# **Reference Card From the** Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)

# EVALUATION

CLASSIFICATION OF BLOOD PRESSURE (BP)*				
CATEGORY	SBP MMHG		DBP mmHg	
Normal	<120	and	<80	
Prehypertension	120–139	or	80-89	
Hypertension, Stage 1	140–159	or	90-99	
Hypertension, Stage 2	≥160	or	≥100	

\* See Blood Pressure Measurement Techniques (reverse side)

Key: SBP = systolic blood pressure DBP = diastolic blood pressure

### **DIAGNOSTIC WORKUP 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, serum potassium, creatinine, and calcium. Optional: urinary albumin/creatinine ratio.
- Obtain electrocardiogram.

## ASSESS FOR MAJOR CARDIOVASCULAR DISEASE (CVD) **RISK FACTORS**

- Hypertension
- Obesity

- (body mass index  $>30 \text{ kg/m}^2$ )
- Dyslipidemia
- Diabetes mellitus
- Cigarette smoking

# Assess for Identifiable Causes of Hypertension

- Sleep apnea
- Drug induced/related
- · Chronic kidney disease Primary aldosteronism
- Renovascular disease

- Physical inactivity Microalbuminuria, estimated
- glomerular filtration rate <60 mL/min
- Age (>55 for men, >65 for women) Family history of premature CVD
- (men age <55, women age <65)
- · Cushing's syndrome or steroid
  - therapy
  - Pheochromocytoma
  - · Coarctation of aorta
  - Thyroid/parathyroid disease

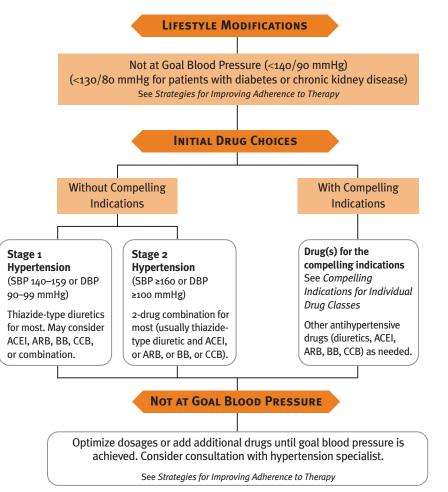
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# TREATMENT

#### **PRINCIPLES OF HYPERTENSION TREATMENT**

- Treat to BP <140/90 mmHg or BP <130/80 mmHg in patients with diabetes or chronic kidney disease.
- Majority of patients will require two medications to reach goal.

## ALGORITHM FOR TREATMENT OF HYPERTENSION



Blood Pressure Measurement Techniques		
Метнор	Notes	
In-office	Two readings, 5 minutes apart, sitting in chair. Confirm elevated reading in contralateral arm.	
Ambulatory BP monitoring	Indicated for evaluation of "white coat hyper- tension." Absence of 10–20 percent BP decrease during sleep may indicate increased CVD risk.	
Patient self-check	Provides information on response to therapy. May help improve adherence to therapy and is useful for evaluating "white coat hypertension."	

### **CAUSES OF RESISTANT HYPERTENSION**

- Improper BP measurement
- Excess sodium intake
- Inadequate diuretic therapy
- Medication
- Inadequate doses
- Drug actions and interactions (e.g., nonsteroidal anti-inflammatory drugs (NSAIDs), illicit drugs, sympathomimetics, oral contraceptives)
- Over-the-counter (OTC) drugs and herbal supplements
- Excess alcohol intake
- Identifiable causes of hypertension (see reverse side)

# COMPELLING INDICATIONS FOR INDIVIDUAL DRUG CLASSES COMPELLING INDICATION INITIAL THERAPY OPTIONS

Heart failure	THIAZ, BB, ACEI, ARB, ALDO ANT
<ul> <li>Post myocardial infarction</li> </ul>	BB, ACEI, ALDO ANT
<ul> <li>High CVD risk</li> </ul>	THIAZ, BB, ACEI, CCB
Diabetes	THIAZ, BB, ACEI, ARB, CCB
<ul> <li>Chronic kidney disease</li> </ul>	ACEI, ARB
<ul> <li>Recurrent stroke prevention</li> </ul>	THIAZ, ACEI
-	

Key: THIAZ = thiazide diuretic, ACEI= angiotensin converting enzyme inhibitor, ARB = angiotensin receptor blocker, BB = beta blocker, CCB = calcium channel blocker, ALDO ANT = aldosterone antagonist

## STRATEGIES FOR IMPROVING ADHERENCE TO THERAPY

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

The National High Blood Pressure Education Program is coordinated by the National Heart, Lung, and Blood Institute (NHLBI) at the National Institutes of Health. Copies of the JNC 7 Report are available on the NHLBI Web site at **http://www.nhlbi.nih.gov** or from the NHLBI Health Information Center, P.O. Box 30105, Bethesda, MD 20824-0105; Phone: 301-592-8573 or 240-629-3255 (TTY); Fax: 301-592-8563.

## PRINCIPLES OF LIFESTYLE MODIFICATION

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

LIFESTYLE MODIFICATION RECOMMENDATIONS				
MODIFICATION	RECOMMENDATION	Avg. SBP Reduction Range <sup>†</sup>		
Weight reduction	Maintain normal body weight (body mass index 18.5–24.9 kg/m²).	5–20 mmHg/10 kg		
DASH eating plan	Adopt a diet rich in fruits, vegetables, and lowfat dairy products with reduced content of saturated and total fat.	8–14 mmHg		
Dietary sodium reduction	Reduce dietary sodium intake to $\leq 100 \text{ mmol per day}$ (2.4 g sodium or 6 g sodium chloride).	2–8 mmHg		
Aerobic physical activity	Regular aerobic physical activi- ty (e.g., brisk walking) at least 30 minutes per day, most days of the week.	4–9 mmHg		
Moderation of alcohol consumption	Men: limit to $\leq 2$ drinks* per day. Women and lighter weight per- sons: limit to $\leq 1$ drink* per day.	2–4 mmHg		

\* 1 drink = 1/2 oz or 15 mL ethanol (e.g., 12 oz beer, 5 oz wine, 1.5 oz 80-proof whiskey).

† Effects are dose and time dependent.



#### U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health National Heart, Lung, and Blood Institute National High Blood Pressure Education Program

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