

Policy Number: **01-09-020**
 SUBJECT: **Guidelines for Treatment of Hypertensive Patients**

EFFECTIVE DATE: **4/2008**
 REVIEWED/REVISED: **4/12/10, 03/17/2011, 04/10/2012, 5/30/13, 03/03/2015**

PROTOCOL:

**PATHS Community Medical Centers
 Guidelines for Treatment of Hypertensive Patients**

Table 1. Classification and management of blood pressure for adults*

BP CLASSIFICATION	SBP* MMHG	DBP* MMHG	LIFESTYLE MODIFICATION	INITIAL DRUG THERAPY	
				WITHOUT COMPELLING INDICATION	WITH COMPELLING INDICATIONS (SEE TABLE 8)
NORMAL	<120	and <80	Encourage		
PREHYPERTENSION	120–139	or 80–89	Yes	No antihypertensive drug indicated.	Drug(s) for compelling indications.‡
STAGE 1 HYPERTENSION	140–159	or 90–99	Yes	Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination.	Drug(s) for the com- pelling indications.‡ Other antihypertensive drugs (diuretics, ACEI, ARB, BB, CCB) as needed.
STAGE 2 HYPERTENSION	≥160	or ≥100	Yes	Two-drug combination for most† (usually thiazide-type diuretic and ACEI or ARB or BB or CCB).	

DBP, diastolic blood pressure; SBP, systolic blood pressure.

Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta-blocker;
 CCB, calcium channel blocker.

* Treatment determined by highest BP category.

† Initial combined therapy should be used cautiously in those at risk for orthostatic hypotension.

‡ Treat patients with chronic kidney disease or diabetes to BP goal of <130/80 mmHg.

Blood Pressure Measurement Techniques

The auscultatory method of BP measurement with a properly calibrated and validated instrument should be used.

- Persons should be seated quietly for at least 5 minutes in a chair (rather than on an exam table), with feet on the floor, and arm supported at heart level. Measurement of BP in the standing position is indicated periodically, especially in those at risk for postural hypotension. An appropriate-sized cuff (cuff bladder encircling at least 80 percent of the arm) should be used to ensure accuracy. At least two measurements should be made.
- Ambulatory blood pressure monitoring (ABPM) provides information about BP during daily activities and sleep. ABPM is warranted for evaluation of “white-coat” hypertension in the absence of target organ injury.

- It is also helpful to assess patients with apparent drug resistance, hypotensive symptoms with antihypertensive medications, episodic hypertension, and autonomic dysfunction. BP self-measurements may benefit patients by providing information on response to antihypertensive medication, improving patient adherence with therapy, and in evaluating white-coat hypertension.

Diagnostic Work-Up of Hypertension

- Assess risk factors and comorbidities.
- Reveal identifiable causes of hypertension.
- Assess presence of target organ damage.
- Conduct history and physical examination.
- Obtain laboratory tests:
 - urinalysis,
 - blood glucose,
 - hematocrit and lipid panel,
 - renal function,
 - serum potassium,
 - creatinine, and
 - calcium.
 - Optional: urinary albumin/creatinine ratio.
- Obtain electrocardiogram **at time of initial evaluation then at least once a year there after.**

Assess for Major Cardiovascular Disease (CVD) Risk Factors & Identifiable Causes of Hypertension

Table 3. Cardiovascular risk factors

MAJOR RISK FACTORS
Hypertension*
Cigarette smoking
Obesity* (body mass index ≥ 30 kg/m ²)
Physical inactivity
Dyslipidemia*
Diabetes mellitus*
Microalbuminuria or estimated GFR < 60 mL/min
Age (older than 55 for men, 65 for women)
Family history of premature cardiovascular disease (men under age 55 or women under age 65)
TARGET ORGAN DAMAGE
Heart <ul style="list-style-type: none"> • Left ventricular hypertrophy • Angina or prior myocardial infarction • Prior coronary revascularization • Heart failure
Brain <ul style="list-style-type: none"> • Stroke or transient ischemic attack
Chronic kidney disease
Peripheral arterial disease
Retinopathy
GFR, glomerular filtration rate.
* Components of the metabolic syndrome.

Table 4. Identifiable causes of hypertension

Sleep apnea
Drug-induced or related causes (see table 9)
Chronic kidney disease
Primary aldosteronism
Renovascular disease
Chronic steroid therapy and Cushing's syndrome
Pheochromocytoma
Coarctation of the aorta
Thyroid or parathyroid disease

Treatment

Treating SBP and DBP to targets that are $< 140/90$ mmHg is associated with a decrease in CVD complications. In patients with hypertension and diabetes or renal disease, the BP goal is $< 130/80$ mmHg.

Principles of Lifestyle Modifications

- Encourage healthy lifestyles in all individuals
- Prescribe lifestyle modifications for all patients with prehypertension and hypertension
- Components of panel modifications include weight reduction, DASH eating plan, dietary sodium reduction, aerobic physical activity, and moderation of alcohol consumption.

Table 5. Lifestyle modifications to manage hypertension**

MODIFICATION	RECOMMENDATION	APPROXIMATE SBP REDUCTION (RANGE)
Weight reduction	Maintain normal body weight (body mass index 18.5–24.9 kg/m ²).	5–20 mmHg/10 kg weight loss ^{23,24}
Adopt DASH eating plan	Consume a diet rich in fruits, vegetables, and lowfat dairy products with a reduced content of saturated and total fat.	8–14 mmHg ^{25,26}
Dietary sodium reduction	Reduce dietary sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g sodium chloride).	2–8 mmHg ^{25–27}
Physical activity	Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day, most days of the week).	4–9 mmHg ^{28,29}
Moderation of alcohol consumption	Limit consumption to no more than 2 drinks (1 oz or 30 mL ethanol; e.g., 24 oz beer, 10 oz wine, or 3 oz 80-proof whiskey) per day in most men and to no more than 1 drink per day in women and lighter weight persons.	2–4 mmHg ³⁰

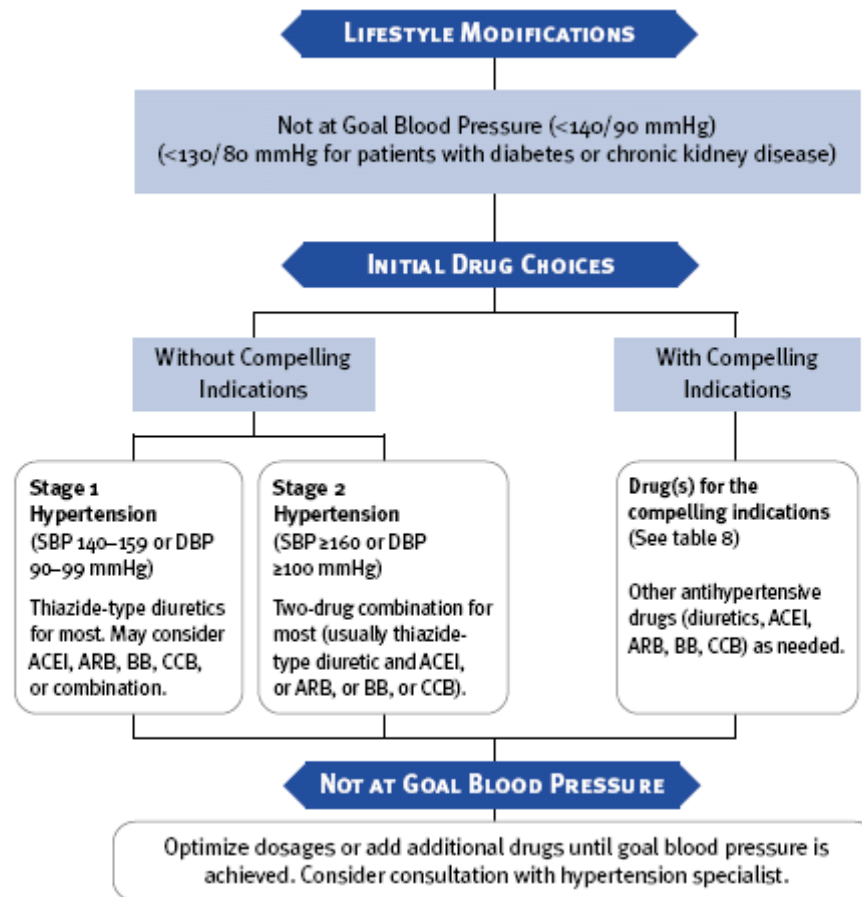
DASH, Dietary Approaches to Stop Hypertension.

* For overall cardiovascular risk reduction, stop smoking.

† The effects of implementing these modifications are dose and time dependent, and could be greater for some individuals.

For patients not at goal blood pressure (<140/90mmHg) (< 130/80 mmHg for patients with diabetes of CKD)

Figure 1. Algorithm for treatment of hypertension



DBP, diastolic blood pressure; SBP, systolic blood pressure.

Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta-blocker; CCB, calcium channel blocker.

Patient still not at Goal Blood Pressure

Optimize dosages or add additional drugs until goal blood pressure is achieved. Consider consultation with hypertensive specialist. See strategies for Improving Adherence to Therapy.

Causes of Resistant Hypertension

- Improper BP measurement
- Excess sodium intake
- Inadequate diuretic therapy
- Medication
 - Inadequate doses
 - Drug actions and interactions (e.g. NSAID's, illicit drugs, sympathomimetics, oral contraceptives)
 - Over-the-counter (OTC) drugs and herbal supplements
 - Excessive alcohol intake

- Identifiable causes of hypertension

Compelling Indications for Individual Drug Classes

Table 8. Clinical trial and guideline basis for compelling indications for individual drug classes

COMPELLING INDICATION*	RECOMMENDED DRUGS†						CLINICAL TRIAL BASIS‡
	DIURETIC	BB	ACEI	ARB	CCB	ALDO/ANT	
Heart failure	*	*	*	*		*	ACC/AHA Heart Failure Guideline, ⁴³ MERIT-HF, ⁴⁴ COPERNICUS, ⁴⁵ CIBIS, ⁴⁶ SOLVD, ⁴⁴ AIRE, ⁴⁷ TRACE, ⁴⁸ ValHEFT, ⁴⁹ RALES ⁴⁸
Postmyocardial infarction		*	*			*	ACC/AHA Post-MI Guideline, ⁵⁰ BHAT, ⁵¹ SAVE, ⁵² Capricorn, ⁵³ EPHEsus ⁵³
High coronary disease risk	*	*	*		*		ALLHAT, ⁵⁵ HOPE, ⁵⁴ ANBP2, ⁵⁴ LIFE, ⁵² CONVINCE ⁵⁴
Diabetes	*	*	*	*	*		NKF-ADA Guideline, ^{24,25} UKPDS, ⁵⁴ ALLHAT ⁵⁵
Chronic kidney disease			*	*			NKF Guideline, ²⁵ Captopril Trial, ⁵⁵ RENAAL, ⁵⁴ IDNT, ⁵⁷ REIN, ⁵⁸ AASK ⁵⁹
Recurrent stroke prevention	*		*				PROGRESS ⁵⁵

* Compelling indications for antihypertensive drugs are based on benefits from outcome studies or existing clinical guidelines; the compelling indication is managed in parallel with the BP.

† Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; Aldo ANT, aldosterone antagonist; BB, beta-blocker; CCB, calcium channel blocker.

‡ Conditions for which clinical trials demonstrate benefit of specific classes of antihypertensive drugs.

Strategies for Improving Adherence to Therapy

- Clinician empathy increases patient trust, motivation, and adherence therapy
- Physicians should consider their patients' cultural beliefs and individual attitudes in formulating therapy.

Adopted from the JNC VII Guidelines

SIGNATURES:

Chief Medical Officer

Date

Director of Administrative Operations

Date