Cases in Hypertension

Kelsey Bryant, MD, MPH, MS
Associate Professor of Medicine
Icahn School of Medicine at Mount Sinai
New York, NY

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Disclosure

I have no financial interests or relationships to disclose.

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Learning Objectives

- Apply risk assessment and accurate diagnostics to determine hypertension management strategies
- Accurately interpret primary aldosteronism screening
- Prescribe combination therapy initiation and management with confidence

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CASE 1

43-year-old Female
with PreDM, HLD, BMI 39

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Case 1: 43-year-old Female with PreDM, HLD, BMI 39

- Initial BP in office 151/92, HR 81
  - No smoking, recent caffeine
  - Regular size cuff used
- Prior office SBP ranges 129-155 over the last 5 years
- Takes no medication
- Upper arm circumference is 46cm (18.1in)

Case 1, Question 1

Which of the Following Is the Likely Result When the Blood Pressure Is Remeasured with the Correctly Sized Extra-large Cuff?

A. SBP will decrease by approximately 5 mmHg
B. SBP will decrease by approximately 20 mmHg
C. SBP will increase by approximately 20 mmHg
D. BP will be unchanged, as automated oscillometric devices self-calibrate for cuff size
E. SBP will increase by approximately 5 mmHg

Case 1: 43-year-old Female with PreDM, HLD, BMI 39

- BP is remeasured with an XL cuff at **137/82** and confirmed a few minutes later at **136/82**

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Effect of Blood Pressure Cuff Size on Measurement

Cuff Fit	Arm Size Scenario	Systolic BP (SBP)	Diastolic BP (DBP)
✅ **Correct Size**	Regular Arm	0 mm Hg	0 mm Hg
⬇ **Cuff Too Large**	Small Arm	–3.6 mm Hg	–1.3 mm Hg
⬆ **Cuff Too Small**	Large Arm	+4.8 mm Hg	+1.8 mm Hg
⬆⬆ **Cuff Way Too Small**	Extra Large Arm (2 sizes too small)	**+19.5 mm Hg**	+7.4 mm Hg

Ishigami J, Charleston J, Miller ER, Matsushita K, Appel LJ, Brady TM. Effects of Cuff Size on the Accuracy of Blood Pressure Readings: The Cuff(SZ) Randomized Crossover Trial. *JAMA Internal Medicine*. 2023;183(10):1061.

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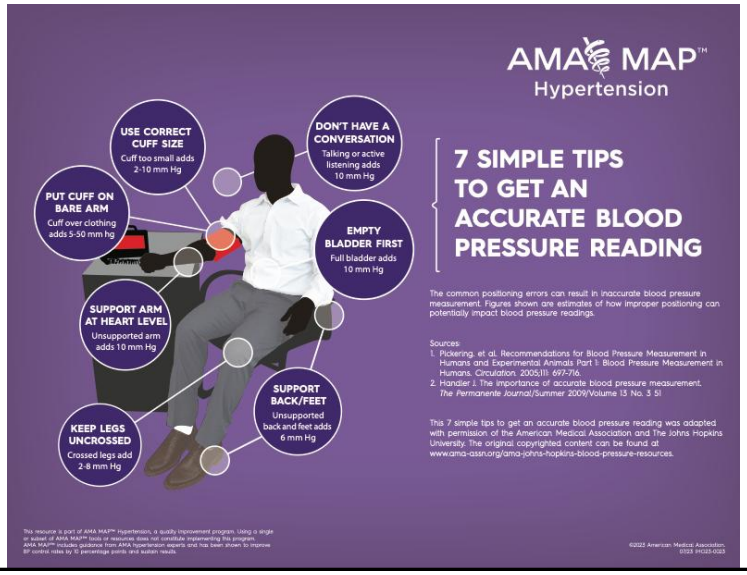
We Need Good Data to Make Good Decisions



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Case 1, Question 2

How Would You Classify the Patient's Most Likely Diagnosis?

A. Elevated BP
B. Pre-Hypertension
C. Stage I Hypertension
D. Stage II Hypertension
E. Severe Hypertension

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HTN Stages

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

Writing Committee Members*, Jones DW, Ferdinand KC, Taler SJ, Johnson HM, Shimbo D, Abdalla M, Altieri MM, Bansal N, Bello NA, Bress AP, Carter J, Cohen JB, Collins KJ, Commodore-Mensah Y, et al. 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. *Hypertension*. 2025;82(10).

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Case 1, Question 3

43 F, PreDM, Obesity, HLD, BP 136/72 What Is the Next Best Step?

A. Advise patient to work on lifestyle changes and return in 1 year
B. Advise patient to work on lifestyle changes and return in 3 months
C. Start a low-dose first-line agent
D. Obtain more information for risk stratification
E. Start a low-dose single-pill combination

Lab Work Up/PREVENT

Recommendation for Laboratory Tests and Other Diagnostic Procedures

COR	LOE	Recommendation
1	C-EO	1. For adults who are diagnosed with hypertension, laboratory tests (ie, complete blood count, serum electrolytes, serum creatinine, lipid profile, glucose or hemoglobin A1c [HbA1c], thyroid-stimulating hormone, urinalysis, and urine albumin-to-creatinine ratio) and diagnostic procedures (12-lead ECG) should be performed to optimize management.

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Rationale for Lab Testing

Laboratory Test	Rationale
CBC	Anemia → CV workload Polycythemia → ?other secondary cause
BMP	?CKD ?baseline electrolyte abnormalities to inform treatment choice
Lipid Profile	Risk stratification (PREVENT)
Fasting glucose/A1c	Risk stratification (PREVENT)
TSH	2ndary workup, hyperthyroid = hyperdynamic hypothyroid → diastolic HTN
Urinalysis	Hematuria/casts → glomerulonephritis, broad assessment of possible renal pathology
Urine albumin-to-creatinine ratio	End organ damage, risk stratification
ECG	Structural abnormalities, LVH

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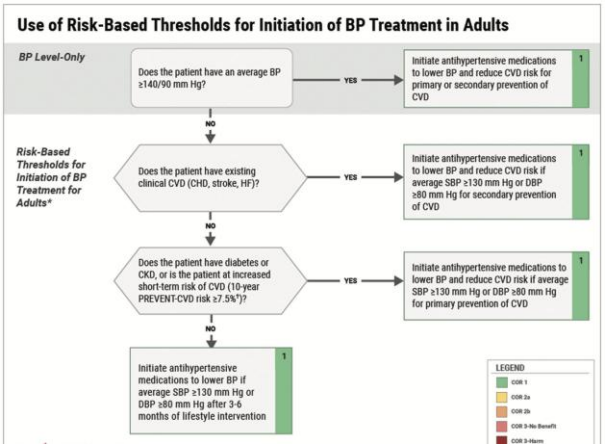
Risk Assessment



- Initiate Medication:
  - -all Stage II
  - -existing CVD
  - -DM, CKD
  - -**PREVENT CVD risk ≥ 7.5%**

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~~Pooled Cohort Equation~~ ->PREVENT

PCE

- 5 cohorts, 1960's-1990's (25,000 adults)
- Age 40-79, 10-year risk
- ASCVD only
- Overestimates risk in modern populations

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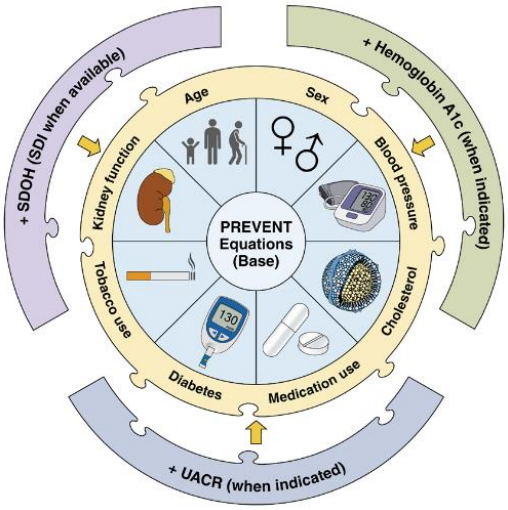

Khan SS, et al. Novel Prediction Equations for Absolute Risk Assessment of Total Cardiovascular Disease Incorporating Cardiovascular-Kidney-Metabolic Health: A Scientific Statement From the American Heart Association. *Circulation*. 2023;148(24):1982–2004.

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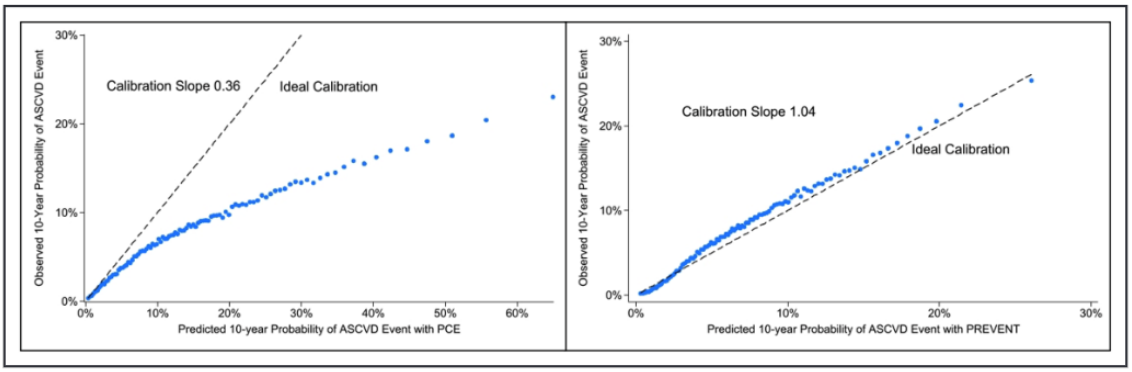
Ongoing PREVENT Validation



2.5 million veterans, PREVENT calibration > PCE

King SJ, et al. Comparison of the Pooled Cohort and the PREVENT Cardiovascular Disease Risk Equations in the Veterans Health Administration. *Circulation*. 2025;152(16):1183–1185.

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Case 1: 43-year-old Female with PreDM, HLD, BMI 39

- PREVENT Score: 1.6% (10 years)
- Start with a trial of lifestyle modification
  - CVD risk <7.5%
- Initiate antihypertensives if BP >130/80 after 3-6 months

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CASE 2
64-year-old Male, T2DM, HLD, Prior TIA

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64-year-old Male, T2DM, HLD, Prior TIA

- A1c 7.9
- BP 138/79, HR 73
- Home BPs in 130s-140s
- Meds: Telmisartan 40mg, Atorvastatin 80mg, ASA 81mg, Semaglutide 1mg

Case 2, Question 1

Based on the 2025 AHA/ACC High BP Guideline, What Is the Most Appropriate BP Target for This Patient?

A. <120/80 mmHg
B. <130/80 mmHg
C. <140/90 mmHg
D. A + B
E. B + C

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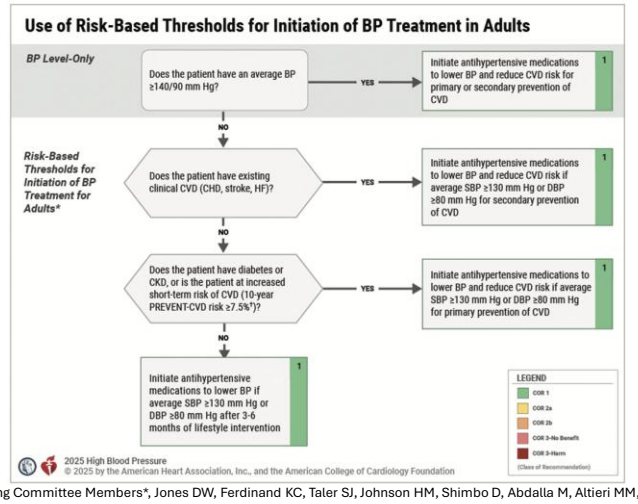
BP Goals Based on Risk

5.2.7. BP Goal for Patients With Hypertension

Recommendations for BP Goal for Patients With Hypertension
Referenced studies that support recommendations are summarized in the Evidence Table.

COR	LOE	Recommendations
1	A	1. In adults with confirmed hypertension who are at increased risk* for CVD, an SBP goal of at least <130 mm Hg, with encouragement to achieve SBP <120 mm Hg, is recommended to reduce the risk of cardiovascular events and total mortality.[1–4]
2b	B-NR	2. In adults with confirmed hypertension who are not at increased risk* for CVD, an SBP goal of <130 mm Hg, with encouragement to achieve SBP <120 mm Hg, may be reasonable to reduce risk of further elevation of BP.[5]
1	B-R	3. In adults with confirmed hypertension who are at increased risk* for CVD, a DBP target of <80 mm Hg is recommended to reduce the risk of cardiovascular events and total mortality.[6]
2b	B-NR	4. In adults with confirmed hypertension who are not at increased risk* for CVD, a DBP target of <80 mm Hg may be reasonable to reduce the risk of cardiovascular events.[5]

*Increased risk is defined as a 10-year predicted risk for CVD events of ≥7.5% using PREVENT.



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Why Are We Even Still Talking About BP Goals?

Trial	Population	Targets	Achieved BP	Outcome	Effect	Takeaway
ACCORD (2010) 🔴	T2DM + ↑CVD risk	<120 vs <140	~119 mmHg	CVD events/death	HR 0.88 (0.73–1.06), p=0.20	❌ No overall benefit
ACCORD Post Hoc (2010) 🟡	T2DM (factorial: BP + glycemia)	<120 vs <140	~119 mmHg	CVD mortality	HR 0.71 (0.56–0.90), p=0.005	⚠️ Context-dependent benefit
SPRINT (2015) 🟢	No DM + ↑CVD risk	<120 vs <140	~121 mmHg	CVD events/death	HR 0.75 (0.64–0.89), p<0.001	✅ Strong benefit
STEP (2021) 🟢	Age 60–80	<130 vs <150	~127 mmHg	Nonfatal CVD	HR 0.74 (0.60–0.92)	✅ Benefit in older adults
ESPRIT (2024) 🟢	± DM + ↑CVD risk	<120 vs <140	~122 mmHg	CVD events/death	HR 0.88 (0.78–0.99), p=0.028	✅ Modest benefit
BPROAD (2024/2025) 🟢	T2DM + hypertension	<120 vs <140	~122 mmHg	CVD events	HR 0.79 (95% CI 0.69–0.90), p<0.001	✅ Clear benefit in diabetes

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64-year-old Male, T2DM, HLD, Prior TIA

- Relevant labs:
  - Na+ 138
  - K+ 4.1
  - Cr 0.9
  - UACR <30 mg/g
  - LDL 112
- Relevant history:
  - No history of orthostasis
  - No recent falls
  - No side effects to current medications

Case 2, Question 2

Now What?

A. Increase telmisartan to 80mg
B. Switch to losartan 100mg
C. Switch to telmisartan 40mg/HCTZ 12.5mg
D. Continue telmisartan 40mg
E. Add carvedilol 6.25mg BID

64-year-old Male, T2DM, HLD, Prior TIA

- Increasing a single agent is less effective than adding a second agent…by a lot
- Doubling a dose, on average, provides ***an additional 1.5 mmHg*** of BP lowering
- Side effects are typically dose-dependent
- **Adding an agent >> than increasing a dose when BP lowering is the goal**

Drug Class	Standard Dose SBP Reduction (mmHg)	Additional SBP Reduction per Dose Doubling (mmHg)
CCBs	~9.5	**2.6** *(steepest)*
Thiazides	~10.8	2.0
MRAs	~8.4	1.8
ACE Inhibitors	~6.8	1.6
ARBs	~8.5	1.1
Beta-Blockers	~8.9	**0.5** *(flattest)*

Wang N, Salam A, Pant R, Kumar A, Dhurjati R, Haghdoost F, Vidyasagar K, Kaistha P, Esam H, Gnanenthiran SR, Kanukula R, Whelton PK, Egan B, Schutte AE, Rahimi K, et al. Blood pressure-lowering efficacy of antihypertensive drugs and their combinations: a systematic review and meta-analysis of randomised, double-blind, placebo-controlled trials. *The Lancet*. 2025;406(10506):915–925.

Combination Therapy > Monotherapy

Strategy	SBP Reduction (mmHg)	Incremental Benefit	Example	Key Insight
Standard-dose monotherapy	~9	—	Amlodipine 5mg	Baseline effect
Double the dose	~10.5	**+1.5**	Amlodipine 10mg	Minimal additional benefit
Add a 2nd drug	~15	**+6**	Amlodipine 5mg + Olmesartan 20mg	Much greater reduction
Comparison	—	**~5× greater benefit vs dose doubling**	—	Combination > up-titration
Tolerability	—	—	—	Lower doses of 2 drugs → fewer side effects vs max dose of 1

Wang N, Salam A, Pant R, Kumar A, Dhurjati R, Haghdoost F, Vidyasagar K, Kaistha P, Esam H, Gnanenthiran SR, Kanukula R, Whelton PK, Egan B, Schutte AE, Rahimi K, et al. Blood pressure-lowering efficacy of antihypertensive drugs and their combinations: a systematic review and meta-analysis of randomised, double-blind, placebo-controlled trials. *The Lancet*. 2025;406(10506):915–925.

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CASE 3
59-year-old Female with Longstanding HTN

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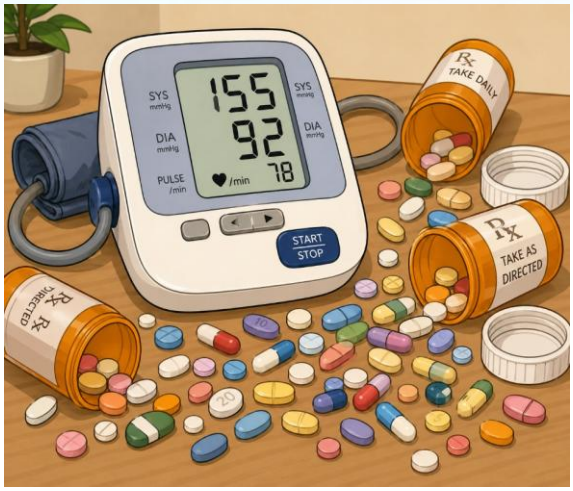
59-year-old Female with Longstanding HTN

- Office BP 155/92
  - Home BPs high 130s-150s
  - On amlodipine 5mg – telmisartan 40mg
  - Past medications:
    - Losartan 100mg (ineffective)
    - Hydrochlorothiazide 25mg (hypokalemia)
    - Nifedipine 90mg (leg swelling)
  - Current Labs: Cr 1.1, K+ 3.9



Case 3, Question 1

What Is the Next Best Step?

A. Increase combo pill to amlodipine 10-telmisartan 40
B. Keep combo as is, add chlorthalidone
C. Keep combo as is, add spironolactone
D. Draw renin/aldosterone
E. Stop combo pill and return in 2 weeks for renin/aldosterone testing

Screening for Primary Hyperaldosteronism

3.2.3.1. Primary Aldosteronism

Recommendations for Primary Aldosteronism		
COR	LOE	Recommendations
1	C-EO	1. In adults with hypertension, screening for primary aldosteronism is recommended in the presence of any of the following conditions to increase rates of detection, diagnosis, and specific targeted therapy: resistant hypertension (regardless of whether hypokalemia is present), hypokalemia (spontaneous or diuretic induced), OSA, incidentally discovered adrenal mass, family history of early-onset hypertension, or stroke at a young age (<40 years).
2b	C-EO	2. In adults with stage 2 hypertension, screening for primary aldosteronism may be considered to increase rates of detection, diagnosis, and specific targeted therapy.

Recommendations for Primary Aldosteronism (Continued)		
COR	LOE	Recommendations
1	C-LD	3. In adults with an indication for screening for primary aldosteronism, use of plasma aldosterone, renin activity, and the plasma aldosterone to renin activity ratio is recommended for initial screening to assess if there is biochemical evidence of primary aldosteronism.[1–3]
1	C-EO	4. In adults with an indication for screening for primary aldosteronism, it is recommended to continue most antihypertensive medications (other than mineralocorticoid receptor antagonists [MRAs]) prior to initial screening to minimize barriers to or delays in screening.

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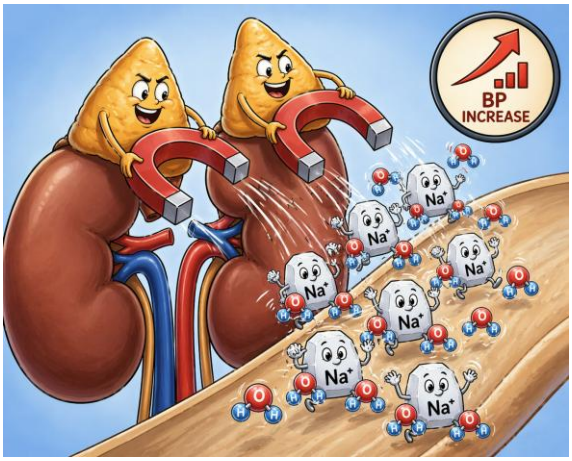
But Why?

- Up to **10%** of patients with stage I hypertension
- Up to **22%** of patients with stage II hypertension
- Up to **35%** of patients with hypertension + other associated risk factors (like OSA!)
- Patients with PA have > risk for end organ damage, even when adjusting for the degree of BP elevation
- 2x risk of heart failure (!!)
- 4x risk of atrial fibrillation (!!)
- Targeted treatment (either medical or surgical) **improves cardiovascular and kidney outcomes**



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59-year-old Female with Longstanding HTN

- You continue medication and draw renin/aldosterone
  - PRA: 0.46 ng/mL/h
  - Aldosterone 11 ng/dL
  - K+ 4.1, Cr 1.2
  - **ARR: 23.9**
- **Now what?**

Case 3, Question 2

Now What?

A. Hold ARB and retest to confirm
B. Saline suppression test
C. Adrenal CT/Adrenal Vein Sampling
D. Add spironolactone, continue combo pill
E. Add spironolactone, discontinue combo pill
F. Increase dose of combo pill, this is not hyperaldosteronism

Wait…What Is a Positive ARR?

- It depends!
  - Suppressed renin & inappropriately high aldosterone relative to renin
- You must know your institution's assay!
- You cannot rely on red flags in the EHR!

Adler GK, Stowasser M, Correa RR, Khan N, Kline G, McGowan MJ, Mulatero P, Murad MH, Touyz RM, Vaidya A, Williams TA, Yang J, Young WF, Zennaro M-C, Brito JP. Primary Aldosteronism: An Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology and Metabolism*. 2025;110(9):2453–2495.

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PA Screening Thresholds

Component	Criteria	Threshold
Renin (low/suppressed)	Plasma renin activity (PRA)	≤ 1 ng/mL/h
	Direct renin concentration (DRC)	≤ 8.2 mU/L
Aldosterone (inappropriately high)	Aldosterone (immunoassay)	≥ 10 ng/dL (≥ 277 pmol/L)
	Aldosterone (LC-MS/MS)	≥ 7.5 ng/dL (≥ 208 pmol/L)
AND		
Aldosterone-to-Renin Ratio (ARR) elevated	Aldosterone (immunoassay) / PRA	**> 20**
	Aldosterone (LC-MS/MS) / PRA	**> 15**
	Aldosterone (immunoassay) / DRC	**> 70**
	Aldosterone (LC-MS/MS) / DRC	**> 52**

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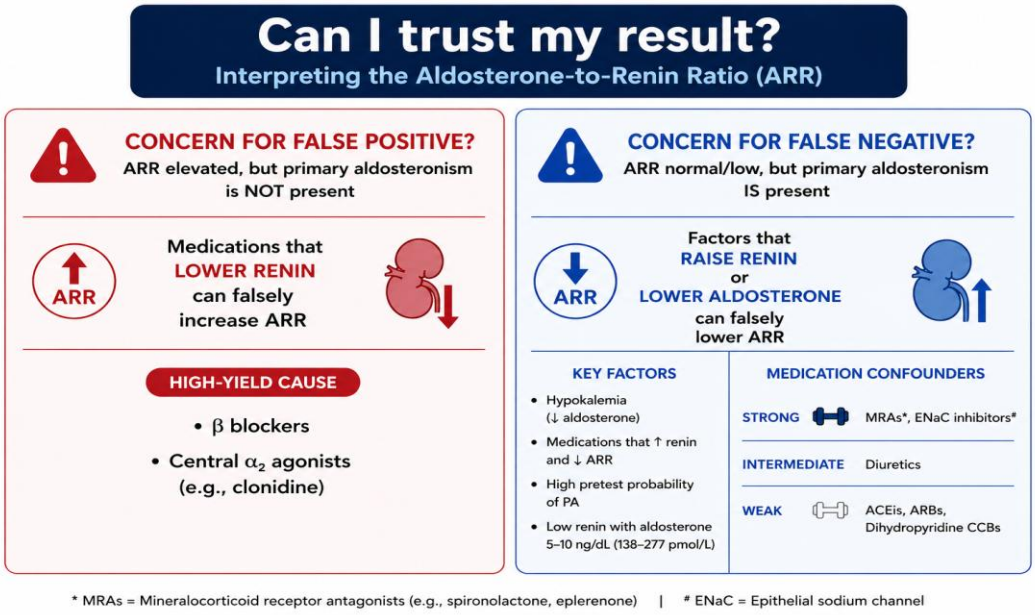

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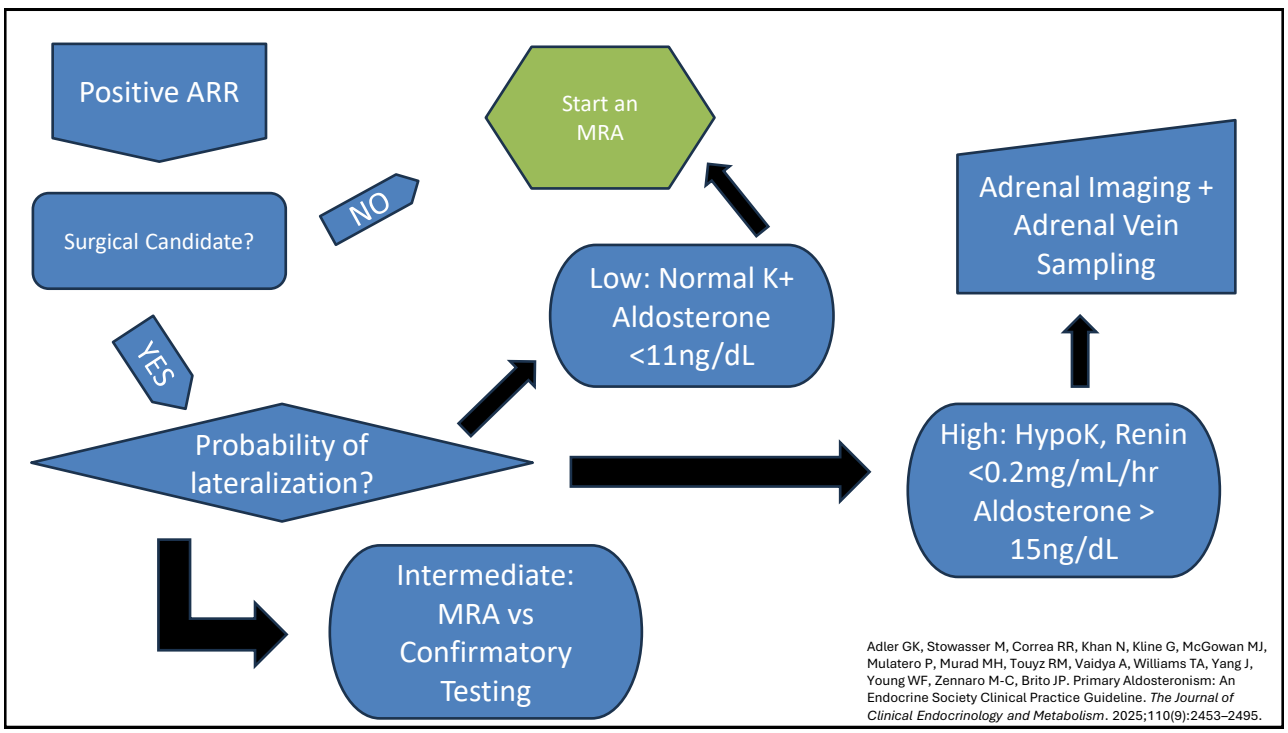

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Why Think About Lateralization?

- Surgical outcomes > Medical in appropriately selected patients
  - But: most patients will be managed medically
- Impractical and unnecessary to confirm every diagnosis
  - Think: will it change management or am I starting an MRA anyway?

Adler GK, Stowasser M, Correa RR, Khan N, Kline G, McGowan MJ, Mulatero P, Murad MH, Touyz RM, Vaidya A, Williams TA, Yang J, Young WF, Zennaro M-C, Brito JP. Primary Aldosteronism: An Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology and Metabolism*. 2025;110(9):2453–2495.

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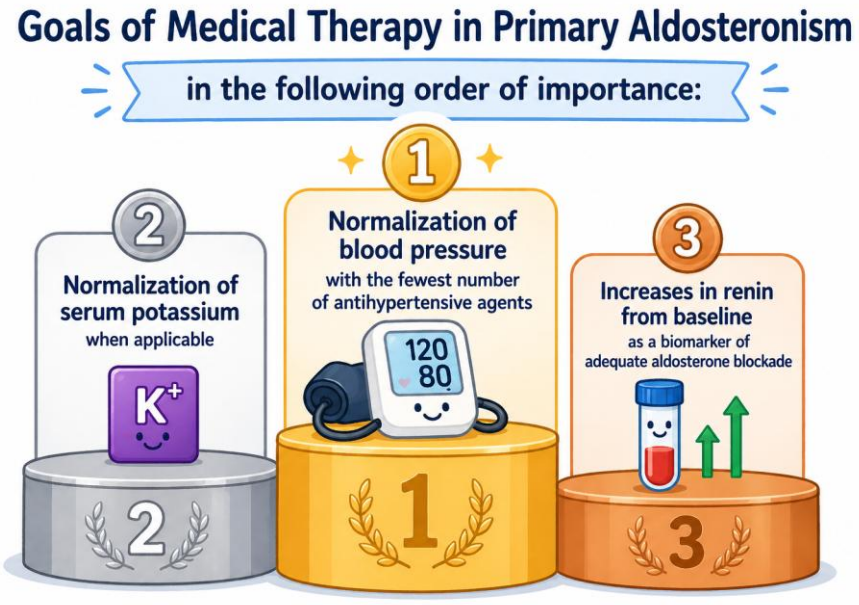

Parisien-La Salle S, Hundemer GL, Nehs MA, Barletta JA, Vaidya A. Treatment of Primary Aldosteronism. *Hypertension*. 2026;83(5):e26238.

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Pharmacologic Therapy for Primary Aldosteronism

GOAL: Control BP and correct hypokalemia by blocking aldosterone or Na^+ reabsorption

FIRST-LINE CHOICE

START WITH A MINERALOCORTICOID RECEPTOR ANTAGONIST (MRA)

Steroidal MRA (first choice)

Spironolactone	Eplerenone
12.5–25 mg daily ↓ Max 200 mg daily	25 mg twice daily ↓ Max 200 mg twice daily
• Hyperkalemia • Antiandrogenic (gynecomastia, ↓ libido, menstrual irregularities)	• Hyperkalemia • Fewer hormonal side effects than spironolactone

Nonsteroidal MRA (fewer hormonal side effects)

Finerenone	Esaxerenone
10 mg daily ↓ Max 20 mg daily	2.5 mg daily ↓ Max 5 mg daily
• Hyperkalemia • Minimal hormonal side effects	• Hyperkalemia • Minimal hormonal side effects

ADD / ALTERNATIVE OPTION IF NEEDED

Epithelial Sodium Channel (ENaC) Inhibitors (add-on or alternative)

Amiloride	Triamterene
2.5–5 mg daily ↓ Max 40 mg daily	37.5–50 mg daily ↓ Max 300 mg daily
• Hyperkalemia • Nausea, dizziness	• Hyperkalemia • Nephrolithiasis, nausea

WHEN TO CONSIDER

- Cost-effective First-line in most patients
- If antiandrogenic side effects or intolerance to spironolactone
- If inadequate BP/K control or MRA not tolerated

MONITORING (ALL AGENTS)

Serum potassium · Renal function · Blood pressure · Renin

⚠ Monitor more frequently in renal impairment or with significant hypo-/hyperkalemia.

Parisien-La Salle S, Hundemer GL, Nehs MA, Barletta JA, Vaidya A. Treatment of Primary Aldosteronism. *Hypertension*. 2026;83(5):e26238.

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CASE 4

52-year-old Male, No Medical History

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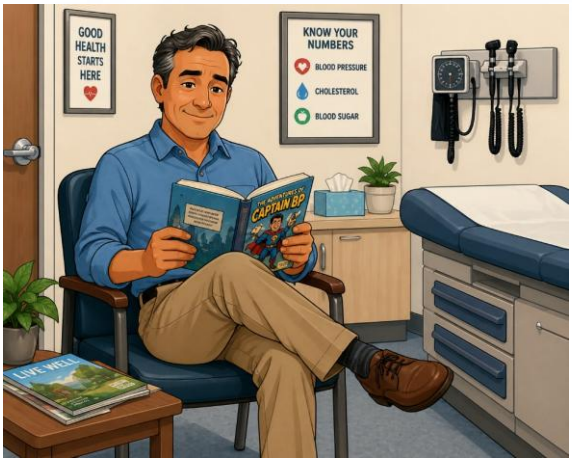
52-year-old Male, No Medical History

- BP 157/90 initial
  - 148/92 (average of 3 after rest)
- Here to establish care, no complaints
- You draw labs and ask him to measure BP at home with a validated device and follow up in a week



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Case 4: 52-year-old Male, No Medical History

BASIC METABOLIC PANEL

Test	Result	Units
Sodium	140	mmol/L
Potassium	4.3	mmol/L
Chloride	103	mmol/L
CO_2 (Bicarbonate)	25	mmol/L
BUN	15	mg/dL
Creatinine	0.97	mg/dL
eGFR	92	mL/min/1.73 m²
Glucose	92	mg/dL
Calcium	9.6	mg/dL

LIPID PANEL

Test	Result	Units
Total Cholesterol	226	mg/dL
LDL Cholesterol (calc)	146	mg/dL
HDL Cholesterol	52	mg/dL
Triglycerides	134	mg/dL
Non-HDL Cholesterol	174	mg/dL

URINE ALBUMIN-TO-CREATININE RATIO (UACR)

Test	Result	Units
Urine Albumin, Random	12.4	mg/L
Urine Creatinine, Random	98.0	mg/dL
UACR (calculated)	12	mg/g

COMPLETE BLOOD COUNT (CBC)

Test	Result	Units
WBC	6.8	$10^3/\mu L$
RBC	4.92	$10^6/\mu L$
Hemoglobin	15.1	g/dL
Hematocrit	44.6	%
MCV	90.7	fL
MCH	30.7	pg
MCHC	33.9	g/dL
RDW	12.8	%
Platelets	252	$10^3/\mu L$

THYROID STIMULATING HORMONE (TSH)

Test	Result	Units
TSH	1.48	mIU/L

HEMOGLOBIN A1c

Test	Result	Units
Hemoglobin A1c	5.4	%

Home Blood Pressure Log

Name: Patient 4
Month/Year: June 2026

Date	AM (before meds/breakfast)		PM (before dinner)		Daily Average
	Reading 1	Reading 2	Reading 1	Reading 2	
Mon 6/1	142/88	138/84	150/95	146/90	144/89
Tue 6/2	156/94	150/92	160/98	158/96	156/95
Wed 6/3	138/80	135/78	142/88	140/84	139/83
Thu 6/4	162/98	158/96	164/100	160/98	161/98
Fri 6/5	146/90	142/88	150/92	148/90	147/90
Sat 6/6	137/82	136/80	140/86	138/84	138/83
Sun 6/7	150/94	146/92	152/94	150/92	150/93

Overall Average (14 readings): 147/92

Average Systolic: 147
Average Diastolic: 92

* Measurements taken while seated, after ...es of rest.
No caffeine/exercise/smoking for 30 min ...or.

Stage II HTN

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Case 4, Question 1

What Is the Next Best Step?

A. Start amlodipine 2.5 mg
B. Start hydrochlorothiazide 25 mg
C. Start amlodipine 5mg-olmesartan 20mg
D. Start spironolactone 25mg
E. Lifestyle changes only and follow-up

Case 4: 52-year-old Male with Stage II HTN

5.2.4. Choice of Initial Monotherapy Versus Initial Combination Drug Therapy

Recommendations for Choice of Initial Monotherapy Versus Initial Combination Drug Therapy
Referenced studies that support the recommendations are summarized in the Evidence Table.

COR	LOE	Recommendations
1	B-R	1. In adults with stage 2 hypertension (SBP ≥ 140 mm Hg and DBP ≥90 mm Hg), initiation of antihypertensive drug therapy with 2 first-line agents of different classes, ideally in a single-pill combination (SPC), is recommended to improve BP control and adherence.[1–6]
2a	C-EO	2. In adults with stage 1 hypertension (SBP 130-139 mm Hg and DBP 80-89 mm Hg), initiation of antihypertensive drug therapy with a single first-line antihypertensive drug is reasonable, with dosage titration and sequential addition of other agents as needed to achieve BP control.
3: Harm	A	3. In adults with hypertension, simultaneous use of an ACEi, ARB, and/or renin inhibitor in combination is not recommended due to the potential for harm.[7–9]

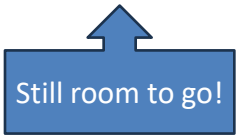
Writing Committee Members*, Jones DW, Ferdinand KC, Taler SJ, Johnson HM, Shimbo D, Abdalla M, Altieri MM, Bansal N, Bello NA, Bress AP, Carter J, Cohen JB, Collins KJ, Commodore-Mensah Y, et al. 2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGIM Guideline for the Prevention, Detection, 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. *Hypertension*. 2025;82(10).

Case 4: 52-year-old Male with Stage II HTN

Drug	Expected Reduction SBP/DBP mmHG
Amlodipine 2.5mg	5/3
HCTZ 25mg	7/4
Amlodipine 5mg-Olmesartan 20mg	**13/7**
Spironolactone 25mg	6/3

147/92

134/85



Bpmodel.org

Zasadzinski L, Khan T, Yang J, Tsipas S, Sutherland SE, Wozniak GD. State-Level Variation in Hypertension Prevalence and Single-Pill Combination Use, 2023. *Journal of the American Heart Association*. 2026:e047745.

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A Case for Combo Therapy

- ~75% of patients require **≥2 medications** to achieve BP control
- <30% of patients in ALLHAT achieved BP <140/90 on monotherapy
- Combo therapy is well-tolerated and widely available

King JB, An J, Bellows BK, Cohen JB, Commodore-Mensah Y, Ghazi L, Langford AT, Brook RD, on behalf of the American Heart Association Council on Hypertension; Council on Cardiovascular and Stroke Nursing; and Council on Clinical Cardiology. Single-Pill Combination Therapy for the Management of Hypertension: A Scientific Statement From the American Heart Association. *Hypertension*. 2025:HYP.0000000000000258.

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28 FDA-Approved Antihypertensive SPCs

Benazepril + HCTZ	Lisinopril + HCTZ	Irbesartan + HCTZ	Valsartan + HCTZ	Telmisartan + amlodipine	Bisoprolol + HCTZ	Spironolactone + HCTZ
Captopril + HCTZ	Quinapril + HCTZ	Losartan + HCTZ	Benazepril + amlodipine	Valsartan + amlodipine	Metoprolol tartrate + HCTZ	Olmesartan + amlodipine + HCTZ
Enalapril + HCTZ	Azilsartan + chlorthalidone[1]	Olmesartan + HCTZ	Trandolapril + amlodipine	Valsartan + nebivolol[2]	Amiloride + HCTZ	Valsartan + amlodipine + HCTZ
Fosinopril + HCTZ	Candesartan + HCTZ	Telmisartan + HCTZ	Olmesartan + amlodipine	Atenolol + chlorthalidone	Triamterene + HCTZ	Telmisartan + amlodipine + indapamide[2]

Slide Design: Katie Derington, PharmD
Data current as of Feb 18, 2026 using Drugs@FDA, FDA Orange Book, and Micromedex REDBOOK. Black = Branded product only.
[1]Generic approved by FDA Jan 2025. [2]Not orderable.

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A Look at SPC Use in SPRINT

- 3,833 intensive arm participants on ≥2 drug classes
  - 219 unique regimens
    - ONLY 7/219 (3.2%) had class-equivalent SPC
    - 40.3% of participants were one of those 7 regimens
  - 27.7% were on ≥4 drug classes, no SPC ☹

King JB, Derington CG, Herrick JS, Jacobs JA, Zheutlin AR, Conroy MB, Cushman WC, Bress AP. Single-Pill Combination Product Availability of the Antihypertensive Regimens Used for Intensive Systolic Blood Pressure Treatment in the Systolic Blood Pressure Intervention Trial. *Hypertension*. 2023;80(8):1749–1758.

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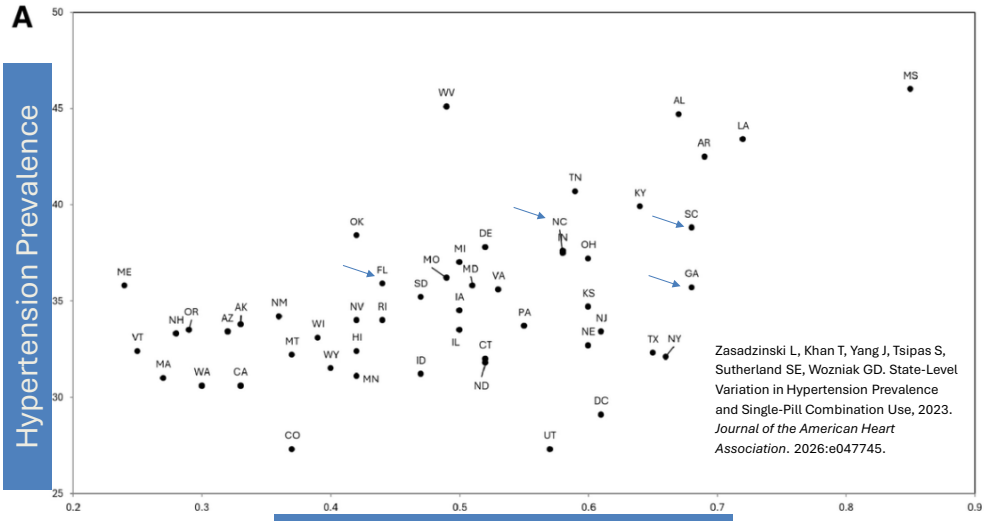
State Level SPC Analysis



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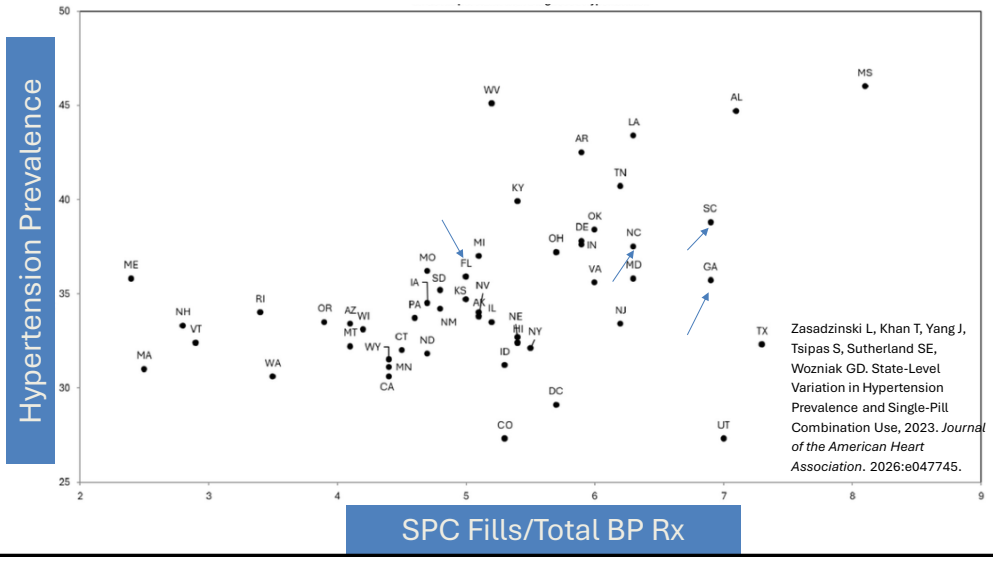
State Level SPC Analysis



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Single-Pill Combination Antihypertensives: Coverage Patterns (FL, GA, SC, NC)

Category	Combination Type	Examples (Generic/SPC)	Coverage Pattern	Notes
Widely Preferred	ACEi + Thiazide	**lisinopril/HCTZ, enalapril/HCTZ, benazepril/HCTZ**	Preferred (Tier 1)	Lowest cost, universally covered generics
Widely Preferred	ARB + T			Strong guideline alignment
Widely Preferred	ACEi + C			Good tolerability, commonly listed
Variable Coverage	ARB + C		-preferred	May require step therapy
Variable Coverage	Thiazide			Less commonly prioritized
Often Non-Preferred	Triple combination	**amlodipine/valsartan/HCTZ, olmesartan/amlodipine/HCTZ**	Non-preferred / PA required	Higher cost, brand-heavy
Often Non-Preferred	Newer branded SPCs	**perindopril/amlodipine**	Non-preferred / PA required	Limited formulary presence

Key Takeaway

Generic dual-combination pills (ACEi/ARB + thiazide or CCB) are consistently preferred across Medicaid and Medicare plans; triple and branded SPCs often require prior authorization.

Footnote (Sources)
State Medicaid Preferred Drug Lists reviewed: Florida (AHCA), Georgia (DCH), South Carolina (SCDHHS), North Carolina (NC DHHS); regional Medicare Part D formularies; Million Hearts® Fixed-Dose Combination Coverage Analysis.

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Considerations in SPC Use

Pro

- Faster BP control
- Improved adherence
- Improved persistence
- ?fewer side effects
- Better outcomes

Con

- Limitations in products
- Lack of dosing flexibility
- Challenges with isolating side effects

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CASE 5
37-year-old Male, MASLD, HLD

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Case 5: 37-year-old Male, MASLD, HLD

- BP 134/75
  - Confirmed on repeat
- BMI 29
- PREVENT Score 1.9%
- Family history of T2DM, Hypertension
- Lifestyle
  - Drinks alcohol 3-4x/week, 2-3 drinks at a time
  - Exercises on weekends
  - Has a sedentary job
  - No smoking

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Case 5: 37-year-old Male, MASLD, HLD

- The patient asks about how much he would need to cut back on alcohol to improve his blood pressure. **How do you advise him?**

- A. Cut back by one day/week
- B. Cut total consumption by about 30%
- C. 3 or fewer drinks/week, try for abstinence
- D.2 or fewer drinks/week, try for abstinence

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Case 5: 37-year-old Male, MASLD, HLD, ETOH

Alcohol

1	A	6. Adults with or without hypertension who currently consume alcohol should be advised to pursue a recommended goal of abstinence, or at least to reduce alcohol intake to ≤1 drink/d for women and ≤2 drinks/d for men to prevent or treat elevated BP and hypertension.[I 28–31]

Writing Committee Members*, Jones DW, Ferdinand KC, Taler SJ, Johnson HM, Shimbo D, Abdalla M, Altieri MM, Bansal N, Bello NA, Bress AP, Carter J, Cohen JB, Collins KJ, Commodore-Mensah Y, et al. 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. *Hypertension*. 2025;82(10).

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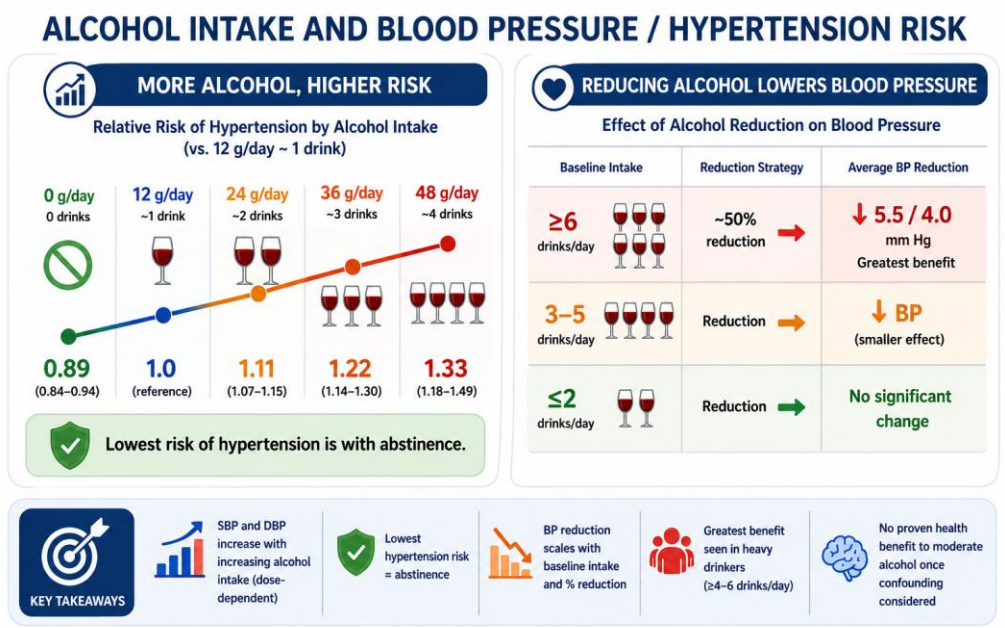

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CASE 6

68-year-old Female, HTN, DM, HLD

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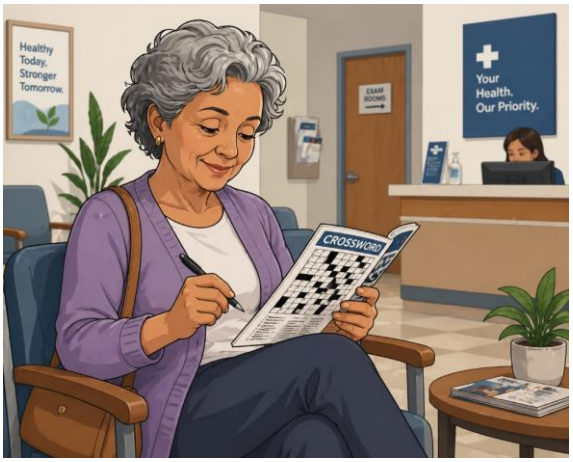
Case 6: 68-year-old Female, HTN, DM, HLD

- BP 142/91
- Meds: rosuvastatin 40mg, HCTZ 25mg, tirzepatide 7.5mg
- FH Dementia
- Concerned about memory loss, her mother started showing signs in early 70s



Case 6, Question 1

How Do You Counsel Your Patient on Next Steps to Prevent Mild Cognitive Impairment and Dementia?

A. Implement lifestyle changes to improve BP to <140/90
B. Increase HCTZ to 50mg, goal <140/90
C. Switch to HCTZ-containing combo pill, goal <130/80
D. Switch to Chlorthalidone, goal <130/80

Case 6: 68-year-old Female, HTN, DM, HLD

Recommendation for Prevention of Mild Cognitive Impairment and Dementia
Referenced studies that support the recommendation are summarized in the Evidence Table.

COR	LOE	Recommendation
1	A	1. In adults with hypertension, a goal of <130 mm Hg SBP is recommended to prevent mild cognitive impairment and dementia.[1–5]

Writing Committee Members*, Jones DW, Ferdinand KC, Taler SJ, Johnson HM, Shimbo D, Abdalla M, Altieri MM, Bansal N, Bello NA, Bress AP, Carter J, Cohen JB, Collins KJ, Commodore-Mensah Y, et al. 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. *Hypertension*. 2025;82(10).

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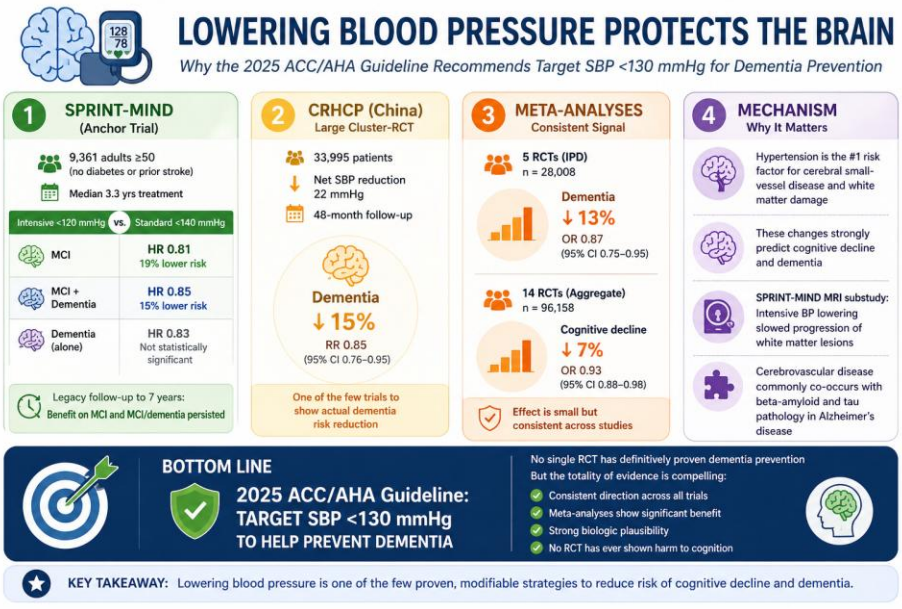

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Our Journey...

Case	Story	Teaching Points
Case 1	43 yo F with preDM, HLD, BMI 39	Cuff Size, PREVENT
Case 2	64 yo M, T2DM, HLD, Prior TIA	BP Goals, Combo Therapy
Case 3	59 yo F: Longstanding HTN	Primary Aldosteronism
Case 4	52 yo M with Stage II HTN	Initiating Combo Therapy
Case 5	37 yo M, MASLD, HLD, ETOH	Alcohol reduction/abstinence
Case 6	68 yo F, HTN, DM, HLD	MCI/dementia risk reduction

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Wrapping Up...

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Top Takeaways

- Cuff size and measurement technique matter!
- PREVENT replaces PCE for risk estimation
- Low-risk patients should be considered for antihypertensive therapy if goal not reached in 3-6 months

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Top Takeaways

- If you aren't diagnosing primary aldosteronism, you aren't looking for it
- Combination therapy is more effective than monotherapy
- Less alcohol, lower BP
- More intensive blood pressure control leads to better CV outcomes, including reducing the risk of dementia

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