Hypertension Management 2026

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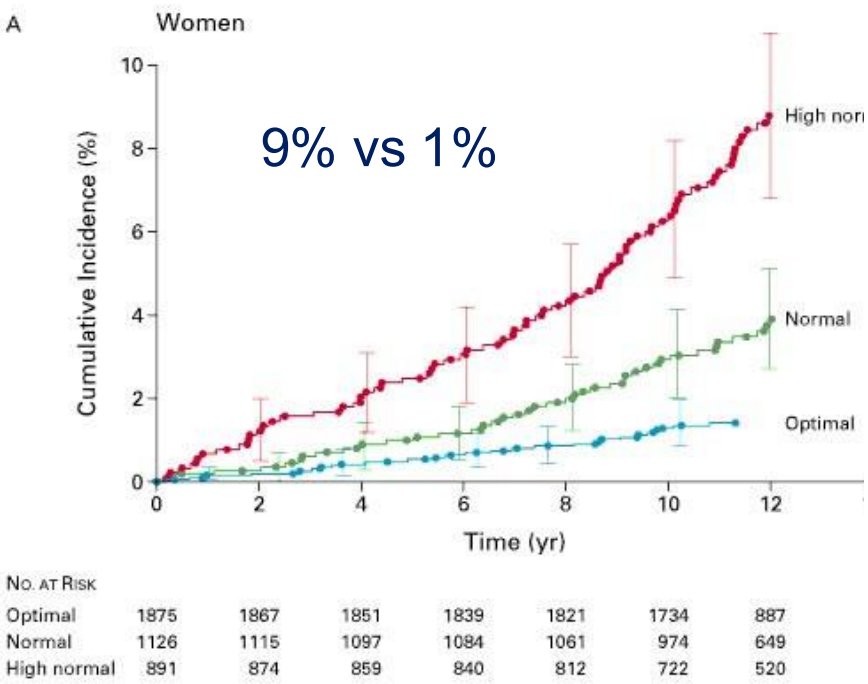
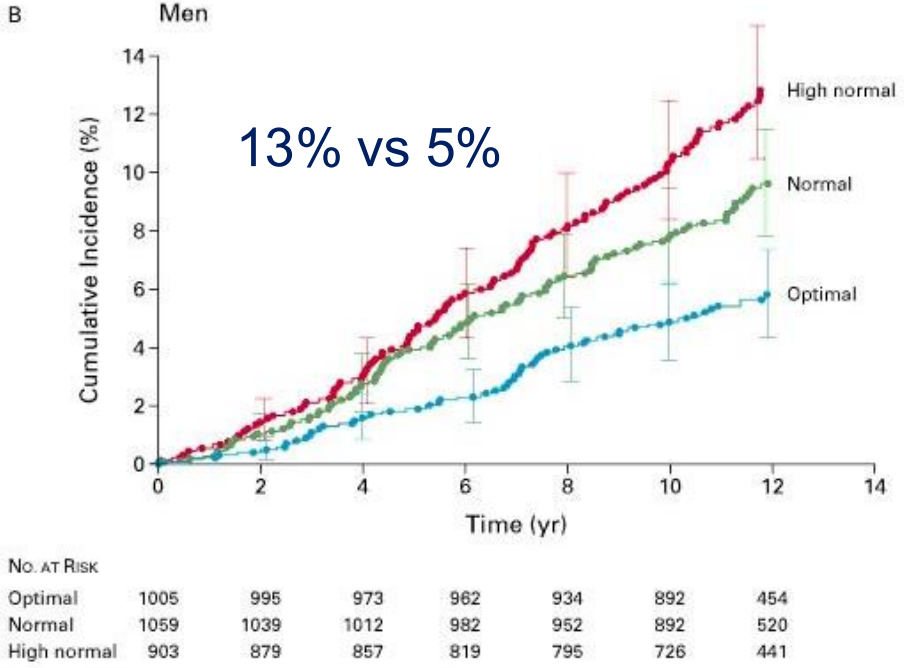
Timeline of Hypertension

- ~80 years ago, hypertension was considered an “essential malady” and not a treatable condition.
- President Franklin D. Roosevelt was given a clean bill of health by his physician even when his BP was recorded as ~220/120 mmHg.
- The first anti-hypertensives were thiazide diuretics and introduced in late 1950s.
- Throughout 1960’s there was debate on whether HTN needed to be treated or was a natural part of the ageing process.
- First multicenter VA cooperative study established treating DBP (<90 mmHg) reduced CV events 1967 and 1970.
- 1991 SHEP (Systolic Hypertension in Elderly Program) showed benefit of treating SBP over 160mmHg with chlorthalidone / atenolol

Saklayen M et al. Frontiers in Cardiovascular Medicine 2016

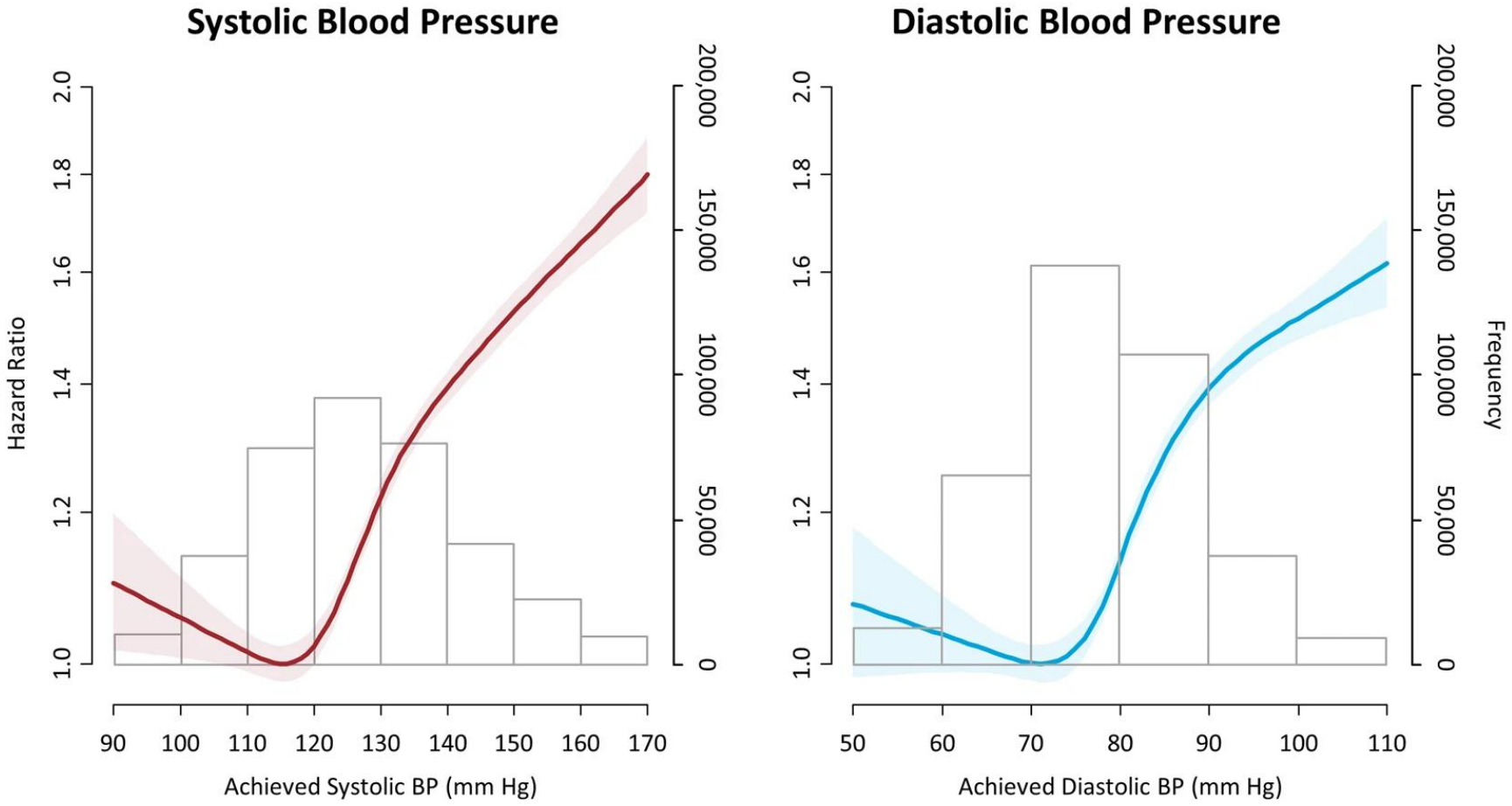
Incidence of Cardiovascular Events by Blood Pressure Category:





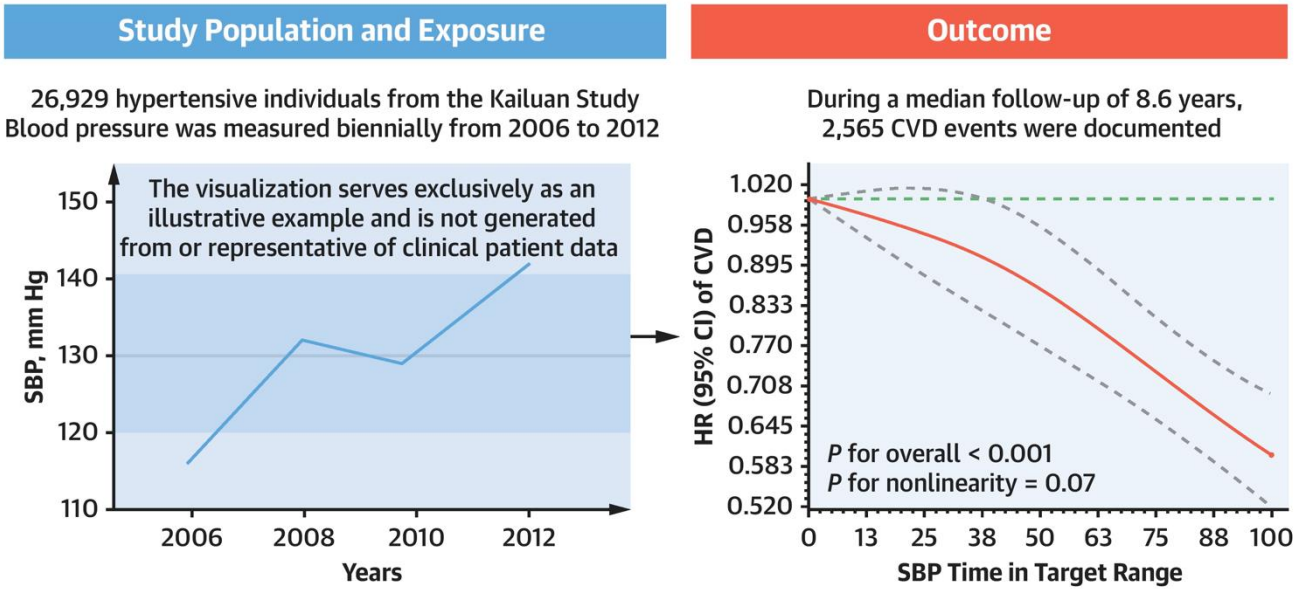
Optimal: BP <120/80 mmHg
Normal: BP 120-129/80-84 mmHg
High Normal: BP 130-139/85-89 mmHg

Achieved Blood Pressure and Risk of Cardiovascular Events



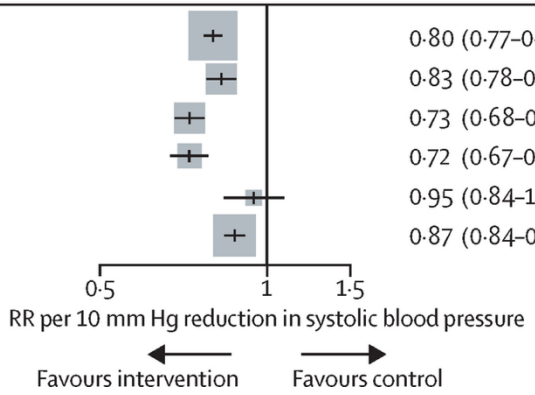
BP <120/80 mmHg

Long-Term SBP Time in Range and CVD in Patients with HTN:



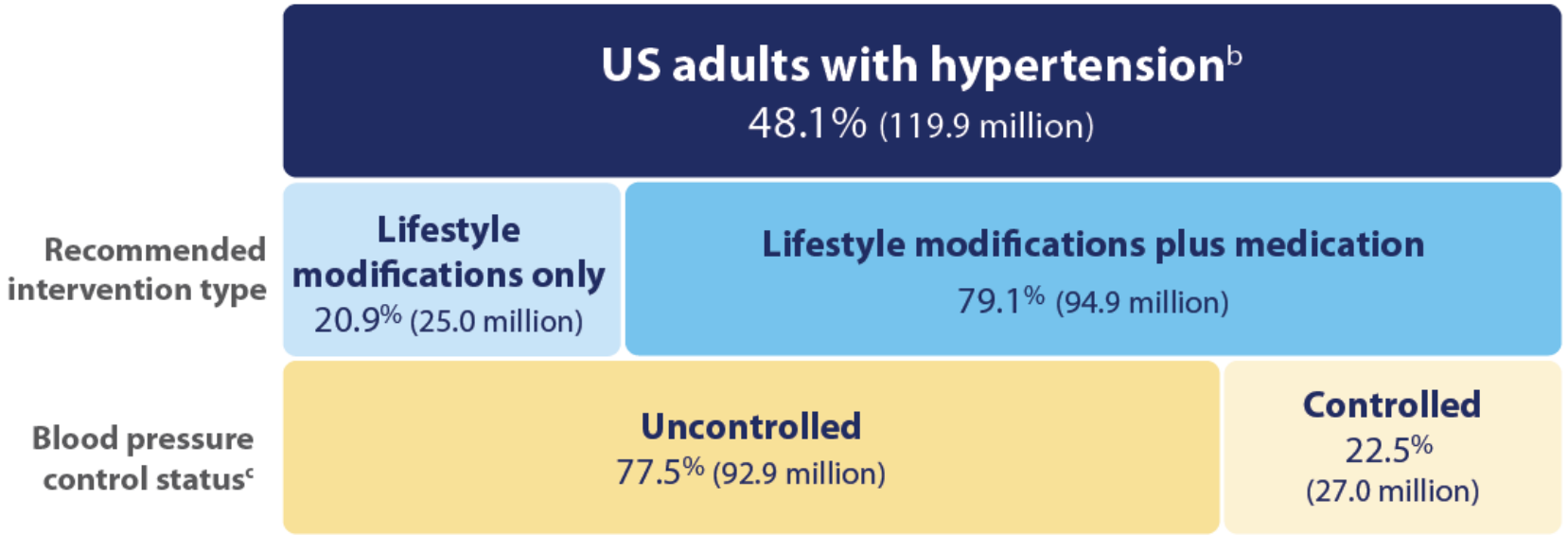
Effect of 10 mmHg reduction in SBP:

	Studies	Intervention		Control		RR (95% CI) per 10 mm Hg reduction in systolic blood pressure
		Events	Participants	Events	Participants	
Major cardiovascular events	55	13209	137319	14068	128259	0·80 (0·77–0·83)
Coronary heart disease	56	4862	136986	5301	128548	0·83 (0·78–0·88)
Stroke	54	4635	136682	5378	128641	0·73 (0·68–0·77)
Heart failure	43	3284	115411	3760	107440	0·72 (0·67–0·78)
Renal failure	16	890	39888	834	39043	0·95 (0·84–1·07)
All-cause mortality	57	9775	138298	9998	129700	0·87 (0·84–0·91)



Estimated Hypertension Prevalence, Treatment, and Control (Blood Pressure <130/80 mm Hg) Among US Adults[a]

Applying the criteria from the American College of Cardiology and American Heart Association's (ACC/AHA) 2017 Hypertension Clinical Practice Guideline - NHANES 2017- March 2020



Data source: National Center for Health Statistics, Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES) 2017-March 2020. Definitions: ACC/AHA criteria adapted from Ritchey MD, Gillespie C, Wozniak G, et al. Potential need for expanded pharmacologic treatment and lifestyle modification services under the 2017 ACC/AHA Hypertension Guideline. *J Clin Hypertens*. 2018; 1377-1391. https://doi.org/10.1111/jch.13364

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[a] Among adults aged 18 years and older; estimates may not equal 100% due to rounding.
[b] Blood pressure ≥130/80 mm Hg or currently using prescription to lower blood pressure.
[c] Controlled is defined as having a blood pressure <130/80 mm Hg. All adults recommended lifestyle modifications only are considered uncontrolled as their blood pressure is above the threshold.

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https://doi.org/10.1161/HYPERTENSIONAHA.120.15026

CLINICAL PRACTICE GUIDELINES

2020 International Society of Hypertension Global Hypertension Practice Guidelines

CLINICAL PRACTICE GUIDELINES

2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/N 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

Definition and Classification of Blood Pressure

Blood Pressure Category	SBP		DBP
Normal	< 120 mmHg	and	< 80 mmHg
Elevated	120 to 129 mmHg	and	< 80 mmHg
Hypertension			
Stage 1 Hypertension	130 to 139 mmHg	or	80 to 89 mmHg
Stage 2 Hypertension	≥ 140 mmHg	or	≥ 90 mmHg

COR	RECOMMENDATIONS
1	In adults, BP should be categorized as normal, elevated, or stage 1 or stage 2 hypertension to prevent and treat high BP.

Abbreviations: BP indicates blood pressure; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

Jones, D.W., et al. (2025). 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. *Circulation*.

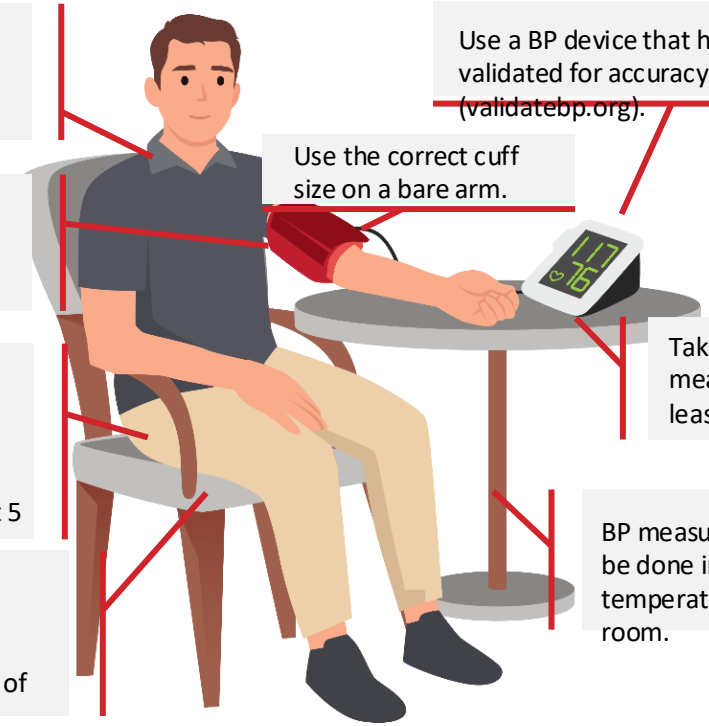
Best Practices for Accurate In-Office Blood Pressure Measurement

Avoid caffeine, exercise, and smoking for at least 30 minutes before.

The patient's arm should be supported at heart level.

Patient should be relaxed, sitting in a chair (feet flat, legs uncrossed, and back supported) for at least 5 minutes.

Neither patient nor clinician should talk during the rest or measurement. No use of phones.



Use a BP device that has been validated for accuracy (validatebp.org).

Use the correct cuff size on a bare arm.

Take 2 or more BP measurements at least 1-minute apart.

BP measurement should be done in a temperature-controlled room.

COR	RECOMMENDATIONS
1	When diagnosing and managing high BP in adults, standardized methods are recommended for the accurate measurement and documentation of in-office BP.
2a	When measuring in-office BP in adults, it is reasonable to use the oscillometric method with an automated device over the auscultatory method.

Abbreviation: BP indicates blood pressure.

Jones, D.W., et al. (2025). 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. *Circulation*.

Essential Laboratory Tests/Procedures:

Class 1A: Annual Testing

Routine Diagnostic Studies

- Complete blood count
- Serum sodium, potassium, calcium
- Serum creatinine with estimation of GFR
- Lipid profile
- Fasting blood glucose or Hemoglobin A1c
- Thyroid-stimulating hormone
- Urinalysis
- Urine albumin to creatinine ratio; urine protein to creatinine ratio
- Electrocardiogram

*Screen for secondary causes when appropriate

From Clinic to Home: Blood Pressure Monitoring

COR	RECOMMENDATIONS
1	In adults with suspected hypertension, out-of-office BP measurements by either ABPM or HBPM are recommended to confirm the diagnosis of hypertension.
1	In adults who are taking antihypertensive medication, HBPM is recommended for monitoring the titration of BP-lowering medication, along with co-interventions such as patient education, telehealth counseling, and clinical interventions.
3: No Benefit	In adults, the use of cuffless BP devices is not recommended for the diagnosis or management of high BP.

Corresponding Ambulatory and Home Blood Values Measurement to Office Values

Office (mmHg)	HBPM (mmHg)	Daytime ABPM (mmHg)	Nightime ABPM (mmHg)	24-Hour ABPM (mmHg)
120/80	120/80	120/80	100/65	115/75
130/80	130/80	130/80	110/65	125/75
140/90	135/85	135/85	120/70	130/80
160/100	145/90	145/90	140/85	145/90

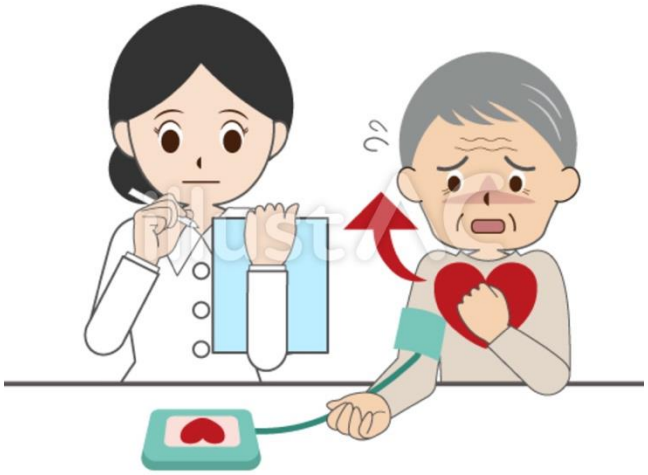
www.validatebp.org

Omron
A&D Medical
Homedics

American Heart Association.

Jones, D.W., et al. (2025). 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. *Circulation*.

White-coat and Masked Hypertension



- White-coat hypertension: BP is high in the office setting and normal or elevated outside of the office setting
- Masked hypertension: BP is high outside of the office setting and normal or elevated in the office setting
- ABPM is preferred for excluding white-coat and masked hypertension among individuals not taking antihypertensives.
- Adults with in-office BP ≥160/100 mmHg should be promptly started on antihypertensives

COR	RECOMMENDATIONS
2a	In adults with untreated office SBP ≥130/80 mmHg but <160/100 mmHg, it is reasonable to exclude white-coat hypertension using out-of-office BP monitoring before a diagnosis of hypertension is made.
2a	In adults with white-coat hypertension, out-of-office BP monitoring is reasonable to exclude transition to a diagnosis of sustained hypertension.
2a	In adults with apparent treatment resistant hypertension on office BP, it is reasonable to exclude white-coat effect, a form of pseudoresistance, using out-of-office BP monitoring
2a	In adults who are taking antihypertensive medication and have elevated office BP (office SBP ≥130 mm Hg or DBP ≥80 mm Hg), but do not have resistant hypertension or office SBP ≥160 mm Hg or DBP ≥100 mm Hg, it is reasonable to exclude white-coat effect using out-of-office BP monitoring

American Heart Association.

Jones, D.W., et al. (2025). 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. *Circulation*.

Ambulatory BP Monitoring

Indications for Ambulatory Blood Pressure Monitoring:

• Suspected whitecoat hypertension and discrepant readings between home and clinic.

•Episodic hypotension

•Monitoring treatment

•Suspected overtreatment with resultant iatrogenic hypotension

24-hour ambulatory BP:

- Mean **24-hour BP** >135/ 85 mmHg
- Mean **daytime BP** >140/90 mmHg
- Mean **nighttime BP** >125/75 mmHg

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Hypertension Causes, from Lifestyle to Genetics

Dietary Intake Factors	Non-Dietary Factors
• Higher sodium intake • Lower potassium intake • Lower calcium/ magnesium intake • Lower diet quality *(lower intake of fruits/ vegetables, plant proteins, fiber)* • Alcohol intake	• Genetics variants • Overweight/obesity • Lower physical activity/fitness • Sleep disturbances *(related to duration, quality, regularity and/or disordered breathing)* • Psychosocial stressors • Air pollution

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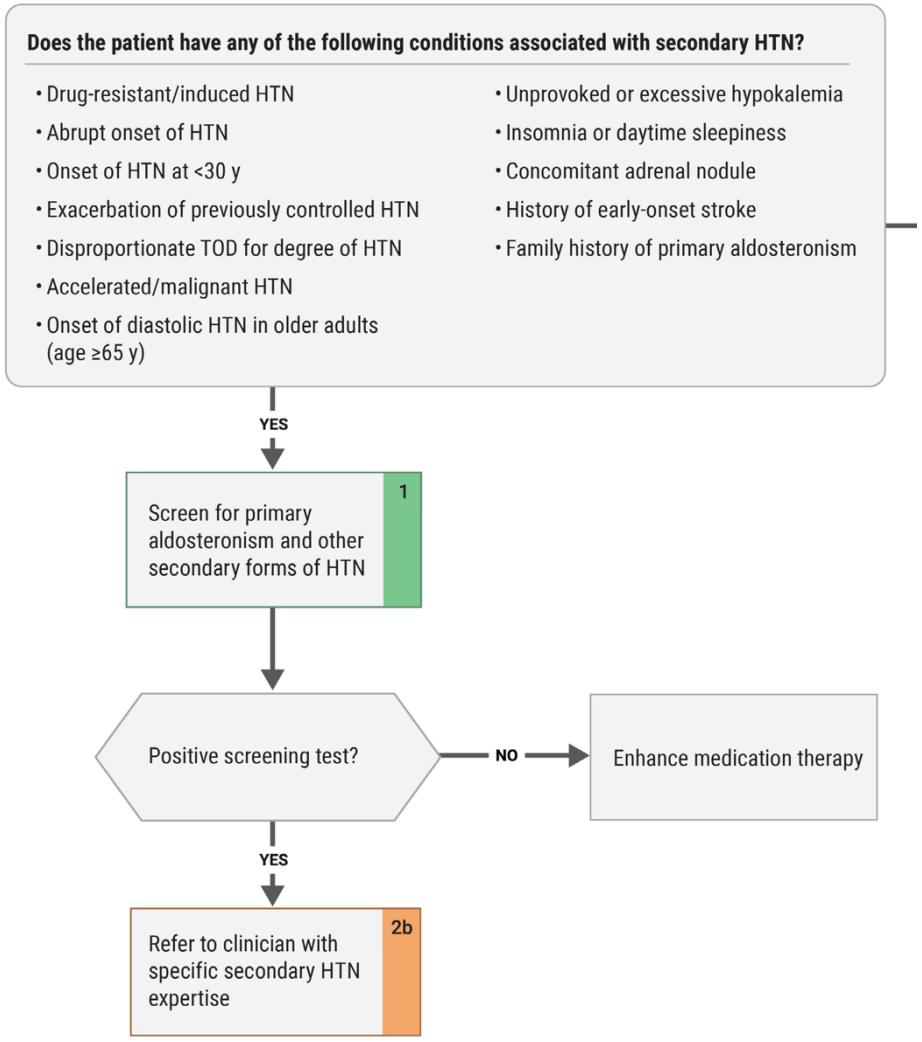
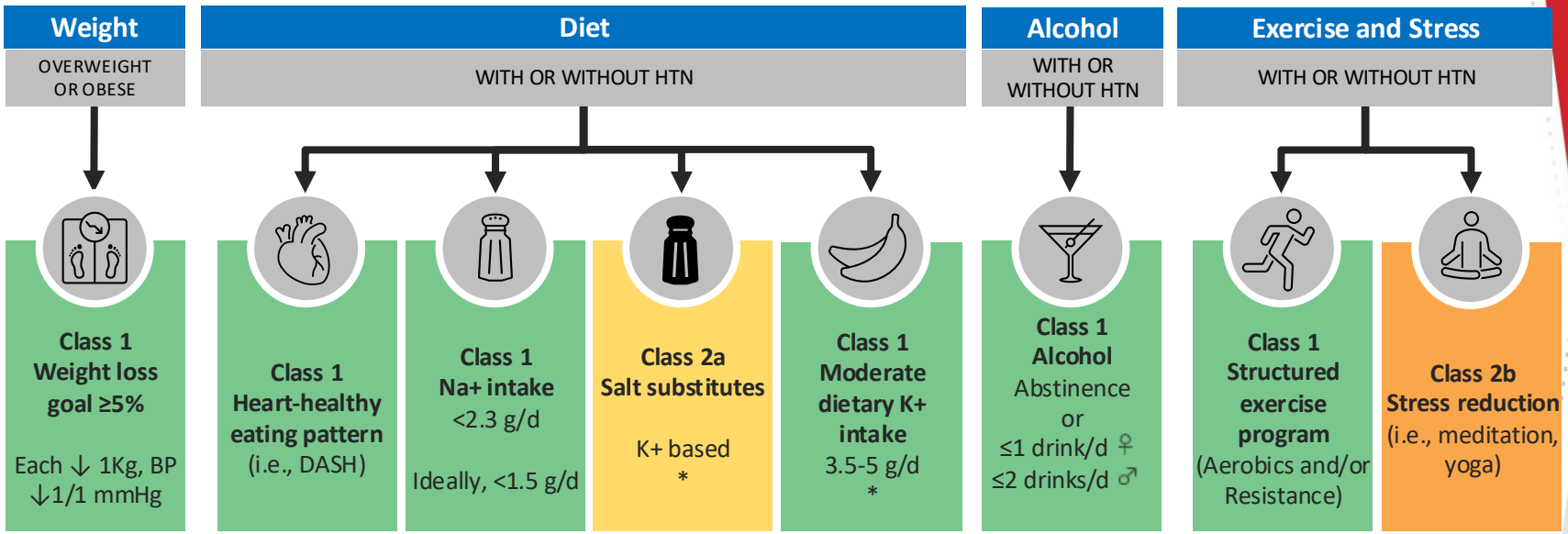
Secondary Forms of Hypertension & Screening:



Cause	Prevalence	Testing
OSA	25-50%	Sleep study
CKD	14%	Renal panel/ Renal US
Hyper-aldosteronism	5-25%	AAR >20-30 Renin<1/Aldo >10
Renovascular Hypertension	0.1-5%	Renal US Abdominal CTA
Hypo/Hyper-Thyroid	<1%	TSH/T3/FT4
Pheochromo-cytoma	<0.6%	24-hour urine + plasma metanephrines
Cushing Syndrome	0.1%	Overnight 1 mg dexamethasone suppression
Aortic Coarctation	0.1%	Echocardiogram, CTA Chest
Hyperpara-thyroidism	rare	Ca/PTH

Blood pressure management:

Lifestyle and psychosocial approaches



***Monitor potassium in those at risk for hyperkalemia**

Abbreviations: BP indicates blook pressure; DASH, Dietary Approaches to Stop Hypertension diet Kg, kilograms; and HTN, hypertension.

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Effects of Non-Pharmacologic Therapy

Intervention	Goal	Approximate Impact on SBP	
		HTN	Normotension
Weight Loss	Ideal Body Weight 5% Body Weight	Approximately 1 mmHg for every 1 kg reduction in weight	
DASH Diet		-11 mmHg	-3 mmHg
Reduced Dietary Sodium Intake	<1500 mg/day 1000 mg/day ↓	-5/6 mmHg	-2/3 mmHg
Increased Dietary Potassium Intake	3500-5000 mg/day	-4/5 mmHg	-2 mmHg
Physical Activity	90-150 min/week 65-75% THR	-5/8 mmHg	-2/4 mmHg
Reduce Alcohol Consumption	Men ≤ 2 drinks Women ≤ 1.5 drinks	-4 mmHg	3 mmHg

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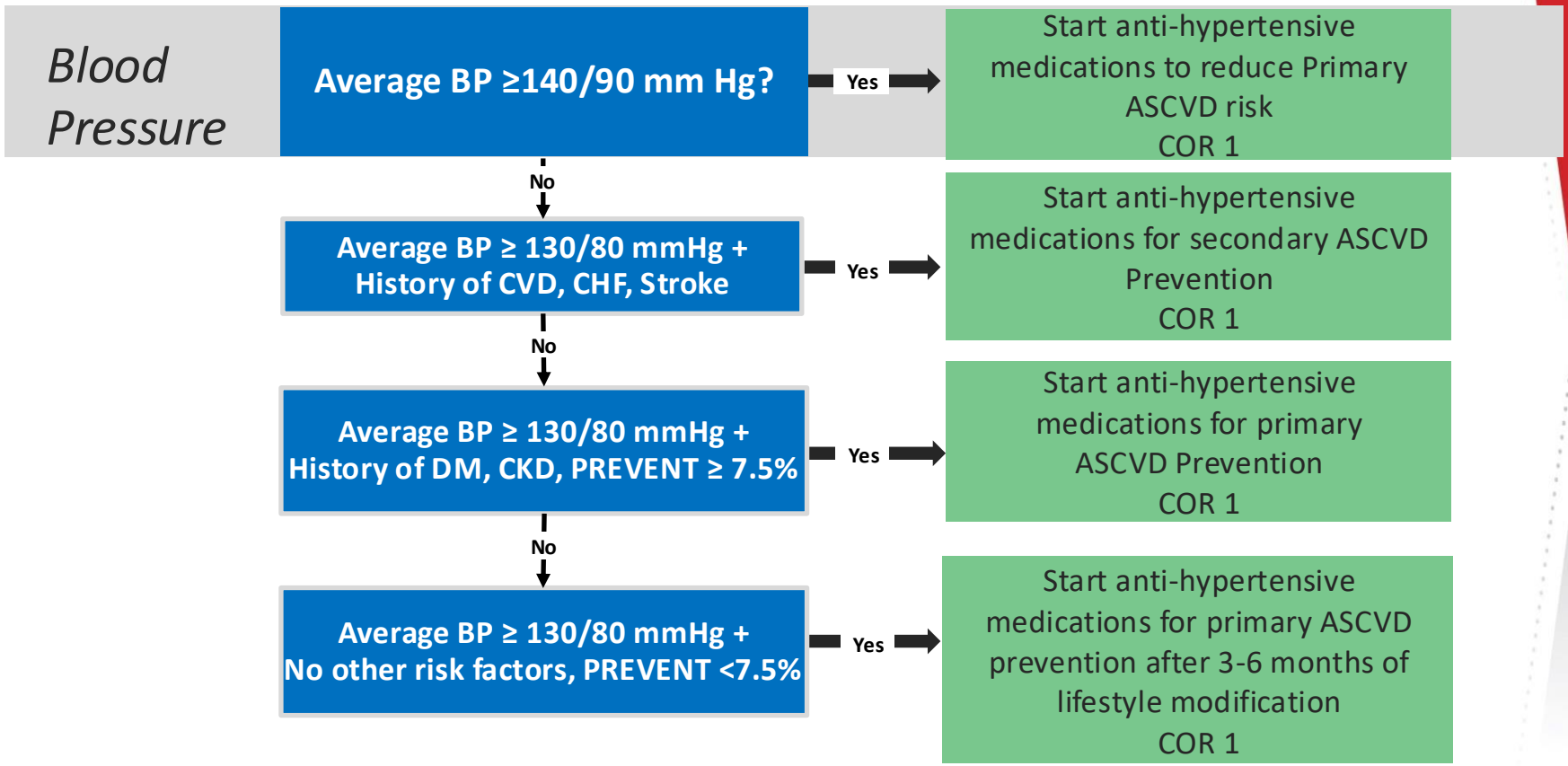
Use of Risk Based Thresholds for Initiation of BP Treatment



Abbreviations: BP indicates blood pressure; CHD, coronary heart disease; CKD, chronic kidney disease; CVD, cardiovascular disease; DBP, diastolic blood pressure; HF, heart failure; PREVENT, Predicting Risk of CVD EVENTs; and SBP, systolic blood pressure.

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The American Heart Association PREVENT™ Online Calculator

CVD | ASCVD | Heart Failure

Sex*
- (•) Male
- ( ) Female

Age (years)*
30-79

SBP (mmHg)*
90-200

Total Cholesterol (mg/dL)*
130-320

HDL Cholesterol (mg/dL)*
20-100

eGFR (mL/min/1.73m²)*
15-140

BMI (kg/m²)*
18.5-39.9
Please enter the BMI value

Diabetes
Any history of diabetes.
- (•) No
- ( ) Yes

Current Smoking
Any cigarette use within the last 30 days
- (•) No
- ( ) Yes

Lipid-lowering medication
Current use of statin medication to lower cholesterol
- (•) No
- ( ) Yes

Anti-hypertensive medication
Current use of any medication for hypertension
- (•) No
- ( ) Yes

The following three predictors are optional for further personalization of risk assessment. When they are clinically indicated or available,

If available or indicated, select "Yes" and enter the value.

UACR (mg/g)
UACR is clinically indicated for individuals with chronic kidney disease, diabetes, or hypertension
- (•) No
- ( ) Yes

HbA1C
HbA1c is clinically indicated for individuals with diabetes, prediabetes, overweight, or obesity, or those with history of gestational diabetes
- (•) No
- ( ) Yes

Zip Code
valid 5-digit zip code is needed to estimate social deprivation index [SDI]
- (•) No
- ( ) Yes

ACC/AHA 2026 dyslipidemia guidelines: PREVENT

Calculate

Use PREVENT-ASCVD for 10-year risk in adults 30-79 yrs.

Low: <3%
Borderline: 3-5%
Intermediate: 5-10%
High: ≥10%

Personalize

Consider risk enhancers not captured by PREVENT.

- Lp(a) ≥ 125 nmol/L
- hsCRP ≥ 2 mg/L
- Family hx premature CVD
- Autoimmune/HIV
- Reproductive RF

Reclassify

Use CAC scoring when decision uncertain.

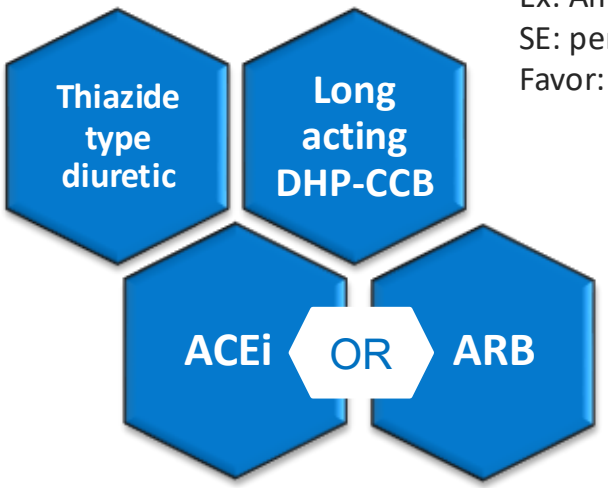
CAC 0: defer, repeat 3-7 yrs
1-99: Moderate, LDL <100 (2.6)
≥100: High-intensity, LDL <70 (1.8)
≥300: ≥50%↓,LDL <70 (1.8)
≥1000: ≥50%↓,LDL <55 (1.4)

- PREVENT risk score replaces Pooled Cohort Equations (PCE)
  - Includes eGFR, A1c, UACR, zip code for ages 30-79
  - Predicts 10- and 30-year risk for ASCVD and Heart Failure
  - More accurate, PCE overestimated CVD risk by ~50%

Initial Medication Selection for Treatment of Primary HTN

COR	RECOMMENDATIONS
1	For adults initiating antihypertensive drug therapy, thiazide-type diuretics, long-acting dihydropyridine CCBs, and ACEi or ARBs are recommended as first-line therapy to prevent CVD.

Ex: HCTZ, Chlorthalidone, Indapamide
SE: ↓Na, ↓K ↓Mg, ↑ glucose, ↑ uric acid, AKI, dehydration, cramping, dizziness, ↑urination
Favor: edema



Ex: Amlodipine, Felodipine, Nifedipine
SE: peripheral swelling/edema
Favor: Angina, Raynaud's/Vasospasm, ESRD

Ex: Lisinopril, Enalapril, Benazepril
SE: Cough (10-20%), angioedema, ↑K, ↑ Cr
Favor: CHF/T2D/Proteinuria/CKD

Ex: Losartan, Valsartan, Irbesartan, Olmesartan, Telmisartan, Candesartan
SE: ↑K, ↑ Cr, angioedema
Favor: CHF/T2D/Proteinuria/CKD

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; CVD, cardiovascular disease; and LA DHP-CCB, Dihydropyridine Calcium Channel Blocker.

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Alternative Blood Pressure Agents:

Class	Agents	Considerations:
CCB non-dihydropyridine	Diltiazem Verapamil	Avoid: with BB/HFrEF. SE: constipation
Diuretics – aldosterone antagonists	Spironolactone Eplerenone	Avoid: ↑K, CKDIV SE: gynecomastia
Diuretics – potassium sparing	Amiloride Triamterene	Not effective monotherapy. Use with thiazide diuretics.
Beta-blockers Cardio-selective	Atenolol* Bisoprolol Metoprolol Tart/Succ	First line in pts with arrhythmia/CAD/CHF/AAA. Preferred in patients with reactive airway disease (RAD).
Beta-blockers Non-selective (avoid in pts with RAD)	Nadolol*/Propranolol Carvedilol/Labetalol	N – AF/PVC P – anxiety/POTS C – varices/CHF L – pregnancy
Alpha-1 blockers	Doxazosin/Prazosin	SE: orthostatic hypotension
Centrally acting	Clonidine	SE: rebound hypertension
Direct vasodilators	Hydralazine Minoxidil	SE: ↑Na/H20 retention, reflex tachycardia H – SLE, M – ↑hair, pericardial effusion

*Aldosterone synthase inhibitors + dual endothelin receptor antagonists will be discussed later.

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Choice of initial monotherapy vs combination drug therapy

Stage 1 HTN*
Class 2a

SBP 130-139 mmHg
DBP 80-89 mmHg

Initiation of <u>a single</u> 1st line agent is reasonable.

Dosing titration and sequential addition of other agents as needed.

Stage 2 HTN*
Class 1

SBP ≥140 mmHg
DBP ≥90 mmHg

Some high-risk patients with stage 1 HTN.

Initiation of <u>two</u> 1st line agents of different classes.

Ideally, in a single pill combination to improve adherence.

Any stage HTN
Class 3: Harm

<u>Don't</u> combine ACEi, ARBs and/or renin inhibitors.

Single combo pill + once daily dosing to improve adherence.
Class I

*50% of patients are not compliant with BP medications after 1 year.

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; and HTN, hypertension.

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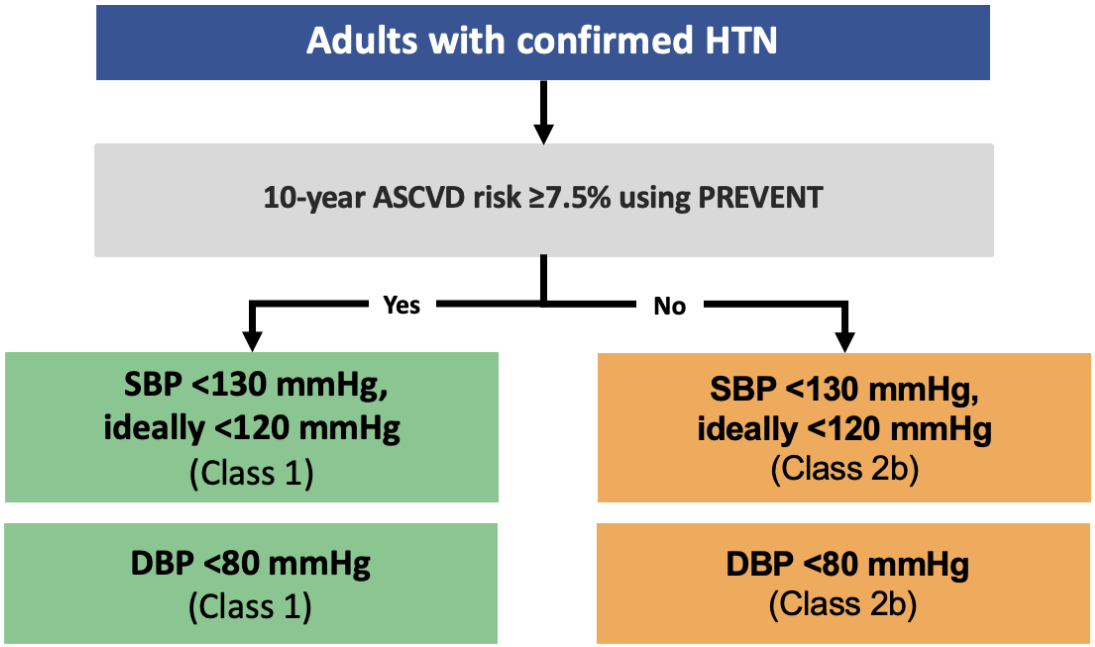
Blood Pressure Goals for Patient with HTN:



Abbreviations: ASCVD indicates atherosclerotic cardiovascular disease; BP, blood pressure; DBP, diastolic blood pressure; HTN, hypertension; PREVENT, Predicting Risk of CVD EVENTs; and SBP, systolic blood pressure.

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Hypertension Management in Patients with DM:

Take Home Point: Greater than 80 % of adults with T2D have HTN. Intensive BP goals are associated with improved CV outcomes.

BP Goal

Use antihypertensive medication(s) for

SBP >130 mmHg

or

DBP > 80 mmHg

(Class 1)

Initial Management

All first-line agents are effective.

(ie. Thiazide type diuretics, CCB, ACEi and ARBs, etc)

(Class 1)

Special considerations: CKD

- If eGFR <60 ml/min/1.73m2 or moderate to severe albuminuria >30 mg/g; ACEi or ARB are recommended.
- If mild albuminuria (<30,g/g), ACEi or ARBs can delay progression of DM-related kidney disease.

(Class 1)

Abbreviations: ACEi indicates Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BP, blood pressure; CV, cardiovascular; CCB, Calcium Channel Blocker; DBP, diastolic blood pressure; DM, diabetes mellitus; T2D, type two diabetes mellitus; and SBP, systolic blood pressure.

American Heart Association.

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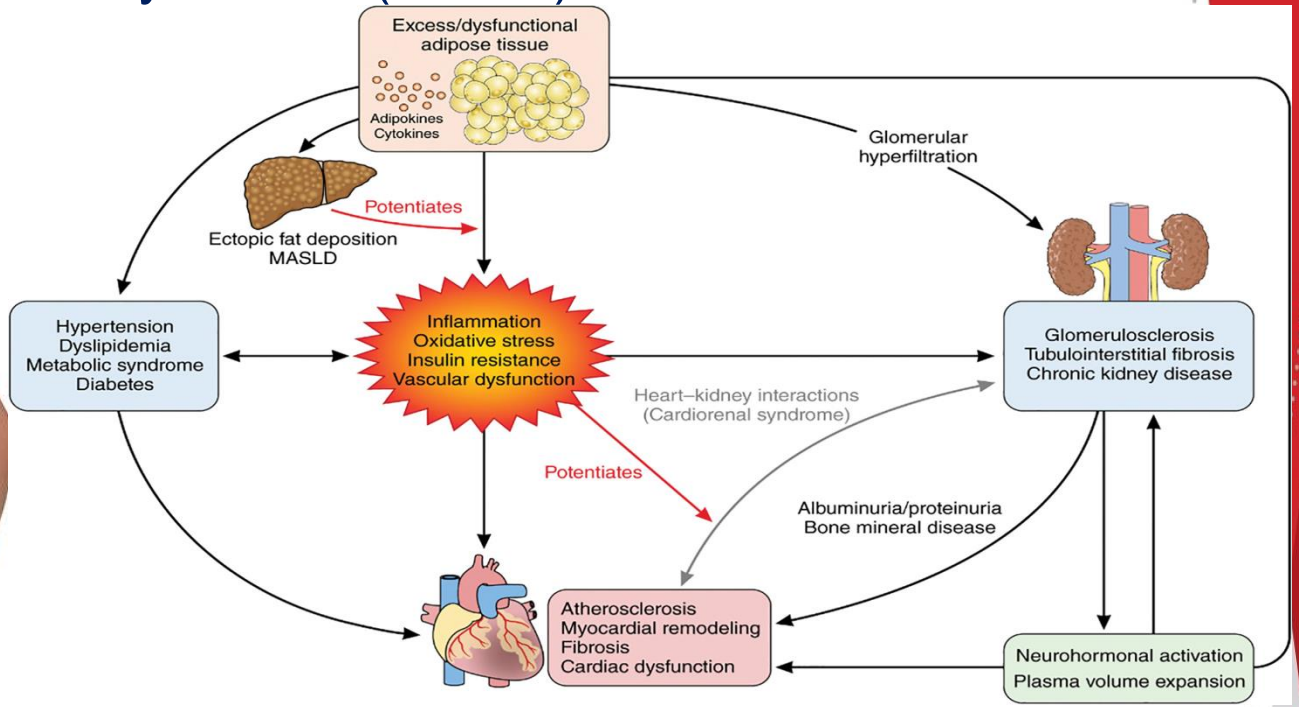
Hypertension Management with Obesity + Cardio-Kidney Metabolic Syndrome (CKMS):



COR	RECOMMENDATIONS
2b	In adults with hypertension who also have overweight or obesity with a BMI ≥27 kg/m^2, incretin mimetics, like GLP-1 RAs, when used for weight management may be effective as an adjunct to lower BP
2b	In adults with hypertension who have obesity with a BMI≥35.0 kg/m^2, bariatric surgery for weight loss in combination with behavioral interventions and antihypertensive therapies may be effective at lowering BP.

s, D.W., et al. (2025). 2025 AH
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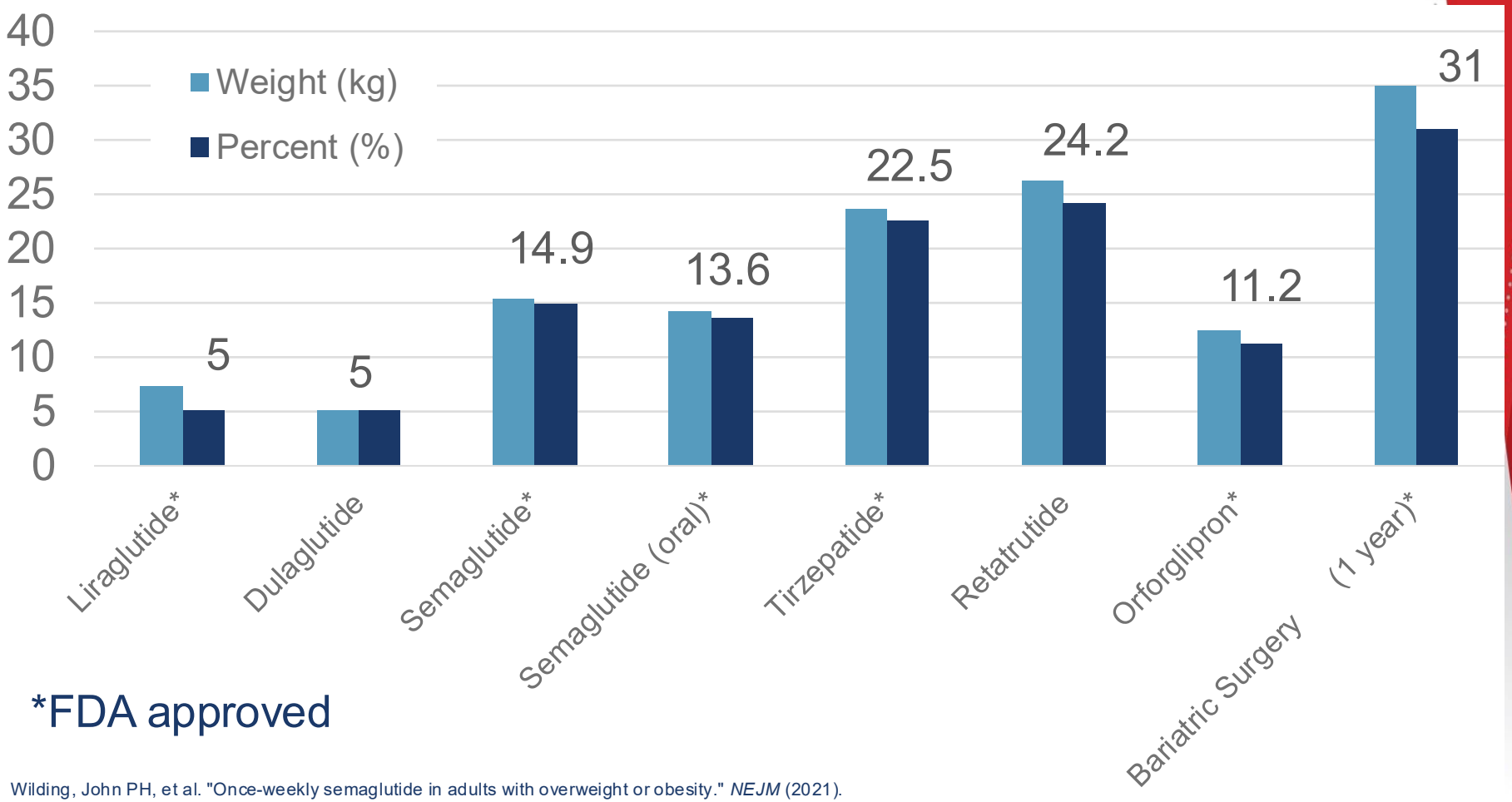
Weight Loss with GLP-1 Receptor Agonists:



*FDA approved

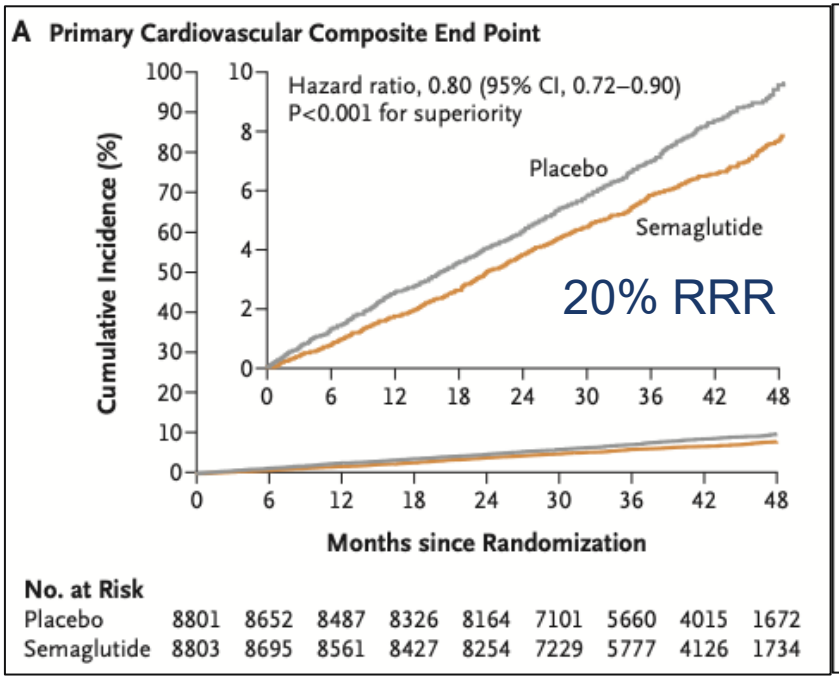
Wilding, John PH, et al. "Once-weekly semaglutide in adults with overweight or obesity." *NEJM* (2021).
Jastreboff, Ania M., et al. "Tirzepatide once weekly for the treatment of obesity."NEJM. 387.3 (2022): 205-216.
Bonora, Enzo, et al. "Effect of dulaglutide 3.0 and 4.5 mg on weight in patients with type 2 diabetes: exploratory analyses of AWARD-11." *Diabetes, Obesity and Metabolism* 23.10

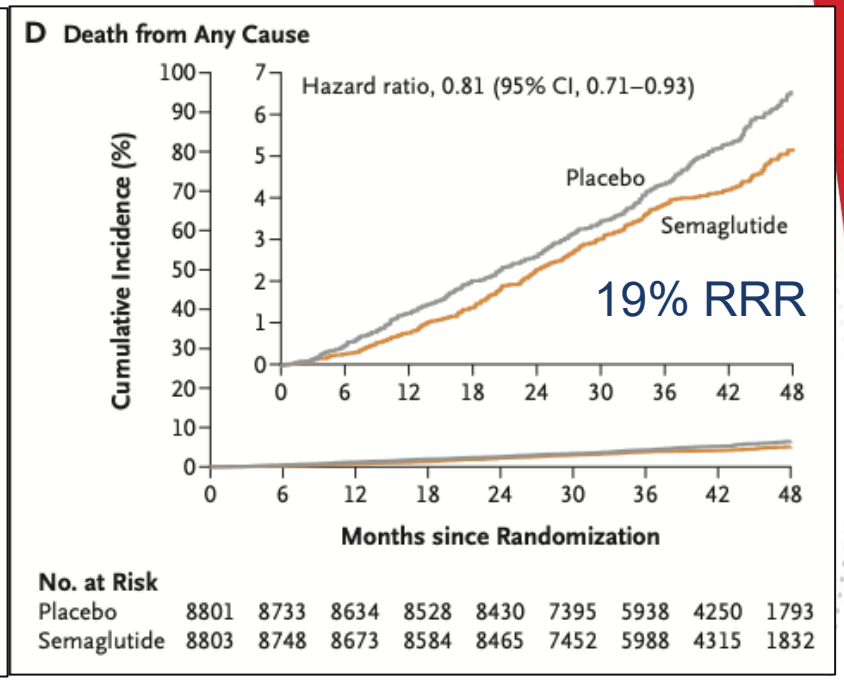
American Heart Association.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes





- 17,604 patients with CVD and BMI ≥ 27
- Randomized to Semaglutide 2.4 mg/week or placebo

American Heart Association.

Lincoff AM. Et al., *N Engl J Med* 2023

Jones, D.W., et al. (2025). 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. *Circulation*.

The NEW ENGLAND JOURNAL of MEDICINE

Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes

Table 3. Supportive Binary and Continuous Secondary End Points.*

End Point	Semaglutide (N=8803)	Placebo (N=8801)	Difference (95% CI)†
Glycated hemoglobin level of <5.7% among patients with baseline glycated hemoglobin level of ≥5.7% — no./total no. (%)‡			
At week 52	3848/5831 (66.0)	1136/5748 (19.8)	10.15 (9.18 to 11.23)
At week 104	3775/5750 (65.7)	1211/5663 (21.4)	8.74 (7.91 to 9.65)
Mean change from randomization to week 104			
Body weight — %	−9.39±0.09	−0.88±0.08	−8.51 (−8.75 to −8.27)
Waist circumference — cm	−7.56±0.09	−1.03±0.09	−6.53 (−6.79 to −6.27)
Glycated hemoglobin level — percentage points	−0.31±0.00	0.01±0.00	−0.32 (−0.33 to −0.31)
Systolic blood pressure — mm Hg	−3.82±0.16	−0.51±0.16	−3.31 (−3.75 to −2.88)
Diastolic blood pressure — mm Hg	−1.02±0.10	−0.47±0.10	−0.55 (−0.83 to −0.27)
Heart rate — beats/min	3.79±0.11	0.69±0.11	3.10 (2.80 to 3.39)
EQ-5D-5L index score§	0.01±0.00	−0.01±0.00	0.01 (0.01 to 0.02)
EQ-5D-VAS score§	2.52±0.16	0.92±0.16	1.60 (1.16 to 2.04)
High-sensitivity CRP level — %	−39.12	−2.08	−37.82 (−39.70 to −35.90)
Total cholesterol level — %	−4.63	−1.92	−2.77 (−3.37 to −2.16)
HDL cholesterol level — %	4.86	0.59	4.24 (3.70 to 4.79)
LDL cholesterol level — %	−5.25	−3.14	−2.18 (−3.22 to −1.12)
Triglyceride level — %	−18.34	−3.20	−15.64 (−16.68 to −14.58)

American Heart Association.

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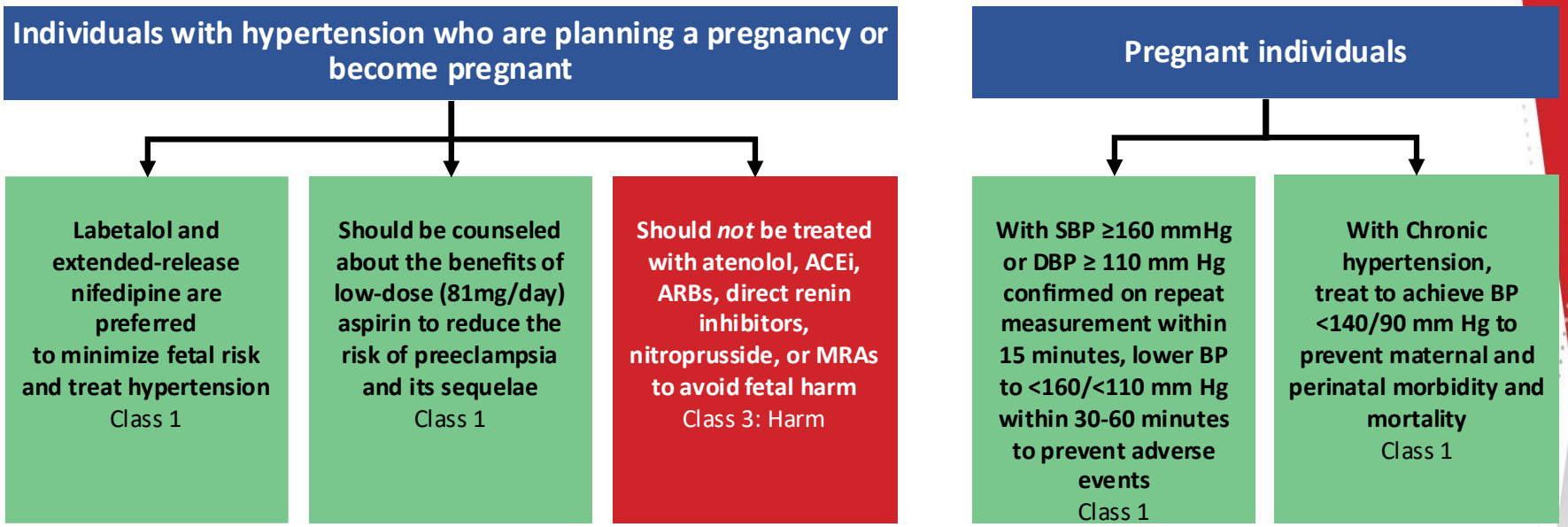
Hypertension Management in Pregnancy:



Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BP, blood pressure; DBP, diastolic blood pressure; HTN, hypertension; MRA, mineralocorticoid receptor antagonist; SBP, systolic blood pressure; and TX, treatment.

American Heart Association.

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Management of Resistant Hypertension

Resistant Hypertension

- Office BP ≥ 130/80 on ≥ 3 antihypertensives (ACEi/ARB + CCB + thiazide diuretic)
- Office BP < 130/80 but requires ≥ 4 antihypertensives

Workup and Address Potential Causes

- Exclude pseudoresistance (ambulatory BPs, medication adherence)
- Review and remove interfering medications
- Screen for secondary causes (primary aldosteronism, OSA, renal parenchymal disease and renovascular disease, etc.)

Class 1

Contraindications or Intolerant of MRA?

No

Add MRA

In adults with uncontrolled resistant hypertension despite optimal treatment with first-line antihypertensive therapy and with an eGFR of ≥45 ml/min/1.73 m^2

Class 1

Yes

Adding an alternative second line agent is reasonable to control BP:

- Amiloride
- Beta Blocker
- Alpha Blocker
- Central sympatholytic drug
- Dual endothelin receptor antagonist
- Direct vasodilator

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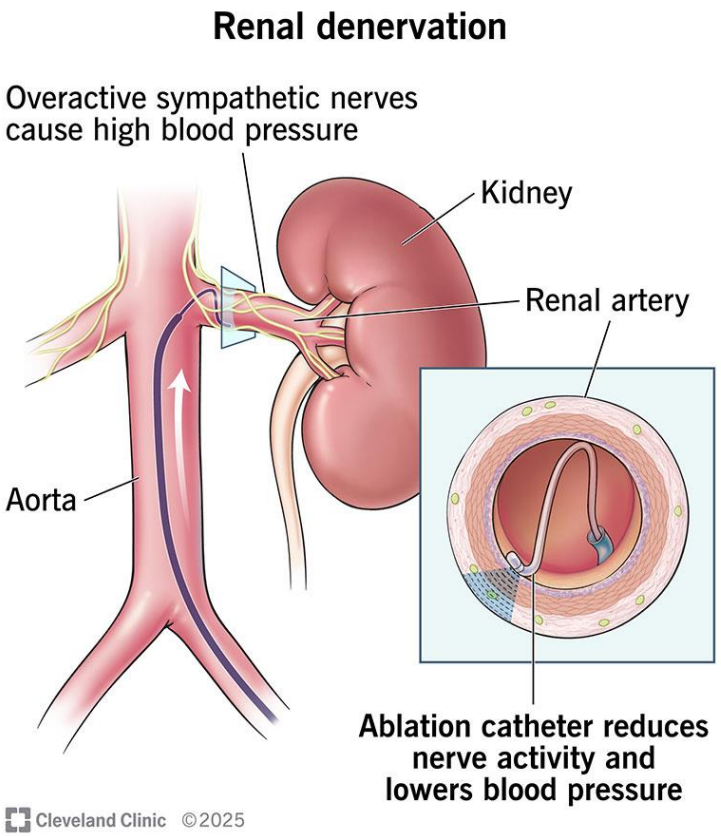
Renal Denervation: FDA Approved 2023



- ↑ Renal sympathetic activation leads to
  1) ↑ renin release
  2) ↑ Na^+ absorption
  3) ↑ renal vascular resistance
- Resulting in elevated blood pressure.
- Results in 5-10 mmHg ↓ at 2-3 months.
- Consider in patients with resistant hypertension + BP ≥ 140/90 mmHg + eGFR ≥ 40 (Class 2b).
- Contraindications: secondary hypertension, orthostatic hypotension, pregnancy, FMD, or renal artery abnormality.

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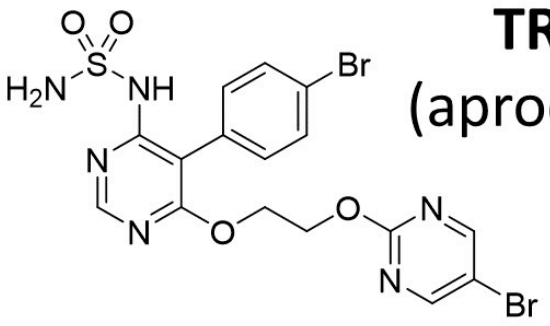
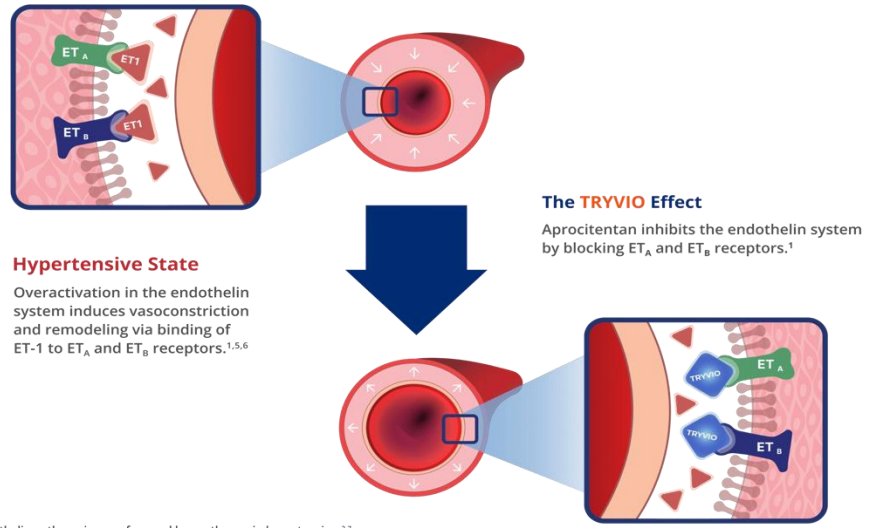
Novel Blood Pressure Reducing Agents:



TRYVIO
(aprocitentan)



- Aprocitentan (Tryvio) 2024
- Novel class BP agent.
- Endothelin-1 Receptor Antagonist.
- PRECISION 3 Study: 4-6mmHg SBP decrease vs placebo.
- Dose: 12.5 mg PO daily
- SE: fluid retention/edema (9%), anemia, ↓ sperm count.
- Avoid in severe hepatic/renal impairment.

American Heart Association.

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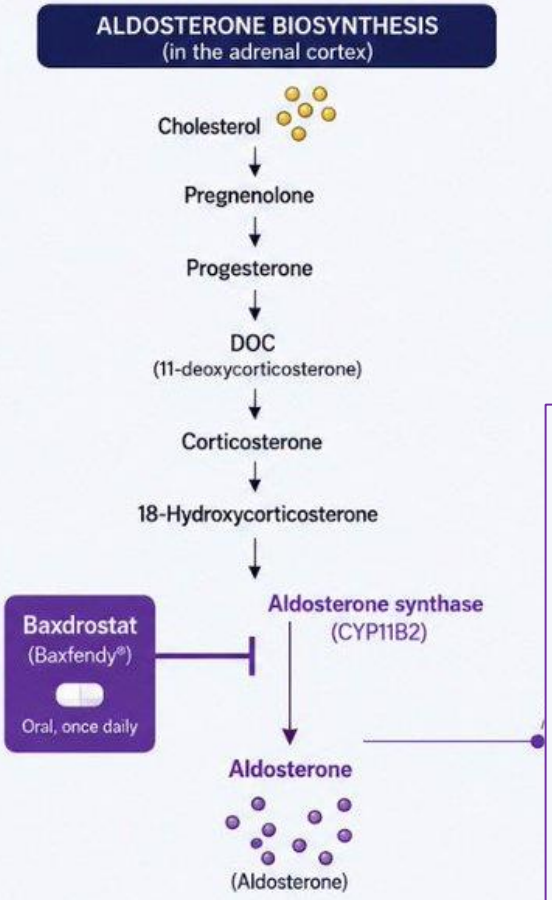
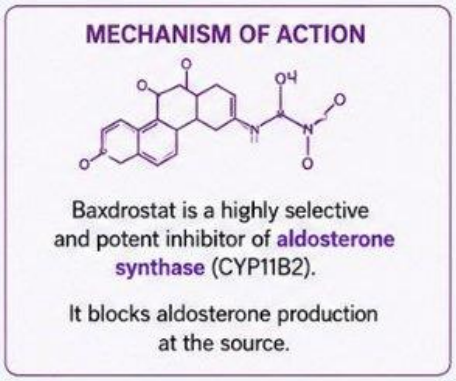
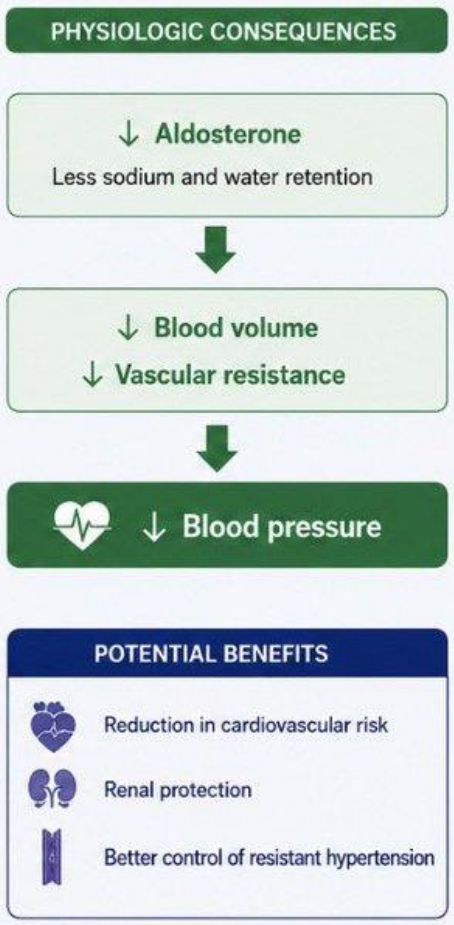
Baxdrostat (Baxfendy®): First-in-Class Aldosterone Synthase Inhibitor (ASI)

A novel mechanism of action to lower blood pressure





- Approved May 2026
- Dose: 2 or 1 mg daily
- BaxHTN Study → ↓ 10-15 mmHg SBP
- SE: hyperkalemia, hyponatremia, dizziness, headache, muscle spasm.



By specifically inhibiting aldosterone synthesis, Baxdrostat offers a new therapeutic approach for adults with uncontrolled or resistant hypertension on top of standard therapy.

DOC = 11-deoxycorticosterone; ENaC = epithelial sodium channel; ROMK = renal outer medullary potassium channel.

American Heart Association.

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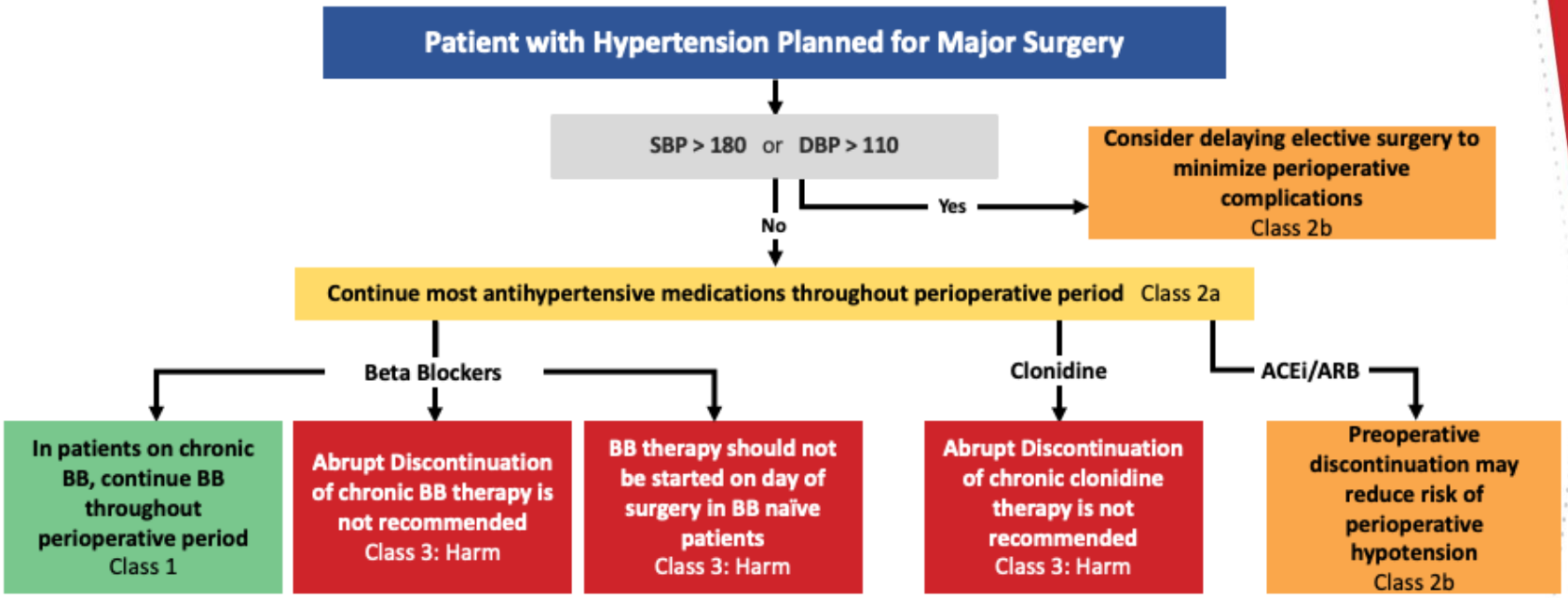
Patients Scheduled for Surgical Procedures:



Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BB, beta blocker; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

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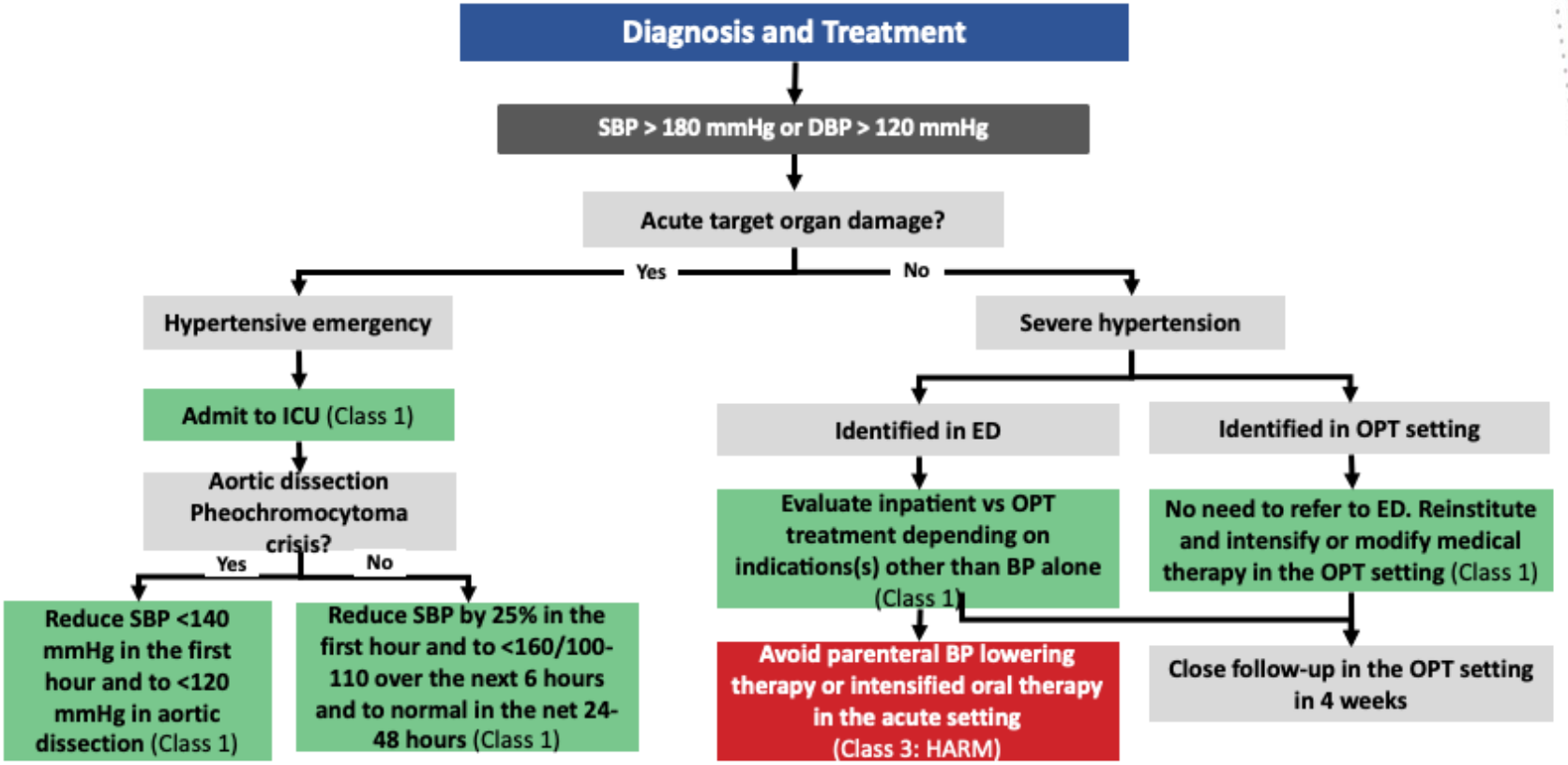
Severe Hypertension and Hypertensive Emergencies:



Abbreviations: DBP indicates diastolic blood pressure; ED, emergency department; ICU, intensive care unit; OPT, outpatient; and SBP, systolic blood pressure.

Ex: ADCHF, pulmonary edema, PRES, encephalopathy, retinal hemorrhage, papilledema, intracranial hemorrhage, ischemic stroke, ACS, AKI, aortic dissection

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Summary:

- Optimal BP <120/80 mmHg with gradual ↑ in CVD risk both above and below this threshold (↑20% CVD for every ↑10 mmHg SBP).
- BP >130/80 mmHg + CVD, CHF, CVA, T2D, CKD, or Prevent ≥7.5% - start antihypertensive therapy.
- BP >130/80 mmHg + no RF + Prevent <7.5% - trial of lifestyle modification/weight loss for 3-6 months.
- BP >140/90 mmHg initiate pharmacologic therapy
- First line agents – thiazide diuretics, CCB, ACE/ARB.
- Individualize therapy to patient comorbidities and risk.
- Consider secondary work up in patients with early onset or resistant hypertension or electrolyte abnormalities.
- Avoid/minimize side effects to increase patient compliance.

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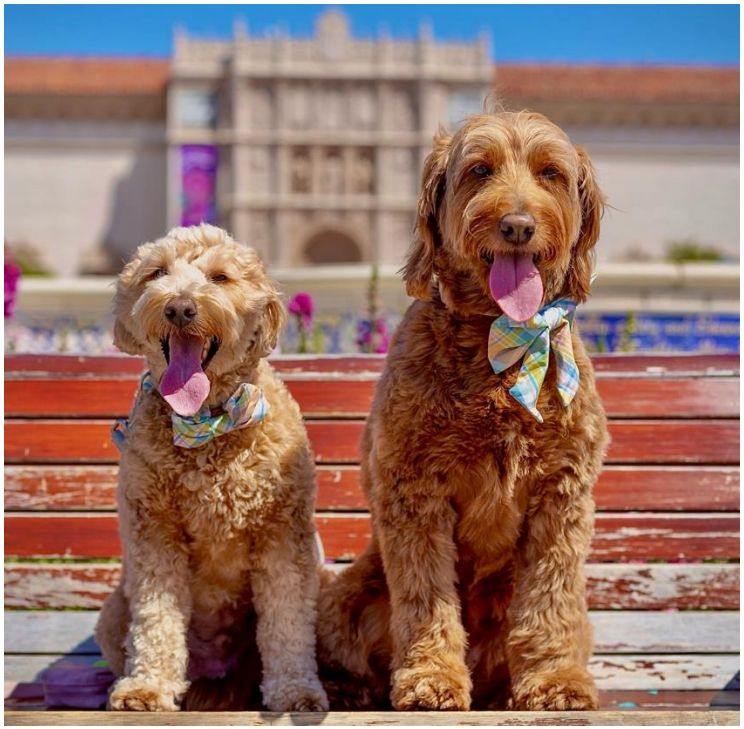
Thank you!



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