

Special Populations, Comorbidities, and Preferred Agents<sup>a,b</sup>

	Preferred Agents	Alternate Agents	Other Selected Agents	Comments	
Uncomplicated	thiazide, diuretic, β-blocker	ACEI, CCB	α-blocker, clonidine, reserpine	Short-acting nifedipine should not be used for	long-term management of HTN
African-American Race	thiazide diuretic	CCB, β-blocker, ACEI	α-β-blocker, clonidine, α-blocker	Differences in efficacy among patient β-blockers <sup>d</sup>	populations are not as apparent when diuretics are added to ACEIs and
Asthma/COPD	thiazide diuretic	ACEI, CCB	clonidine, α-blocker	β-blockers generally contraindicated in patients	with bronchospastic disease
BPH-Symptomatic	α-blocker <sup>c</sup>	β-blocker, ACEI, thiazide diuretic (low dose), CCB	clonidine	Diuretics may influence symptoms of polyuria	and frequency
Coronary artery disease	β-blocker (non-ISA post-MI)	verapamil, diltiazem	DHP SR, ACEI, thiazide diuretic	Non-ISA β-blockers are the drugs of choice dysfunction	post-MI; ACEIs are also indicated post-MI in patients with systolic
LVD-Diastolic	β-blocker, diuretic	verapamil, diltiazem	ACEI, α-blocker	Diuretics should be used if symptoms of	volume overload exist
LVD-Systolic	ACEI <sup>d</sup> , diuretic <sup>d</sup>	angiotensin II antagonist, hydralazine/nitrates	amlodipine, felodipine	ACEIs are preferred for their potential diuretics should be used if symptoms of ACEI is not tolerated; other selected agents may and CCBs should be used with caution	improvement in morbidity and mortality in this patient population; volume overload exist; angiotensin II antagonists may be used where an be used in conjunction with an ACEI in stable CHF patients; β-blockers <sup>d</sup>
CrI (CrCl <25 ml/min or S <sub>cr</sub> >2.5mg/dL)	furosemide, ACEI	β-blocker, CCB, α-blocker, indapamide, metolazone	clonidine, minoxidil, hydralazine	Potassium (K <sup>+</sup> )-sparing diuretics, K <sup>+</sup> supplements, >3.0 mg/dL; metoprolol is the preferred β-blocker	and/or ACEI may cause ↑K <sup>+</sup> ; use ACEI with caution in patients with S <sub>cr</sub> due to hepatic excretion
Depression	thiazide diuretic	ACEI, CCB, α-blocker		Clonidine, reserpine, methylodopa, β-blockers may	exacerbate depression
DM	ACEI <sup>e</sup> (types 1 & 2 DM with proteinuria)	thiazide diuretic (low dose), CCB, β-blocker, α-blocker	angiotensin II antagonist	High-dose thiazide diuretics and β-blockers may SR in patients with HTN and type 2 DM remains	worsen glucose control; β-blockers may mask hypoglycemia; use of DHP controversial
Elderly (>65yrs)	thiazide diuretic	β-blocker, CCB, ACEI	α-blocker	Use caution with α-blockers in elderly due to	first-dose syncope or dizziness
Gout	β-blocker	ACEI, CCB, thiazide diuretic (low dose)	α-blocker	Diuretic-induced hyperuricemia does not require	treatment in the absence of gout or kidney stones
Dyslipidemia	thiazide diuretic (low dose), β-blocker	ACEI, CCB, α-blocker		Thiazide diuretics may ↑TC and ↑TG and transient	non-ISA β-blockers may ↓HDL and ↑TG, although these effects may be
Isolated systolic hypertension	thiazide diuretic	DHP SR, β-blocker, ACEI	α-blocker	The use of DHP SR as first-line therapy remains	controversial, although studies are available to indicate benefit
Left ventricular hypertrophy	ACEI, thiazide diuretic, β-blocker	CCB	α-blocker, clonidine	Direct-acting vasodilators do not reduce left	ventricular hypertrophy
Peripheral vascular disease	thiazide diuretic, ACEI	CCB, β-blocker	α-blocker	Nonselective β-blockers without α-blockade may	worsen resting ischemia or severe claudication symptoms
Pilots	thiazide diuretic, lisinopril				
Pregnancy (chronic HTN)	methylodopa	labetalol	hydralazine (generally used for preeclampsia)	Except for ACEI and angiotensin II antagonists be continued if taken prior to pregnancy;	that are contraindicated during pregnancy, any antihypertensive drug may β-blockers may cause growth retardation in 1st trimester

<sup>a</sup> Adapted from JNC VI; **Bold**=compelling indication per outcome data (unless contraindicated); *Italics*=may have favorable effect on comorbid conditions

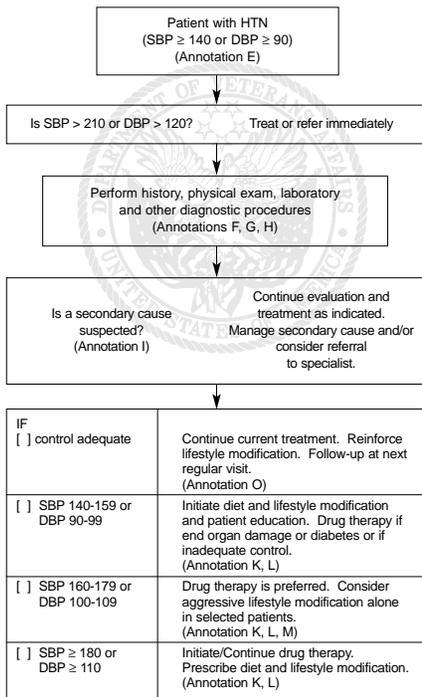
<sup>b</sup> ACEI=angiotensin-converting enzyme inhibitor; BUN=blood urea nitrogen; CCB=calcium channel blocker; DHP SR=long-acting dihydropyridine; COPD=chronic obstructive pulmonary disease; BPH=benign prostatic hyperplasia; ISA=intrinsic sympathomimetic activity; MI=myocardial infarction; LVD=left ventricular dysfunction; CHF=chronic heart failure; CrI=chronic renal insufficiency; DM=diabetes mellitus; TC=total cholesterol; TG=triglyceride; HDL=high-density-lipoprotein cholesterol

<sup>c</sup> Generally recommended for use as adjunct therapy to other antihypertensive agents

<sup>d</sup> There is compelling evidence to use β-blockers as adjunct therapy in patients with NYHA II to III CHF who are stable on an ACEI with or without a diuretic; refer to PBM-MAP The Pharmacologic Management of Chronic Heart Failure at [www.vapbm.org](http://www.vapbm.org) or <http://www.pbm.med.va.gov>

<sup>e</sup> Compelling indication in type 1 DM with proteinuria; preferred agent in types 1 and 2 DM with proteinuria

**VA/DoD DIAGNOSIS AND MANAGEMENT OF PATIENTS WITH HYPERTENSION IN THE PRIMARY CARE SETTING**



**Recommendations for Follow-up Based on Initial Blood Pressure Measurements for Adults<sup>a</sup>**

Systolic	Diastolic	Recommended Follow-up
< 130	< 85	Recheck in 2 years
130-139	85-89	Recheck in 1 year <sup>b</sup>
140-159	90-99	Confirm within 2 months <sup>c</sup>
160-179	100-109	Evaluate or refer to source of care within 1 month
> 180	> 100	Evaluate or refer to source of care immediately or within 1 week, depending on the clinical situation

<sup>a</sup>If systolic and diastolic categories are different, follow recommendations for shorter follow-up (e.g., 160/86 mm Hg should be evaluated or referred to source of care within 1 month).  
<sup>b</sup>Modify the scheduling of follow-up according to reliable information about past blood pressure measurements, other cardiovascular risk factors, or target organ disease.  
<sup>c</sup>Provide advice about lifestyle modifications.

**General Principles for Pharmacologic Management:**

- Emphasize adherence to the medication regimen.
- If control not achieved, continue once a day regimen by increasing drug dose as tolerated OR substituting another drug OR adding an agent from a different class.
- Multi-drug regimens should include a thiazide diuretic for synergy, unless contraindicated.
- If BP control is not achieved with three drugs in compliant patients, further evaluation or referral should be considered.



VA Access to full guideline at <http://www.oqp.med.va.gov/cpg/cpg.htm>

DoD Access to full guideline at <http://www.cs.amedd.army.mil/qmo>

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**Recommended Dosage for Selected Hypertension Drug Therapy (Adapted from PBM-MAP The Pharmacologic Management of HTN, Supplement to the VA/DoD Clinical Practice Guideline on HTN)**

Drug <sup>a</sup>	Dosage Range <sup>d,e</sup>	Comments
<b>THIAZIDE DIURETICS</b> Hydrochlorothiazide <sup>b</sup> HCTZ/Triamterene <sup>b</sup>	12.5-25 mg/day (max=50 mg/day) 25/37.5-50 mg/75 mg/day	Use HCTZ/Triamterene with caution with ACEI and other K <sup>+</sup> retaining drugs or supplements
<b>β-BLOCKERS</b> Noncardioselective Propranolol <sup>b</sup> Cardioselective Atenolol <sup>b</sup> Metoprolol <sup>b</sup>	IR: 40-480 mg/day in divided doses SR: 80-160 mg/day 25-100 mg/day (adjust dose in CRI) IR: 50-300 mg/day (once daily or divided doses)	β-blockers are contraindicated in asthma patients Discontinue with slow taper over 1 week As doses increase, cardioselectivity decreases
<b>CCBs</b> Verapamil IR <sup>b</sup> Verapamil SR <sup>b</sup> Diltiazem IR <sup>b</sup> Diltiazem SR (Tiazac®) Dihydropyridines Felodipine Nifedipine SR (Adalat®/CC <sup>2</sup> )	120-360 mg/day (in 2-3 divided doses) 120-480 mg/day (once daily or 2 divided doses) 90-360 mg/day (in 3-4 divided doses) 120-540 mg/day 2.5-10 mg/day 30-120 mg/day (manufacturer max=90 mg/day)	Verapamil is contraindicated in AV node dysfunction (2 <sup>nd</sup> or 3 <sup>rd</sup> degree heart block), systolic CHF and decreased LV function Diltiazem may decrease sinus rate and cause heart block Monitor adverse effects (DHPs may cause ankle edema, dizziness, flushing, headache) Use CCBs with caution in patients with liver or renal dysfunction
<b>ACEIs</b> Captopril <sup>b</sup> Fosinopril Lisinopril <sup>b</sup>	25-150 <sup>f</sup> mg/day (in 2-3 divided doses) 10-40 mg/day 5-40 mg/day	Avoid in 2 <sup>nd</sup> and 3 <sup>rd</sup> trimesters of pregnancy due to possible fetal and neonatal morbidity and death Monitor K <sup>+</sup> and renal function
<b>α-BLOCKERS</b> Prazosin <sup>b</sup> Terazosin <sup>b</sup>	max=20 mg/day 1-15 mg/day (in 2-3 divided doses) 1-5 mg/day	Initiate at low doses (1 mg) with 1 <sup>st</sup> dose given at bedtime to avoid syncope
<b>ANGIOTENSIN II ANTAGONIST</b> Candesartan Irbesartan Losartan Telmisartan Valsartan	8-32 mg/day (once daily or 2 divided doses) 150-300 mg/day 25-100 mg/day (once daily or 2 divided doses) 20-80 mg/day 80-320 mg/day	Contraindicated in 2 <sup>nd</sup> and 3 <sup>rd</sup> trimesters of pregnancy due to potential for fetal and neonatal morbidity and death
<b>CENTRALLY ACTING</b> Clonidine Tablet <sup>f</sup> Clonidine Patch Methyldopa	0.1-0.8 mg/day (in 2-3 divided doses) (max can be up to 2.4 mg/day) 0.1-0.6 mg patch weekly 500 mg-3 g/day (in 2-4 divided doses)	Taper dose to discontinue Clonidine patches are costly but may be useful in selected patients
<b>PERIPHERALLY ACTING</b> Reserpine	0.05-0.25 mg/day	Monitor for sedation, nightmares, tremors, nasal congestion, activation of peptic ulcer
<b>VASODILATING AGENTS</b> Minoxidil Hydralazine <sup>b</sup>	5-40 mg/day (once daily or 2 divided doses) (max=100 mg/day) 30-200 mg/day (in 2-3 divided doses)	Should be used with a diuretic and β-blockers to reduce edema and reflex tachycardia Monitor for hypertrichosis, pericardial effusions with minoxidil Monitor for headache and SLE (dose-related) with hydralazine

<sup>a</sup>Partial list

<sup>b</sup>DoD BCF item; all BCF items are available through the DoD NMOP  
<sup>c</sup>Calan® SR, Isoptin® SR, and generic equivalents are on the DoD BCF

<sup>d</sup>Once daily dosing unless specified otherwise

<sup>e</sup>IR=immediate release; SR=sustained release

<sup>f</sup>Patients should take 1 hour prior to food ingestion (empty stomach)