HYPERTENSION GUIDELINES FOR ADULTS IN PRIMARY CARE [FOR THE DETECTION EVALUATION PREVENTION AND TREATMENT: 2017]

[DERIVED FOM JNCH -9 AMERICAN COLLEGE OF CARDIOLOGY RECOMMENDATIONS -2017].

Hypertension has been implicated in the initiation or progression of a number of medical conditions including Cardiac, Stroke, Kidney Disease. It is therefore important that primary care physicians in particular be alert to the prevention, detection, evaluation and treatment of this common medical problem.
Normal blood pressure is defined as blood pressure <120/<80 (mm of Hg).
Blood pressure is considered ELEVATED if pressure is between 120 -129/<80.
Hypertension is defined in 2 stages:
Stage 1: 130-139/80-89.
Stage 2: >=140/>=90
Individuals with blood pressures in two categories should be designated in the higher category.

See Table I below.

Categories of BP in Adults*

BP Category	SBP		DBP
Normal	<120 mm Hg	and	<80 mm Hg
Elevated	120–129 mm Hg	and	<80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	*or*	80–89 mm Hg
Stage 2	≥140 mm Hg	*or*	≥90 mm Hg

*Individuals with SBP and DBP in 2 categories should be designated to the higher BP category. Table 6

Hypertension detection may be further refined by locale, time of day and measurement method. See table below for Clinic; Home; Daytime, Nighttime & 24 Hour ABPM.

See Table II below.

Corresponding Values of Systolic BP/Diastolic BP for Clinic, Home (HBPM), Daytime, Nighttime, and 24-Hour Ambulatory (ABPM) Measurements.

Clinic	HBPM	Daytime ABPM	Nighttime ABPM	24-Hour ABPM
120/80	120/80	120/80	100/65	115/75
130/80	130/80	130/80	110/65	125/75
140/90	135/85	135/85	120/70	130/80
160/100	145/90	145/90	140/85	145/90

White Coat Hypertension may be suspected in patients not on drug therapy if BP is between >= 130/80 but <160/100 and after3 months of trial of lifestyle modification and with Home BP Monitoring (HBPM) or Daytime Amb. BP Monitoring (ABPM) falls to <130/80. In this scenario ABPM or HBPM should be done annually to detect progression.

Masked Hypertension may be suspected in patients, not on drug therapy, if Office BP is 120-129/<80 after 3 mo of lifestyle modification and Daytime ABPM or HBPM shows BP of >= 130/80. If BP on monitoring is not >= 130/80 then BP is considered Elevated and life style modification should continue with annual HBPM or ABPM to detect Masked HTN or progression.

In both situations of suspicion of White Coat Hypertension and Masked Hypertension if the BP on HBPM or ABPM remains >130/80 then drug therapy should be initiated along with continuation of lifestyle modification.

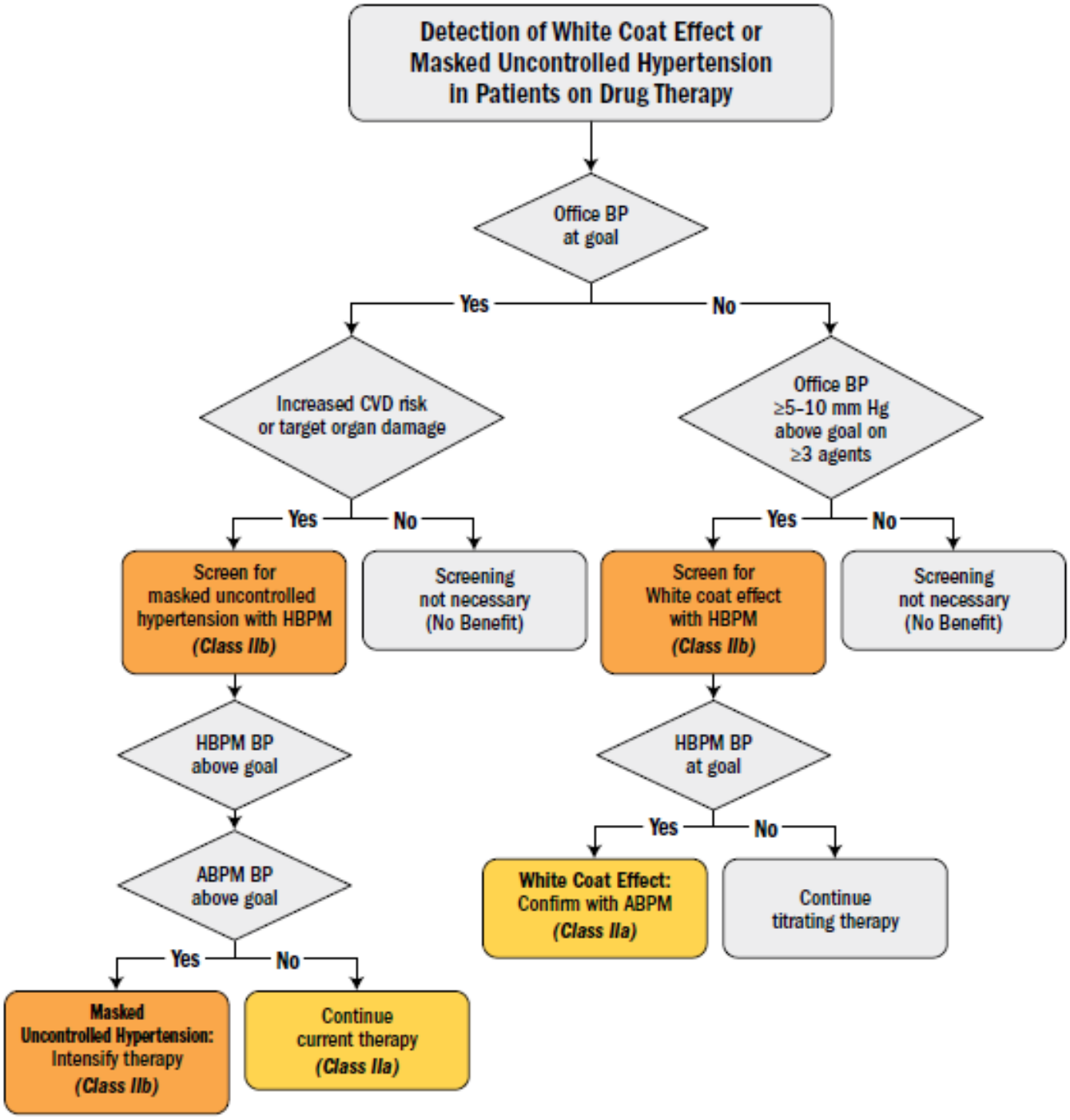
If the patient is on drug therapy and Office BP is above goal by >=5 -10 mmHg on 3 agents, then screen for White Coat Effect with HBPM. If BP on HBPM is at goal, then this signifies White Coat Effect and can be confirmed with ABPM.

If white Coat Effect is not confirmed, then continue titrating therapy.

If the Office BP is at Goal but there is increased CVD risk or target organ damage, then screen for masked uncontrolled hypertension with HBPM. If HBPM is above goal, then investigate further with ABPM and if also above goal then Masked Uncontrolled Hypertension is present and therapy should be intensified. If ABPM is not above goal, then continue current therapy.

See diagram below.

Detection of White Coat Hypertension or Masked Hypertension in Patients on Drug Therapy



SCREENING FOR SECONDARY HYPERTENSION

If there is new onset or uncontrolled hypertension, then screening should be done for Secondary Hypertension under the following conditions:

- Abrupt onset Hypertension;

- Drug-resistant/ induced hypertension;
- Onset of hypertension at < 30 years old;
- Onset of diastolic hypertension at age > =65 y.o
- Disproportionate target organ damage for the degree of hypertension;
- Unprovoked or excessive hypokalemia;
- Exacerbation of previously controlled hypertension;
- Accelerated/ Malignant Hypertension

If screening is positive, then referral to clinicians with the specific expertise should be strongly considered.

See screening tests and indications in tables below:

Causes of Secondary Hypertension with Clinical Indications and Diagnostic Screening Tests

	Prevalence	Clinical Indications	Physical Exam	Screening Tests	Additional/ Confirmatory Tests
Common Causes					
Renal parenchymal disease	1%–2%	Urinary tract infections; obstruction, hematuria; urinary frequency and nocturia; analgesic abuse; family history of polycystic kidney disease; elevated serum creatinine; abnormal urinalysis	Abdominal mass (polycystic kidney disease); skin pallor	Renal ultrasound	Tests to evaluate cause of renal disease
Renovascular disease	5%-34%*	Resistant hypertension; hypertension of abrupt onset or worsening or increasingly difficult to control; lash pulmonary edemam (atherosclerotic); early onset hypertension, especially in women (fibromuscular hyperplasia)	Abdominal systolic-diastolic bruit; bruits over other arteries (carotid–atherosclerotic or fibromuscular dysplasia), femoral	Renal Duplex Doppler ultrasound; MRA; abdominal CT	Bilateral selective renal intraarterial angiography
Primary aldosteronism	8%–20%†	Resistant hypertension; hypertension with hypokalemia (spontaneous or diuretic-induced); hypertension and muscle cramps or weakness; hypertension and incidentally discovered adrenal mass; hypertension and obstructive sleep apnea; hypertension and family history of early onset hypertension or stroke	Arrhythmias (with hypokalemia); especially atrial fibrillation	Plasma aldosterone/ renin ratio under standardized conditions (correction of hypokalemia and withdrawal of aldosterone antagonists for 4–6 wk)	Oral sodium loading test (prior to 24 h urine aldosterone) or IV saline infusion test with plasma aldosterone at 4 h of infusion. Adrenal CT scan, Adrenal vein sampling. Trial of mineralocorticoid receptor blockers§
Obstructive sleep apnea‡	25%–50%	Resistant hypertension; snoring fitful sleep; breathing pauses during sleep; daytime sleepiness	Obesity, Mallampati class III–IV; loss of normal nocturnal BP fall	Berlin Questionnaire (8); Epworth Sleepiness Score (9); overnight oximetry	Polysomnography

Drug- or alcohol-induced[ll]	2%–4%	Sodium-containing antacids; caffeine; nicotine (smoking); alcohol; NSAIDs; oral contraceptives; cyclosporine or tacrolimus; sympathomimetics (decongestants, anorectics); cocaine, amphetamines and other illicit drugs; neuro psychiatric agents; erythro-poiesis stimulating agents; clonidine withdrawal; herbal agents (MaHuang, ephedra)	Fine tremor, tachycardia, sweating (cocaine, ephedrine, MAO inhibitors); acute abdominal pain (cocaine)	Urinary drug screen (illicit drugs)	Response to withdrawal of suspected agent
Uncommon Causes					
Pheochromo-cytoma/ paraganglioma	0.1%–0.6%	Resistant hypertension; paroxysmal hypertension or crisis superimposed on sustained hypertension; "spells", BP lability, headache, sweating, palpitations, pallor; positive family history of pheochromocytoma/ paraganglioma; adrenal incidentaloma	Skin stigmata of neurofibromatosis (café-au-lait spots; neurofibromas); orthostatic hypotension	24-h urinary fractionated metanephrines or plasma metanephrines under standard conditions (30' supine position with indwelling IV cannula)	CT or MRI scan of abdomen/pelvis
Cushing's syndrome	<0.1%	Rapid weight gain, especially with central distribution; proximal muscle weakness; depression; hyperglycemia	Central obesity, "moon" face, dorsal and supraclavicular fat pads, wide (1 cm) violaceous striae, hirsutism	Overnight 1 mg dexamethasone suppression test	24-h urinary free cortisol excretion (preferably multiple); midnight salivary cortisol
Hypothyroid-ism	<1%	Dry skin; cold intolerance; constipation; hoarseness; weight gain	Delayed ankle refex; periorbital puffiness; coarse skin; cold skin; slow movement; goiter	Thyroid stimulating hormone; free thyroxine	None
Hyperthyroid-ism	<1%	Warm, moist skin; heat intolerance; nervousness; tremulousness; insomnia; weight loss; diarrhea; proximal muscle weakness	Lid lag; fine tremor of the outstretched hands; warm, moist skin	Thyroid stimulating hormone, free thyroxine	Radioactive iodine uptake and scan
Aortic coarctation (undiagnosed or repaired)	0.1%	Young patient with hypertension (<30 y of age)	BP higher in upper extremities compared to lower extremities; absent femoral pulses; continuous murmur over patient's back, chest, or abdominal bruit; left thoracotomy scar (postoperative)	Echocardiogram	Thoracic and abdominal CT or MRA
Primary hyperpara-thyroidism	Rare	Hypercalcemia	Usually none	Serum calcium	Serum parathyroid hormone

Uncommon Causes (continued from previous page)					
Congenital adrenal hyperplasia	Rare	Hypertension and hypokalemia; virilization (11-beta-hydroxylase deiciency [11-beta-OH]) incomplete masculinization in males and primary amenorrhea in females (17-alpha-hydroxylase deiciency [17-alpha-OH])	Signs of virilization (11-beta-OH) or incomplete masculinization (17-alpha-OH)	Hypertension and hypokalemia with low or normal aldosterone and renin	11-beta-OH: elevated deoxycorti-costerone (DOC), 11-deoxycortisol and androgens 17-alpha-OH: decreased androgens and estrogen; elevated deoxycorticosterone and corticosterone
Mineralo-corticoid excess syndromes other than primary aldosteronism	Rare	Early onset hypertension; resistant hypertension; hypokalemia or hyperkalemia	Arrhythmias (with hypokalemia)	Low aldosterone and renin	Urinary cortisol metabolites; genetic testing
Acromegaly	Rare	Acral features, enlarging shoe, glove or hat size; headache, visual disturbances; diabetes mellitus	Acral features; large hands and feet; frontal bossing	Serum growth hormone ≥1 ng/mL during oral glucose load	Elevated age- and sex-matched IGF-1 level; MRI scan of the pituitary

*Depending on the clinical situation (hypertension alone, 5%; hypertension starting dialysis, 22%; hypertension and peripheral vascular disease, 28%; hypertension in the elderly with congestive heart failure, 34%).

†8% in general population with hypertension; up to 20% in patients with resistant hypertension.

‡Although obstructive sleep apnea is listed as a cause of secondary hypertension, RCTs on the effects of continuous positive airway pressure on lowering BP in patients with hypertension have produced mixed results

§May treat patients with resistant hypertension with a MRA whether or not primary aldosteronism is present.

PREVENTION:

Frequently used medications and other substances that may cause elevated blood pressure include:

- Alcohol,
- Caffeine,
- Oral Contraceptives,
- NSAIDs,
- Decongestants (eg. Phenylephrine, Pseudoephedrine),
- Recreational Drugs (eg.cocaine, methamphetamine, 'bath salts'[MDPV], etc),
- Antidepressants (eg. MAOIs, SNRIs, TCAs), Amphetamines (eg amphetamine, dextroamphetamine, methylphenidate, dexmethylphenidate) ,
- Atypical Anti Psychotics (eg Clozapine & Olanzapine),
- Immunosuppressants (eg Cyclosporine),
- Herbal Supplements (eg. St John's wort[with MAO inhibitors yohimbine], Ma Huang [ephedra] ,
- Systemic steroids (eg. Prednisone, prednisolone, fluodrocortisone, prednisolone, methylprednisolone)
- Angiogenesis inhibitor (eg Bevacizumab)
- Tyrosine kinase inhibitor (eg. sunitinib, sorafenif).
- Etc.

DIAGNOSTIC TESTING:

Basic laboratory testing for primary hypertension includes: CBC; serum: -NA, K, Ca, Creatinine with eGFR; Fasting blood glucose; Urinalysis; TSH; Lipid Profile.

EKG should be done.

Other laboratory testing may include Uric Acid and Urinary Albumin/Creatinine ratio. Echocardiogram may be included.

PREVENTION AND TREATMENT: Non Pharmacologic Interventions.

The proven non pharmacologic interventions for prevention and treatment include:

- Weight loss (ideal body weight is the goal, expect 1mmHg reduction for each 1 kg reduction in body weight).
- Healthy diet (rich in fruits, vegetables, whole grain, low fat dairy products with reduced content of saturated and trans I fats).
- Reduced intake of dietary sodium (<1500 mg/day is goal but at least 1000 mg/day reduction for most.)
- Enhanced intake of dietary potassium (3500 -5000 mg/day)
- Physical activity
- Moderation of alcohol intake (reduction to <= 2 drinks/day for men and <=1 drink/day for women)

Blood Pressure (BP) Thresholds and Recommendations for Treatment and Follow-Up

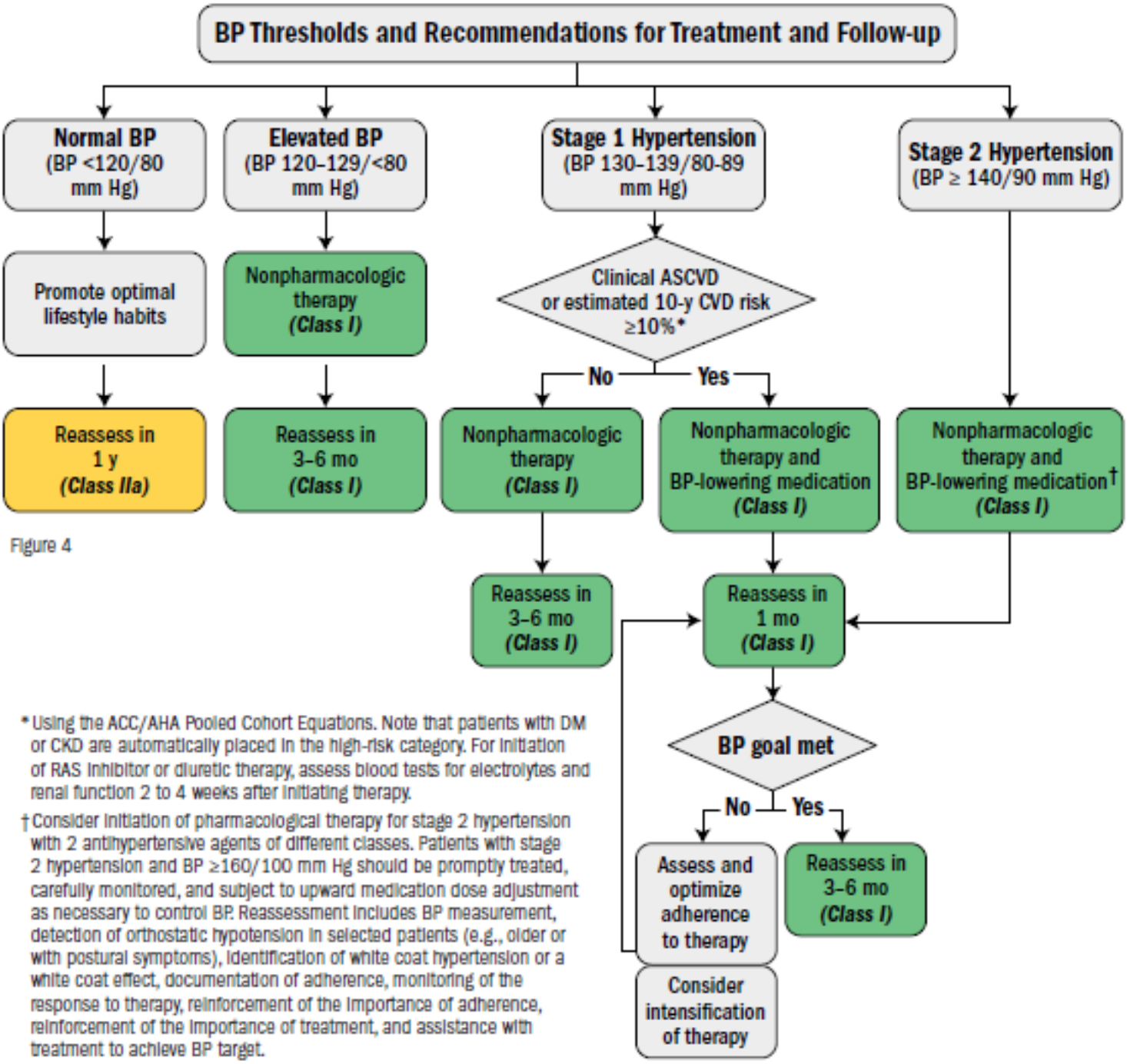


Figure 4

*Using the ACC/AHA Pooled Cohort Equations. Note that patients with DM or CKD are automatically placed in the high-risk category. For initiation of RAS inhibitor or diuretic therapy, assess blood tests for electrolytes and renal function 2 to 4 weeks after initiating therapy.

†Consider initiation of pharmacological therapy for stage 2 hypertension with 2 antihypertensive agents of different classes. Patients with stage 2 hypertension and BP ≥160/100 mm Hg should be promptly treated, carefully monitored, and subject to upward medication dose adjustment as necessary to control BP. Reassessment includes BP measurement, detection of orthostatic hypotension in selected patients (e.g., older or with postural symptoms), identification of white coat hypertension or a white coat effect, documentation of adherence, monitoring of the response to therapy, reinforcement of the importance of adherence, reinforcement of the importance of treatment, and assistance with treatment to achieve BP target.

PHARMACOLOGIC TREATMENT:

As a rule of thumb the goal of therapy is a BP of < 130/80. The exception is (>=65 y.o. non-institutionalized, community living ambulatory adult where the goal is <130 SBP). In most cases therapy is initiated for BP > 130/80 except for patients with no clinical CVD and ASCVD risk of <10% and patients with secondary stroke prevention where the threshold for treatment is >=140/90.

BP Thresholds for and Goals of Pharmacologic Therapy in Patients with Hypertension According to Clinical Conditions

Clinical Condition (s)	BP Threshold mm Hg	BP Goal mm Hg
General		
Clinical CVD or 10 year ASCVD risk ≥ 10%	≥130/80	<130/80
No clinical CVD and 10 year ASCVD risk <10%	≥140/90	<130/80
Older persons (≥65 years of age; non-institutionalized, ambulatory, community-living adults)	≥130 (SBP)	<130 (SBP)
Specific Comorbidities		
Diabetes mellitus	≥130/80	<130/80
Chronic kidney disease	≥130/80	<130/80
Chronic kidney disease post-renal transplantation	≥130/80	<130/80
Heart failure	≥130/80	<130/80
Stable ischemic heart disease	≥130/80	<130/80
Secondary stroke prevention	≥140/90	<130/80
Secondary stroke prevention (lacunar)	≥130/80	<130/80
Peripheral arterial disease	≥130/80	<130/80

A list of oral antihypertensive drugs by class, name, usual dosages, usual frequency and important considerations in their usage are listed in the tables below.

Oral Antihypertensive Drugs

Class	Drug	Usual Dose, Range (mg per day)*	Daily Frequency	Comments
Primary Agents				
Thiazide or thiazide-type diuretics	**Chlorthalidone**	12.5–25	1	· Chlorthalidone preferred based on prolonged half-life and proven trial reduction of CVD · Monitor for hyponatremia and hypokalemia, uric acid and calcium levels. · Use with caution in patients with history of acute gout unless patient is on uric acid-lowering therapy.
	Hydrochlorothiazide	25–50	1	
	Indapamide	1.25–2.5	1	
	Metolazone	2.5–10	1	
ACE Inhibitors	**Benazepril**	10–40	1 or 2	· Do not use in combination with ARBs or direct renin inhibitor · Increased risk of hyperkalemia, especially in patients with CKD or in those on K+ supplements or K+-sparing drugs · May cause acute renal failure in patients with severe bilateral renal artery stenosis · Do not use if history of angioedema with ACE inhibitors. · Avoid in pregnancy
	Captopril	12.5–150	2 or 3	
	Enalapril	5–40	1 or 2	
	Fosinopril	10–40	1	
	Lisinopril	10–40	1	
	Moexipril	7.5–30	1 or 2	
	Perindopril	4–16	1	
	Quinapril	10–80	1 or 2	
	Ramipril	2.5–10	1 or 2	
	Trandolapril	1–4	1	
ARBs	**Azilsartan**	40–80	1	· Do not use in combination with ACE inhibitors or direct renin inhibitor · Increased risk of hyperkalemia in CKD or in those on K+ supplements or K+-sparing drugs · May cause acute renal failure in patients with severe bilateral renal artery stenosis · Do not use if history of angioedema with ARBs. Patients with a history of angioedema with an ACEI can receive an ARB beginning 6 weeks after ACEI discontinued. · Avoid in pregnancy
	Candesartan	8–32	1	
	Eprosartan	600–800	1 or 2	
	Irbesartan	150–300	1	
	Losartan	50–100	1 or 2	
	Olmesartan	20–40	1	
	Telmisartan	20–80	1	
	Valsartan	80–320	1	
CCB—dihydropyridines	**Amlodipine**	2.5–10	1	· Avoid use in patients with HFrEF; amlodipine or felodipine may be used if required · Associated with dose-related pedal edema, which is more common in women than men
	Felodipine	5–10	1	
	Isradipine	5–10	2	
	Nicardipine SR	5–20	1	
	Nifedipine LA	60–120	1	
	Nisoldipine	30–90	1	
CCB—nondihydropyridines	**Diltiazem SR**	180–360	2	· Avoid routine use with beta blockers due to increased risk of bradycardia and heart block · Do not use in patients with HFrEF · Drug interactions with diltiazem and verapamil (CYP3A4 major substrate and moderate inhibitor)
	Diltiazem ER	120–480	1	
	Verapamil IR	40-80	3	
	Verapamil SR	120–480	1 or 2	
	Verapamil-delayed onset ER (various forms)	100–480	1 (in the evening)	

Table is continued in the next page

Class	Drug	Usual Dose, Range (mg per day)*	Daily Frequency	Comments
Secondary Agents				
Diuretics—loop	**Bumetanide**	0.5–4	2	· Preferred diuretics in patients with symptomatic HF. Preferred over thiazides in patients with moderate-to-severe CKD (e.g., GFR <30 mL/min)
	Furosemide	20–80	2	
	Torsemide	5–10	1	
Diuretics—potassium sparing	**Amiloride**	5–10	1 or 2	· Monotherapy agents minimally effective antihypertensives · Combination therapy of potassium sparing diuretic with a thiazide can be considered in patients with hypokalemia on thiazide monotherapy · Avoid in patients with signiicant CKD (e.g., GFR <45 mL/min)
	Triamterene	50–100	1 or 2	
Diuretics—aldosterone antagonists	**Eplerenone**	50–100	12	· Preferred agents in primary aldosteronism and resistant hypertension · Spironolactone associated with greater risk of gynecomastia and impotence compared to eplerenone · Common add-on therapy in resistant hypertension · Avoid use with K+ supplements, other K+-sparing diuretics or signiicant renal dysfunction · Eplerenone often requires twice daily dosing for adequate BP lowering
	Spironolactone	25–100	1	
Beta blockers—cardioselective	**Atenolol**	25–100	12	· Beta blockers are not recommended as irst-line agents unless the patient has IHD or HF · Preferred in patients with bronchospastic airway disease requiring a beta blocker · Bisoprolol and metoprolol succinate preferred in patients with HFrEF · Avoid abrupt cessation
	Betaxolol	5–20	1	
	Bisorolol	2.5–10	1	
	Metoprolol tartrate	100–400	2	
	Metoprolol succinate	50–200	1	
Beta blockers—cardioselective and vasodilatory	**Nebivolol**	5–40	1	· Induces nitric oxide-induced vasodilation · Avoid abrupt cessation
Beta blockers—noncardioselective	**Nadolol**	40–120	1	· Avoid in patients with reactive airways disease · Avoid abrupt cessation
	Propranolol IR	160–480	2	
	Propranolol LA	80–320	1	
Beta blockers—intrinsic sympathomimetic activity	**Acebutolol**	200–800	2	· Generally avoid, especially in patients with IHD or HF · Avoid abrupt cessation
	Carteolol	2.5–10	1	
	Penbutolol	10–40	1	
	Pindolol	10–60	2	

Table is continued in the next page

Class	Drug	Usual Dose, Range (mg per day)*	Daily Frequency	Comments
Secondary Agents *(continued from previous page)*				
Beta blockers—combined alpha- and beta-receptor	**Carvedilol**	12.5–50	2	· Carvedilol preferred in patients with HFrEF · Avoid abrupt cessation
	Carvedilol phosphate	20–80	1	
	Labetalol	200–800	2	
Direct renin inhibitor	**Aliskiren**	150–300	1	· Do not use in combination with ACE inhibitors or ARBs · Aliskiren is very long acting · Increased risk of hyperkalemia in CKD or in those on K+ supplements or K+ sparing drugs · May cause acute renal failure in patients with severe bilateral renal artery stenosis · Avoid in pregnancy
Alpha-1 blockers	**Doxazosin**	1–8	1	· Associated with orthostatic hypotension, especially in older adults · May consider as second-line agent in patients with concomitant BPH
	Prazosin	2–20	2 or 3	
	Terazosin	1–20	1 or 2	
Central alpha1-agonist and other centrally acting drugs	**Clonidine oral**	0.1–0.8	2	· Generally reserved as last-line due to signifcant CNS adverse effects, especially in older adults · Avoid abrupt discontinuation of clonidine, which may induce hypertensive crisis; clonidine must be tapered to avoid rebound hypertension
	Clonidine patch	0.1–0.3	1 weekly	
	Methyldopa	250–1000	2	
	Guanfacine	0.5–2	1	
Direct vasodilators	**Hydralazine**	250-200	2 or 3	· Associated with sodium and water retention and refex tachycardia; use with a diuretic and bet a blocker · Hydralazine associated with drug-induced lupus-like syndrome at higher doses · Minoxidil associated with hirsutism and requires a loop diuretic. Can induce pericardial effusion
	Minoxidil	5–100	1 -3	

*Dosages may vary from those listed in the FDA approved labeling (available at http://dailymed.nlm.nih.gov/dailymed/index.cfm).

Adapted with permission from Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. JAMA. 2003; 289:2560-72

The treatment for hypertension for specific medical conditions including: Heart Failure with Reduced Ejection Fraction, Stable Ischemic Heart Disease, Chronic Kidney Disease, patients with a previous history of stroke (Secondary Stroke Prevention) and Resistant Hypertension, is summarized in the following tables:

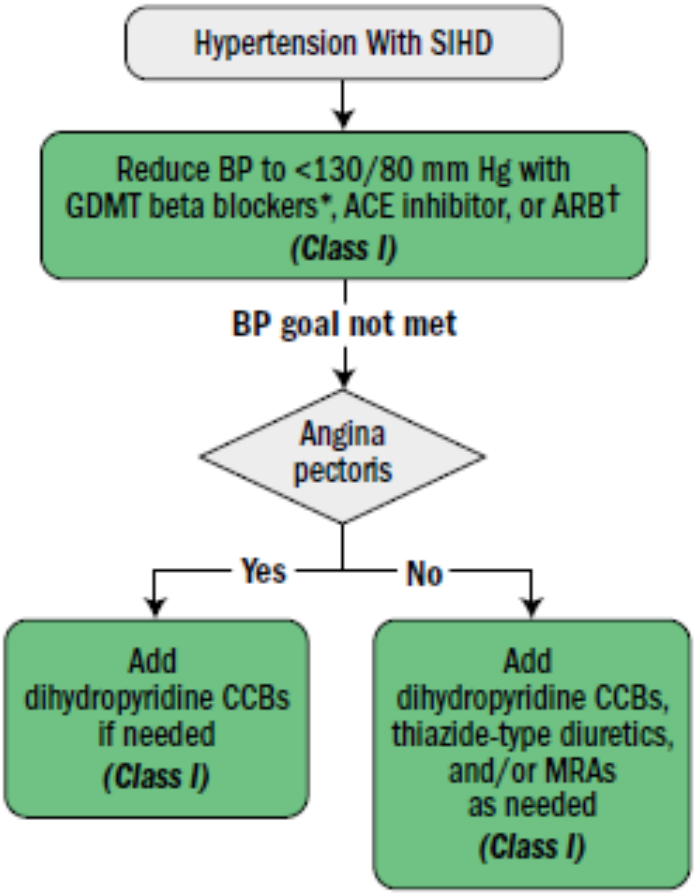
Heart Failure with Reduced Ejection Fraction (HFrEF)

Recommendations for Treatment of Hypertension in Patients with Heart Failure with Reduced Ejection Fraction (HF*r*EF) Referenced studies that support recommendations are summarized in online Data Supplement 34		
COR	**LOE**	**Recommendations**
I	C-EO	1. Adults with HF*r*EF and hypertension should be prescribed GDMT* titrated to attain a BP less than 130/80 mm Hg.
III: No Benefit	B-R	2. Nondihydropyridine CCBs are not recommended in the treatment of hypertension in adults with HF*r*EF.

Heart Failure with Preserved Ejection Fraction (HFpEF)

Recommendations for Treatment of Hypertension in Patients with Heart Failure with Preserved Ejection Fraction (HF***p***EF) Referenced studies that support recommendations are summarized in online Data Supplement 35, 36		
COR	**LOE**	**Recommendations**
I	C-EO	1. In adults with HF*p*EF who present with symptoms of volume overload, diuretics should be prescribed to control hypertension.
I	C-LD	2. Adults with HF*p*EF and persistent hypertension after management of volume overload should be prescribed ACE inhibitors or ARB and beta blockers titrated to attain systolic BP less than 130 mm Hg.

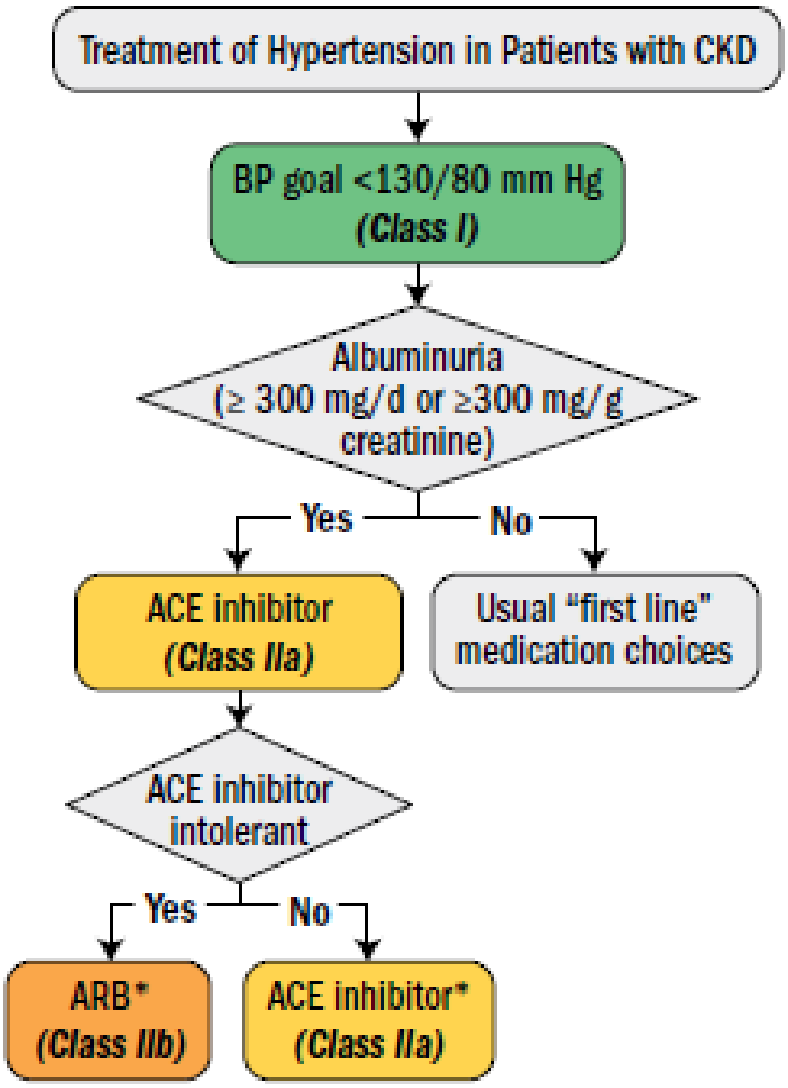
Management of Hypertension in Patients with Stable Ischemic Heart Disease (SIHD)



*GDMT beta blockers for BP control or relief of angina include carvedilol, metoprolol tartrate, metoprolol succinate, nadolol, bisoprolol, propranolol, and timolol. Avoid beta blockers with intrinsic sympathomimetic activity. The beta blocker atenolol should not be used because it is less effective than placebo in reducing cardiovascular events.

†If needed for BP control.

Management of Hypertension in Patients with Chronic Kidney Disease



*CKD stage 3 or higher or stage 1 or 2 with albuminuria ≥300 mg/d or ≥300 mg/g creatinine.

Management of Hypertension in Patients with a Previous History of Stroke (Secondary Stroke Prevention)

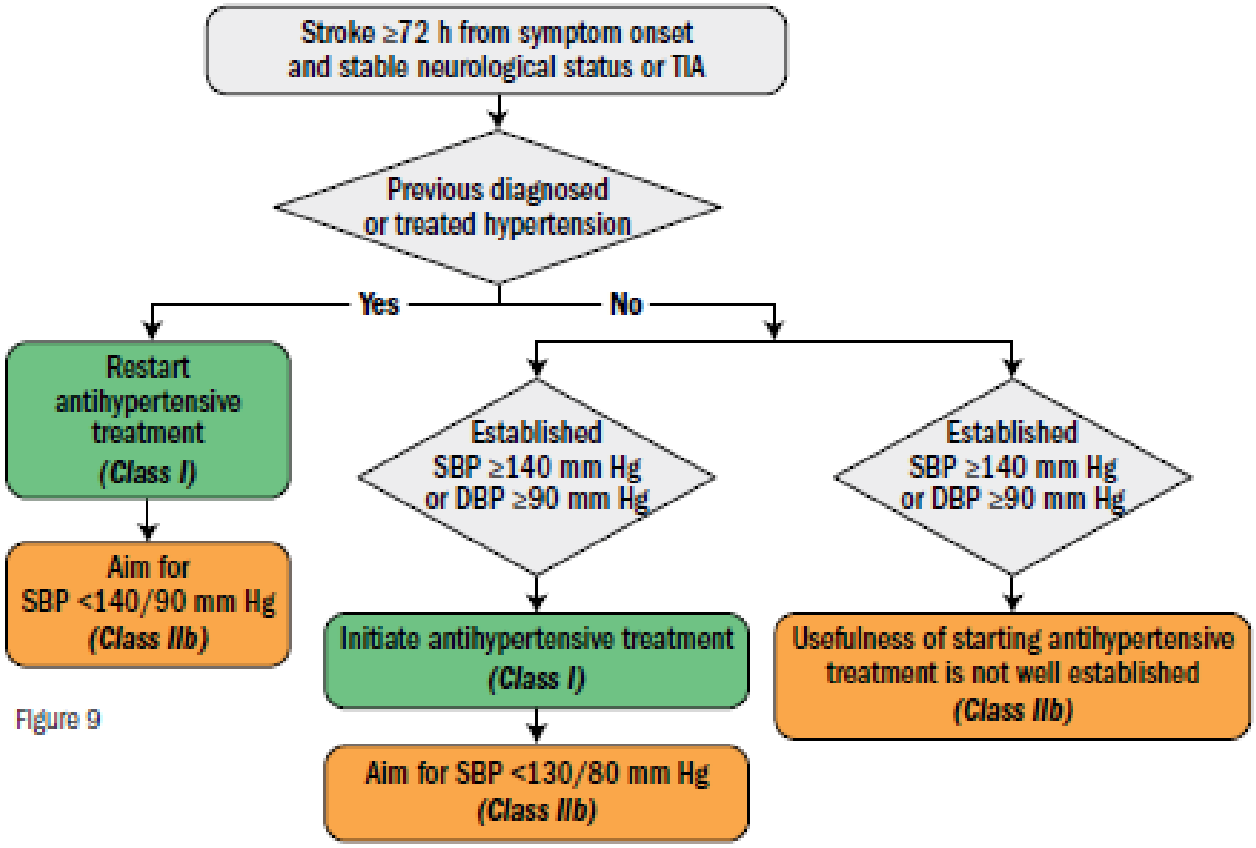
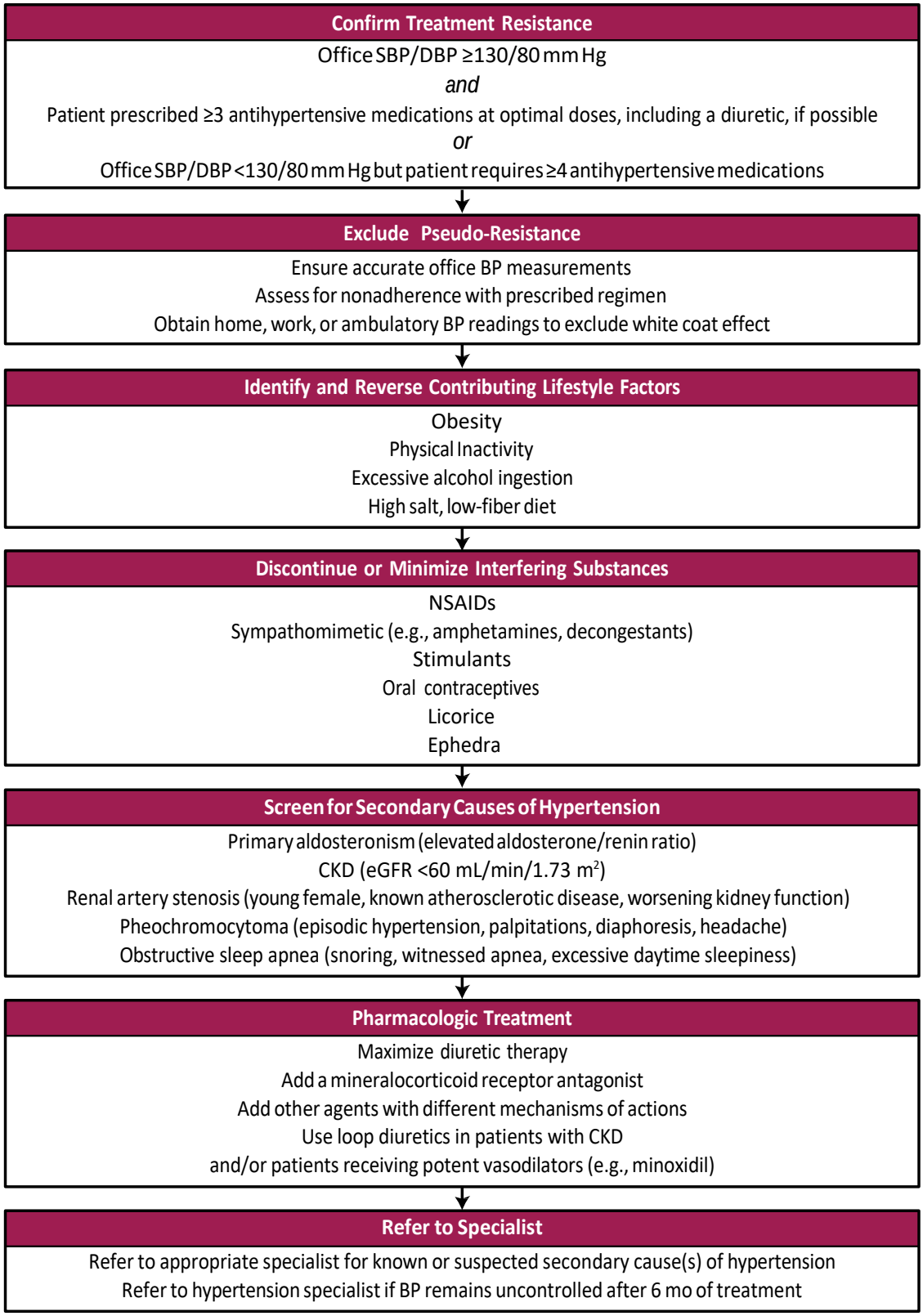


Figure 9

Resistant Hypertension: Diagnosis, Evaluation, and Treatment



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Please cite this article as: Whelton PK, Carey RM, Aronow WS, Casey Jr DE, Collins KJ, Dennison Himmelfarb C, DePalma SM, Gidding S, Jamerson KA, Jones DW, MacLaughlin EJ, Muntner P, Ovbiagele B, Smith Jr SC, Spencer CC, Stafford RS, Taler SJ, Thomas RJ, Williams Sr KA, Williamson JD, Wright Jr JT, 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults, *Journal of the American College of Cardiology* (2017), doi: 10.1016/j.jacc.2017.11.006.