

Management of

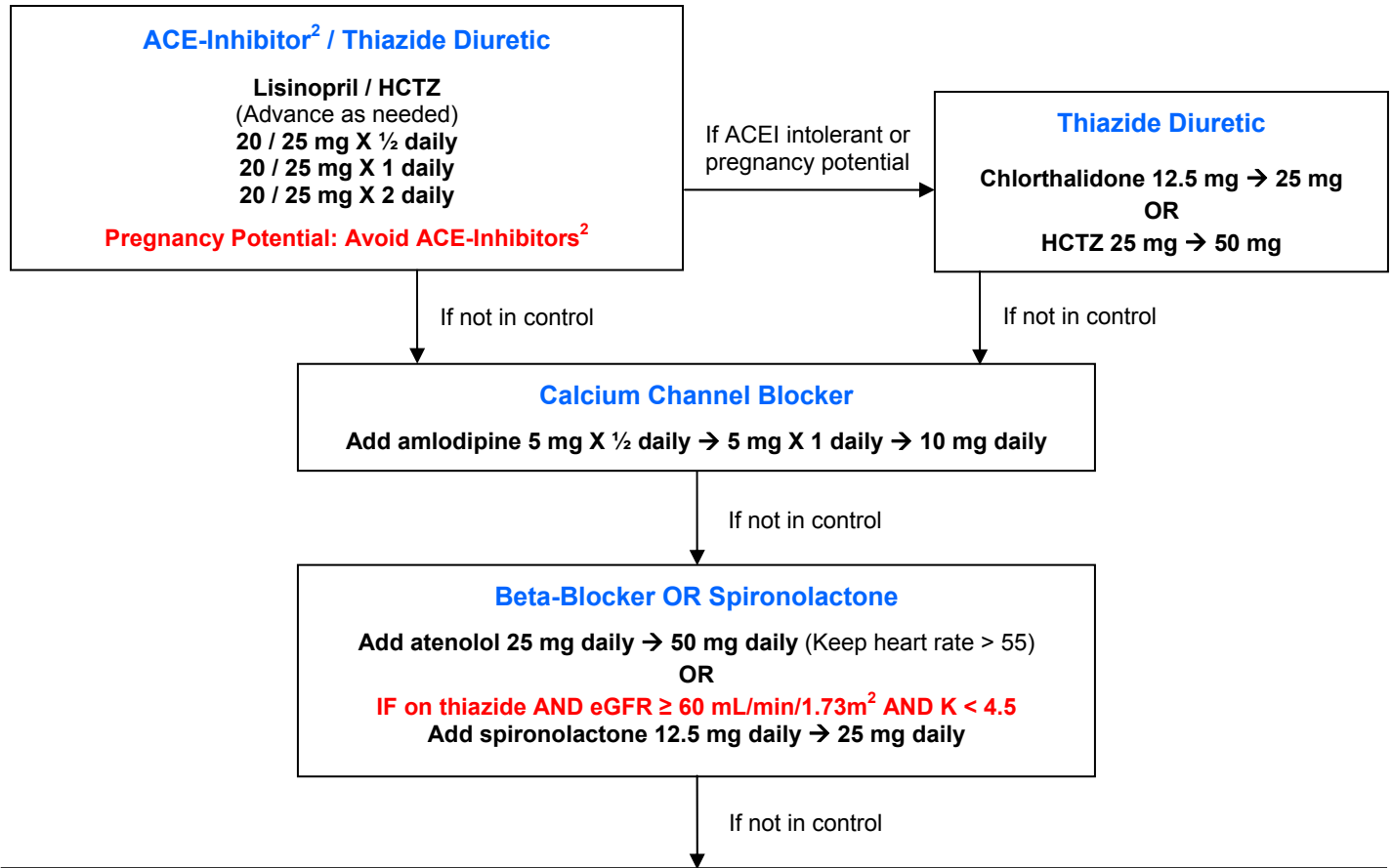
Adult Hypertension¹

BLOOD PRESSURE (BP) GOALS

≤ 139 / 89 mm Hg – Uncomplicated Hypertension

≤ 129 / 79 mm Hg – Diabetes or CKD Stages 1–3, CVA, TIA

NNT CVA³ = 63
 NNT MI³ = 86
 NNT CVA or MI³ = 36



- Consider medication non-adherence.
- Consider interfering agents (e.g., NSAIDs, excess alcohol).
- Consider white coat effect. Consider BP checks by medical assistant (e.g., two checks with 2 readings each, 1 week apart).
- Consider discontinuing lisinopril/HCTZ and changing to chlorthalidone 25 mg plus lisinopril 40 mg daily.
- Consider additional agents (hydralazine, terazosin, reserpine, minoxidil).
- Consider stopping atenolol and adding diltiazem to amlodipine, keeping heart rate > 55.
- **Avoid using clonidine, verapamil, or diltiazem together with a beta blocker. These heart-rate slowing drug combinations may cause symptomatic bradycardia over time.**
- Consider secondary etiologies.
- Consider consultation with a hypertension specialist.

1. Includes essential hypertension, DM and Stage 1-3 CKD, CVA, TIA; excludes CAD, Heart Failure, Stage 4 CKD, and pregnancy.
 2. ACE-Inhibitors are contraindicated in pregnancy and not recommended in most child-bearing age women. http://cl.kp.org/pkc/national/cmi/programs/hypertension/practice_resource/htn_pregnancy_practice_resource.pdf OR Clinical Library → National tab → Interregional Guidelines and Practices Resources → Hypertension: Treatment of Hypertension in Women
 3. NNT = number needed to treat to prevent one event, maintaining hypertension control for at least 5 years. (See Appendix A of Hypertension Guidelines for age-based NNT analysis: <http://cl.kp.org/pkc/national/cmi/programs/hypertension/guideline/index.html> OR Clinical Library → National tab → National Evidence-Based Guidelines → Hypertension Guidelines → Background → Appendix A).

- Medication up-titrations are recommended at 2 – 4 week intervals (for most patients) until control is achieved. Consider follow up labs when up-titrating or adding lisinopril/HCTZ, chlorthalidone, HCTZ, or spironolactone.
- Use lipid lowering therapy according to Dyslipidemia Management in Adults Guideline.*
- If pregnant, refer to OB/GYN for hypertension management. If on ACEIs or ARBs, discontinue immediately.

Lifestyle changes are recommended when SBP > 119 and/or DBP > 79 mm Hg

- DASH diet (low in fat, and high in fruit, vegetables and low-fat dairy products).
- Sodium restriction (≤ 2.4 gm sodium daily).
- Weight reduction if BMI ≥ 25 kg/m².
- Exercise (at least 30 min ≥ 4 times per week).
- Limit daily alcohol to no more than 1 drink (women) or 2 drinks (men).
- Smoking cessation is strongly recommended; counsel tobacco users on the health risks of smoking and the benefits of quitting.

Recommendations for patients with ACEI intolerance

1. In the absence of an ARB indication, start with a thiazide diuretic and proceed to amlodipine as needed.
2. ARB substitution therapy is recommended if any of the following indications are present:
 - Diabetic microalbuminuria (≥ 30 mcg/mg creatinine on 2 or more occasions even if later suppressed with treatment)
 - CKD^a in the presence of DM
 - Non-diabetic CKD^a with proteinuria
 - Left ventricular ejection fraction (LVEF) $\leq 40\%$

^a CKD means chronic kidney disease and can be identified by proteinuria (urine protein ≥ 300 mg/day, urine protein/creatinine ratio ≥ 0.3 , or urine 'micro'albumin ≥ 300 mcg/mg creatinine on 2 or more occasions even if later suppressed with treatment) or eGFR < 60 mL/min/1.73m² for more than 3 months.

SELECTED ANTIHYPERTENSIVE MEDICATIONS **		Usual Dosage Range
Thiazide-type Diuretics	Chlorthalidone (Hygroton)	12.5 – 25 mg daily
	Hydrochlorothiazide (HCTZ) (Esidrix)	25 – 50 mg daily
Thiazide Combinations	Lisinopril/HCTZ (Prinzide)	10/12.5, 20/12.5, 20/25 mg daily
	Spironolactone/HCTZ (Aldactazide)	25/25 mg daily
ACE Inhibitors (ACEI)	Lisinopril (Zestril, Prinivil)	10 – 40 mg daily
	Captopril (Capoten)	12.5 – 50 mg BID
Long-Acting Dihydropyridine Calcium Channel Blockers (CCB)	Amlodopine (Norvasc)	2.5 – 10 mg daily
	Felodipine ER (Plendil)	2.5 – 20 mg daily
	Nifedipine ER (Nifedipine XL)	30 – 90 mg daily
Beta-Blockers (BB)	Atenolol (Tenormin)	25 – 100 mg total, taken daily or BID
	Carvedilol (Coreg)	3.125 – 25 mg BID
	Metoprolol (Lopressor)	25 – 100 mg BID
	Metoprolol ER (Toprol XL)	25 – 200 mg daily
Aldosterone Receptor Blocker	Spironolactone (Aldactone)	12.5 – 25 mg daily
Potassium-sparing Diuretic	Amiloride (Midamor)	5 – 10 mg total, taken daily or BID
Angiotensin II Receptor Blockers (ARB)	Losartan (Cozaar – not available as generic)	25 – 100 mg daily
Direct Vasodilators	Hydralazine (Apresoline)	25 – 100 mg BID
	Minoxidil (Loniten)	2.5 mg daily – 20 mg BID
Alpha Blockers	Terazosin (Hytrin)	1 – 20 mg daily
	Doxazosin (Cardura)	1 – 16 mg daily
	Prazosin (Minipress)	1 – 10 mg BID
Alpha-2 Agonists	Clonidine (Catapres)	0.1 mg – 0.4 mg BID
Peripheral Adrenergic Inhibitor	Reserpine	0.05 – 0.2 mg daily

* <http://cl.kp.org/pkc/scal/cpg/cpg/html/Dyslipid.html> OR Clinical Library → National tab → National Evidence-Based Guidelines → Dyslipidemia Management in Adults

** Availability of medications may vary depending on regional formularies.

This guide is based on the 2009 National Hypertension Guideline. It is not intended or designed as a substitute for the reasonable exercise of independent clinical judgment by practitioners. A PDF of this document can be downloaded from Clinical Library → National tab → National Evidence-Based Guidelines → Hypertension Guideline → Clinician Tools → Management of Adult Hypertension OR go to <http://cl.kp.org/pkc/national/cmi/programs/hypertension/guideline/clinicianTools.html>.