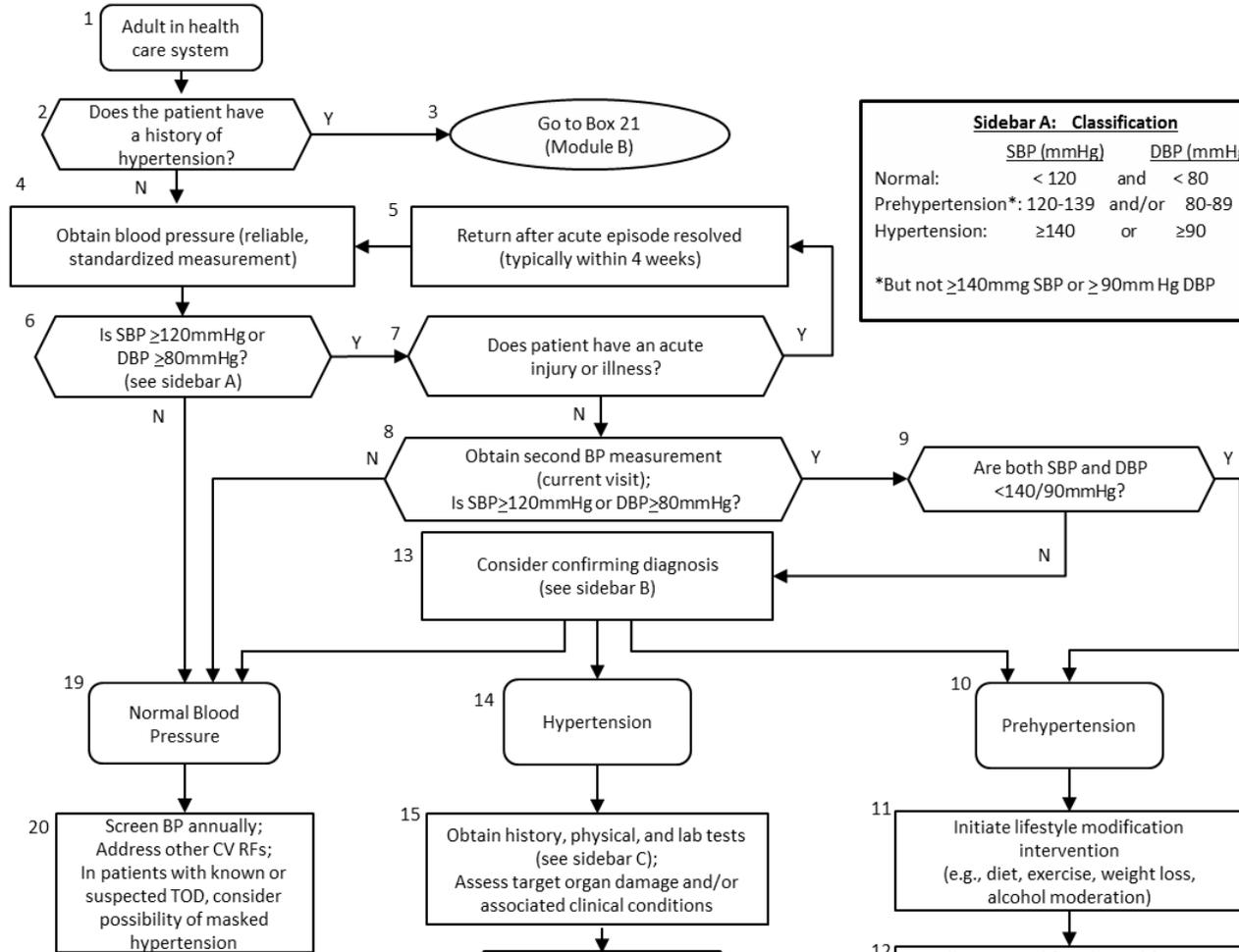


VA/DoD CLINICAL PRACTICE GUIDELINE FOR THE DIAGNOSIS AND MANAGEMENT OF HYPERTENSION IN THE PRIMARY CARE SETTING

Pocket Card

Screening and Diagnosis Module A

Algorithm



Sidebar A: Classification

	SBP (mmHg)	and	DBP (mmHg)
Normal:	< 120		< 80
Prehypertension*:	120-139	and/or	80-89
Hypertension:	≥140	or	≥90

*But not ≥140mmHg SBP or ≥90mmHg DBP

Sidebar B: Confirm Diagnosis

Confirm clinical BP within 1-4 weeks.

If the follow-up BP value is ≥ 140 mmHg SBP or ≥ 90 mmHg DBP, make diagnosis without further testing.

If the follow-up BP value is within prehypertensive range or provider/ patient is uncertain about diagnosis, consider performing HBPM or 24-hour ABPM.

Diagnose hypertension if:
 HBPM: SBP ≥ 135 mmHg or DBP ≥ 85 mmHg
 24-hour ABPM: SBP ≥ 130 or DBP ≥ 80 mmHg

If HBP or ABP is less than the values above, consider diagnosing as prehypertension or white coat hypertension depending on blood pressure reading (see sidebar A).

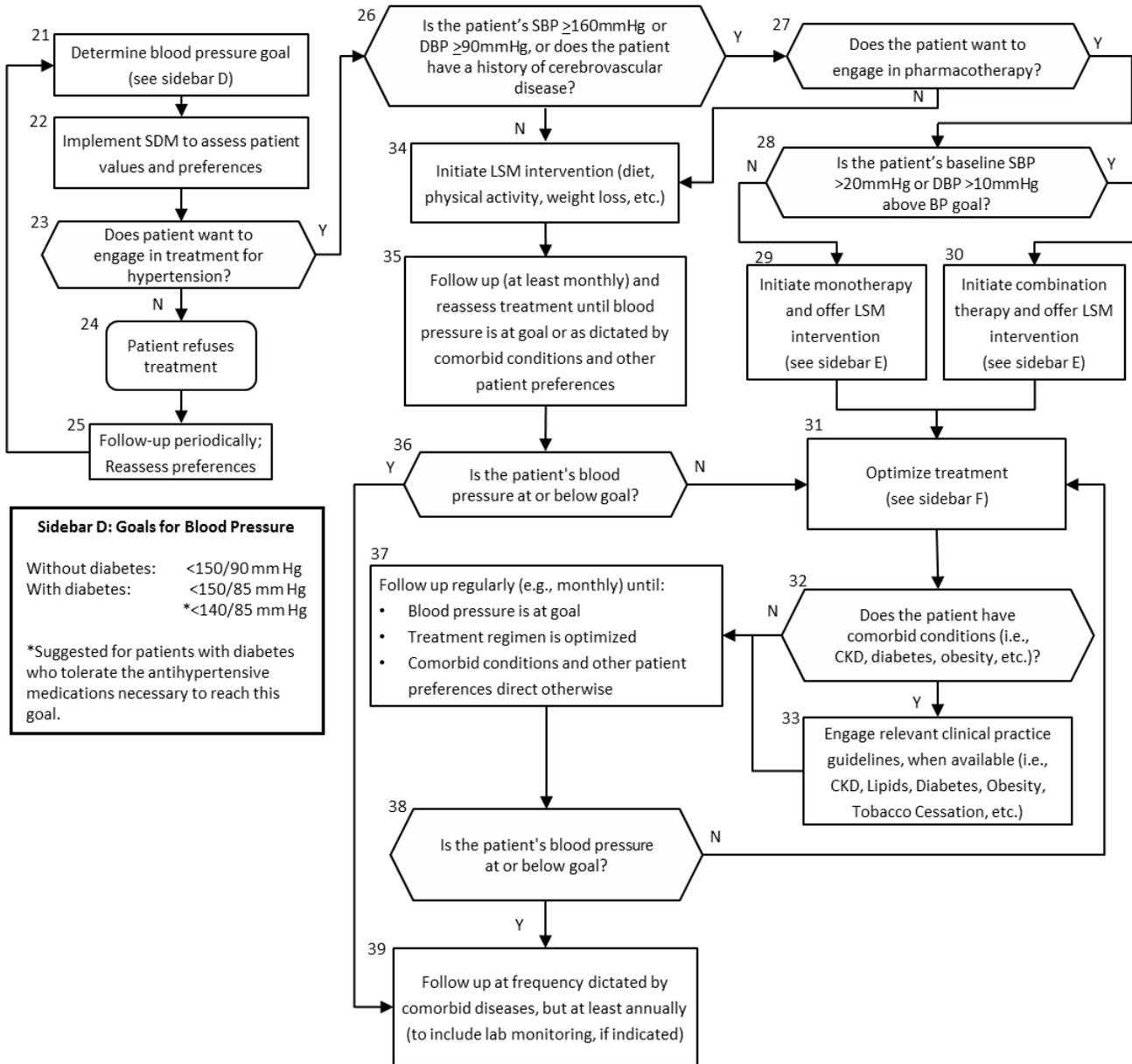
- Sidebar C: Recommended Lab Tests**
- Urinalysis; consider an albumin to creatinine ratio test if urinalysis is positive for protein
 - Basic metabolic panel
 - Non-fasting lipid profile
 - 12-lead electrocardiogram
 - Hematocrit and calcium (optional)

ABBREVIATIONS:

ABP = ambulatory blood pressure; ABPM = ambulatory blood pressure monitoring; ACEI= angiotensin-converting enzyme inhibitor; ARB= angiotensin II receptor blockers; BP= blood pressure; CKD= chronic kidney disease; CV = cardiovascular; DBP= diastolic blood pressure; DHP CCB= dihydropyridine calcium channel blocker; HBP = home blood pressure; HBPM = home blood pressure monitoring; HTN= hypertension; LSM= lifestyle modification; RFs = risk factors; SBP = systolic blood pressure; SDM= shared decision making; TOD= target organ damage

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Pocket Card Management Module B



Sidebar D: Goals for Blood Pressure

Without diabetes: <150/90 mm Hg
With diabetes: <150/85 mm Hg
*<140/85 mm Hg

*Suggested for patients with diabetes who tolerate the antihypertensive medications necessary to reach this goal.

Sidebar E: Initiate Drug Therapy

General Population (including patients with coronary disease, prior MI, or diabetes):

1st Line: Thiazide-type diuretics
2nd Line: ACEIs, ARBs, or long-acting DHP CCBs

Additional drug classes may be added as needed to reach BP goal. (Refer to Table 2)

Specific Populations:

- For patients with CKD, recommend ACEIs or ARBs as 1st line therapy.
- For African American patients, recommend **not** using ACEIs or ARBs as monotherapy.
- For African American patients with CKD, suggest combining a thiazide-type diuretic with an ACEI or ARB.

Sidebar F: Optimize Treatment

- Optimize treatment (Refer to Table 2)
 - Titrate initial drug
 - Add another agent from a different class
- Assess adherence
- Reevaluate diagnosis (resistant HTN)
- Consider evaluation for interfering substances or contributing secondary causes of hypertension
- Consider specialty consultation for patients with resistant hypertension

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Table 1. Blood Pressure Thresholds to Initiate Pharmacologic Treatment and Treatment Goals by Patient Category and Age

Patient Age		Blood Pressure (mmHg) ^a	Category of Patient		
			General Population	Diabetic Population	History of cerebrovascular disease
18-29 years	Initiate	SBP	≥160 (Suggested)	≥160 (Suggested) ^b	≥140 (Suggested)
		DBP	≥90 (Suggested)	≥90 (Suggested) ^b	≥90 (Suggested) ^b
	Goals	SBP	<150 (Suggested)	<150 (Recommended) <140 (Suggested for those who tolerate medication)	<150 (Suggested) ^b
		DBP	<90 (Suggested)	<85 (Recommended)	<90 (Suggested) ^b
30-59 years	Initiate	SBP	≥160 (Suggested)	≥160 (Suggested) ^b	≥140 (Suggested)
		DBP	≥90 (Recommended)	≥90 (Recommended) ^b	≥90 (Recommended) ^b
	Goals	SBP	<150 (Suggested)	<150 (Recommended) <140 (Suggested for those who tolerate medication)	<150 (Suggested) ^b
		DBP	<90 (Recommended)	<85 (Recommended)	<90 (Recommended) ^b
>60 years	Initiate	SBP	≥160 (Recommended) 160 > SBP ≥ 140 (Suggested; using shared decision making)	≥160 (Recommended) ^b 160 > SBP ≥ 140 (Suggested; using shared decision making) ^b	≥140 (Suggested)
		DBP	≥90 (Recommended)	≥90 (Recommended) ^b	≥90 (Recommended) ^b
	Goals	SBP	<150 (Recommended)	<150 (Recommended) <140 (Suggested for those who tolerate medication)	<150 (Recommended) ^b
		DBP	<90 (Recommended)	<85 (Recommended)	<90 (Recommended) ^b

^a Initiate pharmacologic treatment at SBP OR DBP threshold; once pharmacologic treatment is initiated, treat to SBP AND DBP goals.

^b Evidence was not reviewed which indicated the blood pressure value should be different from the general population.

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Table 2. Recommended Dosage for Selected Hypertension Drug Therapy

Drug ^a	Usual Dose Range	Comments ^h
Thiazide-type Diuretics		
Chlorthalidone ^b	12.5-25 mg daily	May cause hyperuricemia/gout. Monitor K+ levels. May cause photosensitivity (rare).
HCTZ ^b	12.5-50 mg daily ^f	
Indapamide	IR: 2.5 mg daily SR ^g : 1.25 – 2.5 mg daily	
Angiotensin-Converting Enzyme Inhibitors		
Benazepril	10-40 mg/day (daily or divided bid)	When pregnancy is detected, discontinue as soon as possible, due to potential for fetal and neonatal morbidity and death. Patients of child-bearing potential should also be educated about the risks. Do not use if history of angioedema. Avoid concomitant use of ACEI with ARB or direct renin inhibitor due to increased risk of hypotension, syncope, increased K+, and changes in renal function (See recommendation #44). Monitor K+ and kidney function; use caution if combined with, K+ sparing diuretic, or K+ supplement. Consider interruption or discontinuation in patients who develop clinically significant decline in kidney function after initiation of therapy, until further work-up, as indicated (e.g., renal artery stenosis).
Enalapril	5-40 mg/day (daily or divided bid)	
Fosinopril	10-40 mg daily	
Lisinopril ^b	10-40 mg daily	
Ramipril ^{b,c}	2.5-20 mg/day (daily or divided bid) (10 mg daily for CV risk prevention)	
Angiotensin II Receptor Blockers		
Azilsartan ^c	40-80 mg daily	When pregnancy is detected, discontinue as soon as possible. Drugs that act directly on the renin angiotensin system can cause injury and death to the developing fetus. Patients of child-bearing potential should also be educated about the risks. Avoid concomitant use of ACEI with angiotensin II receptor blocker or direct renin inhibitor due to increased risk of hypotension, syncope, increased K+, and changes in renal function (See recommendation #44). Monitor K+ and kidney function; use caution if combined with, K+ sparing diuretic, or K+ supplement. Consider interruption or discontinuation in
Candesartan ^c	8-32 mg daily	
Eprosartan ^c	400-800 mg/daily (daily or divided bid)	
Irbesartan ^c	150-300 mg daily	
Losartan ^b	25-100 mg/day (daily or divided bid)	
Olmesartan ^c	20-40 mg daily	
Telmisartan ^c	20-80 mg daily	
Valsartan ^{b,d}	80-320 mg daily	

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		patients who develop clinically significant decline in kidney function after initiation of therapy, until further work-up, as indicated (e.g., renal artery stenosis).
Long-Acting Dihydropyridine Calcium Channel Blockers		
Amlodipine ^b	2.5-10 mg daily	Monitor adverse effects (DHP CCBs may cause ankle edema, dizziness, flushing, headache). Use with caution in patients with hepatic or renal dysfunction.
Felodipine	2.5-10 mg daily	
Nifedipine SR ^b	30-120 mg daily	
Aldosterone/mineralocorticoid Receptor Antagonists		
Eplerenone ^c	50-100 mg/day (daily or divided bid)	Avoid use if hyperkalemia or severe kidney dysfunction. Monitor K ⁺ and kidney function; consider risk vs. benefit if combined with ACEI, ARB, K ⁺ sparing diuretic, or K ⁺ supplement. Higher risk of gynecomastia with spironolactone than eplerenone.
Spironolactone ^b	25-50 mg/daily	
Other Potassium-Sparing Diuretics		
Amiloride ^c	5-10 mg daily	Avoid use if hyperkalemia or severe kidney dysfunction. Helpful in reducing hypokalemia caused by thiazide diuretics.
Alpha-Adrenergic Blockers		
Doxazosin	1-16 mg daily	Initiate at low doses (1 mg). Administer 1 st dose at bedtime to avoid syncope. Avoid use as monotherapy (See recommendation #46).
Prazosin	2-20 mg/day (divided bid or tid)	
Terazosin ^b	1-20 mg daily	
Beta-Adrenergic Blockers		
<i>Noncardioselective</i>		Discontinue with slow taper over one week.
Propranolol	IR: 80-160 mg/day (divided bid) SR: 80-160 mg daily	
<i>Cardioselective</i>		Avoid combination with non-DHP CCB due to increased risk of bradycardia. As doses increase, cardioselectivity decreases. Beta-blockers should be used cautiously in asthma.
Atenolol ^b	25-100 mg daily (adjust dose in CKD)	
Metoprolol tartrate ^b	IR: 50-300 mg/day (daily or divided bid)	
Metoprolol succinate ^b	SR: 25-200 mg/day	
Long-Acting Non-Dihydropyridine Calcium Channel Blockers		
Verapamil SR ^b	120-480 mg divided daily-bid	Verapamil may cause constipation; verapamil is contraindicated in AV node dysfunction (2nd or 3rd degree heart block), systolic HF and ↓ LV function.
Diltiazem SR ^b	120-540 mg daily	Diltiazem may ↓ sinus rate and cause heart

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		block.
		Use CCBs with caution in patients with liver or kidney dysfunction.
Combined Alpha-beta adrenergic blockers		
Carvedilol	IR ^b : 12.5-50 mg/day (divided bid) SR ^c : 20-80 mg/day	Precautions for beta-blockers apply.
Labetalol ^c	200-800 mg/day (divided bid)	
Peripherally Acting Adrenergic Agents		
Reserpine ^e	0.1-0.25 mg daily	Monitor for sedation, and nasal congestion.
Direct Acting Vasodilators		
Minoxidil	2.5-100 mg/day (daily or divided bid)	Direct acting vasodilators often need concomitant use of diuretic and beta-blocker to reduce edema and reflex tachycardia.
Hydralazine ^b	50-200 mg/day (divided bid)	Monitor for hypertrichosis and pericardial effusions with minoxidil. Monitor for headache and SLE (dose-related) with hydralazine.
Centrally Acting Antiadrenergic Drugs		
Clonidine Tablet ^b	0.1-0.8 mg/day (divided bid)	Monitor for somnolence and dry mouth. Taper dose to discontinue.
Clonidine Patch	0.1-0.3 mg patch weekly	Clonidine patches may be useful in select patients.
Methyldopa	500-2,000 mg/day (divided bid)	

ACEI=angiotensin-converting enzyme inhibitor; ARB=angiotensin II receptor blocker; AV=atrioventricular; bid=twice daily; CCB=calcium channel blockers; CKD=chronic kidney disease; CV=cardiovascular; HCTZ=hydrochlorothiazide; HF=heart failure; IR=immediate-release; K+=potassium; LV=left ventricular; SLE=systemic lupus erythematosus; SR=sustained-release

^a Partial list; refer to <http://www.pbm.va.gov/nationalformulary.asp> for items available on the VA National Formulary (VANF) and refer to http://pec.ha.osd.mil/formulary_search.php?submenuheader=1 for items available on the DoD Uniform Formulary. All drugs listed are on the DoD Uniform Formulary.

^b DoD Basic Core Formulary (BCF) item.

^c Item not on VANF

^d Restricted to patients with chronic heart failure in VA.

^e Reserpine not currently available in the U.S. due to changes in requirements for raw materials (re-verified 10/15/2014; next available supply estimated March 2015). Refer to FDA Drug Shortages for current information.

^f 12.5 mg may be considered as an initial dose with titration recommended to 25 to 50mg daily; refer to Recommendation 42 and associated discussion for further information.

^g Indapamide SR not currently available in the US.

^h For complete drug information, review the manufacturer's prescribing information.