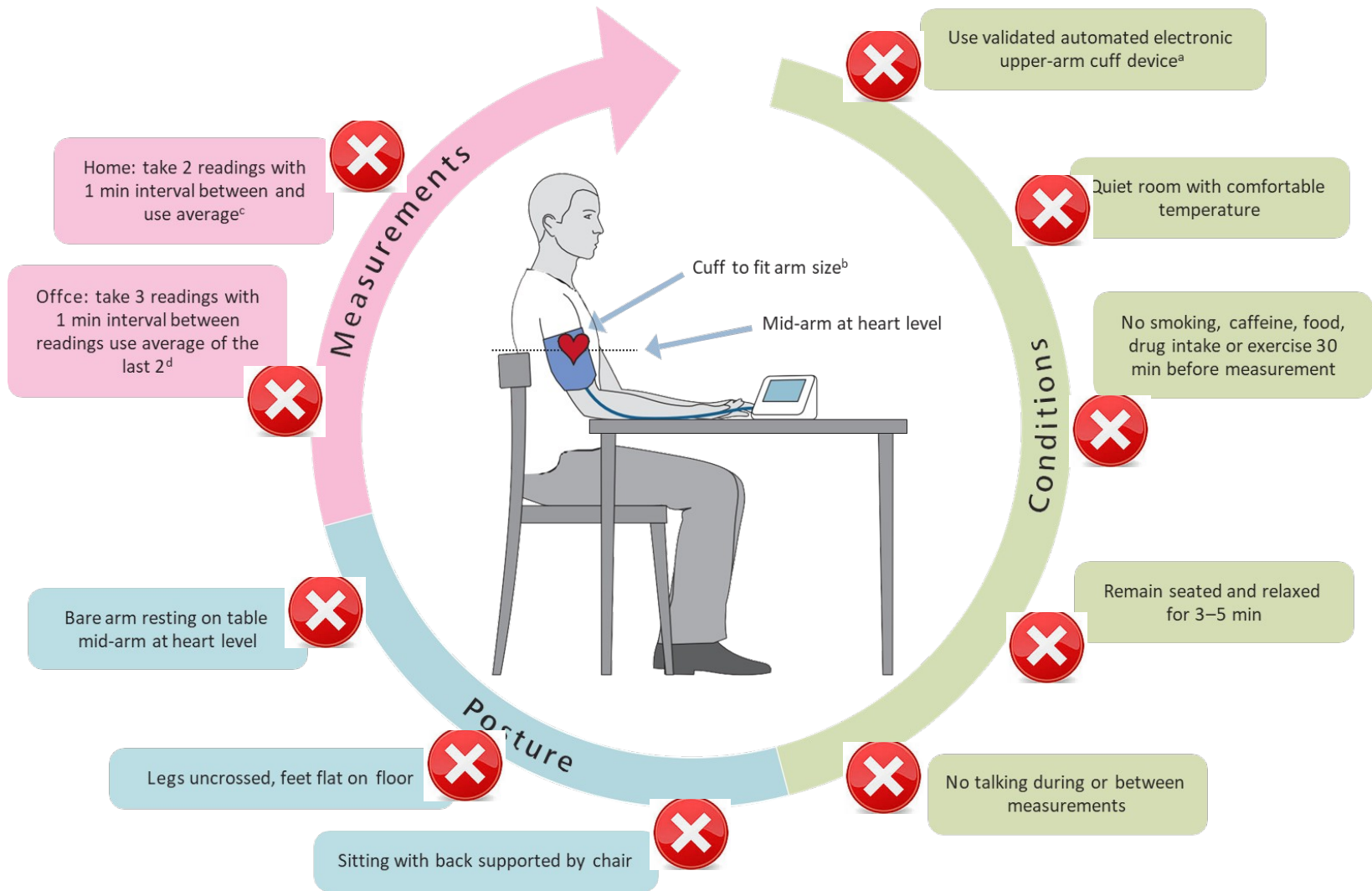
Increased CV Risk and mortality

How to diagnose HTN?





Office and Home BP Measurement

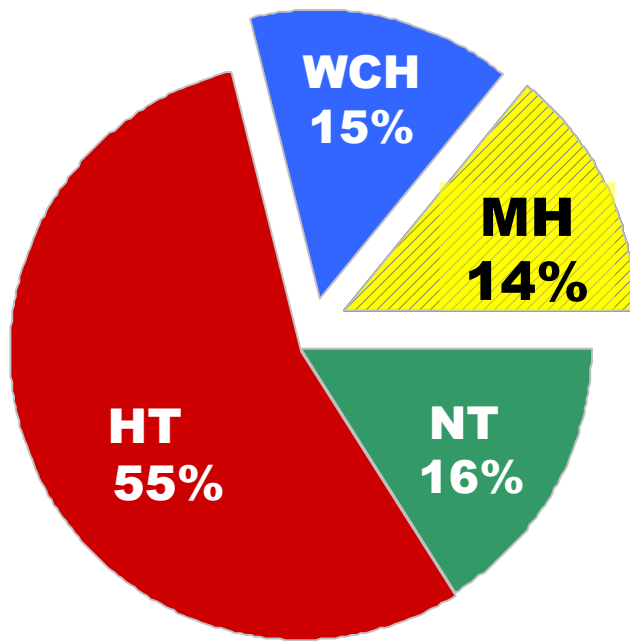




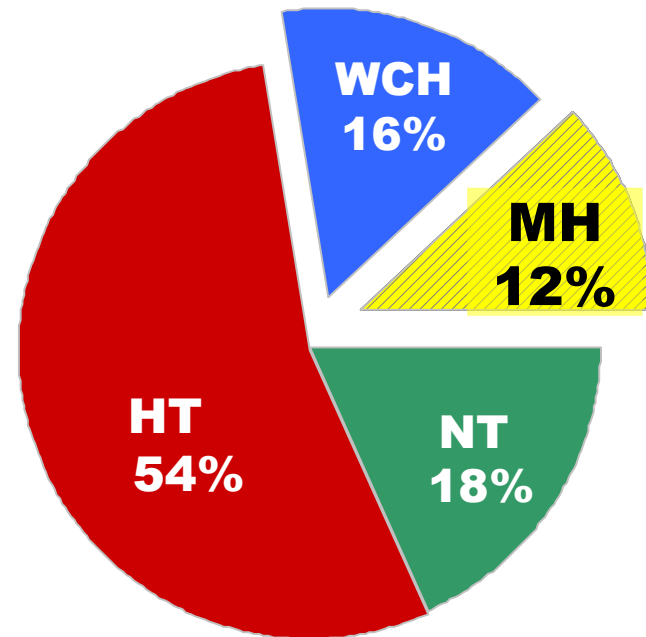
How to measure BP in the Office?

Recommendations & Statements	CoR	LoE
<p>Recommended for diagnosis</p> <p>Basis for risks, treatment benefits, treatment thresholds, goals</p>	I	A
<p>Standardized conditions/protocol</p> <p>3 measurements – use the average of the last 2.</p>	I	C
<p>Diagnosis in ≥ 2 visits (within 4 weeks), Unless BP $\geq 180/110$ mmHg, HTN symptoms, or HMOD or CVD.</p>	I	C
<p>1st visit: Measure both arms for consistent SBP difference $>15-20$ mmHg</p>	I	C
<p>Out-of-office BP: Use before/during treatment to obtain additional info (ABPM, HBPM, or both).</p>	I	C

White Coat and Masked HTN



Ambulatory BP



Home BP



White Coat HTN



Masked HTN

- **Suspect:** particularly in grade 1 HTN
- **Detect:** using home or ambulatory BP monitoring
- **Prescribe:** lifestyle interventions
- **Drug treatment?** Consider in high-risk/organ damage

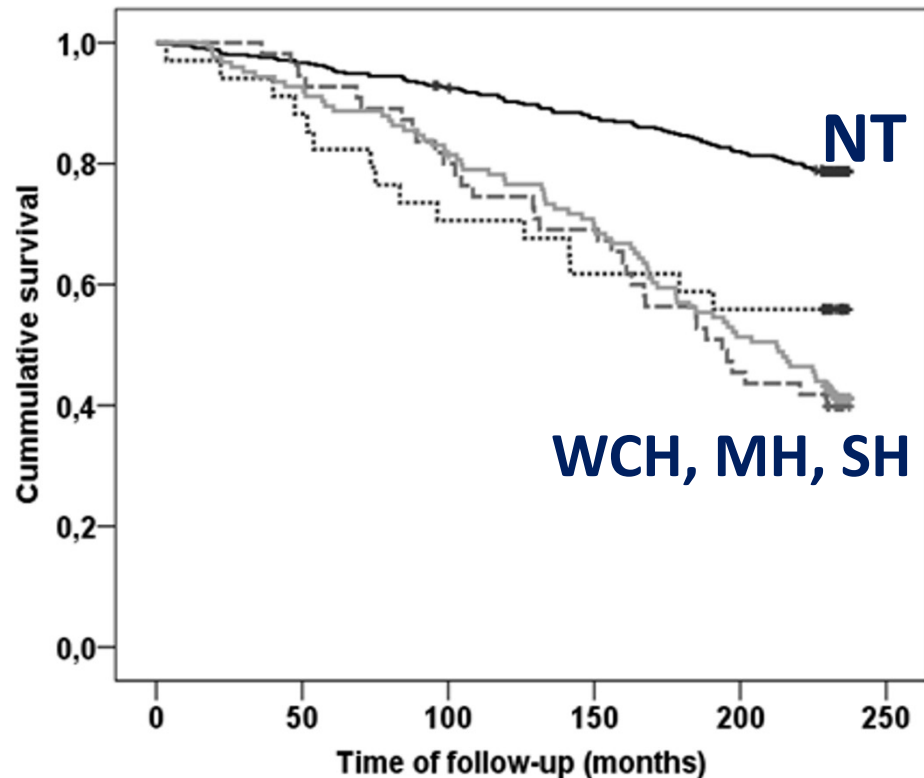
- **Suspect:** particularly in high-normal BP
- **Detect:** using home or ambulatory BP monitoring
- **Prescribe:** lifestyle interventions
- **Drug treatment?** Consider in high-risk/organ damage

**“Intermediate” phenotypes
Same diagnostic/therapeutic strategy**

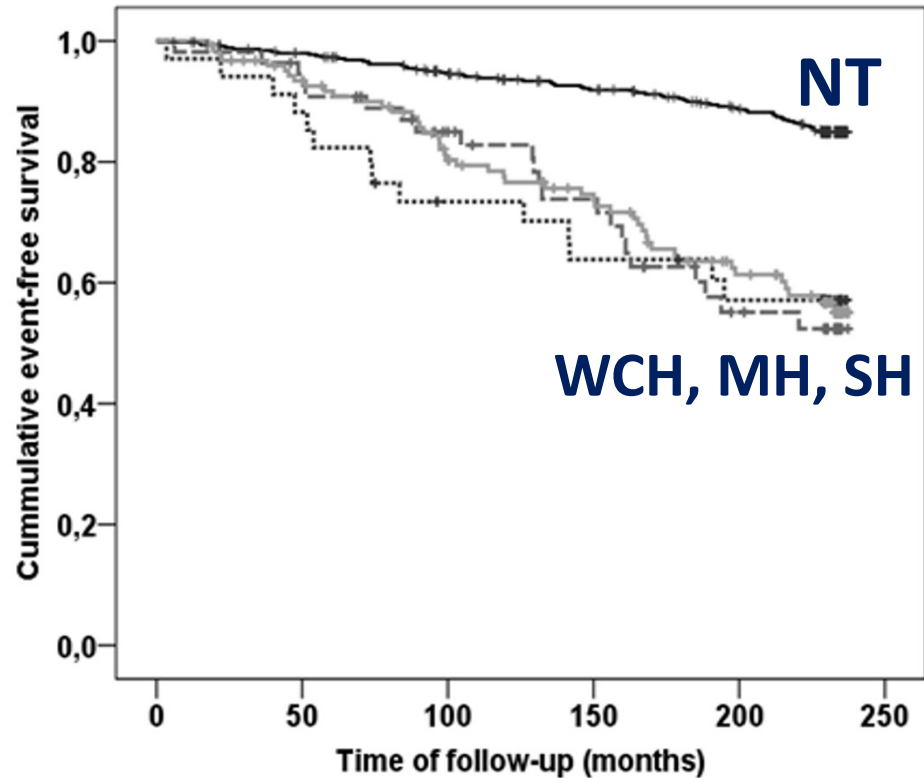
Prognostic value of average home blood pressure and variability: 19-year follow-up of the Didima study

Angeliki Ntineri, Petros G. Kalogeropoulos, Konstantinos G. Kyriakoulis, Evaggelia K. Aissopou, Georgia Thomopoulou, Anastasios Kollias, and George S. Stergiou

All-cause mortality



Cardiovascular events



N=665 (216 deaths)

J Hypertens 2018;36:69-76.



How to monitor BP at home?

Recommendations & Statements	CoR	LoE
In addition to office BP	II	B
Identify White-coat / Masked HTN	I	B
Long-term follow-up (treated HTN)	I	B
Automated upper arm-cuff monitors properly validated – www.stridebp.org	I	C
Before each office visit → 7 days (not less than 3) → Duplicate → morning/evening Average (discard 1 st day)	I	C



ΜΕΤΡΗΣΗ ΑΡΤΗΡΙΑΚΗΣ ΠΙΕΣΗΣ ΣΤΟ ΣΠΙΤΙ

Όνοματεπώνυμο: _____

Ημ/νία γέννησης: ___/___/___ Πιεσόμετρο: _____

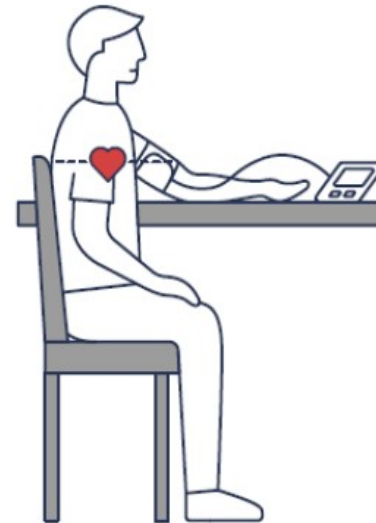
		Ώρα	Συστολική-Διαστολική	(Σφύξεις)
1^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

2^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

3^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

4^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

5^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

Χρησιμοποιήστε πιστοποιημένο
αυτόματο πιεσόμετρο βραχίονα
(www.stridebp.org)

Πριν από κάθε επίσκεψη στον ιατρό:

- Μετρήστε για 7 ημέρες (τουλάχιστον 3)
- Πρωί & απόγευμα πριν τα φάρμακα
- Μετά 5 λεπτά ανάπαυση καθιστή/ός
- 2 μετρήσεις με μεσοδιάστημα 1 λεπτού

Μακροχρόνια παρακολούθηση:

- Διπλή μέτρηση 1 ή 2 φορές την εβδομάδα, ή το μήνα

		Ώρα	Συστολική-Διαστολική	(Σφύξεις)
6^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

7^η ΗΜΕΡΑ ___/___/202__	Πρωί	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)
	Βράδυ	1 ^η	___:___ - _____	(____)
		2 ^η	___:___ - _____	(____)

ΣΗΜΕΙΩΣΤΕ ΕΔΩ ΤΟ ΜΕΣΟ ΟΡΟ ΟΛΩΝ ΤΩΝ ΜΕΤΡΗΣΕΩΝ
ΕΚΤΟΣ ΤΗΣ 1^{ΗΣ} ΜΕΡΑΣ: _____ - _____ (____)



How to use 24-hour Ambulatory BP monitoring (ABPM)

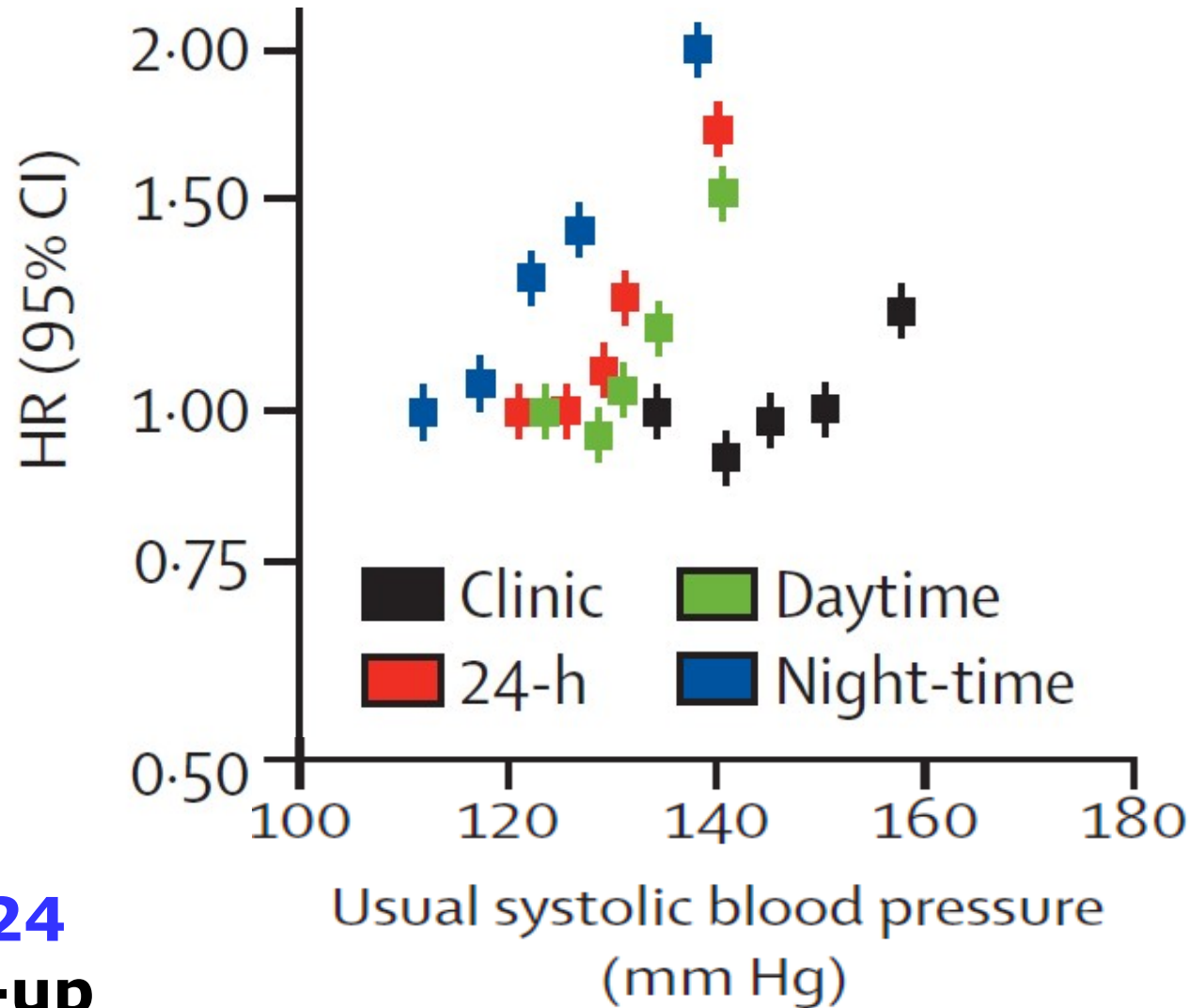
Specific Recommendations & Statements	CoR	LoE
In addition to office BP	II	B
Identify White-coat, Masked, Nocturnal HTN Repeat may be necessary	I	B
Confirm Resistant hypertension	I	B
Upper arm-cuff automated BP monitors properly validated – www.stridebp.org	I	C
Measurement frequency: 20' Day + Night.	I	C



Night-time HTN and BP Phenotypes

	CoR	LoE
Assess night-time BP using ABPM More predictive for outcomes than daytime BP	I	B
Nocturnal HTN, non-dipping, reverse dipping associated with increased CV risk	I	B
For identifying night-time BP phenotypes repeat ABPM (poor reproducibility)	I	B
Measurement frequency: 20 min during day and night	I	C
Non-dipping / Night-time HTN frequent in diabetes-2 and CKD (ABPM or HBPM)	I	B

Night-time BP & Mortality



N 59,124
Follow-up
9,7 yrs

Staplin N, et al. *Lancet* 2023;401:2041-50.

Relative **Informativeness** of BP Indices for All-cause and CVD Death

	All-cause death		Cardiovascular death	
	Confounder-adjusted χ^2 statistic	Informativeness*	Confounder-adjusted χ^2 statistic	Informativeness
Clinic systolic	61.2	100%	29.1	100%
24-h systolic	293.1	479%	135.4	465%
Daytime systolic	233.0	381%	113.3	389%
Night-time systolic	361.7	591%	175.8	604%

Models adjusted for age, sex, smoking, BMI, diabetes, dyslipidaemia, CVD, number of antihypertensive drugs

N 59,124
Follow-up
9,7 yrs

Staplin N, et al. *Lancet* 2023;401:2041-50.

Which blood pressure monitors?

Recommendations & Statements	CoR	LoR
Electronic, upper-arm cuff devices for Office, Home, and Ambulatory BP measurement.	I	B
Manual auscultatory hybrid devices (LCD, LED display, or digital countdown), or shock-resistant aneroid → If automated devices not available.	I	B
Properly validated devices. www.stridebp.org	I	B
Cuffless devices → Do not use	III	C





Cuffless blood pressure measuring devices: review and statement by the European Society of Hypertension Working Group on Blood Pressure Monitoring and Cardiovascular Variability

George S. Stergiou^a, Ramakrishna Mukkamala^b, Alberto Avolio^c, Konstantinos G. Kyriakoulis^a, Stephan Mieke^d, Alan Murray^e, Gianfranco Parati^{f,g}, Aletta E. Schutte^h, James E. Sharmanⁱ, Roland Asmar^j, Richard J. McManus^k, Kei Asayama^l, Alejandro De La Sierra^m, Geoffrey Headⁿ, Kazuomi Kario^o, Anastasios Kollias^a, Martin Myers^p, Teemu Niiranen^{q,r}, Takayoshi Ohkubo^l, Jiguang Wang^s, Gregoire Wuerzner^t, Eoin O'Brien^u, Reinhold Kreutz^v, and Paolo Palatini^w, on behalf of the European Society of Hypertension Working Group on Blood Pressure Monitoring

Considerable potential for changing the diagnosis and management of hypertension

Fundamental questions regarding their accuracy, performance, and implementation

Need to be carefully addressed

before they can be recommended for clinical use

J Hypertens 2022;40:1449-60.



**European
Society of
Hypertension**



**International
Society of
Hypertension**



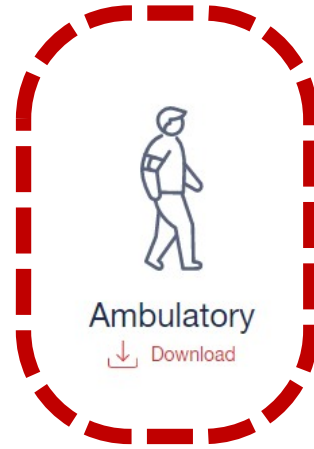
www.stridebp.org



**ONLY 8% OF BLOOD
PRESSURE DEVICES
ON THE MARKET
APPROVED BY
THE STRIDE BP**

Lists of validated BP monitors

Validated blood pressure monitors



>340,000 views from >200 countries

www.stridebp.org

How to predict the CVD risk?



How to assess the CVD 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				
	1 or 2 risk factors				
	≥3 risk factors				
Stage 2	HMOD, CKD grade 3, or diabetes mellitus				
Stage 3	Established CVD or CKD grade ≥4				



<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%

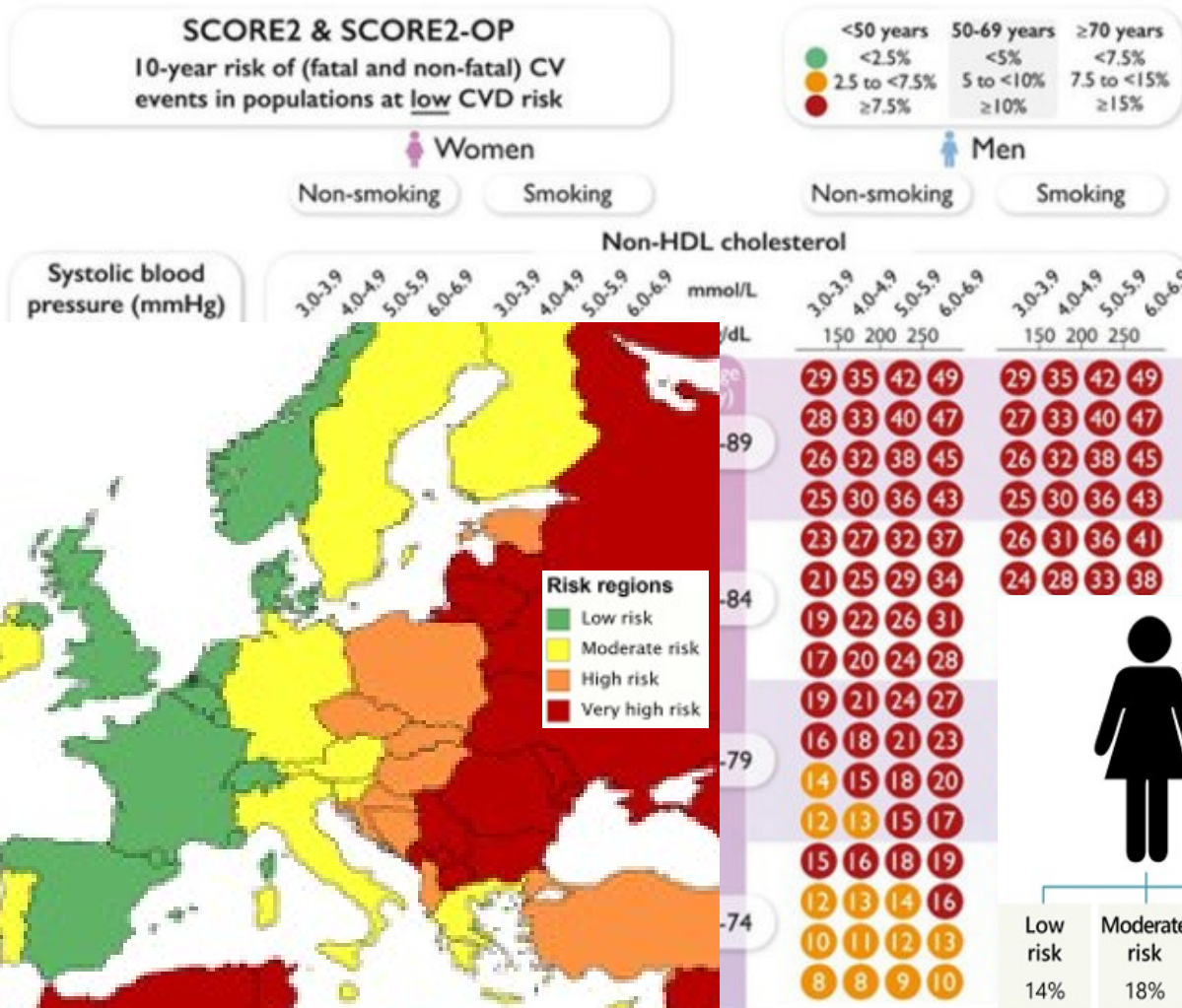


How to detect organ damage?

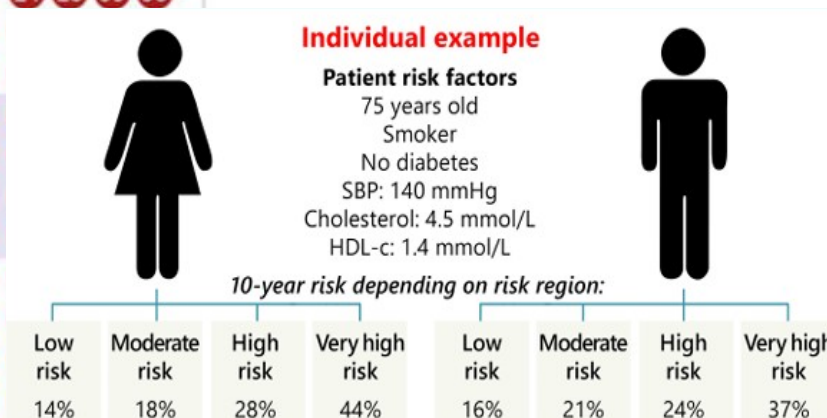
Marker	Sensitivity to changes	Reproducibility - operator independence	Time to changes	Prognostic value of changes
LVH-ECG	Low	High	Moderate (>6 months)	Yes
LVH-Echo	Moderate	Moderate	Moderate (>6 months)	Yes
LVH-MRI	High	High	Moderate (>6 months)	No data
e-GFR	Moderate	High	Moderate (>6 months)	Yes
UACR	High	Moderate	Fast (weeks-months)	Yes
RRI	Low	High	Slow (>12 months)	Yes
Carotid IMT	Very low	Low	Slow (>12 months)	Limited data
PWV	High	Low	Fast (weeks-months)	Limited data
ABI	Low	Moderate	Slow (>12 months)	Limited data
Retina	High	High	Moderate (>6 months)	No data

How to assess the risk if not obvious?

(CVD, CKD, DM complicated, organ damage, marked risk factor)



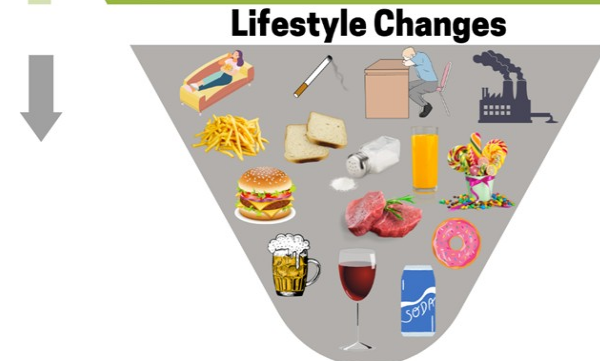
SCORE2 and SCORE2-OP
risk chart for fatal and non-fatal (MI, stroke) ASCVD
Low CVD Risk (1)



Which lifestyle interventions?



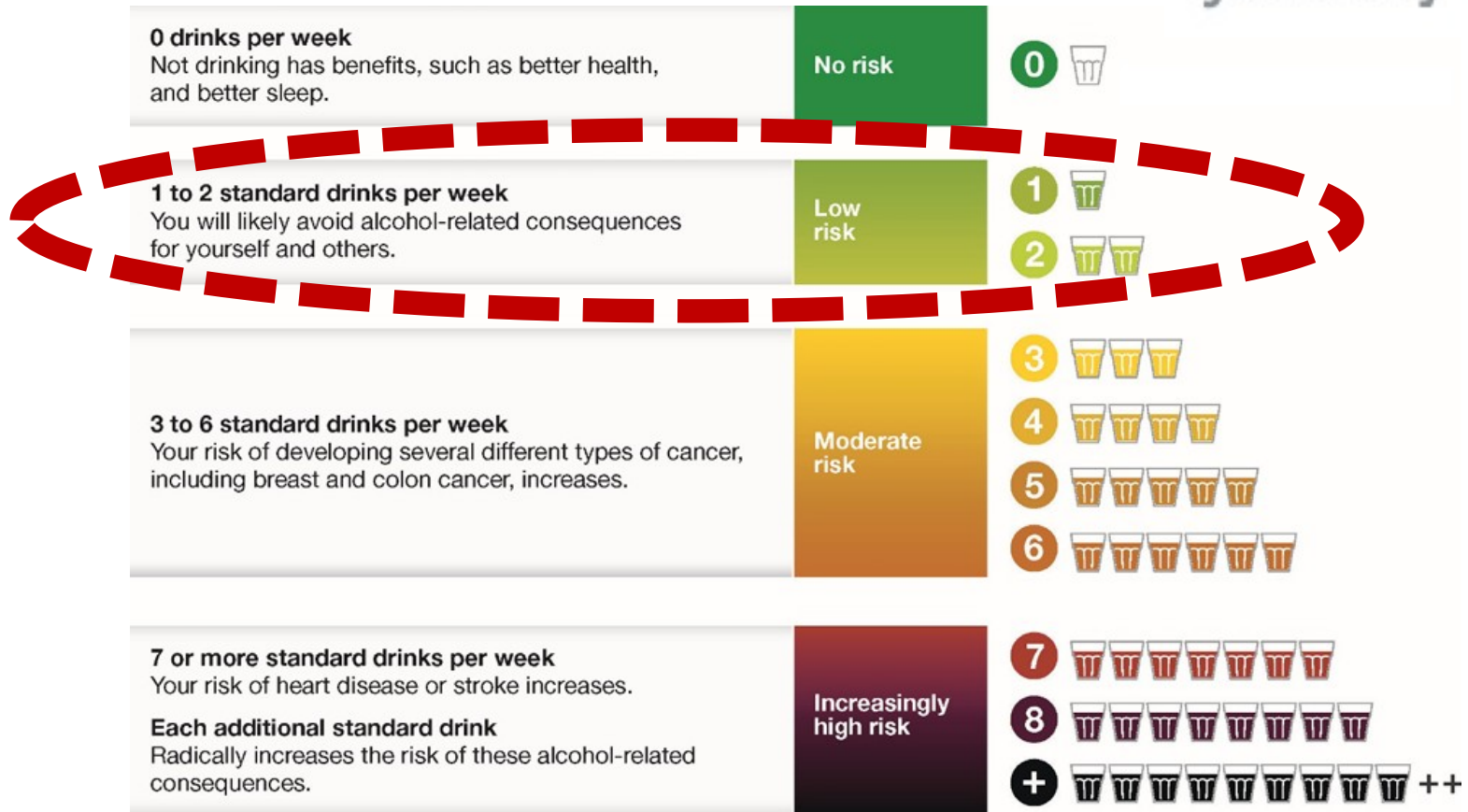
- **Weight** reduction
- **Vegetables**, fruits, beans, nuts, fish, poultry
- **Sodium** ↓ 5g/day, Potassium ↑ food
- **Physical activity**: 3-5 hours/wk aerobic, or 1.5-2.5 hours/week vigorous
- **Alcohol**: Max 2 drinks/day (better 0)
No binge drinking
- **Smoking** 0
- **Reduce Stress**





Canada's Guidance on Alcohol and Health: Final Report

January 2023



A standard drink means:



Beer

341 ml (12 oz) of beer
5% alcohol

or



Cooler, cider, ready-to-drink

341 ml (12 oz) of drinks
5% alcohol

or



Wine

142 ml (5 oz) of wine
12% alcohol

or



Spirits

(whisky, vodka, gin, etc.)
43 ml (1.5 oz) of spirits
40% alcohol

New Directions in Lifestyle Management of HTN and CVD



International Society of Hypertension



J Hypertens.
Wolters Kluwer
2023 Sep 13.

Eat and drink (daily)



Salt
 tsp=5g
 (soy sauce >2tbsp)



Potassium
 3.5g (banana ~450mg)



Sugar Limit



Fibre: 25-29g
 • Avocado 10g/cup
 • Edamame 18g/cup



Alcohol Limit, ideally zero



Other beverages
 • Unsweetened coffee: 2-3 cups
 • Add nitrate-rich drinks: beetroot and pomegranate juice, cocoa drinks

Move



Aerobic exercise Intensity

- Moderate 30 min, 5x week (brisk walking)
- Vigorous 20 min, 3x week (running)
- ~~HIIT~~ 25 min, 3x week



Dynamic resistance (weight training)
 2 or more days (non-consecutive)



Isometric resistance (muscle tightening)
 4x2 min contractions, 3 non-consecutive days

Reduce stressors



Maintain healthy weight
 waist-to-height ratio <0.5



Mindfulness practices
 30 min



Music therapy



Meditation, yoga



Increase sleep quality and duration

Other



Stop smoking



Limit pollution exposure



Use of digital wearables/apps to track movement and sleep

Which BP to start treatment?



Age 18-79 years → $\geq 140/90$

Age 80+ years → ≥ 160 (or ≥ 140)

CV disease (CHD) → $\geq 130/80$

When to start treatment?

Grade 1
Hypertension
BP 140–159/90–99

Grade 2
Hypertension
BP 160–179/100–109

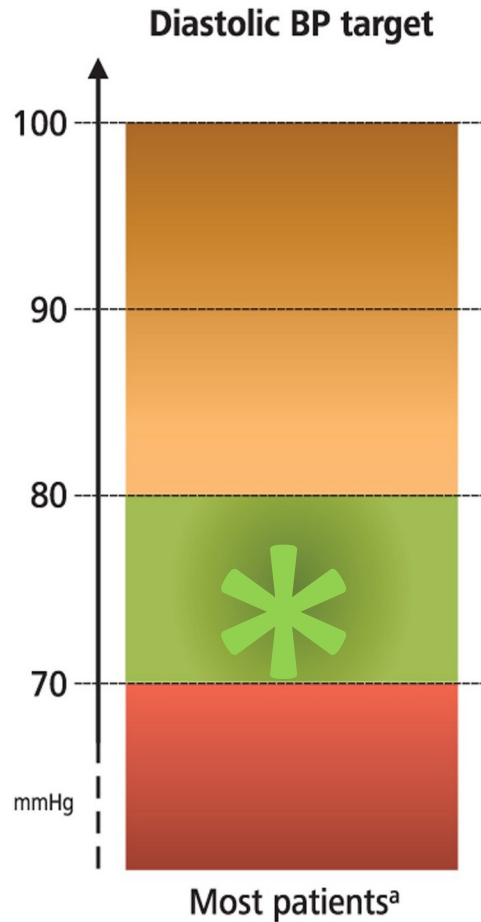
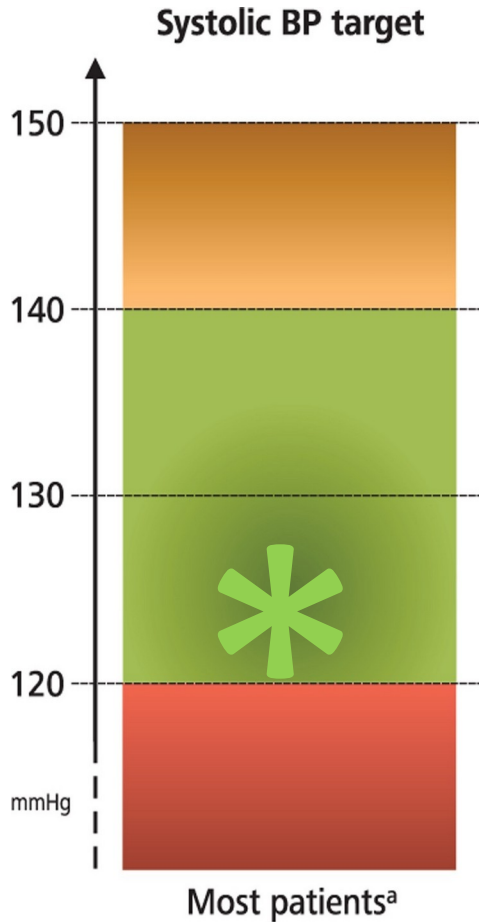
Grade 1
Hypertension
BP 140–159/90–99

Grade 2
Hypertension
BP 160–179/100–109

Grade 3
Hypertension
BP \geq 180/110



Which is the Office BP target?



<80 years

- 1st objective <140/80 mmHg
 - Well tolerated
- 120-129/70-79**

80+ years

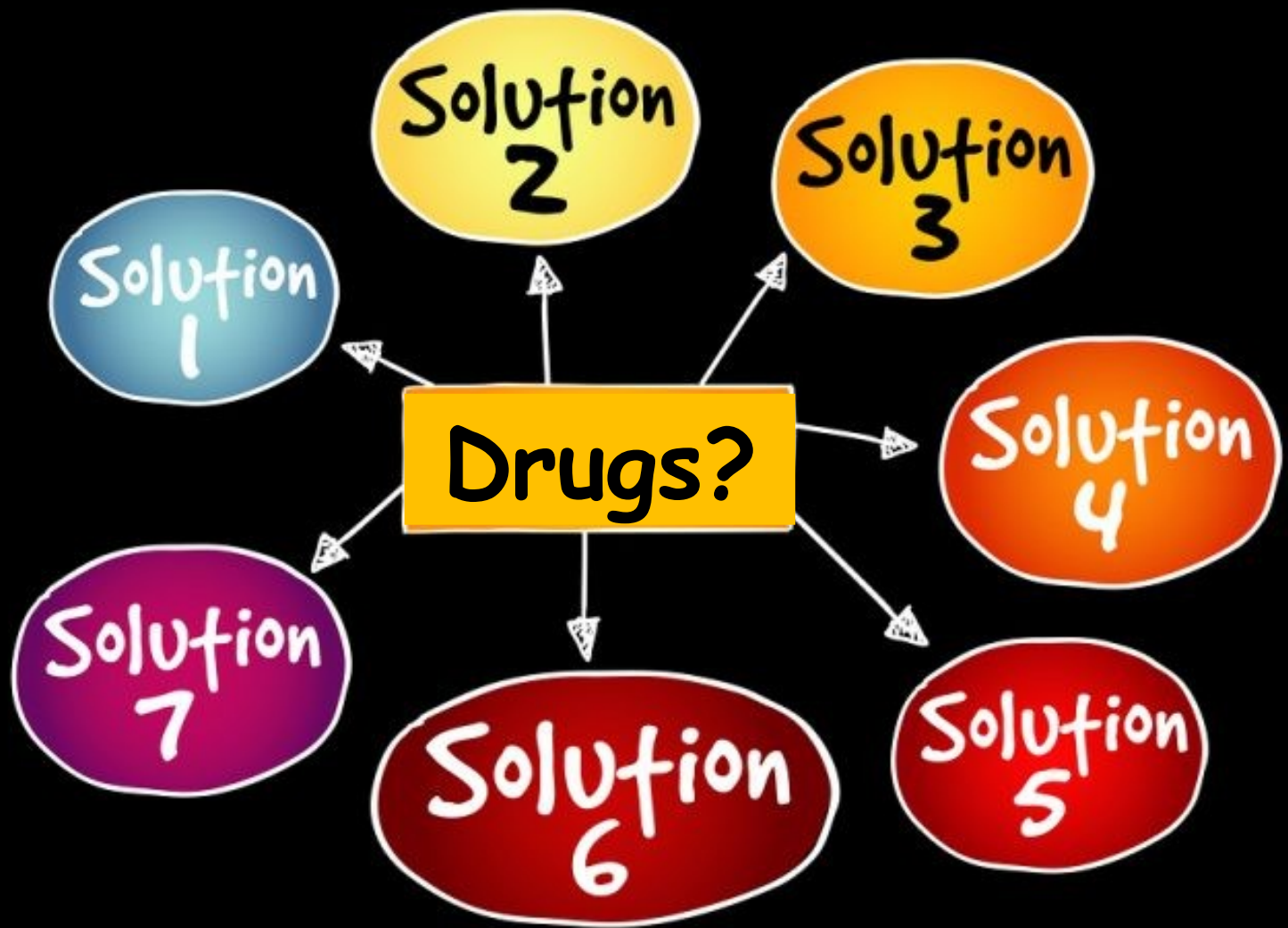
- 1st objective <150/80 mmHg
 - Well tolerated
- SBP 130-139**

Frail patients

Individualize target



~~130~~



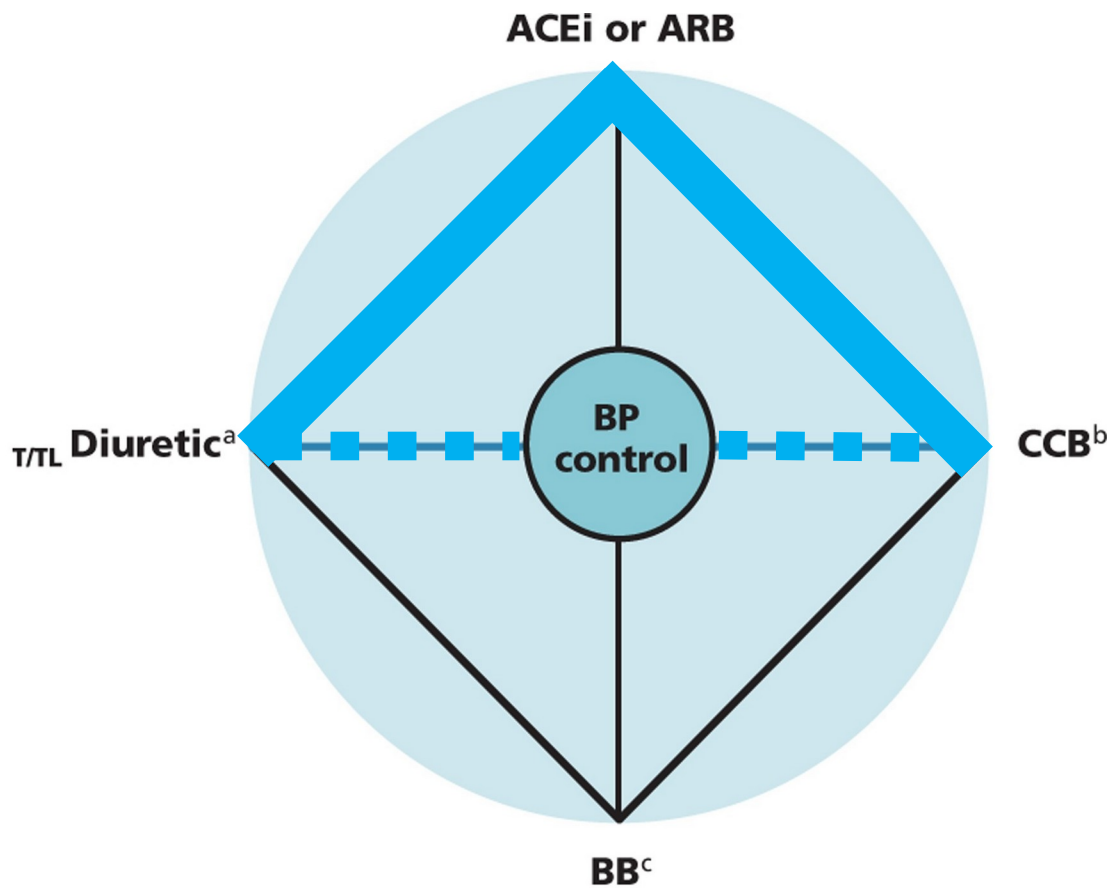
OPTIMAL TREATMENT STRATEGY FOR HYPERTENSION

We spent too long time and effort
to interpret research data
and reach consensus

Primary goal → **Reduce BP**



Which Drug Classes?



General BP Lowering Strategy

Prefer SPCs
at any step



Step 1

Dual combination

Step 2

Triple combination

Step 3

Add further drugs

Which treatment in resistant HTN?

Patients not controlled with
ACEi or ARB + CCB + Diuretic^b



Should Renal Denervation be used?

**CAN BE
CONSIDERED**

When?

1. Uncontrolled BP despite combination
2. Uncontrolled BP if drugs not tolerable
3. Resistant HTN
4. e-GFR is >40 ml/min/1.73m²

How?

- ➔ Shared decision making
- ➔ Experienced specialised centres

Strategy



- ✓ **Goal: BP 125/75 mmHg**
- ✓ **Monthly visits (tele) till BP control (3 months)**
- ✓ **Check non-adherence – before each step**
- ✓ **Lifestyle intervention – at each step**
- ✓ **Simplify regimen (doses/day, single pill combos)**
- ✓ **Home BP monitoring (ABPM) – Telemedicine**
- ✓ **Refer difficult/resistant cases**

ΡΥΘΜΙΣΗ ΤΗΣ ΥΠΕΡΤΑΣΗΣ

Kaiser Perm 91%



ΥΠΕΡΤΑΣΗ 2024

Γ Στεργίου

ΚΕΝΤΡΟ ΥΠΕΡΤΑΣΗΣ - STRIDE-7

Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών
Ιατρική Σχολή, Γ' Παθολογική Κλινική, ΓΝΑ Σωτηρία

