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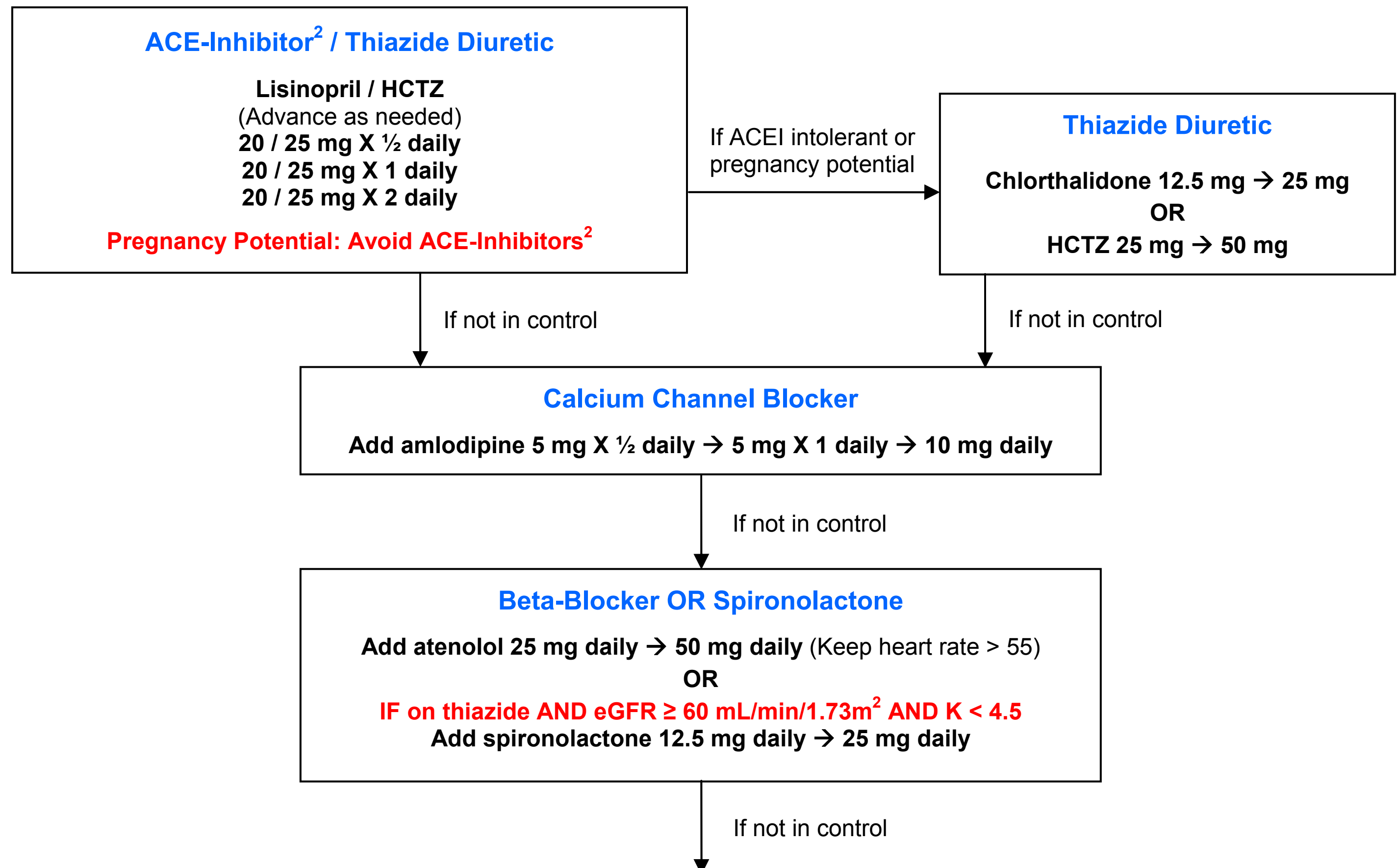
Management of Adult Hypertension[1]

BLOOD PRESSURE (BP) GOALS

≤ 139 / 89 mm Hg – Uncomplicated Hypertension
≤ 129 / 79 mm Hg – Diabetes or CKD Stages 1–3, CVA, TIA

NNT CVA[3]	= 63
NNT MI[3]	= 86
NNT CVA or MI[3]	**= 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).

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- **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/m^2.
- 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) ≤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/1.73m^2 for more than 3 months.

SELECTED ANTIHYPERTENSIVE MEDICATIONS **		Usual Dosage Range
Thiazide-type Diuretics	Chlorthalidone (Hygroton) Hydrochlorothiazide (HCTZ) (Esidrix)	12.5 – 25 mg daily 25 – 50 mg daily
Thiazide Combinations	Lisinopril/HCTZ (Prinzide) Spironolactone/HCTZ (Aldactazide)	10/12.5, 20/12.5, 20/25 mg daily 25/25 mg daily
ACE Inhibitors (ACEI)	Lisinopril (Zestril, Prinivil) Captopril (Capoten)	10 – 40 mg daily 12.5 – 50 mg BID
Long-Acting Dihydropyridine Calcium Channel Blockers (CCB)	Amlodopine (Norvasc) Felodipine ER (Plendil) Nifedipine ER (Nifedipine XL)	2.5 – 10 mg daily 2.5 – 20 mg daily 30 – 90 mg daily
Beta-Blockers (BB)	Atenolol (Tenormin) Carvedilol (Coreg) Metoprolol (Lopressor) Metoprolol ER (Toprol XL)	25 – 100 mg total, taken daily or BID 3.125 – 25 mg BID 25 – 100 mg BID 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) Minoxidil (Loniten)	25 – 100 mg BID 2.5 mg daily – 20 mg BID
Alpha Blockers	Terazosin (Hytrin) Doxazosin (Cardura) Prazosin (Minipress)	1 – 20 mg daily 1 – 16 mg daily 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.

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