Taking the Pressure Off Hypertension Management

A VA Clinician's Guide

VA

U.S. Department of Veterans Affairs

Veterans Health Administration

PBM Academic Detailing Services

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This document aims to provide clarity in selecting optimal blood pressure goals and evidence-based treatments for hypertension in primary care.

ACRONYMS:

ACEI: angiotensin-converting enzyme inhibitor

Afib: atrial fibrillation

ARB: angiotensin receptor blocker

ARNI: angiotensin receptor-neprilysin inhibitor

ASCVD: atherosclerotic cardiovascular disease

BB: beta blocker

BP: blood pressure

CAD: coronary artery disease

CBC: complete blood count

CCB: long-acting calcium channel blocker

CKD: chronic kidney disease

CVD: cardiovascular disease

DBP: diastolic blood pressure

DM: diabetes mellitus

HF: heart failure

HTN: hypertension

LFTs: liver function tests

mmHg: millimeters of mercury

MRA: mineralocorticoid receptor antagonist

RASI: renin-angiotensin system inhibitor

SBP: systolic blood pressure

SGLT-2: sodium-glucose co-transporter 2

U.S. Department of Veterans Affairs
Veterans Health Administration
PBM Academic Detailing Services

These materials were developed by:

VA PBM Academic Detailing Services
Your Partner in Enhancing Veteran Health Outcomes

VA PBM Academic Detailing Services Email Group:
PharmacyAcademicDetailingProgram@va.gov

VA PBM Academic Detailing Services SharePoint Site:
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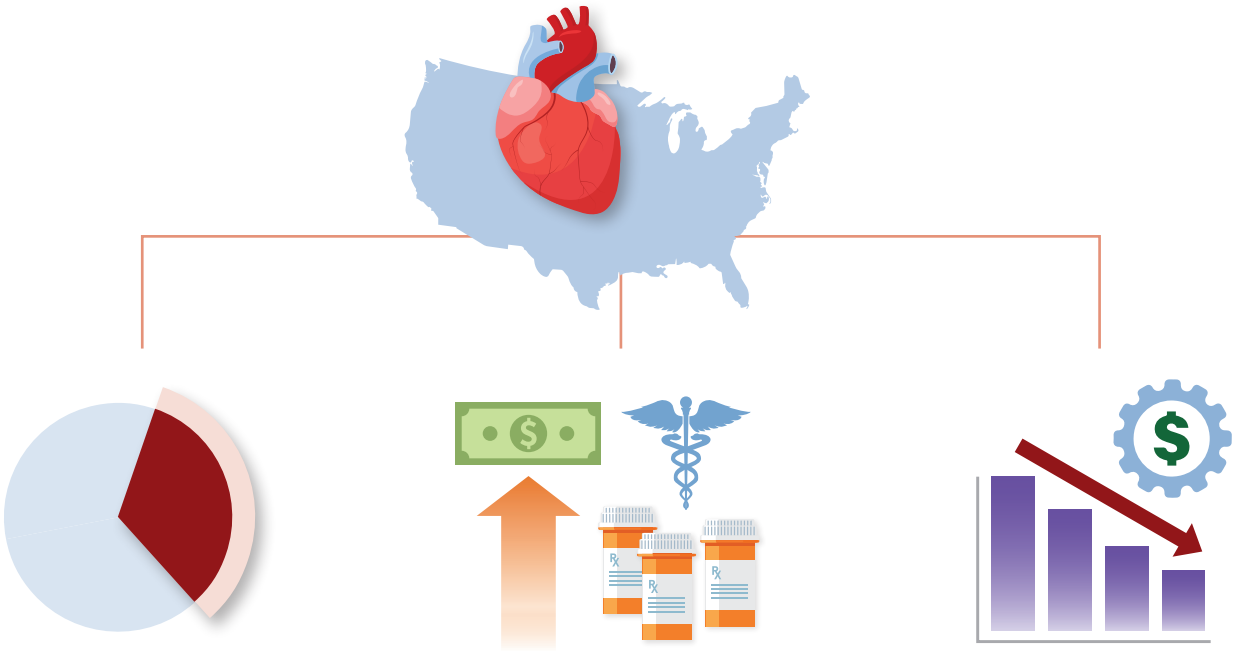
Hypertension in primary care

In the Department of Veterans Affairs (VA) healthcare system, hypertension is the **most common chronic condition** with a prevalence of 37% (> 1 million Veterans).[1] Hypertension is a modifiable risk factor for heart failure, kidney disease, and coronary artery disease.[2-4]

Figure 1. In the United States, cardiovascular diseases cause:[2]



1 in 3 DEATHS
or more than 859,000 people each year.

$216 BILLION
in health care system costs.

$147 BILLION
in lost productivity on the job from premature death.

There are multiple hypertension guidelines in addition to disease-specific guidelines (e.g., chronic kidney disease, heart failure, etc.) that provide differing recommendations regarding treatment goals. The conflicting recommendations from expert opinion often provide uncertainty surrounding optimal blood pressure targets as well as the best pharmacotherapy options.

This document aims to provide clarity in selecting optimal blood pressure goals and evidence-based treatments for hypertension in primary care.

A step-by-step approach to identifying and managing hypertension[3]

Make the diagnosis

- Obtain two systolic blood pressure readings above 130 mmHg on separate office visits
- Ensure correct blood pressure measurement (see VA/DoD video)
- Rule out other causes

Set blood pressure goals

- Patient-specific factors will guide selection (e.g., age, diabetes, chronic kidney disease, cardiovascular disease, pregnancy)

Encourage lifestyle modifications

- Diet modifications (DASH diet, sodium reduction, potassium-rich diet)
- Physical activity/weight loss
- Smoking cessation
- Limited alcohol consumption
- Drug/disease interactions should be considered

Initiate treatment

- Select medication regimen based on patient-specific factors, comorbidities, and drug interactions
- Stage 1 hypertension = 1 medication regimen
- Stage 2 hypertension = consider combination therapy

Follow up and monitor

- If systolic blood pressure is 120-129 mmHg, follow up in 3 months
- If Stage 1 or 2 hypertension and medication is added, follow up in 1 month
- Confirm adherence with treatment plan

Make the diagnosis

Optimal management of hypertension starts with a proper diagnosis. Accurate measurement and documentation of blood pressure is key.

- Measure blood pressure with a validated device (automated office blood pressure measurement preferred when available) after the patient has been resting in a chair for at least 5 minutes.[3,4]
- Counsel the patient to avoid caffeine, nicotine, and exercise for at least 30 minutes prior to the appointment.[3,4]

A diagnosis of hypertension is based on the average of two or more readings obtained on two or more separate office visits. Please note: patients with diabetes and cardiovascular disease may be diagnosed with hypertension at a single visit if blood pressure > 180/110 mmHg.[3-5]

Table 1. Staging and diagnosing hypertension: guideline comparison (mmHg)[3,4,6]

VA/DOD	STAGE	ACC/AHA (2017)	ISH
Diagnosis ≥130/90 ***No staging recommended***	**Stage 1**	SBP 130-139	SBP 140-159
		DBP 80-89	DBP 90-99
	Stage 2	SBP ≥ 140	SBP ≥160
		DBP ≥ 90	DBP ≥ 100

ACC: American College of Cardiology; AHA: American Heart Association; DOD: Department of Defense; ISH: International Society of Hypertension; VA: Department of Veterans Affairs

For more detail on how staging affects treatment options, see Figure 7 on page 7.

Set blood pressure goals

Use shared decision-making to establish individualized blood pressure goals with Veterans.

- Consider age, renal function, and comorbidities (to include frailty and life expectancy).
- Select blood pressure goal based on risks and tolerance.

Choosing the most stringent blood pressure goal could provide the most benefit. However, if fluctuations in blood pressure results in adverse effects such as dizziness or falls, the blood pressure goal should be adjusted.[3,7]

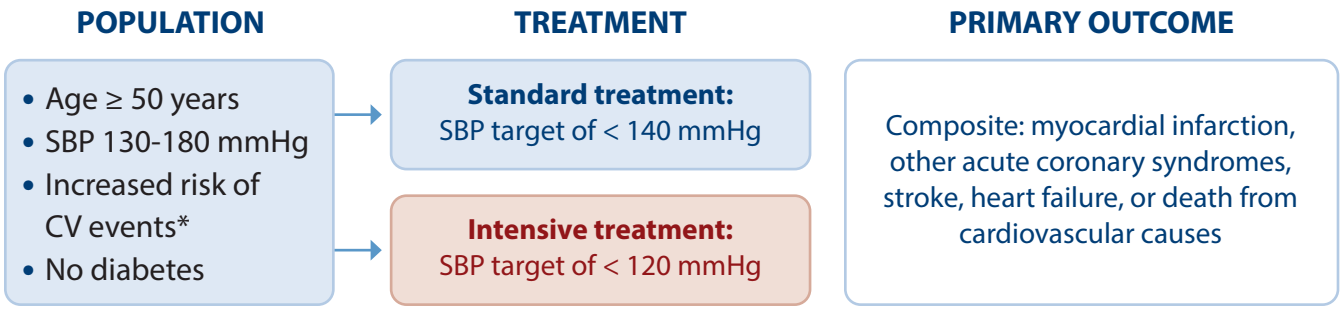
Table 2. Blood pressure goals from various clinical practice guidelines[3-5,7-10]

General population blood pressure goals (mmHg)		
	VA/DOD (2020)[a]	**ACC/AHA (2017)[b]**
Adults < 60 years old	< 130/90	< 130/80
Older adults ≥ 60 years old	< 150/90	

Special populations blood pressure goals (mmHg)			
Diabetes	< 130/80[b,c] < 140/90[a,c] < 150/90 if limited life expectancy[c]	**HF, stroke, or ASCVD with ≥ 10% 10-year risk**	< 130/80[b]
CKD	< 120/80 if non-dialysis[d,e] < 130/80 if kidney transplant[d,e]	**Pregnancy with chronic HTN**	< 120-159/80-109[f] < 110-35/85 if DM[a]

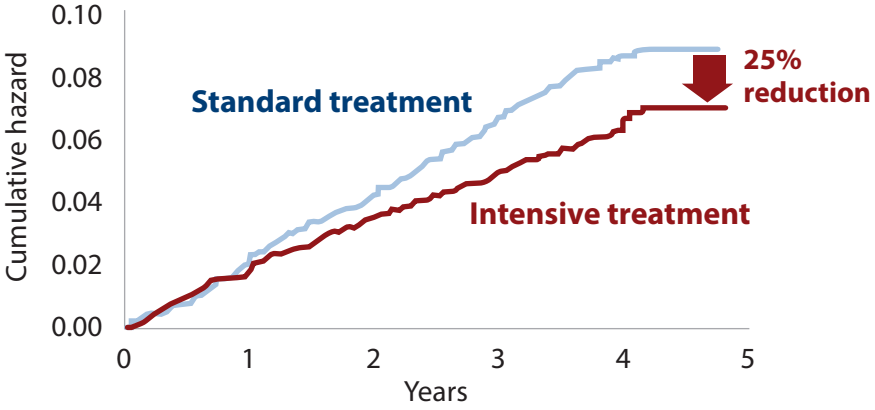
[a] VA/DOD; [b]ACC/AHA; [c]American Diabetes Association (ADA); [d] The National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI); [e]Kidney Disease Improving Global Outcomes (KDIGO); [f]American Congress of Obstetricians and Gynecologists (ACOG).

Figure 2. SPRINT Trial: What evidence supports current blood pressure goal recommendations?[11,12]



*Increased risk of CV events = One or more of the following: clinical or subclinical cardiovascular disease other than stroke; chronic kidney disease, excluding polycystic kidney disease, with an eGFR of 20 to less than 60 mL/min/1.73m^2; 10-year risk of cardiovascular disease of 15% or greater on the basis of the Framingham risk score; or ≥ 75 years old.

Figure 3. Intensive blood pressure control reduced CV outcomes and death[11]



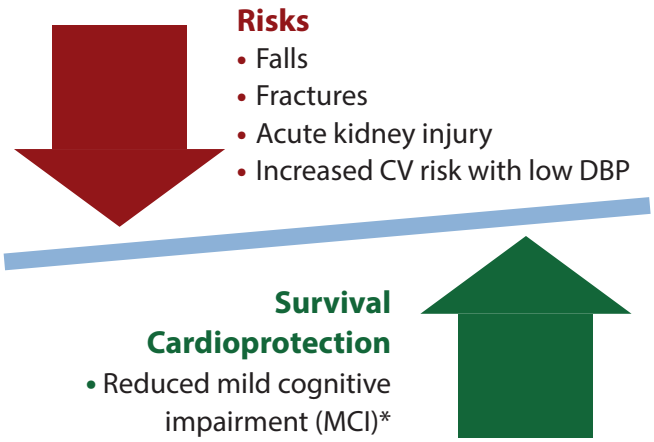
Hazard ratio with intensive treatment, 0.75 (95% CI, 0.64-0.89), $p < 0.001$

Based on the SPRINT trial results, the 2017 ACC/AHA ERC Systematic Review recommended that BP lowering to a SBP goal of < 130 mmHg reduces potential for major cardiovascular events.

The number needed to treat for intensive blood pressure control to prevent one primary outcome event was 61 (follow up period was a median of 3.26 years).[11-13]

How low should you go?

Figure 4. Individual factors to consider when establishing blood pressure goals[14,15]



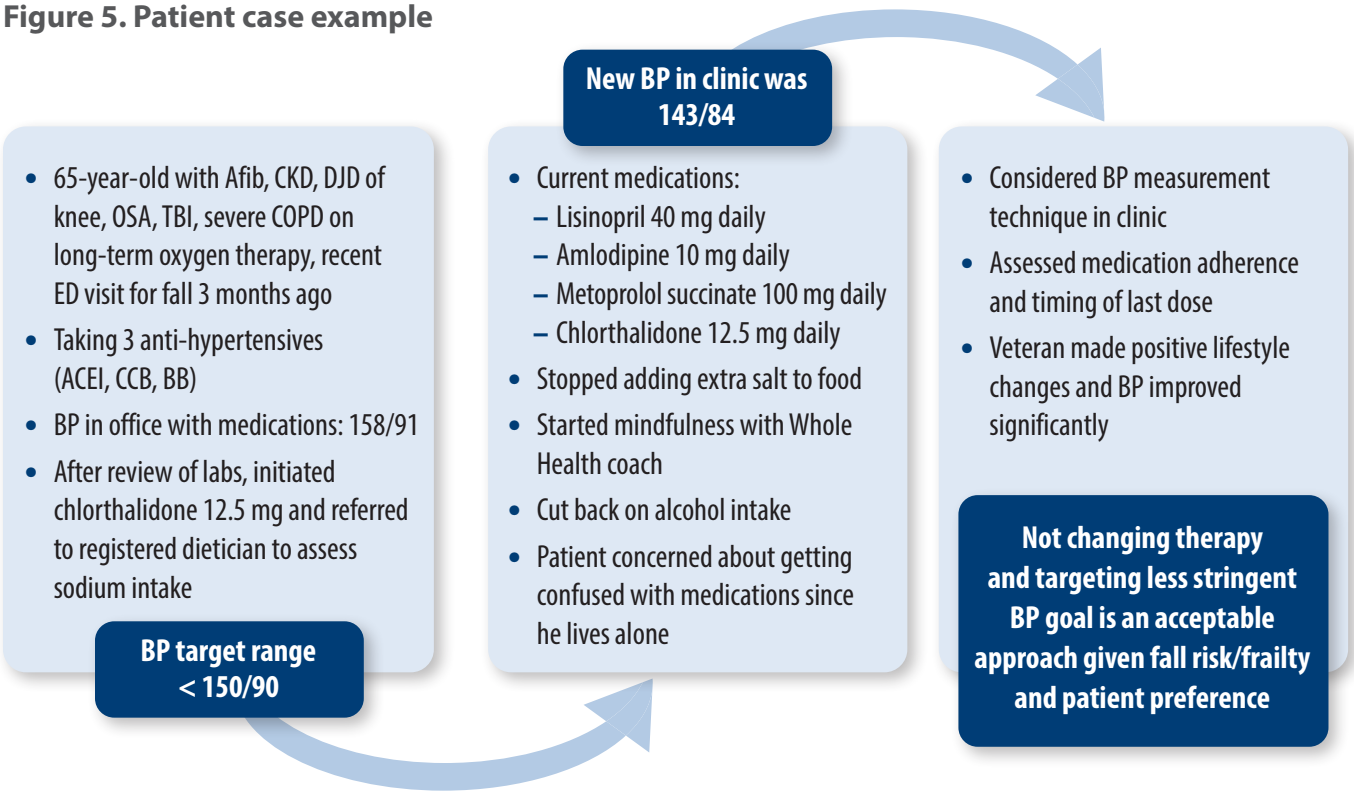
? DID YOU KNOW

Paradoxical increase in cardiovascular events has been seen with diastolic blood pressure < 70 mmHg.

* The SPRINT-MIND trial evaluated the effect of intensive BP control on dementia risk and MCI. It selected a target SBP of < 120 mmHg or < 140 mmHg. There was no statistical difference in the primary outcome of occurrence of dementia; however, in patients with an SBP < 120 mmHg, there was a statistically significant decrease in both MCI and the composite outcome of dementia and MCI. The impact of more intensive BP goals on dementia in older adults remains uncertain, emphasizing the need to individualize BP goals in this population.[16]

Establish and document target blood pressure goal based on comorbidities and shared decision-making.

Figure 5. Patient case example



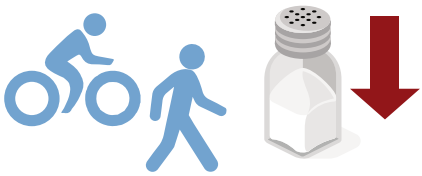
Consider combination therapy when possible. COPD: chronic obstructive pulmonary disease; DJD: degenerative joint disease; ED: emergency department; OSA: obstructive sleep apnea; TBI: traumatic brain injury

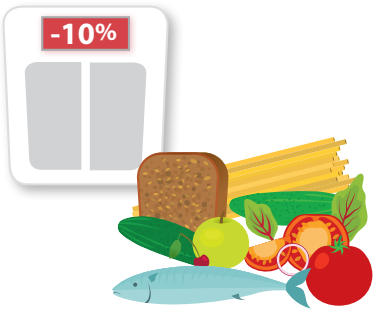
Encourage lifestyle modifications

Talk with the Veteran about lifestyle changes that may improve their blood pressure.

Figure 6. Lifestyle modifications that can result in a reduction of blood pressure[3,17-43]

4 mmHg reduction	4-8 mmHg reduction	10 mmHg reduction
Limit daily alcohol to ≤ 1 drink for women and ≤ 2 drinks for men	• Reduce sedentary time and increase physical activity to 150 minutes/week • Keep sodium intake to < 1 teaspoon (~2,300 mg) of table salt per day[44] • A potassium-rich diet may help reduce blood pressure	• Consider 10% weight loss • Implement DASH diet





DID YOU KNOW

A reduction in blood pressure of just 20/10 mmHg is associated with a 50% decrease in cardiovascular risk.[13]

Initiate treatment

After setting individualized blood pressure goals, recommending lifestyle modifications, and assessing for secondary hypertension causes (see page 8), pharmacotherapy may be indicated. The following treatment algorithm is a general overview of initial treatment options for hypertension management.

It is important to individualize pharmacotherapy after considering patient-specific factors such as age, comorbidities, and lifestyle. When patients require multiple agents to lower their blood pressure, combination agents may lower pill burden and improve adherence.

Figure 7. Hypertension: initial drug therapy algorithm[3,4,6]

CCBs, thiazide diuretics, and ACEIs or ARBs are first-line treatment for most patients. If additional BP lowering is needed, maximize first-line agents then consider a mineralocorticoid receptor antagonist.

If blood pressure is not at goal after initial medications:[3,45,46]

- ☑ **Assess adherence** to medication regimen and optimize dose.
- ☑ **Screen for secondary causes of hypertension** (e.g., primary aldosteronism, chronic kidney disease, hormonal imbalances in the renin-angiotensin system, pheochromocytoma, obstructive sleep apnea, substance use disorder).
- ☑ **Add/optimize** calcium channel blocker, thiazide, ACE inhibitor, or angiotensin receptor blocker.
- ☑ **Re-evaluate diuretic:**
  - Change from loop to thiazide.
  - Change from hydrochlorothiazide to chlorthalidone (↓ by 6-7 mmHg).
- ☑ **Re-evaluate beta blocker:**
  - If on a beta blocker for other indication, consider changing to carvedilol for enhanced blood pressure lowering.

Evaluate for medication-related secondary hypertension

Screening for secondary causes of hypertension is necessary for new onset or uncontrolled hypertension in adults, including drug-resistant (three or more drugs), abrupt onset, age < 30 years, or excessive target organ damage.[45]

Figure 8. Medications and substances that increase blood pressure[3,45]

Nonsteroidal anti-inflammatory drugs (NSAIDs)	Oral contraceptives	Cyclosporine, tacrolimus
Erythropoietin	Vascular endothelial growth factor (VEGF) inhibitors (e.g., Avastin® [bevacizumab], Nexavar® [sorafenib], or Sutent [sunitinib])	
Amphetamines	Glucocorticoids, mineralocorticoids	Decongestants (e.g., pseudo-ephedrine)
Antidepressants (e.g., venlafaxine, duloxetine)		Cocaine

Resistant hypertension

Resistant hypertension is high blood pressure that remains above patient-specific goal on three or more antihypertensive medications (one of which should be a diuretic) prescribed at optimal doses.[3]

If no cause of secondary hypertension is identified or modifiable:

- Consider adding a mineralocorticoid receptor antagonist.[3,47]
- If blood pressure is still not at goal after initiation of a fourth-line medication, add medications with different mechanisms of action.[3]
- If heart failure or ischemic heart disease is present and heart rate is above 70 beats per minute, a beta blocker is an appropriate option for improved blood pressure control.[45]
- Additional agents to consider include clonidine, hydralazine, or minoxidil.[45]

Specialty care may be needed for management of resistant hypertension.[3]

Figure 9. Management of resistant hypertension without modifiable cause of secondary hypertension[3,45]

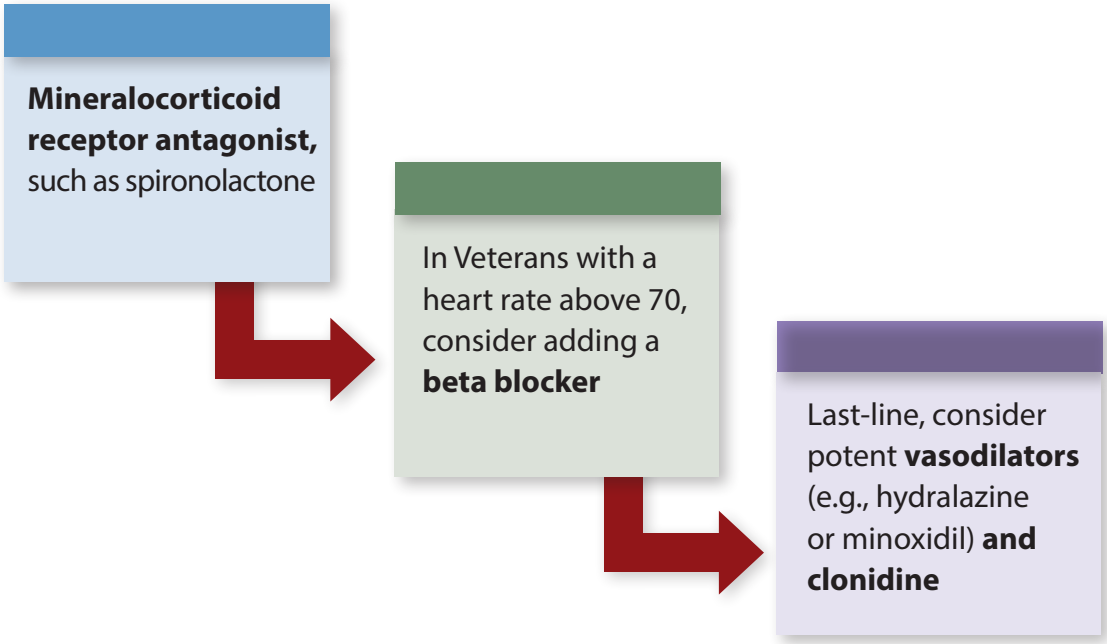


Figure 10. Last-line options for resistant hypertension[45]

HYDRALAZINE

- Safe in pregnancy
- Three times daily dosing
- Side effects: headache, dose-related systemic lupus erythematosus

MINOXIDIL

- Once daily dosing
- Side effects: hypertrichosis/hirsutism, pericardial effusion

CLONIDINE

- Weekly patch available
- Avoid in elderly due to central nervous system side effects
- Side effects: somnolence, bradycardia, dry mouth, bone marrow suppression (rare), hemolytic anemia (rare), liver disorders (rare)

TIP Consider using with a diuretic and BB to reduce edema and reflex tachycardia if present

Figure 11. Patient case example

- 45-year-old white male with HTN, DM, hyperlipidemia, chronic low back pain, OSA, and PTSD
- Taking 3 anti-hypertensives (ACEI, CCB, thiazide)
- BP in office with medications: 153/92
- After review of labs, increased chlorthalidone to 25 mg and reinforced lifestyle modifications

BP target range < 130/90

New BP in clinic was 147/85

- Current medications:
  - Lisinopril 40 mg daily
  - Amlodipine 10 mg daily
  - Chlorthalidone 25 mg daily
- Decreased eating out from 3 days/week to 2 days/week and stopped adding extra salt to food
- Started mindfulness with Whole Health coach
- Cut back on alcohol intake

- Considered BP measurement technique in clinic
- Assessed medication adherence and timing of last dose
- Discussed adjusting regimen to include a combination therapy to reduce pill burden
- Assessed for secondary causes of HTN

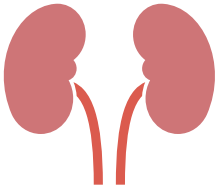
Add spironolactone 12.5 mg daily

OSA: obstructive sleep apnea; PTSD: post traumatic stress disorder

Individualizing treatment in select populations

Consider patient-specific factors when creating a hypertension management plan. Use a shared decision-making approach to individualize the treatment plan and establish a clinically appropriate blood pressure goal based on risks and benefits given the patient's comorbidities.

Hypertension management in chronic kidney disease (CKD)



There is variability among hypertension guidelines on the ideal blood pressure goal for patients with chronic kidney disease (Table 2). The Kidney Disease Improving Global Outcomes (KDIGO) guideline has the most stringent goals for systolic blood pressure control in patients with CKD who are not on dialysis.[8]

A post-hoc analysis in the SPRINT CKD cohort demonstrated:[12]

- Intensive blood pressure management (SBP <120) significantly reduced adverse cardiovascular events* and all-cause mortality in patients with mild-to-moderate CKD (baseline eGFR 47.9 ml/min).
- This benefit was also seen in patients with lower baseline diastolic blood pressure.

There is insufficient high quality clinical evidence to recommend a specific blood pressure target that applies to ***all*** patients with CKD.[48] More intensive blood pressure goals may reduce cardiovascular risk, but evidence is lacking regarding prevention of kidney disease progression in patients with CKD.[3]

In patients with CKD, consider intensive blood pressure management along with individualized risk versus benefit and patient preference.[4,8,48] For kidney transplant patients, use a goal of < 130/80.[8]

What about my patients on dialysis?

Due to the lack of quality evidence to inform recommendations for the management of many of the blood pressure and volume complications in patients on dialysis, few strong recommendations exist. An individualized approach to blood pressure management should be considered.[49]

*SPRINT trial primary cardiovascular outcome: composite of nonfatal myocardial infarction, other acute coronary syndromes, nonfatal stroke, nonfatal acute decompensated congestive heart failure, and cardiovascular death.

Pharmacotherapy considerations in CKD[3,8,48]

The evidence for benefit of using RASI to slow the progression of kidney disease is limited to patients with moderately or severely elevated urine albumin excretion (urine albumin-to-creatinine ratio > 30 mg/g).[3]

Non-dialysis

ACEI/ARB

Kidney transplant

CCB or ARB

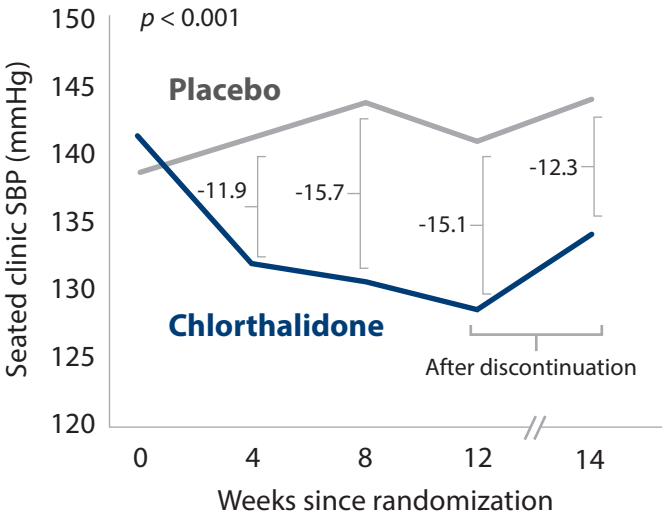
Monitoring

- ☑ Avoid any combo RASI (e.g., ACEI + ARB, ACEI/ARB + aliskiren)
- ☑ Recheck BMP within 2-4 weeks of initiation/dose changes
  - Avoid high potassium diet/caution with potassium-rich salt substitutes in CKD due to risk of hyperkalemia
  - Stop RASI if SCr rises by > 30% within 4 weeks of initiation or dose changes
  - Discontinue RASI if symptomatic hypotension or uncontrolled hyperkalemia despite medical treatment

BMP: basic metabolic panel; SCr: serum creatinine

In patients with CKD + albuminuria, initiate ACEI or ARB as preferred first-line treatment for hypertension.

Figure 12. Chlorthalidone reduces blood pressure and albuminuria in advanced CKD (eGFR < 30 mL/min)[50]



It was previously hypothesized that thiazide diuretics would be ineffective for BP management in patients with an eGFR of < 30 mL/min; however, this has been dispelled by a recent study. **Consider chlorthalidone in patients with CKD who are not optimized on first-line pharmacotherapy.[50]**

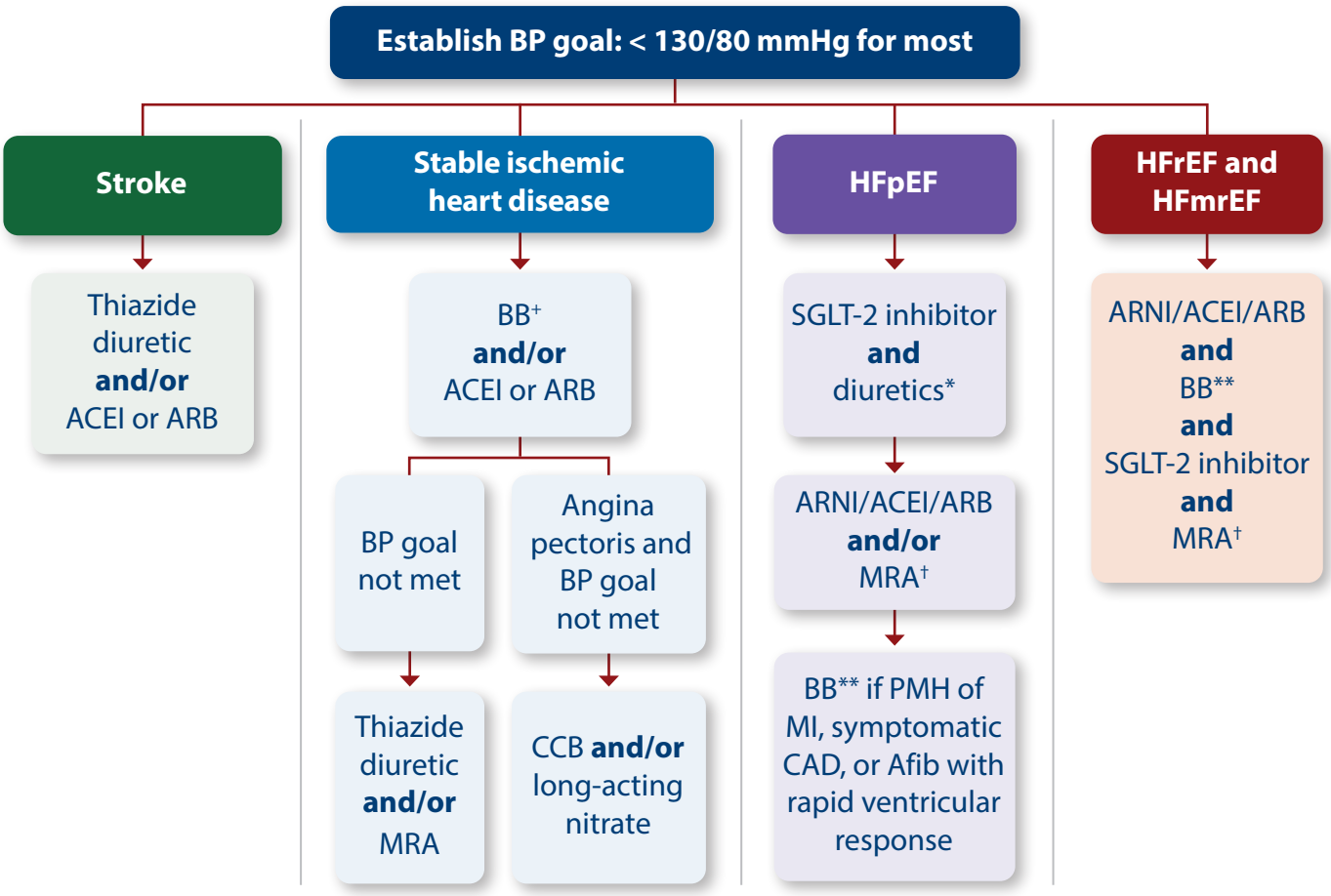
To minimize risk of side effects,[51] monitor BMP and start with a low dose of chlorthalidone (12.5 mg) daily; consider three times a week dosing if on a concomitant loop diuretic.

Chlorthalidone reduced the urinary albumin-to-creatinine ratio compared to placebo (-52% and -4%, respectively at 12 weeks, between group difference of -50%; 95% CI, -60 to -37). Incidence of electrolyte disturbances and increases in serum creatinine level were higher with chlorthalidone versus placebo.

Hypertension management in cardiovascular disease

- Controlling blood pressure can reduce cardiovascular disease complications by 25% and all-cause mortality by 27%.[3]
- Considerations for specific cardiovascular conditions:
  - **History of stroke:** Achieving blood pressure targets is more important than class of medication.[52]
  - **Stable ischemic heart disease (SIHD):** Use beta blockers to prevent angina pectoris, increase exercise time, and prevent coronary events.[53]
  - **Heart failure:** Optimize pharmacotherapy for both heart failure and hypertension.[3,54]

Figure 13. Pharmacotherapy considerations in cardiovascular disease[3,52-55]



+BB: carvedilol, metoprolol tartrate/succinate, bisoprolol, nadolol, propranolol, timolol; *Diuretics are utilized for volume overload not HTN management; **GDMT BB include bisoprolol, carvedilol, and metoprolol succinate; †MRA indicated for HFrEF NYHA class II-IV with CrCl >30 mL/min or SCR < 2.5 mg/dL in males or < 2 mg/dL in females and potassium <5 mEq/L; In HFpEF may be considered to decrease hospitalization for patients with EF >45%, elevated BNP levels or HF admission within 1 year, eGFR >30 mL/min, creatinine <2.5 mg/dL, potassium <5.0 mEq/L.

GDMT: guideline-directed medication therapy; HFmrEF: heart failure with mildy reduced ejection fraction; HFpEF: heart failure with preserved ejection fraction; HFrEF: heart failure with reduced ejection fraction; PMH: past medical history

In patients with CVD, a BP target of < 130/80 is recommended. In patients with HF, follow GDMT.

Hypertension management in diabetes

Diabetes is a major cause of morbidity and mortality in the United States due to increased risk for atherosclerotic cardiovascular disease and progression to chronic kidney disease.

- A 10 mmHg reduction in systolic blood pressure can result in a 12% relative risk reduction of cardiovascular events.[56]
- Utilization of ACEI or ARB has been shown to reduce chronic kidney disease progression.[57]
- For patients with urine albumin-to-creatinine ratio 30-299 mg/g creatinine, the addition of ACEI or ARB has demonstrated reduction in the progression of albuminuria.[57]

Pharmacotherapy considerations in diabetes: preferred first-line therapy[3,5,56]

Diabetes alone	ACEI or ARB, CCB, or thiazide diuretic
Diabetes + CAD	ACEI or ARB
Diabetes + albuminuria (UACR ≥ 30mg/g)	ACEI or ARB

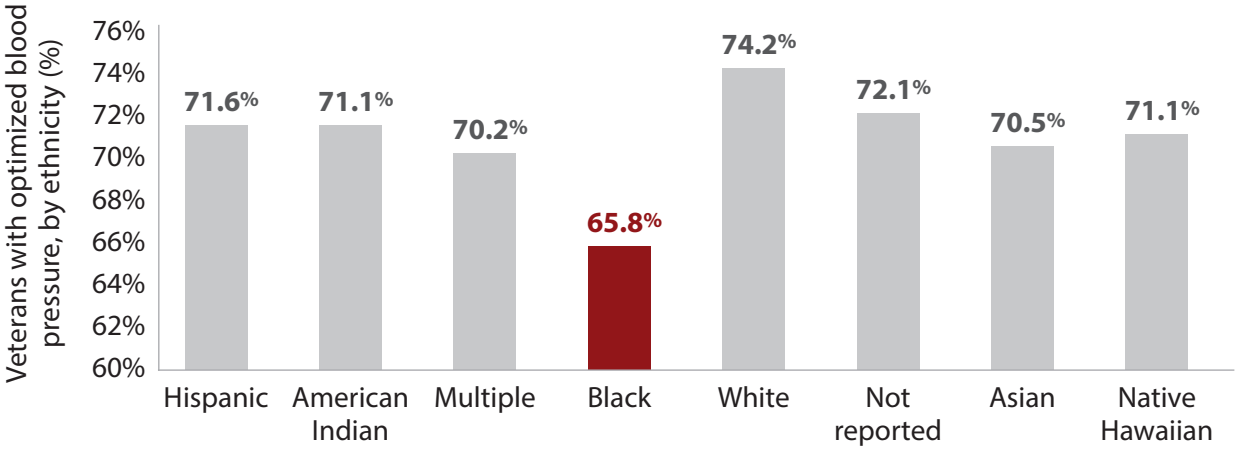
UACR: urine albumin-to-creatinine ratio

Target a systolic blood pressure goal of < 130 in patients with diabetes and utilize an ACEI or ARB with the presence of albuminuria.

Hypertension management in Black patients

In addition to other disease states, patient ethnicity can impact drug selection. Healthcare disparities continue to prevail within the VA population.[58,59]

Figure 14. The Black Veteran population has fewer individuals with optimized blood pressure compared to other ethnicities



Data extracted from the VA Corporate Data Warehouse on 3/17/2022. Numerator patients with hypertension were identified by using ICD-10 & ICD-9 codes in visits and problem lists. Denominator patients were active users of VA healthcare benefits in the last 2 years.

Pharmacotherapy considerations in Black patients: preferred first-line therapy[3,4]

Black + no comorbidities	CCB or thiazide diuretic
Black + CKD *or* diabetic nephropathy *or* HF	CCB or thiazide diuretic + ACEI or ARB

CLINICAL PEARLS

Recommended first-line antihypertensives in Black patients are dihydropyridine CCBs and thiazide diuretics. ACEIs and ARBs should be avoided as initial therapy unless a compelling indication exists (e.g., heart failure, diabetes, chronic kidney disease).[3,4] If ACEI or ARB therapy is desired for comorbidity management, ARBs are preferred given that incidence of angioedema is lower than that of ACEIs.[3,4] ACEIs are used preferentially in black patients with HFrEF.[55]

Hypertension management in female Veterans

Managing hypertension in females of childbearing age can be complicated, as many of our first-line pharmacotherapy options are contraindicated in pregnancy, and hypertension is defined differently in pregnancy. Individualizing therapy to the patient's age and conception desires/plans is important when defining goals of care.

Figure 15. Key considerations when starting antihypertensives in women of childbearing age[60,61,*]

Key things to assess in females of childbearing age*

Ask about pregnancy prior to prescribing new antihypertensive medications. Ask:

- *"Do you have a known or suspected pregnancy?"*
- *"Are you considering pregnancy in the near future?"*
- *"When was your last menstrual period?"*

Medications to avoid if potential for pregnancy is noted

- ACEIs
- ARBs
- aliskerin
- MRAs

*Childbearing age = commonly defined as 18-52 years old. It is important to take into consideration menstrual stage.

Definitions of hypertension in pregnancy[9]

Hypertension in pregnancy

- SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg measured on 2 occasions at least 4 hours apart

Severe-range hypertension

- SBP ≥ 160 mmHg and/or DBP ≥ 110 mmHg measured on 2 occasions at least 4 hours apart

Chronic hypertension

- Hypertension diagnosed/present before pregnancy or before 20 weeks of gestation
- Hypertension diagnosed for the first time during pregnancy that does not resolve in the postpartum period

Chronic hypertension with superimposed preeclampsia

- Preeclampsia in a patient with a history of hypertension before pregnancy or before 20 weeks of gestation

Blood pressure targets in pregnant women with hypertension[5,9]

DM + HTN: < 110-135/85 mmHg[a]

HTN: < 120-159/80-109 mmHg[b]

[a]American Diabetes Association (ADA); [b]American Congress of Obstetricians and Gynecologists (ACOG)

Figure 16. Managing blood pressure during pregnancy[5,9,62-68]

Treat chronic hypertension if SBP > 160 mmHg and/or > 110 mmHg after individual risks versus benefit analysis.*

If a patient with chronic hypertension becomes pregnant, consider changing medications based on individualized maternal and fetal risks.

FIRST-LINE OPTIONS

labetalol
100-2,400 mg/day
in 2-3 divided doses

nifedipine ER
30-120 mg/day
once daily

OTHER OPTIONS

methyldopa
500-3,000 mg/day
in 2-4 divided doses

hydrochlorothiazide
12.5-50 mg/day
once daily

AVOID due to teratogenic potential

- ACEIs
- ARBs
- Renin inhibitors
- MRAs

MONITORING

Blood pressure:
- Maintain SBP 120-160 mmHg
- Maintain DBP 80-110 mmHg

Labs:
- CBC
- Creatinine
- LFTs

Additional vigilance:
- Ultrasound for fetal development
- Proteinuria
- Preeclampsia

*ACOG has one of the higher thresholds for initiation of treatment in pregnancy. Many guidelines recommend treatment with BPs as low as 140/90 mmHg. There is an ongoing trial in the US comparing intensive treatment to traditional treatment, which may impact future decisions. In the meantime, consider lower BP thresholds in patients with risk factors.[69]

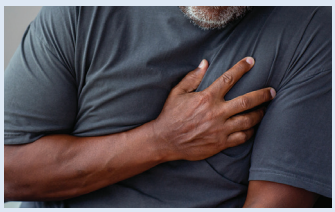
Assess potential for pregnancy at every visit in females of childbearing age. Avoid use of ACEIs, ARBs, and MRAs in patients who are pregnant or may become pregnant.

SGLT-2 inhibitors and benefits in select populations

While SGLT-2 inhibitors are not utilized as antihypertensive agents, there are many benefits of SGLT-2 inhibitors across the special populations discussed in this document. In addition to blood glucose lowering and prevention of cardiovascular and renal complications in patients with diabetes and heart failure, SGLT-2 inhibitors may also have some impact on blood pressure.[70-72]

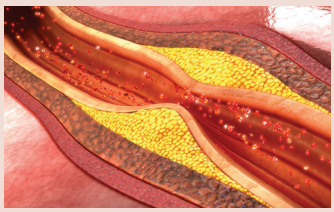
When adding an SGLT-2 inhibitor, blood pressure may decrease over time and other antihypertensive agents may require adjustment.

Figure 17. Comorbidities that may improve with the addition of SGLT-2 inhibitors[70-72]



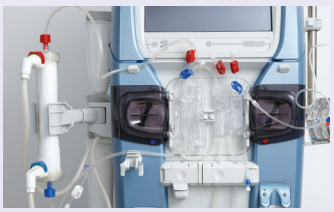
HEART FAILURE

Associated with a reduction in cardiovascular death and heart failure hospitalization in patients with heart failure regardless of ejection fraction



DIABETES AND ASCVD

Associated with prevention of cardiovascular events and a reduction in cardiovascular mortality



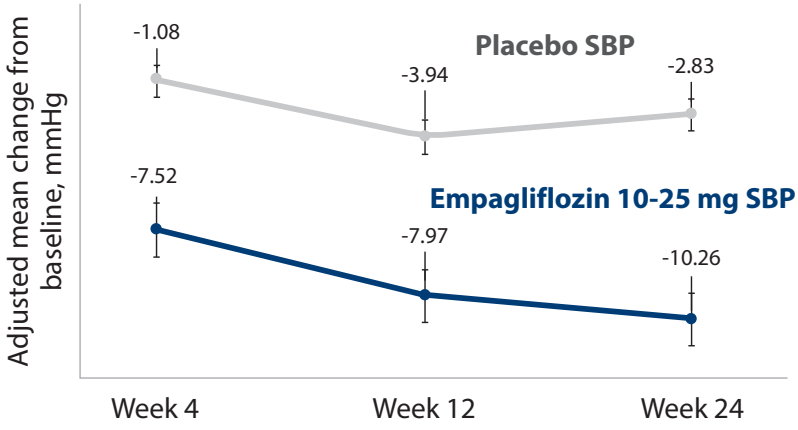
CHRONIC KIDNEY DISEASE

Associated with slower progression of kidney disease and lower rates of clinically relevant renal events

Empagliflozin can reduce blood pressure in Black patients[73]

Figure 18. Empagliflozin reduces blood pressure in Black patients—maximum effects may take up to 6 months[73]

- A recent study revealed that Black patients with diabetes had a reduction in A1c, body weight, and blood pressure when treated with empagliflozin.[73]
- This study also noted that it may take ≥ 6 months for the full antihypertensive effect to be fully realized.[73]



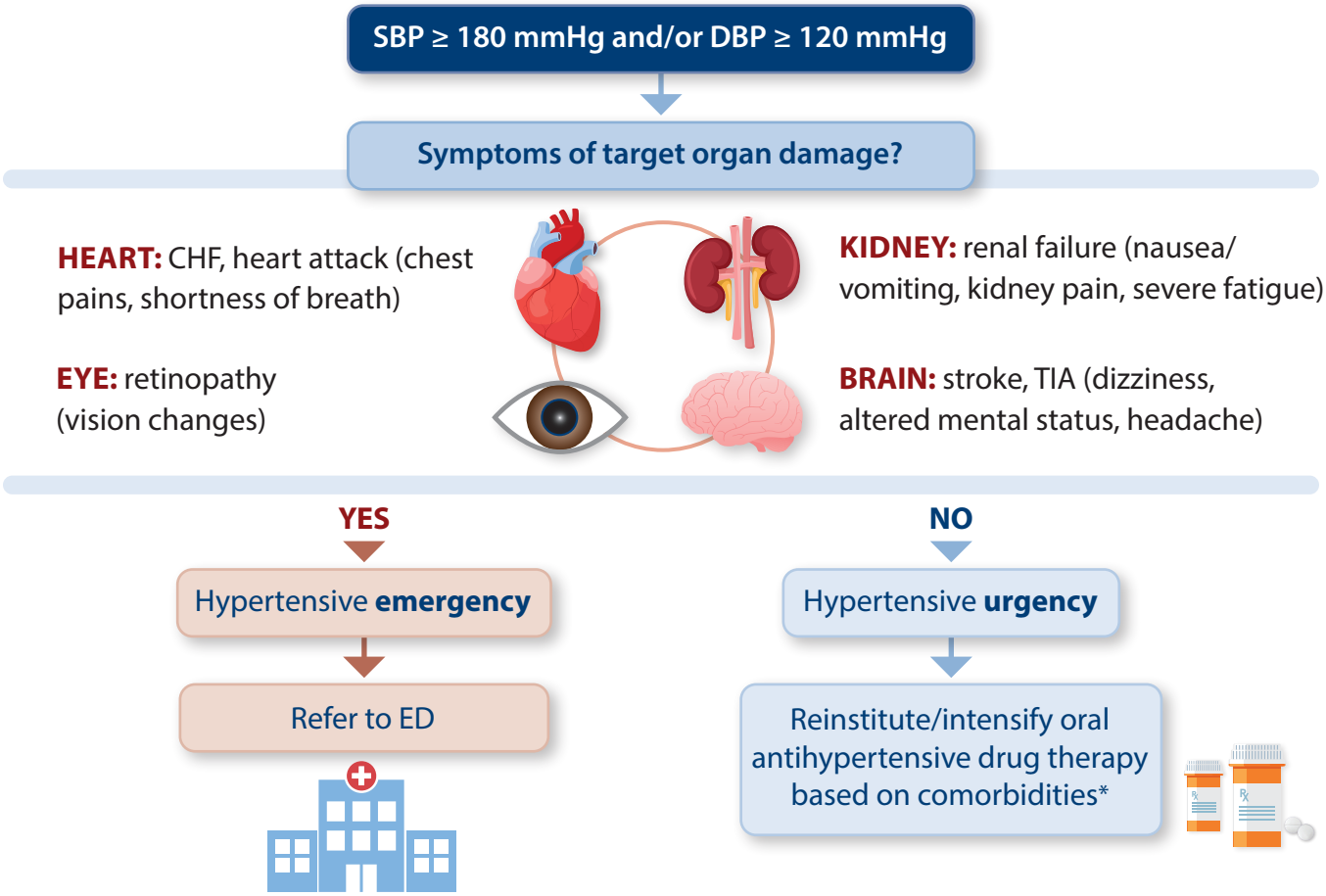
Hypertensive emergency and urgency

Approximately 1-2% of American adults will suffer from a hypertensive crisis, indicated by a markedly elevated blood pressure (≥ 180/120 mmHg).[3,74] Hypertensive crisis is an umbrella term that encompasses hypertensive urgencies and emergencies.[1]

Key points to lowering blood pressure in a hypertensive emergency/urgency:[3,74]

- Avoid lowering BP by more than 25% in the first hour (e.g., SBP 184 mmHg by 25% = 138 mmHg).
- Excessive reduction of BP may cause or contribute to renal, cerebral, or coronary ischemia.

Figure 19: Determining hypertensive urgency versus emergency[3,74]



*See Figure 13 page 13 for recommended antihypertensive drug therapy based on comorbidities.

Recommendations for management of hypertensive urgency is limited. Hypertensive urgency is typically triggered by non-adherence to antihypertensive therapies and anxiety—thus, it is better to focus on therapy adherence. There is no indication for referral to the ED.

Counsel all patients with hypertension to recognize the symptoms of target organ damage and seek emergency treatment immediately if noticed.

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Acknowledgments

THIS GUIDE WAS WRITTEN BY:

Jennifer Bolduc, PharmD
Steffanie Danley, PharmD, BCACP, BCPS
Mindy Guerra, PharmD, BCGP
Amanda Holloway, PharmD
Cain Eric Kirk, PharmD, BCACP
Morgan Moulton, PharmD, BCPS
Alivia Price, PharmD
K. Alexis Pruitt, PharmD, BCPS
Bridget Roop, PharmD
Amee Shah, PharmD
Heather Tanner, PharmD
Raymond Tidwell, PharmD

ACADEMIC DETAILING SERVICE SUPPORT:

Sarah Popish, PharmD, BCPP

WE THANK OUR EXPERT REVIEWERS:

Elaine Furmaga, PharmD
Linda Hemann, MD
Mary Julius, RD
Paul Palevksy, MD
David Parra, PharmD, FCCP, PAHA
Leigh Vasko, PharmD, BCAP

VA

U.S. Department of Veterans Affairs

Veterans Health Administration
PBM Academic Detailing Services

This reference guide was created to be used as a tool for VA providers and is available from the Academic Detailing SharePoint.

These are general recommendations only; specific clinical decisions should be made by the treating provider based on an individual patient's clinical condition.

VA PBM Academic Detailing Services Email Group:
PharmacyAcademicDetailingProgram@va.gov

VA PBM Academic Detailing Services SharePoint Site:
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