



CLINICAL PRACTICE GUIDELINES

HYPERTENSION



VISION

To provide a complete strategy to manage Hypertension/High Blood Pressure in Northeast Nebraska.

GOAL

To provide education, ongoing care with collaboration between primary care providers, and patient care teams to manage hypertension/high blood pressure and its complications.

OVERVIEW

- High blood pressure puts individuals at risk for heart disease and stroke, which are the leading causes of death in the United States.
- Approximately 46% of American adults have high blood pressure.
- About 1 in 3 American adults have prehypertension — blood pressure numbers that are higher than normal — but not yet in the high blood pressure range.
- Only about half (52%) of people with high blood pressure have their condition under control.
- High blood pressure costs the nation almost \$46 billion annually in direct medical expenses and \$3.6 billion in lost productivity.
- White coat hypertension prevalence averages approximately 13% and as high as 35% in some hypertension populations.

Development Team

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Provider-Hospital Organization



DIAGNOSING

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 highest BP category. BP indicates blood pressure (based on an average of at least 2 careful readings obtained on at least 2 occasions); DPP is diastolic blood pressure; SBP is systolic blood pressure.

BP PATTERNS BASED ON OFFICE AND OUT-OF-OFFICE MEASUREMENTS		
	Office/Clinic/ Healthcare Setting	Home/Nonhealth- care/ABPM Setting
Normotensive	No Hypertension	No Hypertension
Sustained Hypertension	Hypertension	Hypertension
Masked Hypertension	No Hypertension	Hypertension
White Coat Hypertension	Hypertension	No Hypertension

ABPM indicates ambulatory blood pressure monitoring; BP is blood pressure

LIFESTYLE MODIFICATIONS

Weight Reduction

Target BMI < 25kg/m²

Diet

Moderate sodium (<2300 mg/day)³, low-fat dairy, rich in fruits/vegetables (DASH). Reinforce importance of healthy diet and refer to dietician as necessary.

Moderate Alcohol Consumption

Limit to one alcoholic beverage (women) or two alcoholic beverages (men) per day.

Smoking Cessation

Aerobic Activity

150 minutes/week

MODIFICATION	RECOMMENDATION	APPROXIMATE SBP REDUCTION RANGE
Weight Reduction	Maintain normal body weight (BMI = 18.5 - 25)	5 - 20 mmHg/ 10 kg weight lost
DASH Eating Plan	Diet rich in fruits, vegetables, low-fat dairy, and reduced in fat	8 - 14 mmHg
Restrict Sodium Intake	< 2.4 grams of sodium per day	2 - 8 mm Hg
Physical Activity	Regular aerobic exercise for at least 30 minutes most days of the week	4 - 10 mm Hg
Moderate Alcohol	≤ 2 drinks/day for men and ≤ 1 drink/day for women	2 - 4 mm Hg

TEAM MEMBERS

The goal of the provider-hospital organization (PHO) is to standardize treatment across our health systems and providers. Clinical Practice Guidelines (CPGs) and resources are developed to implement evidence-based care and best practice standards within our network.

TEAM ROLES

There is an ongoing commitment from the Faith Regional Provider-Hospital Organization (PHO) to develop and implement current evidence-based CPGs. Educating yourself and your patients on these best practice guidelines helps your office.

TEAM RESOURCES

Patient-centered teams work more efficiently and effectively to provide high quality care that is known to improve health outcomes and patient satisfaction.

DISCLAIMER

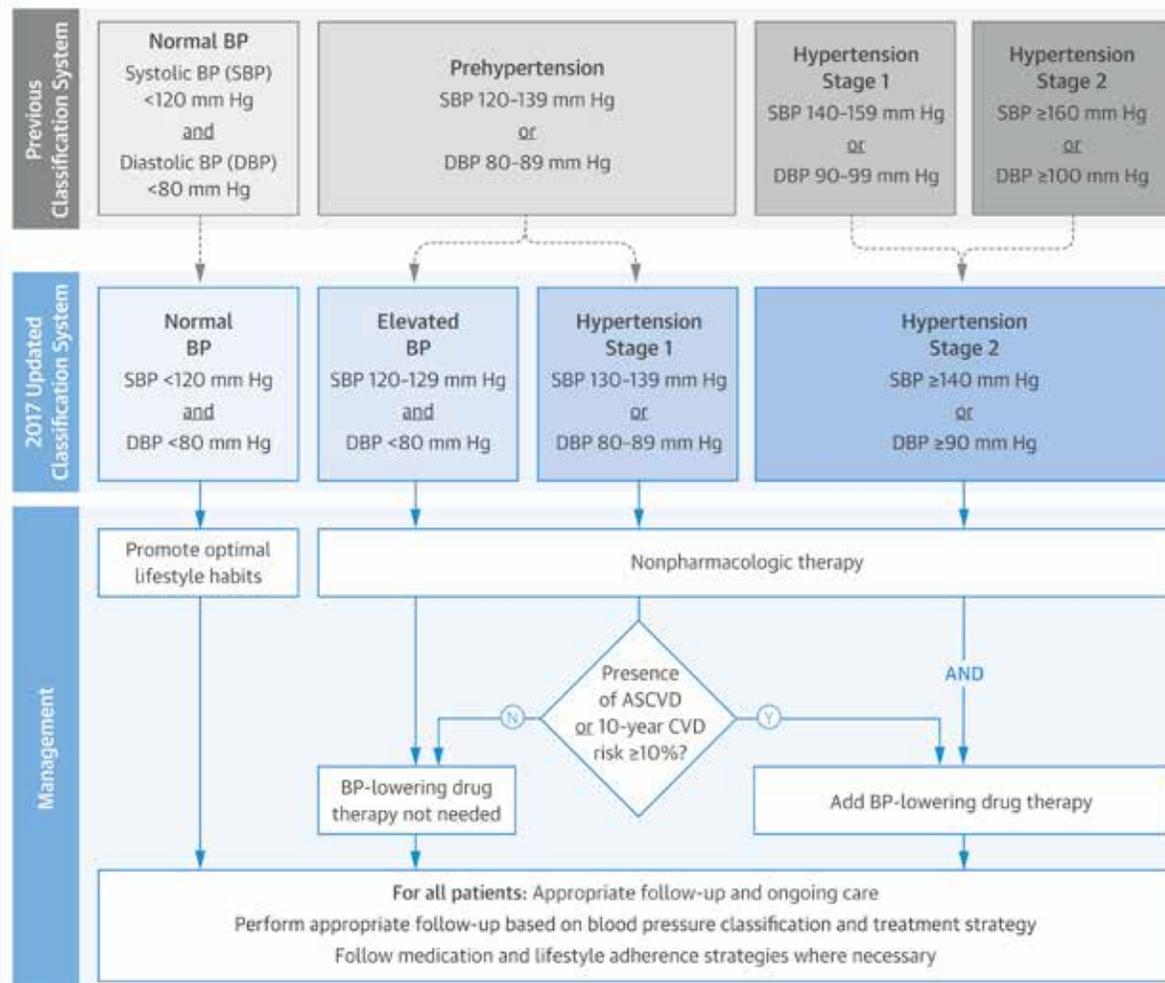
FRHS PHO clinical practice guidelines are developed to assist clinicians by providing an analytical framework for the evaluation and treatment of selected common problems encountered in patients. They are not intended to establish a protocol for all patients with a particular condition. Clinicians must exercise independent judgment and make decisions based upon the situation presented. While great care has been taken to assure the accuracy of the information presented, the reader is advised that FRHS PHO cannot be responsible for continued currency of the information, for any errors or omissions in this guideline, or for any consequences arising from its use. This clinical practice guideline should not be used or reprinted without written consent from the FRHS PHO.

INITIAL LAB AND DIAGNOSTIC WORKUP

Lab and Diagnostic recommendations for goal of managing hypertension and risk factors associated with cardiovascular disease.

Initial Lab and Diagnostic Workup	Significance
BMP	Potassium levels may indicate renal disease and aldosterone excess Serum Creatinine and BUN levels may indicate kidney disease.
Fasting glucose	Identifies glucose intolerance or diabetes, consider further testing as necessary.
Lipids	Abnormal LDL/HDL levels are associated with an increased risk of cardiovascular disease.
Hemoglobin/Hematocrit	Can identify issues beyond CVD, including sickle cell anemia and CKD.
Liver function tests	Consider for medication side effects; identifies fatty liver disorder in obese patients.
Urinalysis	Albuminuria may be indicative of kidney disease; red/white cells may identify potential urinary tract conditions.
EKG	Assists in identifying previous myocardial infarctions, ventricular hypertrophy, and arrhythmias.
TSH	Add in specific situations, e.g. elevated BMI or concern for thyroid disease.

CENTRAL ILLUSTRATION: 2017 Updated Classification and Management of High Blood Pressure in Adults



FIRST-LINE DRUG TREATMENT

General nonblack population, including those with diabetes:

Thiazide-type diuretic, calcium channel blocker (CCB), angiotension-converting enzyme inhibitor (ACEI), angiotensin receptor antagonist (ARB)

General black population, including those with diabetes:

Thiazide-type diuretic or CCB

Age ≥ 18 years with chronic kidney disease (CKD):

ACEI or ARB

FRHS PHO ANTIHYPERTENSIVE PREFERRED DRUG LIST

Antihypertensive Medication		Usual Dosage Range (Hypertnsion)	Pricing
Thiazide-type Diuretics	Chlorthalidone	12.5-25mg daily	\$\$\$
	Hydrochlorothiazide (HCTZ)	12.5-25mg daily	\$
	Indapamide	1.25-5mg daily	\$\$
Aldosterone Antagonist	Spironolactone	50-100mg/daily, in 1-2 divided doses	\$\$
	Eplerenone	50-100mg/daily, in 1-2 divided doses	\$\$\$\$
Diuretic Combinations	HCTZ/Triamterene	25/37.5mg, 1-2 tabs daily	\$\$
	Sprinolactone/HCTZ	25/25mg, 1-4 tabs daily, in 1-2 divided doses	\$\$\$
Angiotensin Converting Enzyme Inhibitors (ACE)	Lisinopril	10-40 mg daily	\$
	Enalapril	10-40mg daily, in 1-2 divided doses	\$
	Benazepril	10-80mg daily	\$
ACEI/Thiazide-type Diuretic Combinations	Lisinopril/HCTZ	20/25mg, 1/2-2 tabs daily	\$\$
	Enalapril/HCTZ	10/25mg, 1/2-2 tabs daily	\$\$
	Benazepril/HCTZ	10/12.5mg, 1/2-2 tabs daily	\$\$
Angiotensin II Receptor Blockers (ARB)	Losartan	25-100mg daily	\$
	Irbesartan	150-300 mg daily	\$
	Valsartan	80-320mg daily	\$
ARB/Thiazide-type Diuretic Combinations	Losartan/HCTZ	50/12.5mg, 1-2 tabs daily	\$\$
	Irbesartan/HCTZ	150/12.5mg, 1-2 tabs daily	\$\$
	Valsartan/HCTZ	160/12.5mg, 1-2 tabs daily	\$\$
Calcium Channel Blocker (Long Acting Dihydropyridine)	Amlodipine	2.5-10mg daily	\$
	Nifedipine (long Acting)	30-90mg daily	\$\$
CCB/ACEI Combinations	Amlodipine/Benazepril	5/10mg, 1/2-2 tabs daily	\$\$
Beta-Blockers (BB)	Atenolol	25-100mg daily	\$
	Bisoprolol	5-20mg daily	\$
	Carvedilol IR	6.25-25mg twice daily	\$
	Labetalol	200-400mg twice daily	\$\$
	Metoprolol	100-450mg daily, in 1-2 divided doses	\$
	Metoprolol XR	25-400mg daily	\$\$
	Nadolol	40-80mg daily	\$\$\$\$
	Propranolol IR	160-480mg daily, in 2-3 divided doses	\$

ANTIHYPERTENSION MEDICATION	LAB MONITORING	FREQUENCY
ACEI or ARB	Potassium and Creatinine	Before initial therapy and within 1 - 2 weeks of initiation or dose increase and annually
Diuretic and/or Aldosterone Antagonist	Potassium and Creatinine	Before initiating therapy and within 1 - 2 weeks of dose increase and annually
	Sodium	Before initiating and consider at time periods above
Beta-Blockers and/or CCBs	No routine lab monitoring	Not applicable.

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PT EDUCATION FOR HYPERTENSION

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