HYPERTENSION TREATMENT PROTOCOL

Definition and Classification:

- Normal: <120/80 mmHg - Elevated: 120-129/<80 mmHg - Stage 1 HTN: 130-139/80-89 mmHg - Stage 2 HTN: ≥140/90 mmHg - Hypertensive Crisis: >180/120 mmHg

Initial Assessment:

- Confirm diagnosis with multiple readings on separate occasions - Assess cardiovascular risk factors - Screen for secondary causes if indicated - Baseline labs: BUN, creatinine, glucose, lipids, electrolytes - ECG, urinalysis

Lifestyle Modifications (First-line for all patients):

- Weight reduction: Goal BMI 18.5-24.9 kg/m² - DASH diet: Rich in fruits, vegetables, low-fat dairy - Sodium restriction: <2.3g daily, ideally <1.5g - Alcohol limitation: ≤2 drinks/day men, ≤1 drink/day women - Regular aerobic exercise: 90-150 minutes/week - Smoking cessation

Pharmacological Treatment:

First-Line Agents:

1. ACE Inhibitors:

- Lisinopril: 10mg daily, max 40mg daily - Enalapril: 5mg BID, max 20mg BID - Monitor: Cough (10%), hyperkalemia, angioedema (rare)

2. ARBs (if ACE inhibitor not tolerated):

- Losartan: 50mg daily, max 100mg daily - Valsartan: 80mg daily, max 320mg daily - Monitor: Hyperkalemia, less cough than ACE inhibitors

3. Calcium Channel Blockers:

- Amlodipine: 2.5-5mg daily, max 10mg daily - Nifedipine XL: 30mg daily, max 90mg daily - Monitor: Peripheral edema, gingival hyperplasia

4. Thiazide Diuretics:

- Hydrochlorothiazide: 12.5-25mg daily - Chlorthalidone: 12.5-25mg daily (preferred) - Monitor: Hypokalemia, hyperuricemia, hyperglycemia

Treatment Algorithms:

Stage 1 Hypertension (130-139/80-89):

- High CV risk: Start single agent - Low-moderate CV risk: Lifestyle modifications x 3 months - If goal not achieved: Add medication

Stage 2 Hypertension (≥140/90):

- Start with 2 agents from different classes

- Preferred combinations:

* ACE inhibitor + thiazide diuretic * ARB + calcium channel blocker * ACE inhibitor + calcium channel blocker

Target Blood Pressures:

- General population: <130/80 mmHg - Age ≥65 years: <130/80 mmHg (if tolerated) - Diabetes: <130/80 mmHg - CKD: <130/80 mmHg

Combination Therapy:

If single agent insufficient after 4-6 weeks:

- Add second agent from different class - Consider fixed-dose combinations for adherence - Avoid ACE inhibitor + ARB combination

Third-line agents:

- Spironolactone: 25mg daily (monitor K+, creatinine) - Beta-blockers: Metoprolol 50mg BID, max 200mg BID - Alpha-blockers: Doxazosin 1mg daily, max 16mg daily

Resistant Hypertension:

Definition: BP >130/80 on 3 antihypertensive agents including diuretic

Evaluation:

- Confirm medication adherence - Check for secondary causes - 24-hour ambulatory BP monitoring - Consider referral to hypertension specialist

Special Populations:

Pregnancy:

- First-line: Methyldopa 250mg BID-TID - Second-line: Labetalol 100mg BID - Avoid: ACE inhibitors, ARBs (teratogenic) - Target: <140/90 mmHg

Heart Failure:

- Preferred: ACE inhibitor + beta-blocker + diuretic - ARB if ACE inhibitor not tolerated - Avoid: Non-dihydropyridine calcium blockers

Coronary Artery Disease:

- Preferred: Beta-blocker + ACE inhibitor - Add calcium channel blocker if needed - Target: <130/80 mmHg

Chronic Kidney Disease:

- Preferred: ACE inhibitor or ARB - Monitor creatinine (acceptable increase <30%) - Avoid potassium-sparing diuretics if K+ >5.0

Diabetes:

- Preferred: ACE inhibitor or ARB - Add thiazide diuretic or calcium channel blocker - Target: <130/80 mmHg

Monitoring:

- Follow-up in 1 month after initiation/dose change - Once stable: Every 3-6 months - Home BP monitoring encouraged - Annual labs: Basic metabolic panel

Drug Interactions:

- NSAIDs: Reduce effectiveness of all antihypertensives - Lithium: Thiazides and ACE inhibitors increase levels - Potassium supplements: Monitor with ACE inhibitors/ARBs

Side Effects Management:

- ACE inhibitor cough: Switch to ARB - Ankle edema (CCB): Add ACE inhibitor or reduce dose - Fatigue (beta-blocker): Reduce dose or change agent - Hypokalemia (diuretic): Add potassium or K+-sparing diuretic

Hypertensive Emergency:

- Immediate treatment if end-organ damage - Goal: Reduce BP by 10-20% in first hour - Agents: Nicardipine IV, labetalol IV, esmolol IV - Avoid: Sublingual nifedipine (precipitous drop)

Follow-up Schedule:

- Initial visit: Confirm diagnosis, start treatment - 1 month: Assess response, adjust therapy - 3 months: Check labs, assess adherence - Every 6 months: Ongoing monitoring if stable

This protocol should be individualized based on patient comorbidities and response to therapy.