



Hypertension and Hyperlipidemia

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Moderator: Annie Gayman, MD

October 8, 2026

Coming Up in CME

Core CME – 2nd Thursdays 12:15 – 1:20 PM

- November 12, 2026 – Asthma
- December 10, 2026 – Relative Energy Deficiency in Sport

Medical Q&A on Non-Core days

Thursdays 12:15-12:45 PM

Full-day CME - Register Today!

Your early registration is important! It helps us confirm attendance and determine if the course will proceed as scheduled. Thank you for registering promptly!

WPMG Teach the Teacher CME: Building Our Teaching Skills

Wednesday, November 18, 2026

8:00am - 4:30pm

Live In-person

Register Today: [Publisher Portal](#)

Save the Date: KP Infectious Disease for Primary Care

Wednesday April 28, 2027

In person at Renton HQ

(Note: If registration is low, the activity will transition to Teams)

Save the Date: Cardiology for Primary Care CME

Thursday, November 18, 2027

Virtual via MS Teams

To explore even more CME offerings, please visit: [CME - Continuing Medical Education | WA Clinical Library](#)

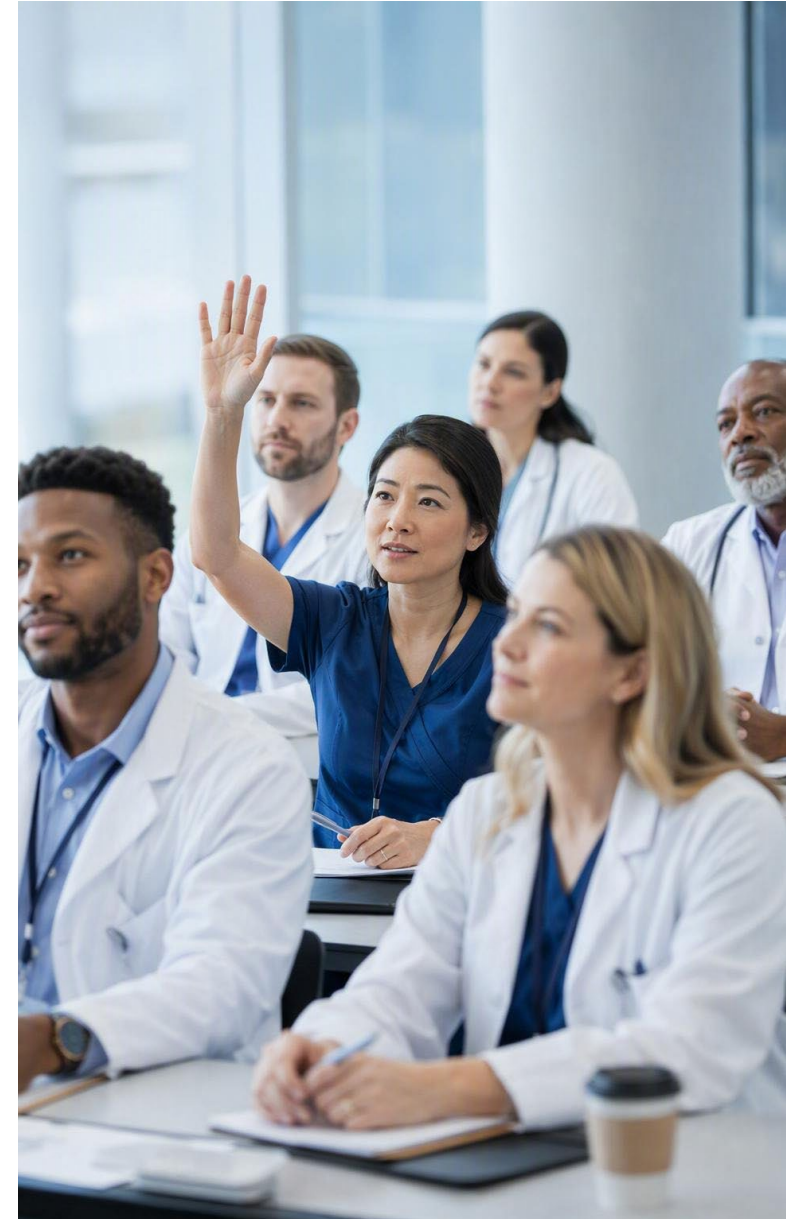
Reminders

Adult Learning depends on active participation.

Please participate in all Audience Response Questions and consider some of the patients you care for as we work through cases.

Please complete the evaluation at the end of the session to earn CME credit.

If chat is distracting, please feel free to ignore during presentation!



Disclosures:

The planners and faculty of this CME activity have indicated no relevant financial relationships with ACCME-defined commercial interests.

Thank you to contributors to today's presentation:

Melissa Hull
Melissa Sturgis
Ryan Broderick
Kim Painter
Katie Paul
Christopher Scott

Agenda



Hypertension Diagnosis



Resistant Hypertension

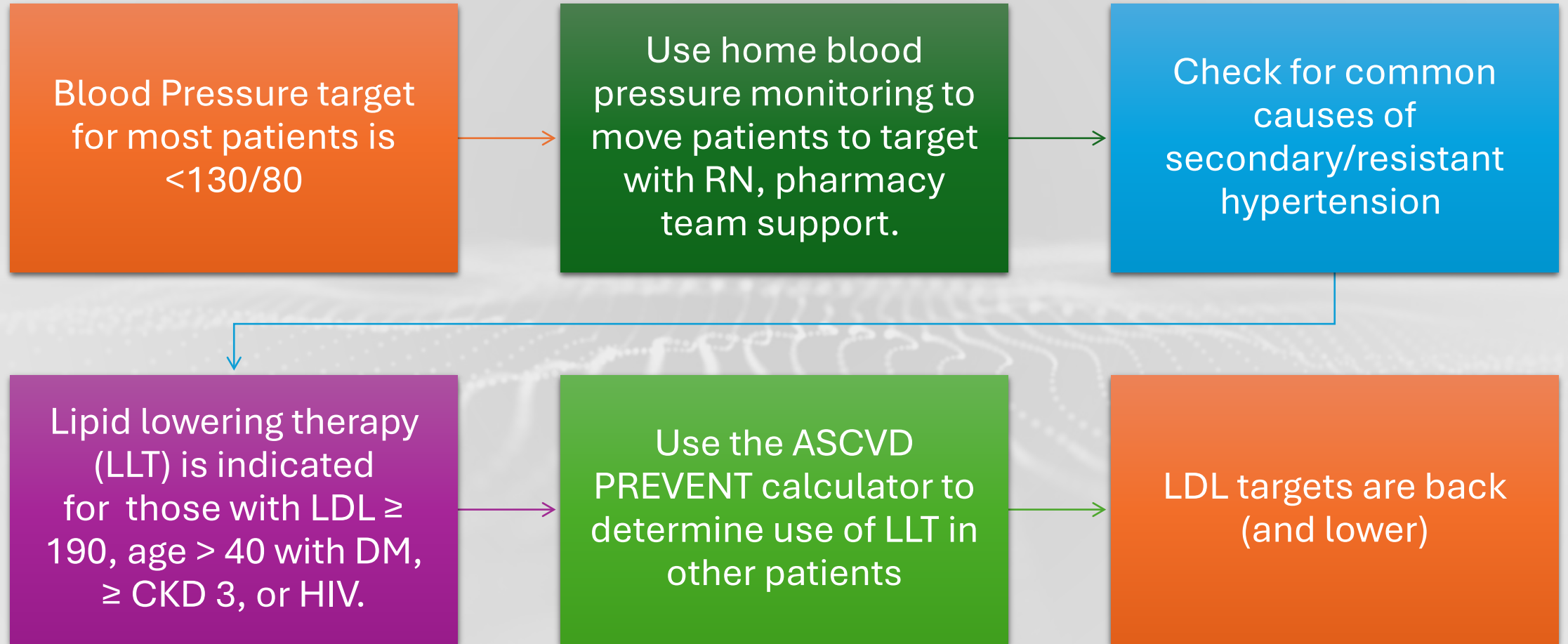


PREVENT Calculator



Lipid lowering therapy

Learning Objectives



A Word on Scope

- Hypertension and Cholesterol management are evolving, big topics.
- Patients are increasingly coming to us with questions about non-LDL cholesterol testing and interpretation
- Please join Med Q&A on October 15th for additional follow up on this topic specifically
- This symbol means we have a KPWA resource that carries this enduring content – mostly Value Based Care Guides and Practice Resources.



Why Focus on Blood Pressure?

- High Blood Pressure (BP) is the **most prevalent modifiable risk factor** for cardiovascular (CV) disease
 - CV disease is the leading cause of death and disability worldwide
 - CV disease burden is **increasing**
- New ACC/AHA/etc BP guidelines for published in August 2025
- BP management and treatment supports KPWA’s HEDIS/Medicare 5-star performance

Prevalence of Hypertension in US Adults 18-80 years

Demographic group	Prevalence	
	Men	Women
Overall	49.5% (59.0 million)	43.9% (56.3 million)
Age groups, y		
18-29	20.3%	9.0%
30-44	39.6%	23.7%
45-59	57.4%	52.5%
60-74	70.7%	71.4%
75-80	83.7%	84.8%
Racial and ethnic groups (age-adjusted)		
NH White	47.0%	39.0%
NH Black	56.8%	56.7%
NH Asian	49.8%	39.1%
Hispanic	50.4%	36.3%
Other	50.7%	47.9%

Almost 50% of US Adults 18-80 years have hypertension

Demographic group	Prevalence	
	Men	Women
Overall	49.5% (59.0 million)	43.9% (56.3 million)



Case 1 - Johnny: Does this person have hypertension?

48-year-old man with no significant past medical history presents for annual wellness exam – BP in office 134/83, no prior BP data for review

Question: Does he have hypertension?

- A. Yes
- B. No
- C. Maybe



Case 1 - Johnny: Does this person have hypertension?

48-year-old man with no significant past medical history presents for annual wellness exam – BP in office 134/83, no prior BP data for review

Question: Does he have hypertension?

- A. Yes
- B. No
- C. Maybe**

Making Hypertension Diagnosis



Isolated elevated in-office BP is NOT sufficient to make diagnosis unless:

Presentation with hypertensive urgency or emergency ($>180/110$)

Initial BP ≥ 150 mm Hg systolic or ≥ 100 mm Hg diastolic with known end-organ damage (left ventricular hypertrophy, hypertensive retinopathy, etc.)



When possible, confirm elevated BP with out-of-office BP measurement



Accurate BP measurement with proper technique is critical

New Blood Pressure Categories

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (top/upper number)	and/or	DIASTOLIC (bottom/lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
STAGE 1 HYPERTENSION (High Blood Pressure)	130 – 139	or	80 – 89
STAGE 2 HYPERTENSION (High Blood Pressure)	140 OR HIGHER	or	90 OR HIGHER
SEVERE HYPERTENSION (If you don't have symptoms*, call your health care professional.)	HIGHER THAN 180	and/or	HIGHER THAN 120
HYPERTENSIVE EMERGENCY (If you have any of these symptoms*, call 911.)	HIGHER THAN 180	and/or	HIGHER THAN 120

Recommendation for Definition of High BP
References that support the recommendation are summarized in the Evidence Table.

COR	LOE	Recommendation
1	B-NR	1. In adults, BP should be categorized as normal, elevated, or stage 1 or 2 hypertension to prevent and treat high BP (Table 4). ^{1,2}

Diagnosis of Hypertension – 2025 Guideline Update

Those taking antihypertensive meds for elevated BP can be defined as having hypertension (“treated hypertension”)

Quality Metrics v Clinical Goals

HEDIS – includes adults 18-85 years-old
<140/90 mm Hg

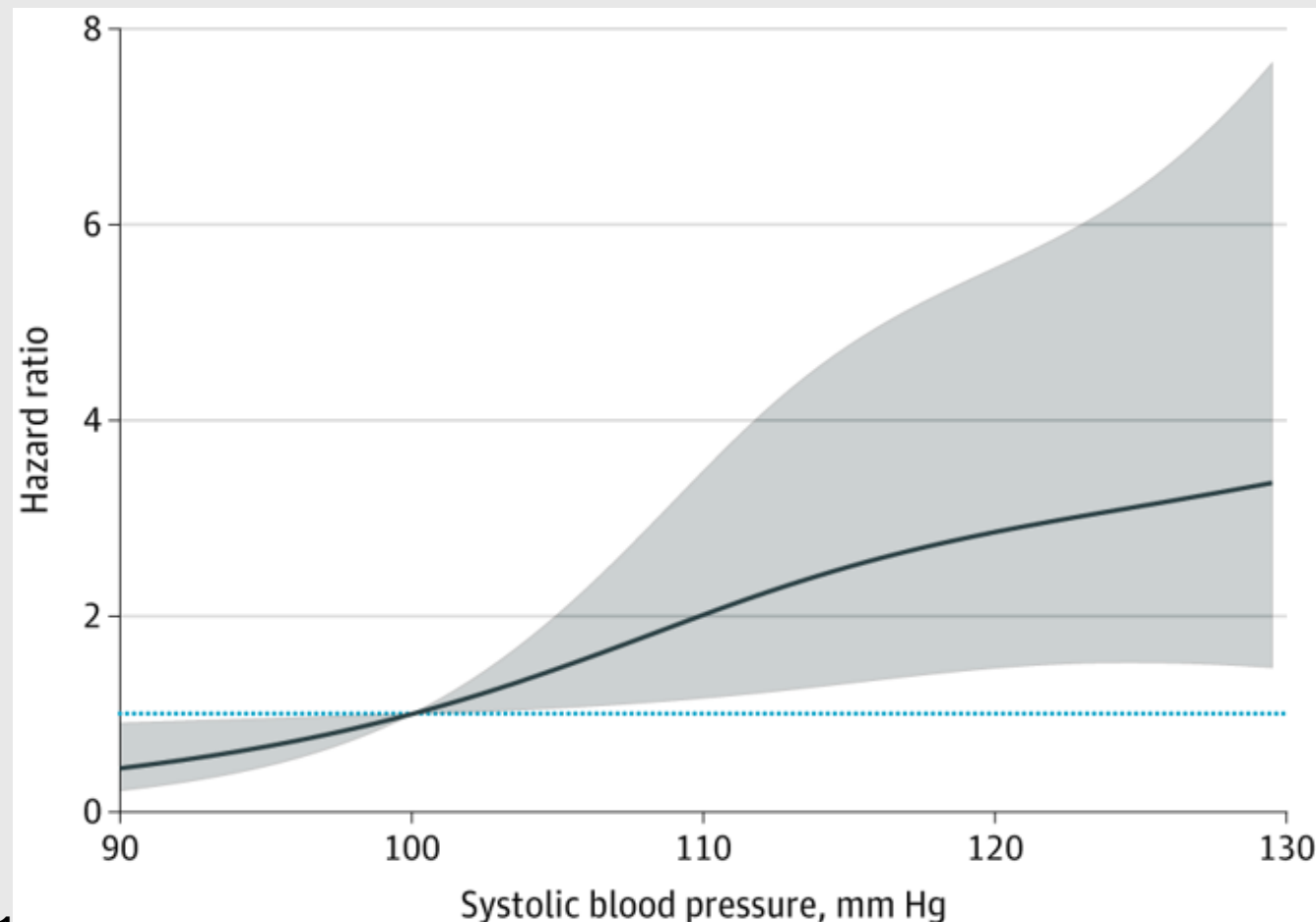
- Regional Blood Pressure Goal – Our regional BP control goal is 90%!

Data support BP goal should be:
<130/80 mm Hg

Rationale for Lower Goals

- Observational data demonstrate association of SBP/DBP and CV risk
- Outcomes of RCTs of lifestyle modification to lower BP
- RCTs of anti-HTN treatment meds to prevent CVD
- Observational data and meta-analyses support gradient of CV risk from normal BP, to elevated BP, stage 1, and 2 hypertension^{1,2}

Association of Normal Systolic Blood Pressure Level With Cardiovascular Disease in the Absence of Risk Factors



Case 1 Update – Johnny

48-year-old man with
no significant past
medical history
presents for annual
wellness exam – BP in-
office 134/83



Question: What is best next step to evaluate suspected hypertension?

What is the best next step to evaluate suspected hypertension?

- A. Schedule repeat office visit in 2 weeks
- B. Tell him to take BP in public machine
- C. Obtain out-of-office BP readings
- D. Use cuffless BP device to obtain more data



Question: What is best next step to evaluate suspected hypertension?

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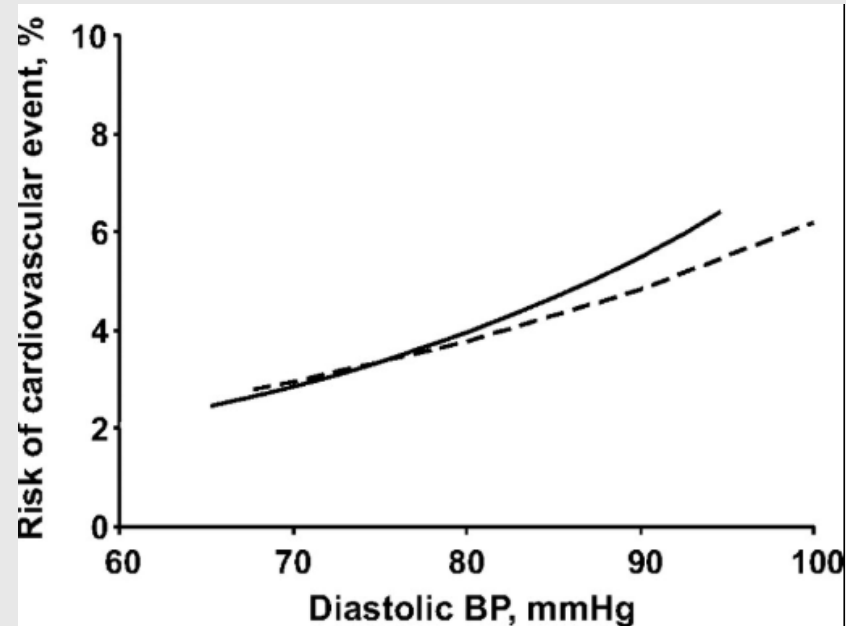
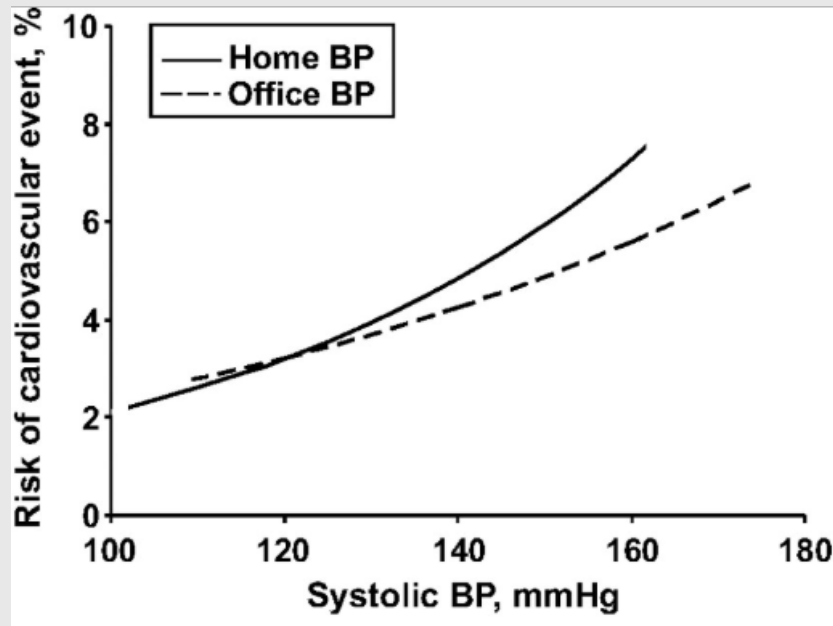
Accurate Measurement of In-Office BP

- Many errors in BP measurement can be avoided by following standardized protocol
- Common sources of error:
 - Improper cuff size
 - Placement of cuff over clothing
 - Incorrect patient position
 - Insufficient rest period before measurement
- In-office BP should be based on average of available readings
- Use automated BP cuffs > manual cuff

Office Blood Pressure Measurement

1. The patient should avoid caffeine, exercise, and smoking for at least 30 minutes before measurement. Ensure the patient has emptied their bladder.
2. Use a blood pressure device that has been validated for accuracy (validatebp.org).
3. Use the correct cuff size on a bare arm.
4. The patient's arm should be supported at heart level.
5. Have the patient relax, sitting in a chair (feet on floor, legs uncrossed, and back supported) for more than 5 minutes of rest.
6. Neither the patient nor the clinician should talk during the rest period or during the measurement. The patient should not be using their phone.
7. Blood pressure measurement should be taken in a temperature-controlled room.
8. Take 2 or more blood pressure measurements at least 1 minute apart. Average the readings, and provide the patient their blood pressure readings both verbally and in writing.

Home BP > In-Office BP for CV Risk



CV Events with 10/5
mmHg in SBP/DBP



BP Variable	HR (95% CI)	P Value
Systolic BP		
Home	1.22 (1.09-1.37)	<0.001
Office	1.01 (0.92-1.12)	0.80
Diastolic BP		
Home	1.15 (1.05-1.26)	0.002
Office	1.06 (0.97-1.16)	0.19



Case 1 Update - Johnny

- 48 yo M with no significant PMH presents for annual wellness exam – BP in office 134/83
- Home BP machine is 2 years old and cuff is appropriate size for his arm

Question: What is best next step?

What is best next step?

- A. Obtain home BP measurements for 2 weeks
- B. Schedule RN visit for BP machine calibration
- C. Instruct him to buy a new model as his BP machine is too old to be accurate



Question: What is best next step?

What is best next step?

- A. Obtain home BP measurements for 2 weeks**
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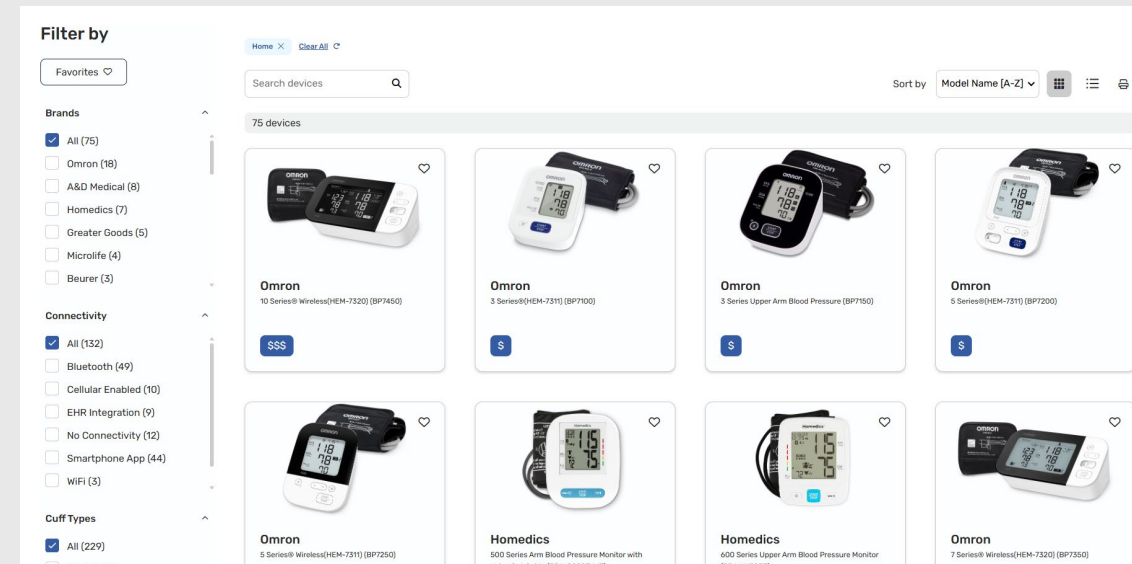
Validated BP Machines Should NOT be “Calibrated”

- There is no validation requirement for marketing a BP device in US
- Many devices are sold without validation
- There is a solution! AMA validates BP machines through independent, third-party process
 - AMA does NOT receive funding from device manufacturers or third parties
- ValidateBP.org lists validated BP machines in US
- Validated home BP machines do not need calibration – they are validated!

Pick an upper arm cuff

Common brands: Omron, Equate, Welch-Allyn (\$\$)

Consider new cuff every ~ 5 years



BP Extractor Tool in Clinical Library

How to see patient-reported BP data

- Vitals flowsheet
- Storyboard Hover
- `.lastbp[#]` will pull in recent clinic, and patient reported BP

PCP Loc: LAKEWOOD MEDICAL OFFICES O-11

Allergies: No Known Allergies
Meds Count: 1

EGFR: 69.3/25/2025

SOCIAL DRIVERS

Wt: 212 lb 2 oz (96.2 kg)
Ht: 5' 5.75" (1.67 m)
BMI: 34.50 kg/m² †
BP: 148/92 >1 day

LAST 10 VISITS
PREVENTIVE, PRIM CARE (9)
No results

CARE GAPS
DTaP/Tdap/Td Vaccine (2 - Td ...
Diabetes Diagnosis Missing fr...
High Intensity Statin Indicated
Zoster Vaccine (1 of 2)
Blood Pressure

PROBLEM LIST (10)

Communication

Recent Vitals

	Most Recent Value	1/13/2026	1/13/2026	1/12/2026
Weight:	212 lb 2 oz (96.2 kg) as of 11/10/2025	1101	1055	1650
Height:	5' 5.75" (1.67 m) as of 10/1/2025	—	—	—
Body Mass Index:	34.50 kg/m ² † 5' 5.75" (1.67 m) as of 10/1/2025 212 lb 2 oz (96.2 kg) as of 11/10/2025	—	—	—
BP:	148/92 as of 11/10/2025	—	—	—
Pulse:	75 as of 11/10/2025	—	—	—
Temp:	98.1 °F (36.7 °C) as of 11/10/2025	—	—	—
Resp:	18 as of 11/10/2025	—	—	—
SpO2:	96% as of 11/10/2025	—	—	—
Peak Flow:	Not taken	—	—	—
(Home) Systolic:	122 as of 8/28/2025	—	—	—
(Home) Diastolic:	77 as of 8/28/2025	—	—	—
DMI Systolic:	134 as of 1/13/2026	134	141	143
DMI Diastolic:	96 as of 1/13/2026	96	91	93

Blood Pressure Extractor

PATIENT DATA

RESULTS

Paste BP text here (Note: Text that is part of an image will not work)

Reset

Extract

Question: Case 1 Update - Johnny

- 48 year-old man with no significant past medical history presents for annual wellness exam – BP in office 134/83
- Average BP over 2 weeks with validated home BP machine is 141/83 mm Hg

Question: What is best next step?

- A. Obtain more home BP data
- B. Start lisinopril/HCTZ
- C. Start trial of lifestyle intervention
- D. Work-up for secondary causes of htn



Question: Case 1 Update - Johnny

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New Blood Pressure Categories

Take Home Point:
Start med for stage 2 HTN
(BP >140/90 mmHg)

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (top/upper number)	and/or	DIASTOLIC mm Hg (bottom/lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
STAGE 1 HYPERTENSION (High Blood Pressure)	130 – 139	or	80 – 89
STAGE 2 HYPERTENSION (High Blood Pressure)	140 OR HIGHER	or	90 OR HIGHER
SEVERE HYPERTENSION (If you don't have symptoms*, call your health care professional.)	HIGHER THAN 180	and/or	HIGHER THAN 120
HYPERTENSIVE EMERGENCY (If you have any of these symptoms*, call 911.)	HIGHER THAN 180	and/or	HIGHER THAN 120

2017 ²		2025 ¹	
COR*	Old Recommendations	COR*	New Recommendations
1	Use of BP-lowering medications is recommended for primary prevention of CVD in adults with	1	In all adults with hypertension, initiation of medications to lower BP is recommended
			when average DBP is ≥90 mm Hg to reduce the risk of cardiovascular events and total mortality.

Preferred Initial Rx:
KP BP Management guidelines
→ lisinopril-HCTZ combo

What about Stage 1 Hypertension?

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (top/upper number)	and/or	DIASTOLIC mm Hg (bottom/lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
STAGE 1 HYPERTENSION (High Blood Pressure)	130 – 139	or	80 – 89
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HYPERTENSIVE EMERGENCY (If you have any of these symptoms*, call 911.)	HIGHER THAN 180	and/or	HIGHER THAN 120



Either lifestyle intervention x6 months or medicines recommended treatment for Stage 1 Hypertension (BP 130-139/80-89 mm Hg)

Remember to add HTN to Problem List and document goal BP

Use of Risk-Based Thresholds for Initiation of BP Treatment in Adults

BP Level-Only

Does the patient have an average BP $\geq 140/90$ mm Hg?

YES

Initiate antihypertensive medications to lower BP and reduce CVD risk for primary or secondary prevention of CVD

1

NO

Risk-Based Thresholds for Initiation of BP Treatment for Adults*

Does the patient have existing clinical CVD (CHD, stroke, HF)?

YES

Initiate antihypertensive medications to lower BP and reduce CVD risk if average SBP ≥ 130 mm Hg or DBP ≥ 80 mm Hg for secondary prevention of CVD

1

NO

Does the patient have diabetes or CKD, or is the patient at increased short-term risk of CVD (10-year PREVENT-CVD risk $\geq 7.5\%^{\dagger}$)?

YES

Initiate antihypertensive medications to lower BP and reduce CVD risk if average SBP ≥ 130 mm Hg or DBP ≥ 80 mm Hg for primary prevention of CVD

1

NO

Initiate antihypertensive medications to lower BP if average SBP ≥ 130 mm Hg or DBP ≥ 80 mm Hg after 3-6 months of lifestyle intervention

1

LEGEND

- COR 1
- COR 2a
- COR 2b
- COR 3-No Benefit
- COR 3-Harm

(Class of Recommendation)



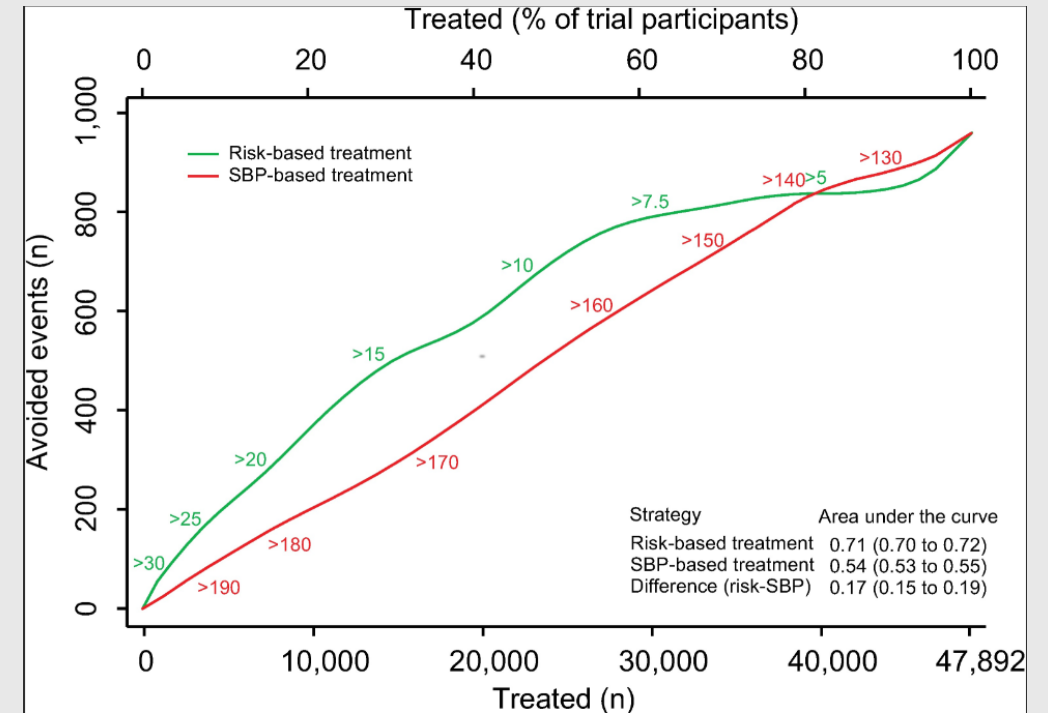
2025 High Blood Pressure

© 2025 by the American Heart Association, Inc., and the American College of Cardiology Foundation

Why Use Risk-Based Treatment Decisions?

- BP-lowering meds provide similar **RELATIVE** risk reduction across all risk levels
- But the greatest **ABSOLUTE** risk reduction for those at highest risk

BP treatment based on CV risk prevents more CV events than based SBP Level alone²



Predicting Risk of Cardiovascular Disease EVENTS (PREVENT)

Data derived from >3 million US adults

- Externally validated from additional independent group of same number
- Risk assessment includes persons age **30-79 years**
- Risk assessment over 10- or 30-year period
- Added variables: eGFR, BMI (and HbA1c, uACR, zip code social deprivation index in full equation)
- Goal to predict risk of total CVD (MI, stroke, and HF)

Use .PREVENT to calculate risk, for now we manually enter patient data

Remember!

- Risk equations do not capture every variable that might predict ASCVD risk (ie family history, lifestyle factors, etc.)
- Risk equations do NOT update risk based on new interventions

PREVENT provides 3 Risk Scores

Which score for what purpose?

Use **CVD** risk for stage 1 HTN in patients without ASCVD (coronary disease and/or stroke), HF, DM, or CKD to determine if trial of lifestyle is appropriate vs starting med

Use **ASCVD** for statin risk assessment in patients without ASCVD, LDL ≥ 190 mg/dL, DM, CKD, HIV

HF added to allow total CVD calculation – not used clinically

Estimated Risks

10 Year

CVD: 17.2%

ASCVD: 9.7%

Heart Failure: 9.2%



Case 2 – Carlos: 56 year old man with clinic BP of 138/81 and reports home BP in 130s/70s. No history of ASCVD, HF, DM, or CKD.

Question: Which PREVENT risk estimate do you use to determine initial management of HTN?

- A. Heart Failure
- B. CVD
- C. ASCVD



Case 2 – Carlos: 56 year old man with clinic BP of 138/81 and reports home BP in 130s/70s. No history of ASCVD, HF, DM, or CKD.

Question: Which PREVENT risk estimate do you use to determine initial management of HTN?

- A. Heart Failure
- B. CVD**
- C. ASCVD

Treatment



Most patients require ≥ 2 medicines to achieve BP control



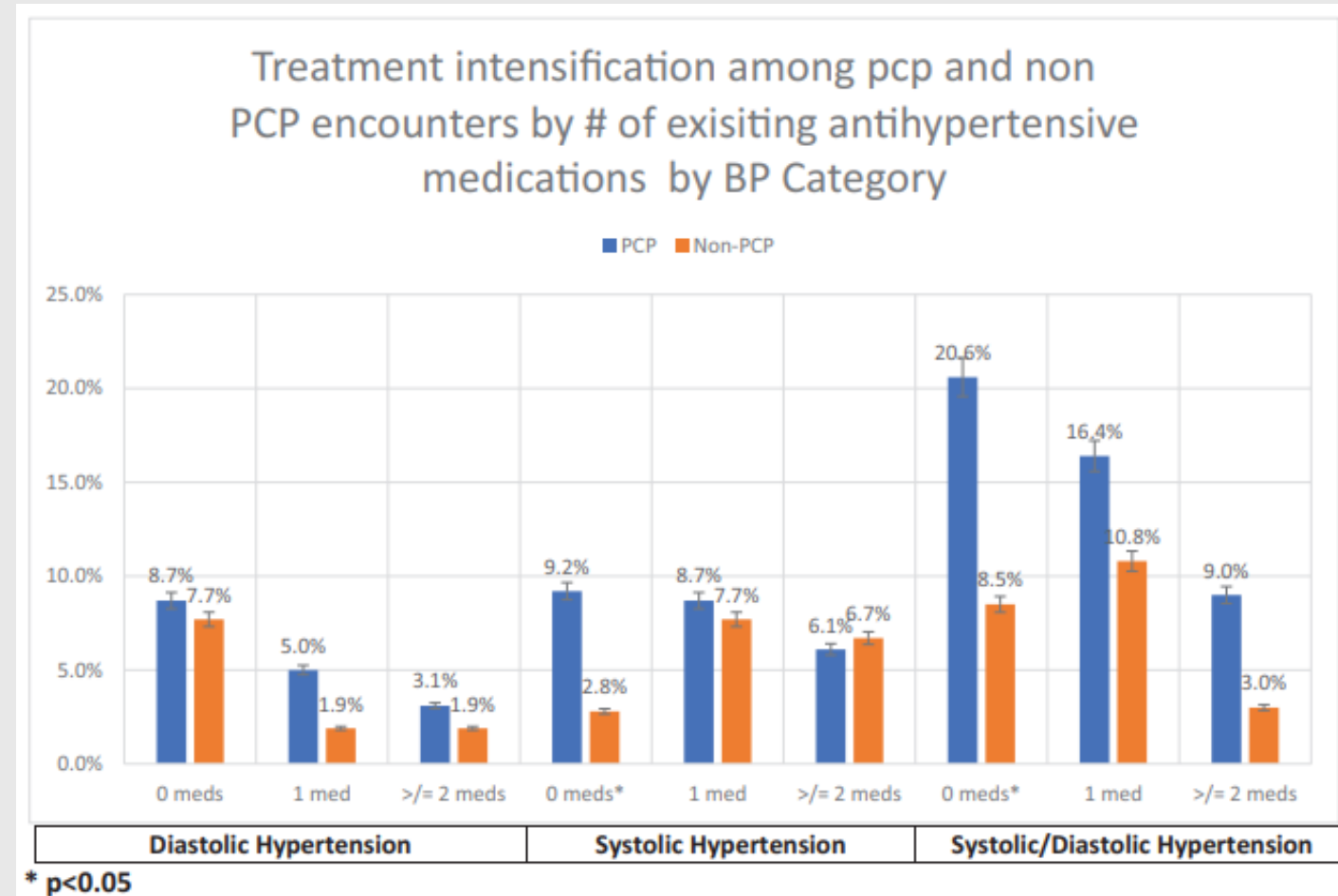
Using a single combination pill is more effective, and efficient in lowering BP and improves adherence when compared with stepped care therapy



Use the HTN SmartRx

Clinical Inertia in Hypertension Treatment

- Elevated SBP and/or DBP during PCP and specialty visit infrequently results in treatment intensification
- Only 10.3% of visits with treatment intensification
- Rates of treatment intensification lower for those already on meds
- Higher treatment rates if seen by own PCP compared to another PCP (10.8 v 5.9%, $p<0.001$)



Use Synopsis View to Make Quick Informed Decisions on Treatment

SnapShot

Chart Review

Medications

Synopsis

Secure Pt. Msg

Synopsis

1

Hypertension Meds

2

CHF

3

Vitals

All Rows

Just now

Most Recent

6 months

2026

4/23/26

14:52

6/5/26

6/28/26

23:59

6/29/26

00:00

8/24/26

13:26

9/14/26

14:59

10/8/26

00:00

ACEI ARB ARNI

losartan potassium

25 mg Daily for kid...

25 mg Daily for kidney protection / blood pressure. ORAL

Beta Blockers

metoprolol succinate

150 mg Daily ORAL

150 mg Daily O... -D/C (REORDERED) 150 mg Daily ORAL

Mineralocorticoid Antagonist

SGLT2 Inhibitor

dapagliflozin

10 mg Daily for dia...

10 mg Daily for diabetes. Replaces empagliflozin (Jardiance). ORAL

empagliflozin

06/05/26 -D/C

12.5 mg QAM ORAL

Loop Diuretics

torsemide

40 mg Daily ORAL

40 mg Daily ORAL

Vasodilators

Digoxin

Ivabradine

CHF Labs

Sodium

04/23/26

143

143

Potassium

04/23/26

4.0

4.0

Creatinine

04/23/26

1.09

1.09

Echo

CHF Classification

Vitals

BP

09/14/26

97/66

106/77

112/78

97/66

Pulse

09/14/26

98

88

89

98

SpO2

08/24/26

97 %

99 %

97 %

Weight

08/24/26

285 lb (129.3 kg)

291 lb 6.4 oz...

285 lb (129.3...

Case 3 - Bertie: What is Best Next Step?

82 year-old woman presents for evaluation of exhaustion, difficulty climbing 1 flight of stairs, and unintentional weight loss of >5% in the past year. You use .pathpertinent and see that she has frailty. Her BP was in the 140s during a recent ED visit after fall due to orthostasis. In your office her BP is 142/78, pulse 68. Current meds are atenolol 50 mg daily & HCTZ 25 mg daily.

Question: What is best next step?

- A. Increase atenolol to 75 mg daily
- B. Increase HCTZ to 50 mg daily
- C. Test for secondary causes of HTN
- D. Consider higher BP goal and document frailty
- E. Add lisinopril 5 mg daily



Case 3 - Bertie: What is Best Next Step?

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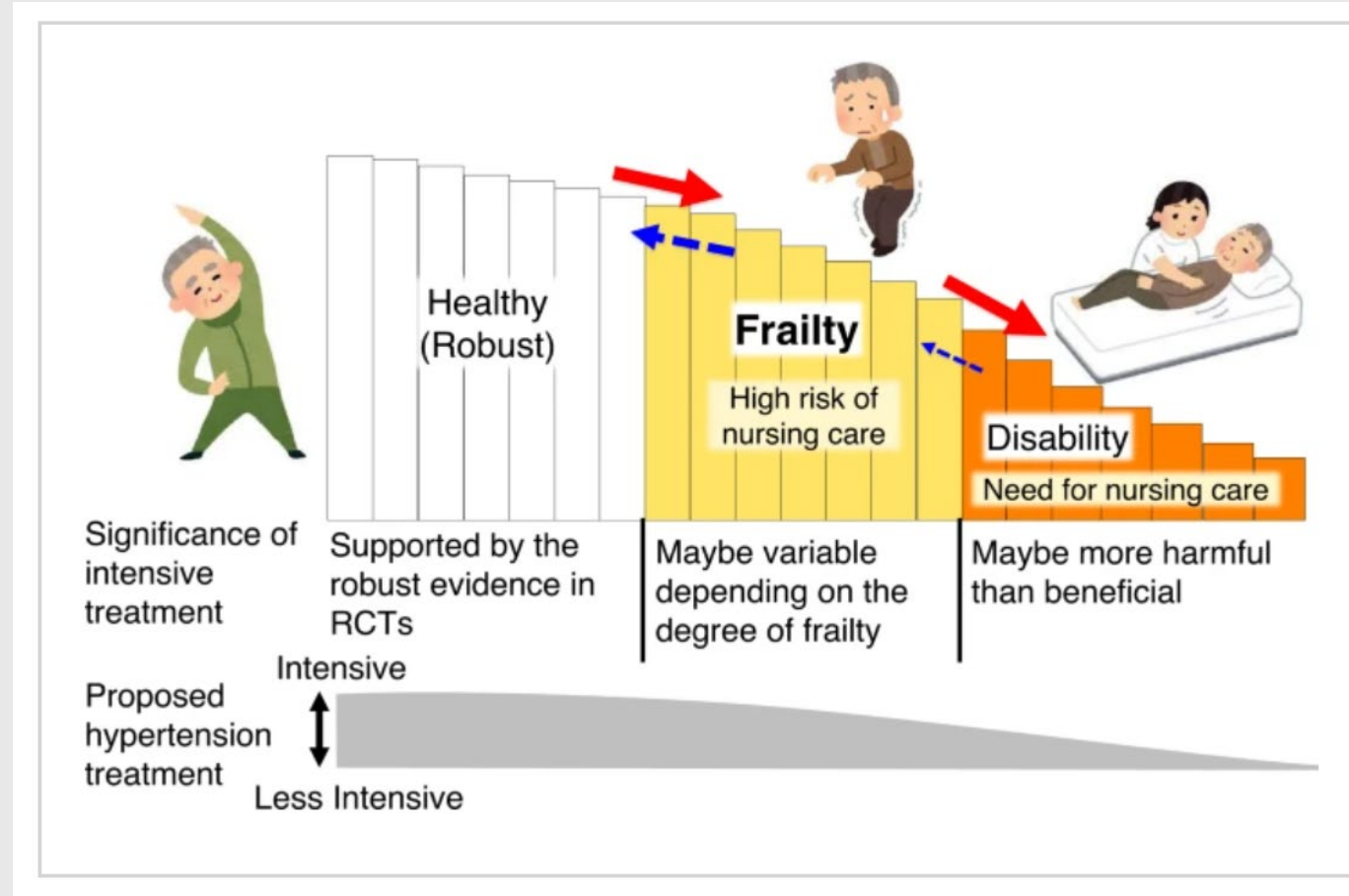
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- E. Add lisinopril 5 mg daily



Alternate BP Goals and Frailty – Key Points

- Frailty is a chronic condition!
- Hypertension is common in frail patients
- **Remember:** Document frailty in Problem List
- **Document twice per year**
- Clinician-patient assessment of potential benefits and harms of BP treatment to align with patient goals
- Assess for orthostatic symptoms – pulse pressure **INCREASES** with age



Case 4 – Sam: What is the Best Next Step?

- 51 year-old woman presents for hypertension follow-up.
- Current medicines include amlodipine 10 mg daily, lisinopril/HCTZ 40 mg/50 mg daily, and bisoprolol 5 mg daily
- In-office BP 145/85 mm Hg → repeat 142/84 mm Hg

Question: What is best next step in evaluation and/or management?

- A. Increase bisoprolol to 10 mg daily
- B. Evaluate serum renin/aldosterone levels
- C. Evaluation for renal artery stenosis
- D. Referral for renal artery denervation



Case 4 – Sam: What is the Best Next Step?

- 51 year-old woman presents for hypertension follow-up.
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Resistant Hypertension

- BP above goal despite treatment with ≥ 3 antiHTN meds with complementary mechanisms of action and including a diuretic, OR
- BP at goal but requiring ≥ 4 antiHTN meds
- Prevalence 8.5-20% US hypertensive adults¹
- 50% higher risk of MI, stroke, ESRD, and CV death compared to those without resistance to treatment²⁻⁴
- Out-of-Office BP measurement critical for management
- Screening for secondary forms of hypertension

Resistant Hypertension Evaluation

- Exclude ‘pseudo-resistance’
 - Ensure accurate office BP measurements
 - Assess for non-adherence
 - Obtain out-of-office BP measurement to exclude white coat effect
- Identify and reverse lifestyle factors
- Discontinue or minimize interfering substances
- Screen for secondary causes of hypertension section

Table 15. Evidence-Based Strategies for Improving Antihypertensive Medication Adherence

Evidence-Based Strategies for Improving Antihypertensive Medication Adherence
Dose consolidation
Single pill combination rather than separate pills
Education/coaching by pharmacists and other health professionals
Electronic/home blood pressure monitoring and feedback
Integration of patient preferences and values/shared decision-making into management plan
Medication synchronization and reminder aids
Mindfulness-based stress reduction or counseling for high stress, anxiety, and/or depression
Self-management interventions

Modified with permission from Choudhry et al.²¹ Copyright 2022 American Heart Association Inc.

Adherence Monitoring

- Assess adherence with the PDC tool in Health Connect
- Proportion of Days Covered (PDC): % of days the patient has access to their medication (goal $\geq 80\%$)

Lisinopril-hydroCHLORothiazide (PRINZIDE/ZESTORE...)
20-12.5 mg Oral Tab

Take 2 tablets by mouth daily for blood pressure
Dispense: 180 tablet, Refills: 99 remaining
Ordered: PRN

 02/12/2026 (S)



Good adherence
($> 80\%$)

Reinforce current adherence strategies

Moderate adherence
(60-79%)

Identify barriers:
How many times per week do you miss your medication?

Poor adherence
($< 60\%$)

Identify barriers:
What concerns do you have with your medication?

Lifestyle Interventions to Lower BP

Intervention	Expected systolic reduction
Exercise — aerobic, dynamic or isometric resistance	5–10 mm Hg
Heart-healthy diet — DASH, reduced sodium, salt substitute	5–8 mm Hg
Meditation	5–7 mm Hg
Reduced alcohol consumption	4–6 mm Hg
Breathing control	5 mm Hg
Weight loss	1 mm Hg per kg lost

KPWA Nutrition Education Classes

- **Lifestyle Medicine Class & Support Group (3 x 1 per week then monthly support group)**
- **Foundations for Healthy Living**
- **Thrive: Eat Well, Be Well**
- **Intuitive Eating Class**
- **Heart Healthy Class (1x class)**

Use .AVSNUTRTIONCLASSES

THE PLANT-BASED HEALTHY PLATE

Use this plate to help you portion your food in a healthy way and make meal planning easier. Portions are based on a small dinner plate.

Fill one-quarter of your plate with a plant-based protein source, such as cooked beans, lentils, or tofu.



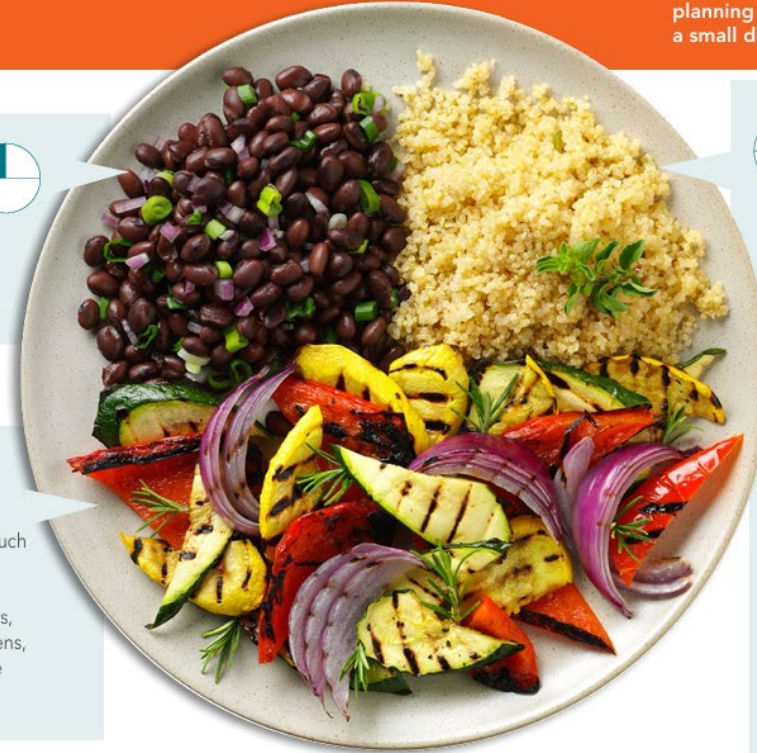
Fill half of your plate with non-starchy vegetables, such as carrots, broccoli, spinach, cabbage, green beans, peppers, zucchini, onions, greens, tomatoes, or romaine lettuce.



Fill one-quarter of your plate with healthy grains or starches, such as brown rice, whole-wheat pasta, quinoa, bulgur, corn, peas, barley, farro, amaranth, 1 slice of whole-grain bread, 2 corn tortillas, or 1 whole-wheat tortilla.

For good nutrition also choose each day:

- 3 servings of fruit. A serving is a small orange, banana, or apple, or 1 cup of berries or melon.
- 2 to 3 cups of a milk substitute, such as almond, soy, or hemp.
- A small amount of healthy fats, such as extra virgin olive or canola oil, or a small handful of nuts.



Common Medications and Substances that Increase BP

Non-Prescription

- Alcohol
- Caffeine
- Decongestants (phenylephrine, pseudoephedrine)
- Herbal supplements (Ma Huang, ephedra)
- Black licorice
- NSAIDs
- Recreational drugs

Prescription

- Sudden withdrawal of central-acting sympatholytic drugs (clonidine)
- Amphetamines
- Antidepressants (MAOIs, SNRIs, TCIs)
- Atypical antipsychotics
- Oral contraceptives
- Angiogenesis inhibitors

Secondary Hypertension

Why Should We Think about Secondary Hypertension?

Despite unclear prevalence – reported rates 5%-25%¹⁻³ – treatment of secondary causes can markedly improve BP control and lower CV risk

- **(Relatively) Common:**

- Sleep apnea
- Primary aldosteronism
- Alcohol, NSAIDs, stimulants
- Renovascular disease

- **Uncommon:**

- Pheochromocytoma (triad of headache, palpitations, diaphoresis)
- Hypothyroidism
- Cushing syndrome
- Coarctation of aorta
- Primary hyperparathyroidism

Sleep Apnea

- Commonly missed diagnosis that can contribute to hypertension

Recommendations for OSA		
COR	LOE	Recommendations
2a	B-R	1. In adults with hypertension and OSA who are overweight or obese, weight loss interventions when combined with continuous positive airway pressure (CPAP) treatment can be effective in reducing SBP. ¹
2a	B-R	2. In adults with resistant hypertension and moderate-to-severe OSA, CPAP treatment can be useful in reducing BP. ^{2,3}

Primary Aldosteronism

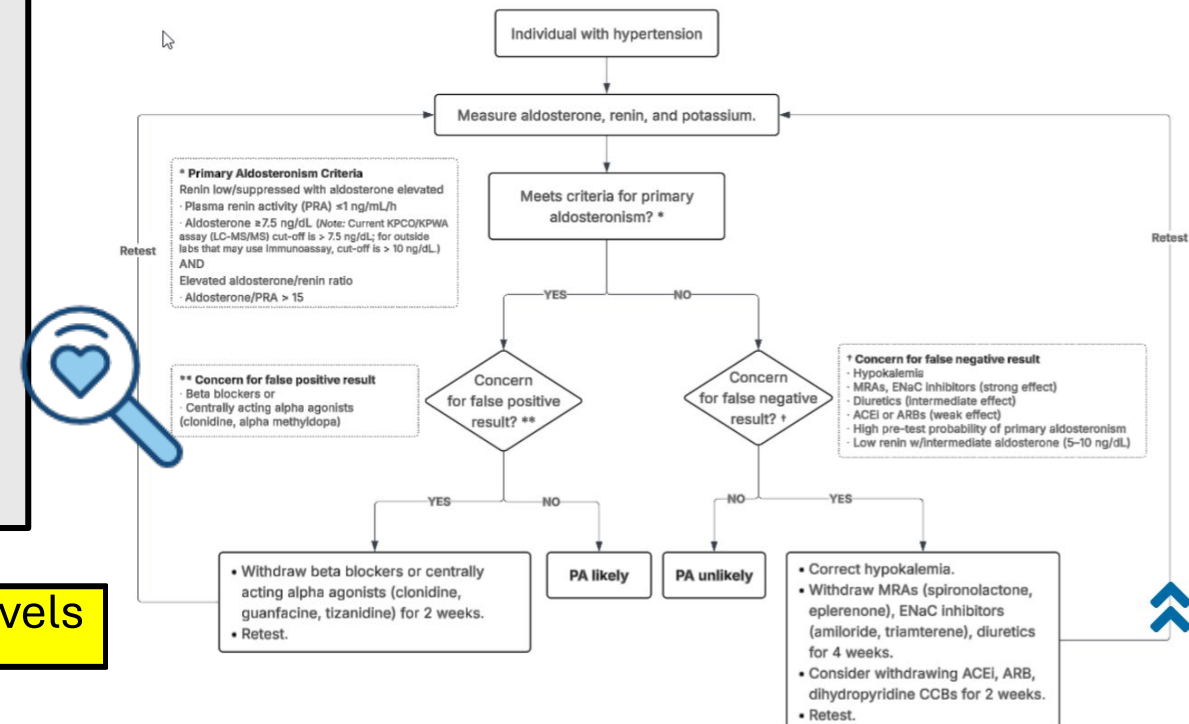
Consider testing for primary aldosteronism with any of:

- Resistant hypertension
- Hypokalemia (spontaneous or diuretic-induced)
- Obstructive sleep apnea
- Incidental adrenal mass
- Family history of early-onset HTN
- Stroke <40 years of age

**KPMF Practice Resource on
Primary Aldosteronism**

Remember >50% of primary aldosteronism have normal K levels

Initial screening test: 8-10am serum aldosterone/renin ratio



Results for Primary Aldosteronism Management

- If pt appropriate for and interested in considering surgical candidacy, E-Consult or Refer to Endocrinology.
 - Surgical treatment (unilateral adrenalectomy) is preferred treatment for patients with **unilateral** hyperaldosteronism, leading to fewer adverse cardiovascular outcomes and superior quality of life compared to medical management.
- For those who are not interested in/not candidates for surgery, treat with mineralocorticoid antagonist (MRA) is the standard of care.
 - Spironolactone starting at 12.5–25 mg daily or eplerenone 25 mg 1–2 times daily

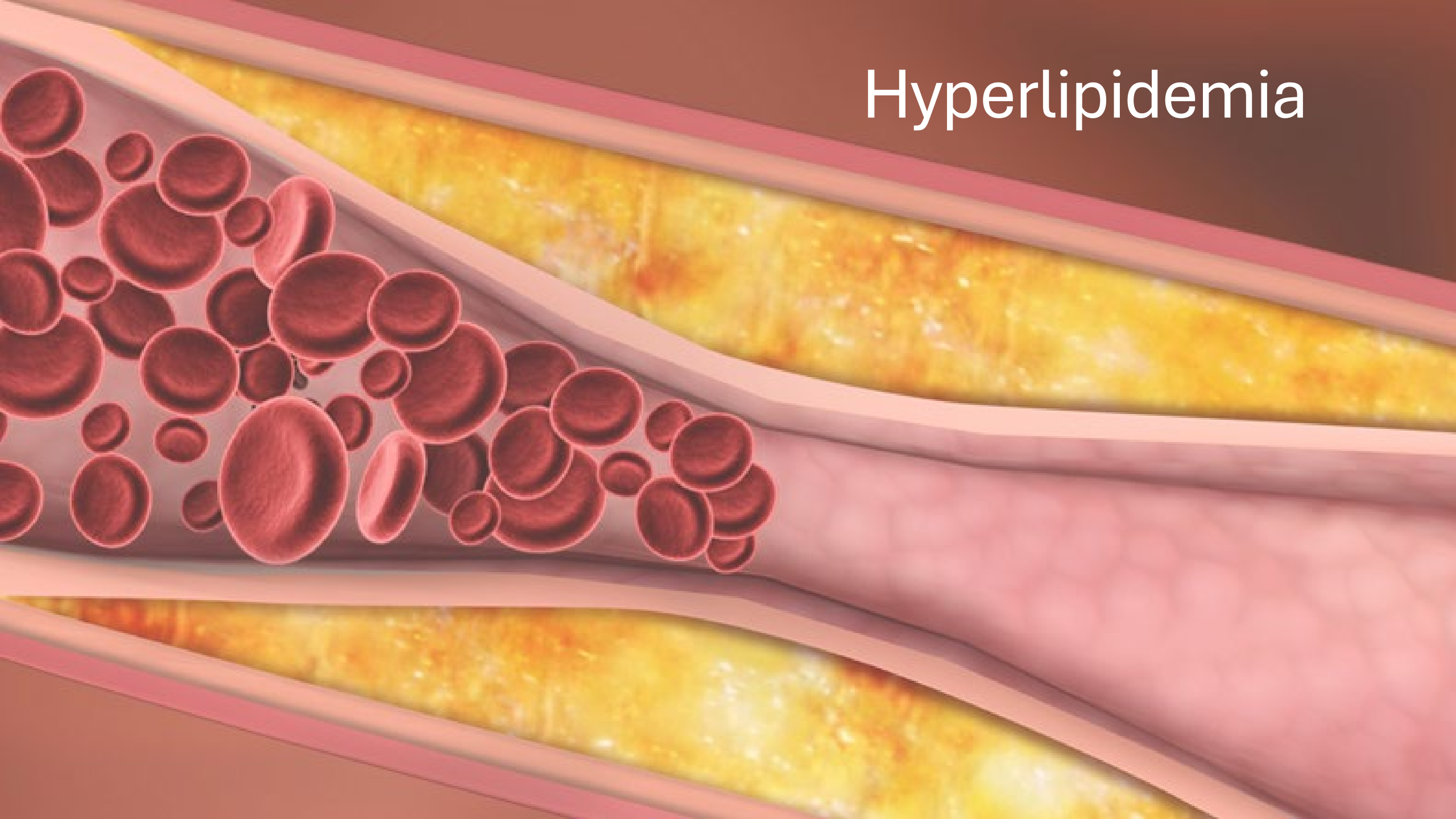
Hypertension



- Dx and manage based on home readings when possible
- Home blood pressure readings are typically accurate, and correlate with CV risk
- ValidateBP.org lists validated BP machines in US
- Goal BP for most is $<130/80$ mm Hg
- Identify and document **Frailty** and consider using higher goal ($<150/90$) in this setting
- Quality Dashboards will use $<140/90$ mm Hg for now
- Have your staff input pt's home blood pressure readings to close Care Gap

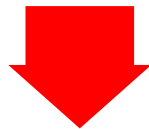
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Hyperlipidemia



ACC/American Heart Association Issue Updated Guideline for Managing Lipids, Cholesterol

Healthy lifestyle habits, earlier treatment to lower long-term exposure to plaque-causing lipids, new cholesterol target goals, selective use of coronary calcium scoring, lipoprotein(a) and apolipoprotein B testing, new treatments, and guidance for managing lipids in specific populations among key focus areas



Embargoed until 1 p.m. CT/2 p.m. ET, Friday, March 13, 2026

20-25% of adults have abnormal lipid levels

Lipid Lowering to Reduce ASCVD Risk

Screen
EARLIER



- Screen at **age ≥2y** if family history of premature ASCVD, severe hypercholesterolemia, or FH
- Screen at **ages 9–11y** to identify FH and other lipid disorders

Check
REGULARLY



- Screen lipids again at age **19y**
- Recheck at least every **5y** and use PREVENT-ASCVD to identify risk

Aim for
LOWER LDL-C



- LDL-C goal:
- **<100 mg/dL** for PREVENT-ASCVD <10%
 - **<70 mg/dL** for PREVENT-ASCVD ≥10%, FH, DM with risk factors, CAC ≥100 AU
 - **<55 mg/dL** for clinical ASCVD at very high risk*

Treat
LONGER



- Check lipids **4–12wk** after start or dose change of lipid-lowering therapy, then **every 6–12mo** thereafter
- Benefits increase with longer therapy; tailor duration to individual risk

Promote lifelong healthy lifestyle behaviors

- Screening asymptomatic persons can identify variety of lipid disorders including genetic disorders
- Duration of exposure to high LDL levels drives ASCVD risk

Start Lipid Lowering therapy for the following:

- **LDL $\geq$ 190**
- **Diabetes mellitus age $\geq$ 40**
- **CKD stage $\geq$ 3 age $\geq$ 40 and LDL $>$ 70**
- **Persons living with HIV aged 40-75 years on stable ART**
- **Secondary Prevention**

Case 5 - Malik: What is next best step?

39-year-old man with hypertension (treated SBP is 128) and BMI 29 who presents for annual physical. Fasting lipid panel demonstrates Total cholesterol 200, LDL 144 mg/dL, TG 470, HDL 31. GFR 75

Question: What is the best next step?

- A. Repeat lipid panel in 1 year
- B. Lifestyle intervention
- C. Start statin
- D. Start PCSK9inhibitor approval process
- E. Calculate PREVENT Score



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- C. Start statin
- D. Start PCSK9inhibitor approval process
- E. Calculate PREVENT Score**

The American Heart Association PREVENT™ Online Calculator

Enter Patient Data Shared Decision

Age: 39 years

Sex: ☒ Male ☐ Female

Any history of diabetes?: ☐ Yes ☒ No

Any cigarette use within the last 30 days?: ☐ Yes ☒ No

BMI: 29 kg/m²

Systolic Blood Pressure: 128 mm Hg

Total Cholesterol: 200 mg/dL

HDL Cholesterol: 31 mg/dL

LDL Cholesterol: 144 mg/dL

Enter Either Value

eGFR: 75 (mL/min/1.73m²)

SCr: mg/dL

Estimated Risks

10 Year 30 Year

CVD: 2.5%

ASCVD: 1.8%

Heart Failure: 0.6%

Remember: Use PREVENT

Information used to calculate risk (required):

- Sex
- Age
- Systolic blood pressure
- Total cholesterol
- HDL cholesterol
- **eGFR**
- BMI
- History of diabetes
- Cigarette use within last 30 days
- Current use of statin medication as lipid-lowering medication
- Current use of any medication for hypertension

The American Heart Association PREVENT™ Online Calculator

Enter Patient Data Shared Decision

Age: 39 years

Sex: ☒ Male ☐ Female

Any history of diabetes?: ☐ Yes ☒ No

Any cigarette use within the last 30 days?: ☐ Yes ☒ No

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Estimated Risks

10 Year 30 Year

CVD: 2.5%

ASCVD: 1.8%

Heart Failure: 0.6%

Remember: PREVENT has **three** different equations/calculators

• PREVENT-CVD

- Recommended by 2025 AHA/ACC High Blood Pressure Guideline to guide management of Stage 1 hypertension

• PREVENT-ASCVD

- Recommended by 2026 Dyslipidemia Guideline to inform management decisions for lipid-lowering therapy

• PREVENT-HF

- Not used clinically in primary care at this time

Estimated Risks	
10 Year	
CVD:	17.2%
ASCVD:	9.7%
Heart Failure:	9.2%

Primary Prevention Treatment Decisions

Risk Assessment with PREVENT-ASCVD calculator to guide recommendations for lipid-lowering therapy (LLT)

Use .Prevent to access calculator

	PREVENT-ASCVD Risk Score
Low Risk	<3%
Borderline Risk	3% - <5%
Intermediate Risk	5% - <10%
High Risk	$\geq 10\%$

CPR Framework for Risk Evaluation

LEGEND

- COR 1
 - COR 2a
 - COR 2b
 - COR 3-No Benefit
 - COR 3-Harm
- (Class of Recommendation)

Calculate and Classify

Estimate 10-y risk with
PREVENT-ASCVD

1

Low risk
0%–<3%

Borderline risk
3%–<5%

Intermediate risk
5%–<10%

High risk
≥10%

Personalize

Discuss risk estimate
and therapy options
with patient

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Discuss risk estimate
and therapy options
with patient

1

AND

Evaluate risk enhancers

2a

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If clinical or patient
uncertainty, consider
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Decide and Treat

Lifestyle modification

1

Treat with lifestyle
modification and
potential lipid-lowering
therapy

2a

Lifestyle modification
and lipid-lowering
therapy

1

Remember, PCE OVER-estimates risk and higher risk threshold previously chosen

Risk Group	Approximate Equivalent Ranges of 10-Year ASCVD Risk Estimates*	
	PCE	PREVENT-ASCVD
Low	<5%	<3%
Borderline	5% to <7.5%	3% to <5%
Intermediate	7.5% to <20%	5% to <10%
High	≥20%	≥10%

Case 5 Follow up - Malik

39 year-old man with hypertension (treated SBP is 128) and BMI 29 who presents for annual physical. Fasting lipid panel demonstrates Total cholesterol 200, LDL 144 mg/dL, TG 470, HDL 31. GFR 75

Question: What is the best next step?

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- D. Start PCSK9inhibitor approval process
- E. Calculate PREVENT Score --> **PREVENT**
ASCVD 1.8%



Case 5 Follow up - Malik

39 year-old man with hypertension (treated SBP is 128) and BMI 29 who presents for annual physical. Fasting lipid panel demonstrates Total cholesterol 200, LDL 144 mg/dL, TG 470, HDL 31. GFR 75

Question: What is the best next step?

- A. Repeat lipid panel in 1 year
- B. Lifestyle intervention**
- C. Start statin
- D. Start PCSK9inhibitor approval process
- E. Calculate PREVENT Score --> PREVENT ASCVD 1.8%**



Diet and LDL cholesterol

- Replacing **saturated fats** (e.g., from red meat and full-fat dairy) with mono- and polyunsaturated fats (e.g., vegetable oils, nuts, seeds, and fish) lowers LDL cholesterol and CV risk
- Increase **soluble fiber**. Intakes of **~5–10 g/day** of soluble fiber are associated with **~5–10% reductions in LDL-C**.
- **Plant-forward** dietary pattern
- **Plant stanols/sterols**
- ***Combining strategies produces additive LDL-C reduction of 15–30%***
- ***.avsnutritionclasses***

Case 6 - Madeleine

44 year-old woman with LDL 144 mg/dL,
PREVENT-ASCVD 4% 10-year risk.

Question: What is the best next step?

- A. Retest lipids in 1 year
- B. Start statin
- C. Lifestyle intervention
- D. Consider Risk
Enhancers/Additional Evaluation



Case 6 - Madeleine

44 year-old woman with LDL 144 mg/dL,
PREVENT-ASCVD 4% 10-year risk.

Question: What is the best next step?

- A. Retest lipids in 1 year
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- C. Lifestyle intervention
- D. Consider Risk
Enhancers/Additional Evaluation**



CPR Framework for Risk Evaluation



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Estimate 10-y risk with
PREVENT-ASCVD

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Low risk
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High risk
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COR 2a

COR 2b

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COR 3-Harm

(Class of Recommendation)

Risk Enhancers



History of premature ASCVD in parent or sibling (onset age <55 for men, <65 yo for women)

Higher risk ancestry (South Asian, Filipino)

Chronic Inflammatory diseases (eg. lupus, RA, advanced psoriasis, inflammatory arthritis)

Lp (a) ≥ 125 mmol/L

TG persistently ≥ 175 mg/dL (non-fasting) and ≥ 150 mg/dL (fasting)

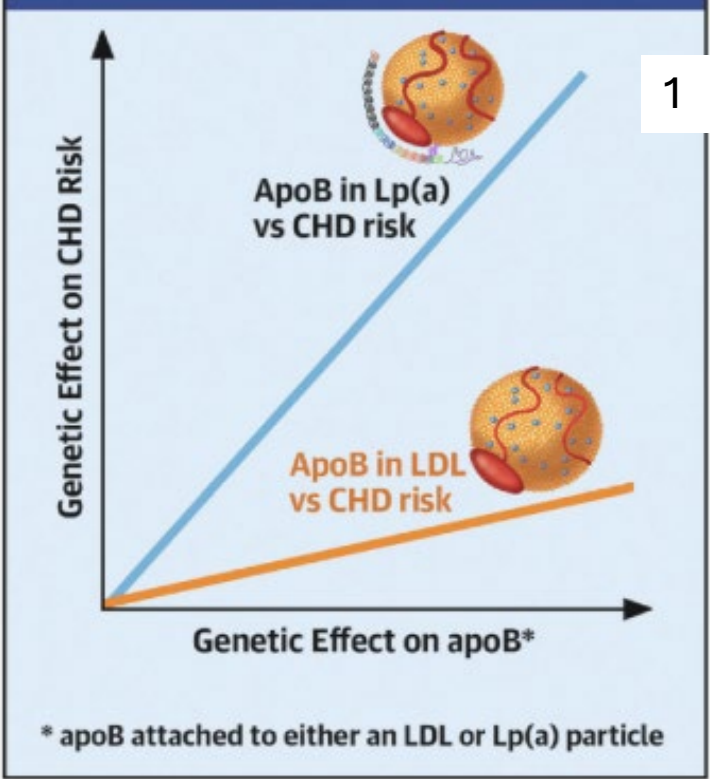
CKM syndrome (Metabolic Syndrome)

LDL-C persistently $\geq 160-189$, non HDL-C $\geq 190-219$ mg/dL or apoB ≥ 120 mg/dL

Reproductive risk markers (premature menopause, preeclampsia, gestational diabetes/hypertension, preterm delivery)

Lipoprotein (a)

- Lp(a) is LDL variant that contains ApoB and ApoA
- Multiple genetic polymorphisms associated with Lp(a) levels
 - Levels predominantly genetically regulated but some other factors can influence Lp(a) levels
- Linear association of Lp(a) levels and CV risk²
- Lp(a) associated with aortic stenosis and myocardial fibrosis and scar⁴



Lp(a) concentration nmol/L (mg/dL)	ASCVD Relative Risk: Increase Compared With Population Median (20 nmol/L, 7 mg/dL)
430 nmol/L (180 mg/dL)	4-fold
350 nmol/L (150 mg/dL)	3-fold
250 nmol/L (100 mg/dL)	2 -fold
125 nmol/L (50 mg/dL)	1.4-fold
75-124 nmol/L (30-49 mg/dL)	1.2-fold
<75 nmol/L (<30 mg/dL)	Reference

1. JACC 2024;83(3):385; 2. Arterioscler Thromb Vasc Biol 2021;41(1):465; 3. JACC 2019;73(17):2150; 4. JACC 2023;82(24):2280

Question: Which Patients Should Have Their LP(a) Tested?

- A. All, at least once
- B. Pts with borderline PREVENT-ASCVD
- C. Family history of premature ASCVD/elevated Lp(a)
- D. None - it doesn't change management since we do not have targeted therapies at this time



Question: Which Patients Should Have Their LP(a) Tested?

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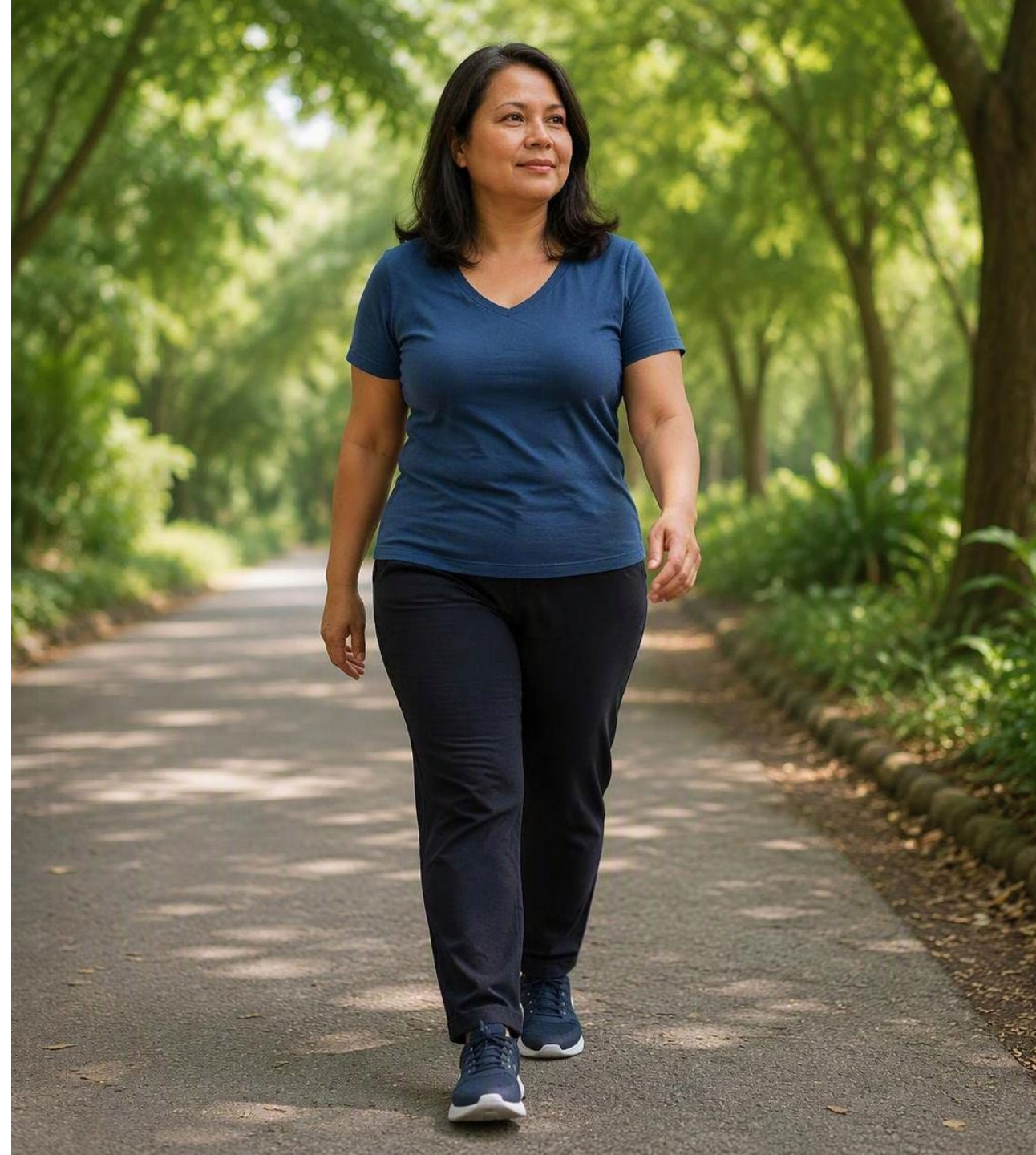


Case Update - Madeleine

44 year-old woman with LDL 144 mg/dL, PREVENT-ASCVD 4% 10-year risk. Lp(a) 56 nmol/L, hs-CRP <2

Question: What is best next step?

- A. Retest lipid profile in 1 year if not ready to start statin
- B. Start statin
- C. Figure out how to order ApoB
- D. Order Coronary Artery Calcium Score

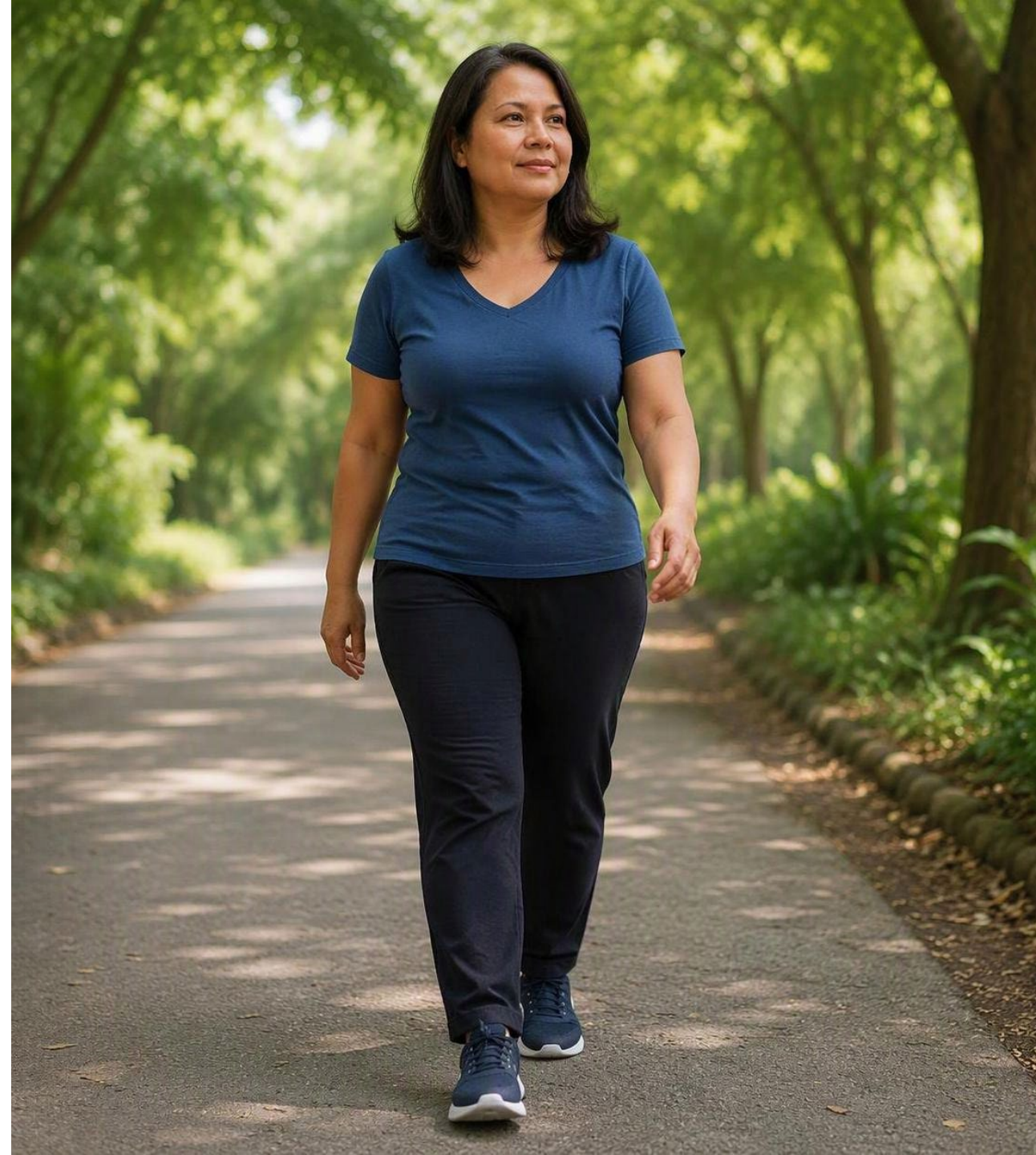


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COR 2a

COR 2b

COR 3-No Benefit

COR 3-Harm

(Class of Recommendation)

Coronary Artery Calcium (CAC)

CAC score	Interpretation
0	Absent
1 – 9	Minimal
10 – 99	Mild
100 – 299	Moderate
300 – 999	Severe
≥ 1000	Extensive

What CAC is — and isn't

- A marker of mature (not soft) plaque, tied to risk of MI, CV death, and sudden death.
- Not a reason for more cardiac testing or revascularization, and not for patients with known disease.

A score of zero is not always reassuring

Do not defer treatment on CAC = 0 in familial hyperlipidemia, LDL ≥ 190, diabetes, current tobacco use, or strong family history of premature ASCVD.

Men ≥ 40 and women ≥ 45, by gated non-contrast CT.

Lipoprotein Goals for ASCVD Risk Reduction

Patient population	LDL-C <100 mg/dL (2.6 mmol/L) Non-HDL-C <130 mg/dL (3.4 mmol/L)	LDL-C <70 mg/dL (1.8 mmol/L) Non-HDL-C <100 mg/dL (2.6 mmol/L)	LDL-C <55 mg/dL (1.4 mmol/L) Non-HDL-C <85 mg/dL (2.2 mmol/L)
Primary prevention	PREVENT-ASCVD <10% • If TG ≥150 mg/dL to 499 mg/dL, apoB goal: <90 mg/dL	PREVENT-ASCVD ≥10% • If TG ≥150 mg/dL to 499 mg/dL, apoB goal: <70 mg/dL	N/A
Severe hypercholesterolemia	Without FH, ASCVD risk factors, and subclinical atherosclerosis	With FH, ASCVD risk factors, or subclinical atherosclerosis	Severe hypercholesterolemia or HeFH with clinical ASCVD
Diabetes	Without ASCVD risk factors or diabetes-specific risk modifiers • apoB goal: <90 mg/dL	With ASCVD risk factors or diabetes-specific risk factors • apoB goal: <70 mg/dL	N/A
Subclinical atherosclerosis	CAC = 1–99 AU and <75th percentile for age, sex, and race	• CAC ≥100 to 299 AU or ≥75th percentile for age, sex, race • CAC ≥300 to 999 AU ◦ Optional goal: LDL-C <55 mg/dL, non-HDL-C <85 mg/dL and consider apoB goal <55 mg/dL	CAC ≥1000 AU
Hypertriglyceridemia	<50 y old with no additional risk enhancers	• With clinical ASCVD not at very high risk ◦ apoB goal: <70 mg/dL • Age 40–75 y with ≥1 ASCVD risk factor ◦ apoB goal: <70 mg/dL	With clinical ASCVD at very high risk • apoB goal: <55 mg/dL
Clinical ASCVD	N/A	Not at very high risk • Optional goal: LDL-C <55 mg/dL, non-HDL-C <85 mg/dL and consider apoB goal <55 mg/dL	• At very high risk ◦ apoB goal: <55 mg/dL • With CKD

Severe Hypercholesterolemia – LDL ≥ 190

- Heterozygous familial hypercholesterolemia (FH) associated with 2-4x increase ASCVD risk¹
- Difficult to estimate risk in FH
- PREVENT risk and CAC should NOT be used (ie CAC=0 should not reassure risk is low)
- Remember secondary causes of elevated LDL (table)
- Treat with high-intensity statin

Dietary factors
■ High saturated fat intake
■ High trans-fat intake
■ High cholesterol intake
■ Weight gain
■ Rapid weight loss
■ Ketosis
Metabolic factors
■ Hypothyroidism
■ Obstructive liver disease
■ Chronic kidney disease
■ Nephrotic syndrome
■ Diabetes and other insulin-resistant states (excess small LDL particles)
■ Uncontrolled hyperglycemia
■ Cushing syndrome
■ Anorexia nervosa
■ Obesity
Drugs
■ High-dose thiazide diuretics
■ Glucocorticoids
■ Estrogens
■ Androgens
■ Atypical antipsychotic drugs
■ Cyclosporine
Physiological
■ Menopausal transition
■ Pregnancy

Treatment

- Statins are cornerstone of therapy

	High-Intensity	Moderate-Intensity	Low-Intensity
Expected % LDL-C Reduction†	≥50%	30%-49%	<30%
Preferred Statins	Atorvastatin (40 mg) 80 mg Rosuvastatin 20 mg (40 mg)	Atorvastatin 10 mg (20 mg) Rosuvastatin (5 mg) 10 mg	
Other Statins	—	Fluvastatin XL 80 mg Fluvastatin 40 mg BID Lovastatin 40 mg (80 mg) Pitavastatin 1, 2, 4 mg Pravastatin 40 mg (80 mg) Simvastatin 20, 40 mg‡	Fluvastatin 20, 40 mg Lovastatin 20 mg Pravastatin 10, 20 mg Simvastatin 10 mg

Statin Intensity	NNT to prevent 1 ASCVD event over 10 years
Moderate	30
High	20

Risks/Benefits of Statins

- Benefits of statins greatly outweigh risks
 - Meta-analysis of statins identified only 4 adverse effects: abnormal liver transaminases, mild proteinuria, edema, and other liver test abnormalities
 - **NO link to cognitive impairment or memory loss, mood disorders, sleep disturbances, peripheral neuropathy**
 - Absolute risk for adverse events is <0.2% annually
 - Statins may slightly increase blood sugar, but the risk of developing DM is small.
 - Even for patients who develop DM while taking a statin, the CV benefits generally outweigh the risk.
 - Statins prevent far more heart attacks and strokes than the number of DM cases they may accelerate or uncover.

Non-Statin Medications

Added to maximum tolerated statin therapy when additional LDL lowering is required

Ezetimibe first-line, decrease LDL by 18-25%

PCSK9 inhibitors (Repatha preferred) decrease LDL 45-64%

Bempedoic acid (Nexletol) decrease LDL 17-24%

See Lipid Rx

Tools for Hypertension and Hyperlipidemia



- Cardiology Value Based Care Guide
 - Hypertension expanded and updated
 - [Primary Aldosteronism Practice Resource](#)
 - HTN Smart Rx
 - Pharmacy CDM for >1 medication
 - Hyperlipidemia expanded and updated
 - [Updated CAC guidance](#)
 - [New Lp\(a\) Practice Resource](#)
 - Lipid Smart Rx
 - Pharmacy CDM for statin intolerance

Hyperlipidemia



- New threshold to treat with statin is 5%.
- New Risk Calculator: PREVENT
 - Not in Health Connect currently but will be soon
 - Use .prevent to access calculator in Clinical Library
- New category: Borderline
 - In pts w Borderline ASCVD risk, look at risk enhancers AND consider further evaluation with Lp(a), look for incidental atherosclerosis
- LDL Goals are back: <100 , <70 , $<55^*$
- Dietary modification is crucial for all
- Think FH when you see $LDL \geq 190$
- Use non-statins when additional LDL lowering is needed

Performance Goals

- Increase the number of patients with BP <130/80.
- Increase statin use when PREVENT-ASCVD risk is $\geq 5\%$
- Use the HTN and HLD Care Guides for decision support



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