Primary Care Hypertension Protocol

Note: This sample protocol from Prisma Health is an online supplement to: Shaffer M, Ridley M, Hastings S, Boston T, Earley S. Saving lives through QI: improving blood pressure control in primary care. Fam Pract Manag. 2025;32(3):11-16. https://www.aafp.org/pubs/fpm/issues/2025/0500/hypertension-control.html

Primary Care Guideline for Ambulatory Management of Elevated Blood Pressure

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Purpose and Summary of this Protocol

Hypertension is a leading treatable cause of death in our communities and throughout the world. Management of hypertension involves the patient, their social supports, and the entire health care team. This protocol will review the roles and responsibilities of each member of the health care team in caring for patients with elevated blood pressure in primary care and present an evidence-based treatment guideline for advancing pharmacotherapy. Figures outlining the team-based approach to care (Figure 1) and the evidence-based treatment guideline (Figure 3) are provided, as are additional resources and a list of selected references. By following the concepts presented in this protocol we can help patients from all backgrounds optimize their blood pressure control and reduce their risk of heart attack, stroke, and early mortality.

Roles and Responsibilities:

- **Patient Service Representatives**
  - Schedule patients at check out, as requested by physician or advanced practice provider (APP)
  - Schedule patients if noted to be overdue for follow-up on the hypertension registry or based on other office protocols, generally one month for uncontrolled hypertension
  - Assist with coordinating care between primary care and specialty offices
- **Nurse or Medical Assistant**
  - Check blood pressure as part of the rooming process for all patients aged 3 years and older, following the standard policy:
    - Ensure patient is seated for at least 5 minutes before checking and that:
      - Appropriate cuff is used (automatic preferred)
      - Arm is free of any clothing
      - Arm is supported
      - Back is supported
      - Bladder is empty

                - Environment is quiet and patient is not speaking or being spoken to
                - Feet are flat on the floor, if possible
            - If blood pressure is elevated (noted as >139/89mmHg or SBP >129 for high-risk patients as requested by clinician), recheck blood pressure and document as a new vital sign *(Measure Accurately)*
                - If available, use an automatic blood pressure cuff, averaging 3 blood pressures at 1-minute intervals after 5 minutes of rest
                - Ensure both blood pressures are documented in EHR
        - When rooming patients, ask patient about adherence to blood pressure medications and document current blood pressure medications
            - Pend medications due for refills as per standard rooming procedures
        - Perform blood pressure check visits (Figure 2)
            - Obtain vital signs and document as noted above.
            - Ensure provider follow up <4 weeks if BP is >139/89
            - Alert provider in the office if BP is >159/109
        - Process messages from the care gaps team regarding elevated blood pressures in specialty offices
- **Physician or APP**
    - Identify elevated blood pressures and educate patient (see Table 1)
    - Ensure blood pressure was checked at least twice, if elevated
    - Review adherence to medications
    - Assess for secondary causes of elevated blood pressure, particularly in patients on 3 or more agents (obstructive sleep apnea, hyperaldosteronism, pain, anxiety, renal disease, thyroid function, alcohol, amphetamines, caffeine, decongestants, herbal supplements, oral contraceptives, etc.)
    - Engage patient in shared decision making to address blood pressure elevations guided by this protocol:
        - Consider intensifying blood pressure medications *(Act Rapidly)*
            - Figure 1 outlines an evidence-based approach toward hypertension pharmacotherapy. It does not consider all clinical scenarios, comorbidities, and patient preferences but is applicable for most patients. Apply using your clinical judgment; see references below.
            - If therapy is NOT intensified, document reasons why
        - Utilize combination medications, when possible (see Table 3) *(Partner with Patients)*

- Refer or recommend lifestyle change support, such as the following (see Figure 2 (*Partner with Patients*):
    - Hypertension Self-Management Program: 4-month long class available virtually or in person with free BP cuff
    - Care Management for Condition Management (attributed lives only)
    - Remote Monitoring, if available
    - Prescribe home blood pressure checks and healthy eating plans
    - Nutrition, Diabetes Prevention Program, Diabetic Education or Weight Management if appropriate
        - Obese patients are eligible for a DPP referral even without prediabetes if the Prediabetes Test Score ≥5[1] and this is documented
- Recommend routine clinic follow up with a member of the health care team, reassessing patients once monthly until controlled (see Figure 1 and Table 1)
- Assess need for other related screenings and interventions, such as atherosclerotic cardiovascular disease (ASCVD), peripheral artery disease, obstructive sleep apnea, hyperlipidemia, diabetes, chronic kidney disease (CKD), tobacco use and obesity

- **Pharmacist**
    - For referred patients, review hypertension regimens, adherence/refill history, and medication list for those which can exacerbate hypertension
    - Serve as an office resource for physicians/APPs and provide evidence-based recommendations, such as those found in this protocol
    - Perform patient visits focused on hypertension and adjust regimen in collaboration with the patient's PCP

Evidence-Based Pharmacotherapy Algorithm

Evidence surrounding hypertension management has truly developed over the past 2 decades. The traditional model of starting with a single agent from any of the primary 3 classes is no longer an evidence-based strategy for most patients. Here we will review some key principles in therapy, followed by some specific evidence surrounding certain classes, and finally the full algorithm is presented in Figure 3.

[1] https://www.cdc.gov/prediabetes/pdf/Prediabetes-Risk-Test-Final.pdf

- **Key Principles in Hypertension Pharmacotherapy: The standard target blood pressure, regardless of age, is < 139/89, with a SBP target of <130 for patients with diabetes, CKD, ASCVD or at high risk for ASVCD.** The data behind this comes from the SPRINT trial[i] and others and is supported by national and international guidelines, integrated in table 1.[ii,iii,iv] These blood pressure targets reduce acute CVD disease and all-cause mortality, even in patients perceived to be frail. While every clinical scenario is unique and not every patient will tolerate a blood pressure at the goal range, be sure to consider this evidence-based threshold.
- **Dual agent start is appropriate for most patients.** Starting on 2 first line agents at ½ max dose reduces time to reaching treatment goal, minimizes side effects and is recommend by major guidelines. Benefits of blood pressure lowering continue to a SBP of 115 and most patients who need treatment are well above their target. Using a combination pill will improve compliance.[v] Single agent starts should still be considered in the elderly, frail or medically complex.
- **Rapid escalation is essential.** Re-evaluating for escalation every 2-4 weeks reduces clinical inertia and time to target, thus reducing the onset of end organ damage.

Rationale of Specific Medication Classes as Initial Therapy:

- **Angiotensin Receptor Blocker (ARB) and Calcium Channel Blocker (CCB) as first line therapy for patients without pregnancy potential.** An ARB/CCB dual agent start is recommend for most patients. The combination of a renin-angiotensin-aldosterone system (RAAS) inhibitor and CCB has been shown to be superior or equal in blood pressure lowering compared to other combinations in diverse populations, including in Sub Saharan Africa.[vi] The ACCOMPLISH trial showed reduced cardiovascular events compared to RAAS/thiazide.[vii] ARBs are preferred over angiotensin-converting enzyme (ACE) inhibitors due to equivalent efficacy and improved safety profile.[viii] This is true for all racial groups but is especially profound for African Americans who have an angioedema incidence rate as high as 23/1000 patient years.[ix] Three ARB/CCB combination products are available on the market with increasing insurance coverage, see table 3.
- **Thiazide vs Thiazide-like Diuretics.** Thiazide and thiazide-like diuretics are excellent agents for lowering blood pressure with reduced hypokalemia after an RAAS agent is already part of the regimen.[x] Chlorthalidone was once thought to have cardioprotective properties beyond hypertension control, but this has not been demonstrated in larger observational studies.[xi] Because of this, we recommend initiating therapy with a thiazide diuretic due to markedly less hypokalemia than a thiazide-like diuretic,[xii] then convert to a thiazide-like diuretic, if indicated for improved control.
- **Spironolactone as standard 4th line agent.** A high quality randomized controlled trial in 2015 demonstrated the superiority of spironolactone to bisoprolol or doxazosin for hypertension not controlled on an RAAS inhibitor, CCB and thiazide diuretic.[xiii] Renal function and pregnancy potential must be considered.

FIGURE 1. Team Member Roles for Hypertension Care

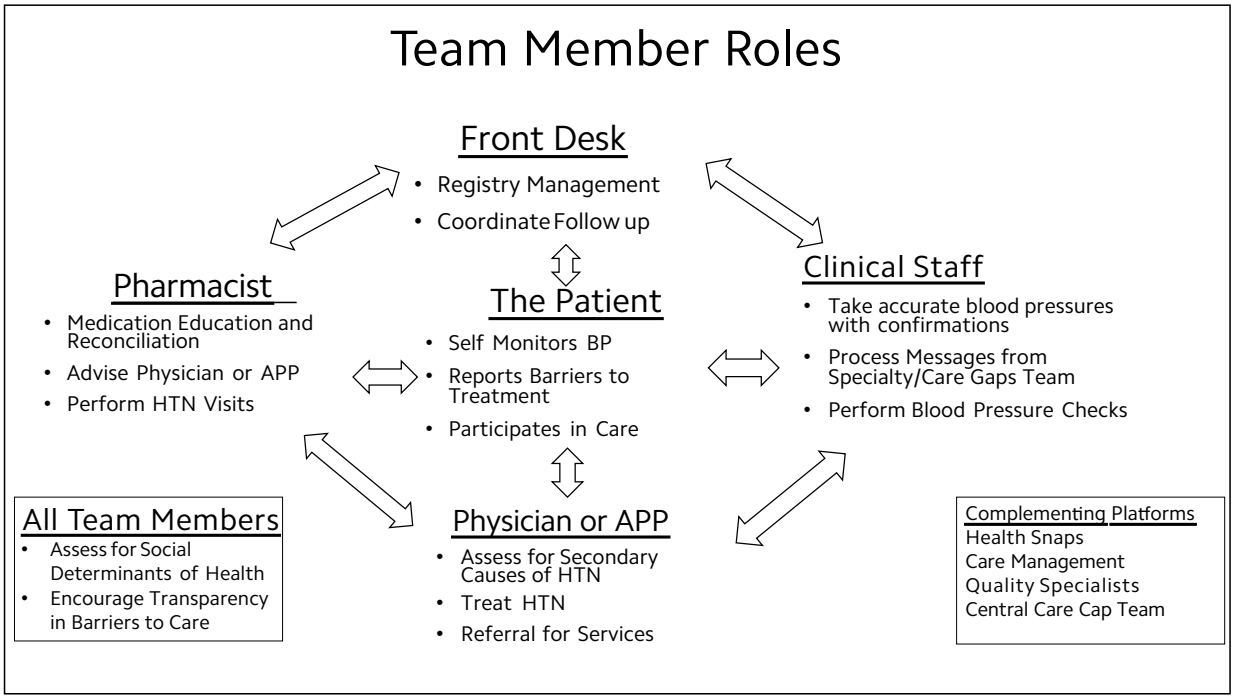


FIGURE 2. Clinical BP Visit Workflow

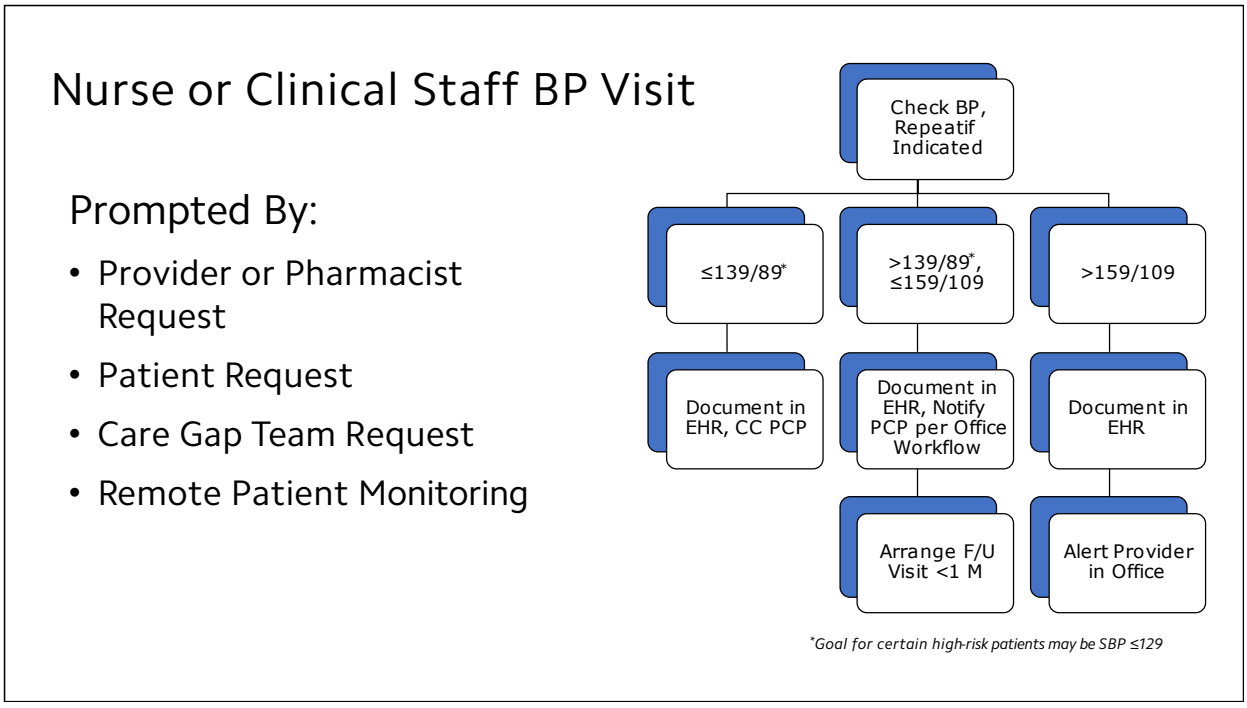


FIGURE 3. Adult Hypertension Initial Pharmacotherapy Treatment Algorithm

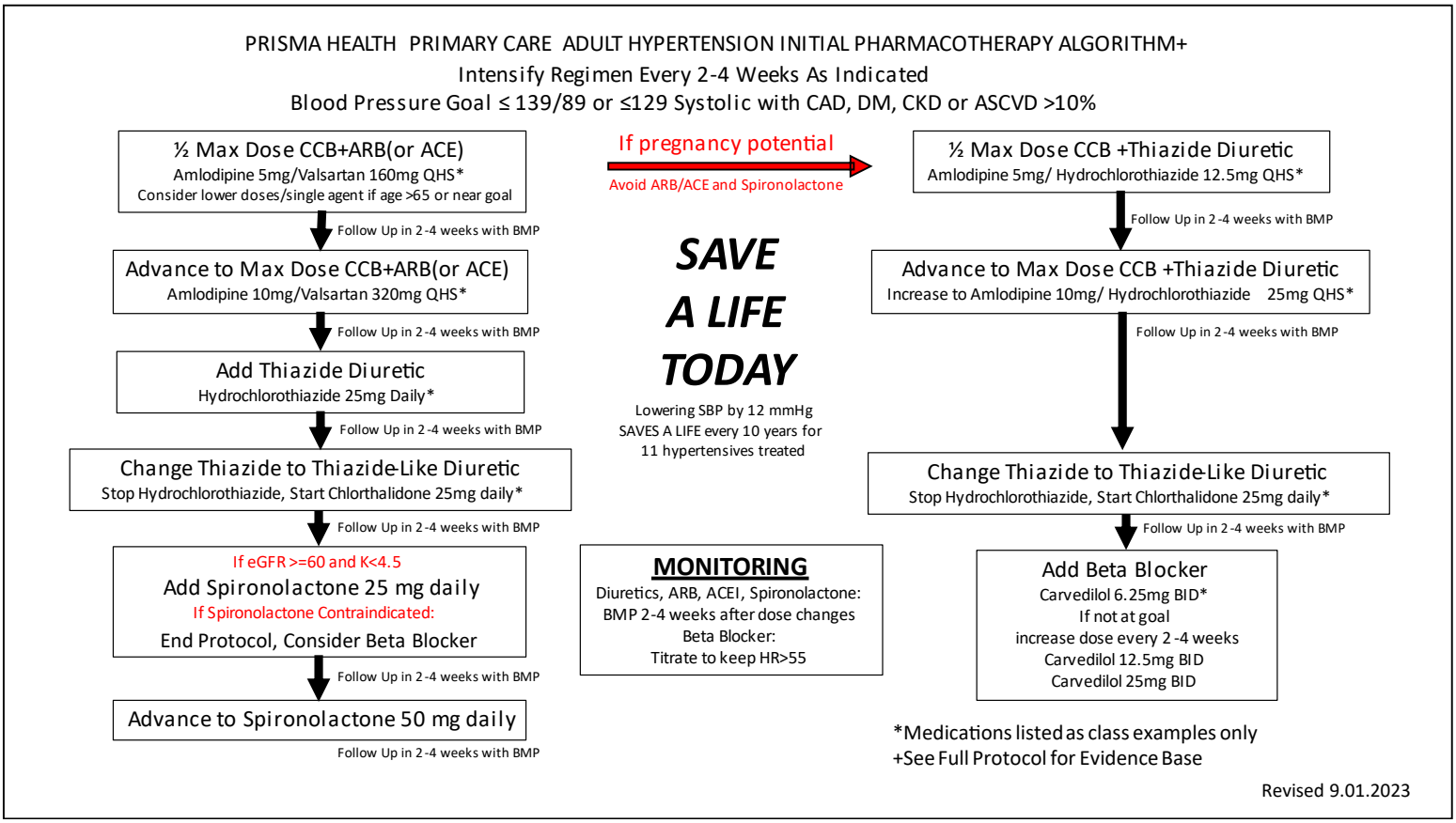
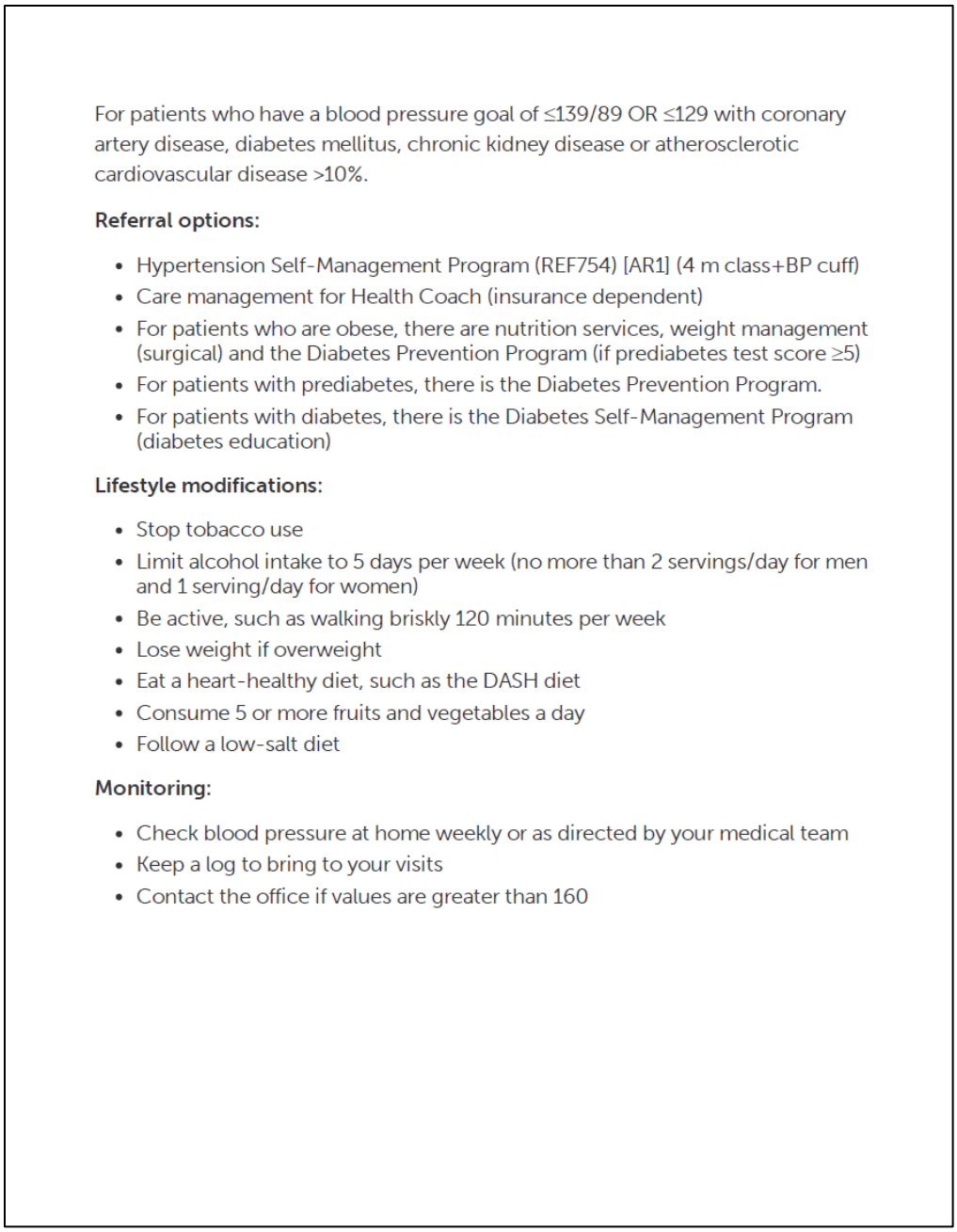


FIGURE 4. Adult Hypertension Nonpharmacologic Interventions



For patients who have a blood pressure goal of ≤139/89 OR ≤129 with coronary artery disease, diabetes mellitus, chronic kidney disease or atherosclerotic cardiovascular disease >10%.

Referral options:

- Hypertension Self-Management Program (REF754) [AR1] (4 m class+BP cuff)
- Care management for Health Coach (insurance dependent)
- For patients who are obese, there are nutrition services, weight management (surgical) and the Diabetes Prevention Program (if prediabetes test score ≥5)
- For patients with prediabetes, there is the Diabetes Prevention Program.
- For patients with diabetes, there is the Diabetes Self-Management Program (diabetes education)

Lifestyle modifications:

- Stop tobacco use
- Limit alcohol intake to 5 days per week (no more than 2 servings/day for men and 1 serving/day for women)
- Be active, such as walking briskly 120 minutes per week
- Lose weight if overweight
- Eat a heart-healthy diet, such as the DASH diet
- Consume 5 or more fruits and vegetables a day
- Follow a low-salt diet

Monitoring:

- Check blood pressure at home weekly or as directed by your medical team
- Keep a log to bring to your visits
- Contact the office if values are greater than 160

TABLE 1. Categories and plans for blood pressure management in adults

Category	Readings			Suggested Action
	SBP		DBP	
Normal	<120mmHg	and	<80 mmHg	• Healthy lifestyle choices • Check blood pressure annually
Elevated	120-129 mmHg	and	<80 mmHg	• Healthy lifestyle choices • Check blood pressure every 3-6 months
High/Stage 1 Hypertension	130-139 mmHg	or	80-89 mmHg	• Healthy lifestyle choices • If ASCVD, DM, CKD or 10yr ASCVD risk >10% • Initiate 2 medications, recheck blood pressure monthly until controlled, followed by every 3-6 months thereafter • Otherwise, recheck every 3-6 months
High/Stage 2 Hypertension	≥140 mmHg	or	≥90 mmHg	• Healthy lifestyle choices • Initiate 2 medications • Recheck blood pressure monthly until controlled, followed by every 3-6months thereafter

SBP: systolic blood pressure; DBP: diastolic blood pressure; ASCVD: atherosclerotic cardiovascular disease.

TABLE 2. Selected medication choices and doses within each first line treatment protocol class

	Initiation Dose (1/2 maximal dose)	Intensification Dose (maximal dose)
Angiotensin Receptor Blockers		
Irbesartan	150mg	300mg
Losartan	50mg	100mg
Olmesartan	20mg	40mg
Telmisartan	40mg	80mg
Valsartan	160mg	320mg
ACE Inhibitors		
Benazepril	20mg	40mg
Lisinopril	20mg	40mg
Calcium Channel Blockers (dihydropyridine)		

Amlodipine	5mg	10mg
Felodipine	5mg	10mg
Nifedipine	60mg	90mg
Thiazide or Thiazide-like Diuretic		
Chlorthalidone	12.5mg	25mg
Hydrochlorothiazide	25mg	50mg
Indapamide SR	1.25mg	2.5mg

TABLE 3. Combination Medications of recommended classes

Class Combinations	Generic Medication Names	Brand Medication Name	Generic available?	Approximate Cost*
ARB + CCB	Olmesartan + amlodipine	Azor	Y	$$$
	Valsartan + amlodipine	Exforge	Y	$$$
	Telmisartan + amlodipine	Twynsta	Y	$$$
ACEi + CCB	Benazepril + amlodipine	Lotrel	Y	$$
ACEi + Thiazide Diuretic	Lisinopril + HCTZ	Zestoretic	Y	$
	Benazepril +HTCZ	Lotensin-HCTZ	Y	SS
	Enalapril + HCTZ	Vaseretic	Y	$$
ARB + Thiazide Diuretic	Valsartan + HCTZ	Diovan HCT	Y	$$
	Olmesartan + HCTZ	Benicar	Y	$$
	Losartan + HCTZ	Hyzaar	Y	$$
ARB + CCB + Thiazide Diuretic	Olmesartan + amlodipine + HCTZ	Tribenzor	Y	$$$
	Valsartan + amlodipine + HCTZ	Exforge HCT	Y	$$$
Thiazide Diuretic + K^+-Sparing Diuretic	HCTZ + spironolactone	Aldactazide	Y	$$$

**Cost based on GoodRx prices as of 1/4/23*

$: <$10/month, $$: $10-30/month, $$$ 30-100/month, $$$$: >$100/month

References:

i The SPRINT Research Group. A randomized trial of intensive versus standard blood-pressure control. *NEJM.* 2015;373:2103-2116.

ii Reboussin et al. Systematic review for the 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*. 2018;71(6):e116-e135.

iii Unger et al. 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*. 2020;75:1334–1357.

iv Guideline for the pharmacological treatment of hypertension in adults. Geneva: World Health Organization; 2021.

v DiPette et al. Fixed-dose combination pharmacologic therapy to improve hypertension control worldwide: Clinical perspective and policy implications. *J Clin Hypertens.* 2019;21:4–15.

vi Ojji et al. Comparison of dual therapies for lowering blood pressure in black Africans. *N Engl J Med.* 2019;380:2429-2439

vii Jamerson et al. Benazepril plus amlodipine or hydrochlorothiazide for hypertension in high-risk patients. *N Engl J Med.* 2008;359:2417-28.

viii Chen et al. Comparative first-line effectiveness and safety of ACE (angiotensin-converting enzyme) inhibitors and angiotensin receptor blockers: a multinational cohort study. *Hypertension.* 2021;78:591–603.

ix Berkey, Kamermans. Does the risk of ACE-I–induced angioedema differ between black and non-black patients? *Evidence-Based Practice*. 2021;24(10):13-14.

x Carter, Ernst, Cohen. Hydrochlorothiazide versus chlorthalidone. *Hypertension*. 2004;43:4-9.

xi Hripcsak et al. Comparison of cardiovascular and safety outcomes of chlorthalidone vs hydrochlorothiazide to treat hypertension. *JAMA Intern Med.* 2020;180(4):542-551.

xii Springer. Chlorthalidone vs. hydrochlorothiazide for treatment of hypertension. *Am Fam Physician*. 2015;92(11):1015-1016.

xiii Williams et al. Spironolactone versus placebo, bisoprolol, and doxazosin to determine the optimal treatment for drug-resistant hypertension (PATHWAY-2): a randomised, double-blind, crossover trial. *Lancet*. 2015;386:2059–2068.