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## **Template: Developing Nurse Standardized Procedure for Blood Pressure Management**

Clinical Protocol: Nurse Co-management in Uncomplicated Hypertension

Effective date:

Policy & Procedure:

Revision date:

Last reviewed:

### **Policy**

It is the policy of \_\_\_\_\_ Health Center to allow qualified RNs to co-manage patients ages 18 years and older with uncomplicated hypertension<sup>1</sup>.

#### I. Procedure

A. Functions the RN may perform: collect subjective data (patient history), collect objective data (perform physical examinations), assess patient status, order and identify abnormal labs, develop and implement treatment and educational plan of care

B. Scope: under the following circumstances the RN may perform function

1. Setting – within the clinic site
2. Supervision – the RN may operate independently within the constraints and criteria of this policy in partnership with mentoring physician(s) and the designated primary care physician to provide care under the protocol.
3. Patient criteria:
  - a. Patient has a designated primary care provider.
  - b. The primary care physician has diagnosed the patient with Stage 1 or Stage 2 hypertension.
  - c. The patient does not have the following co-morbidities: Stage 4 Chronic Kidney Disease, congestive heart failure or pregnancy.
  - d. The patient's baseline labs are within normal limits (CBC, Cr, K, Na, Calcium (or CMP); U/A)
  - d. The nurse has introduce her/himself utilizing correct title and explain role and the patient accepts RN co-management.

C. Definitions:

<sup>1</sup>Uncomplicated hypertension - systolic / diastolic blood pressure > 139/79 patients age 18-60 or patients with diabetes at any age; patients >60 years with new elevation of >149/89.

Resistant hypertension – asymptomatic patient who has not reached target goals for BP control.

Prehypertension – systolic blood pressure (SBP) 120-139 mm Hg or diastolic blood pressure (DBP) of 80-89 mm Hg.

Stage 1 hypertension - systolic blood pressure (SBP) ranging from 140 to 159 mm Hg or a diastolic blood pressure (DBP) ranging from 90 to 99 mm Hg.

Stage 2 hypertension - SBP  $\geq$ 160 mm Hg or DBP  $\geq$ 100 mm Hg.

Controlled blood pressure – Age <60 = BP<139/89; with diabetes = BP<139/89; Age  $\geq$ 60 and does not have diabetes  $\leq$ 149/89.



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Stage 4 Chronic Kidney Disease – calculated glomerular filtration rate (eGFR) < 30 mls/min/1.73m<sup>2</sup>

Champion – primary care mentoring physician

#### D. Procedure for Nurse Practice

##### 1. Subjective assessment

- Review relevant health history reported by the patient &/or documented in the EMR.
- Conducted review of systems for complaints consistent with symptomatic hypotension (dizziness, syncope) and medication side effects (dizziness, persistent dry cough, fatigue, headache, or edema).
- Review adherence with medications and lifestyle modifications.

##### 2. Objective assessment

- Check self-monitored blood pressure trends (average systolic and diastolic readings)
- Measure blood pressure sitting; assess standing if systolic < 110 or systolic is higher than target and patient ≥ 70 years old
- Lab review to identify abnormal values:
  - Sodium < 135 mEq/L
  - Potassium > 5.5 mEq/L or < 3.5 on no diuretic treatment
  - Creatinine not > 1.5 (eGFR not < 40) or 10% increase in creatinine
- Baseline EKG

##### 3. Assessment – Stage 1 or Stage 2 hypertension;

##### 4. Plan

- Base treatment on patient's lowest BP in clinic
  - either sitting or standing for patients over 70 years old
    - if sitting BP elevated and patient is greater than 70 years old, standing BP after 2-5 minutes
- Treatment goals = controlled BP without significant symptoms:
  - Age < 60 BP < 139/89;
  - With diabetes BP < 139/89;
  - Age ≥ 60 and does not have diabetes ≤ 149/89.
- Begin on single pill combination pharmacotherapy (see Appendix I); review for contraindications and consult accordingly
- Patient education on self-monitoring blood pressures
  - Nurse orders BP cuff and instructs patient on how to obtain blood pressure measurement
    - Alternatively may refer to pharmacy for instruction
  - Patient reports BP to RN or primary care provider.
- Lifestyle modifications should be addressed at every encounter:
  - Physical activity (30 minutes per day or 150 minutes a week)
  - Weight management (goal < 25 kg/m<sup>2</sup>)
  - Reducing dietary sodium (1.8 to 2.4 gram sodium daily)
  - Limiting alcohol consumption (≤ 1 drink/day for women; ≤ 2 drinks for men)
  - DASH diet (low-fat, calcium, high fruit and vegetable diet)
  - Smoking cessation

##### 5. Patient follow-up



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- Follow up at regular intervals (2-4 weeks) and titrate as needed following clinical algorithm (Appendix I) until at goal, then reassess at 2-3 months and, if at goal, annually
  - Asymptomatic patients with SBP 160 -179 and/or DBP 100-109 → refer to provider for evaluation; do NOT release patient prior to consultation with physician; schedule BP recheck.
  - SBP >180 and /or DBP >100 diastolic → refer to provider for evaluation; do NOT release patient prior to consultation with physician; schedule recheck.
  - $BP \leq 125/75$  and patient is implementing lifestyle changes, consider cutting back on most recently added medications; repeat in 2-4 weeks
  - Symptomatic hypotension or asymptomatic with  $SBP < 100$ : decrease medication dosage back to previous dosage and consult primary care provider; hold medication if new start and notify; recheck BP in one week, if hypotension continues, consult with physician again.
  - Patient reports possible medication side effects – establish onset, severity and influencing factors then consult with physician (Appendix II).
  - Abnormal laboratory results – consult with physician.
6. Record keeping of patient encounters – all patient care (BP, medications, lab work, and education) and verbal or telephone communications with the clinician, or patient/family shall be documented in the EMR.

## II. Requirements for Registered Nurse

### A. Preparation

1. Education/Licensure: nurse must be licensed as Registered Nurse in California and be in good standing with the Board of Registered Nursing (BRN).
2. Experience: a minimum of one year's experience (full-time or 2080 hours) as an RN is required.
3. Training: nurse must successfully complete advanced training on subjective and objective evaluation of patients including assessing mean blood pressure trends, hypertension medications, patient education and implementation of the protocol.
4. Nurse must demonstrate appropriate blood pressure measurement using both manual and automatic blood pressure instruments in both sitting and standing patient positions using appropriate positioning and cuff size (see Appendix IV).

### B. Evaluation

Initial: Nurse must satisfactorily complete training post-test. Three cases must be documented and reviewed with Champion each week for one month; followed by 3 cases per month for 3 months; then 6 cases per year. Nurse must demonstrate appropriate management of patients with hypertension. If primary care provider disagrees with management plan, cases will be reviewed with Champion. Evidence of successful completion will be documented and included in the nurse's personnel file

Ongoing Evaluation: Annual competency evaluations will be conducted documenting the RNs ability to function appropriately under the protocol including clinical knowledge, skills/procedures, appropriate consultation and documentation.



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### C. Supervision and Review

Roles and responsibilities of Registered Nurses working under the protocol:

1. RN must verify that patients have a designated primary care provider and that the patient meets the criteria for standardized procedure.
2. RN will collaborate and work in partnership with individual patient's primary care physician to provide care under the protocol.
3. RN will introduce her/himself utilizing correct title and explain role
4. RN will collect subjective data (patient history), collect objective data (perform physical examinations), assess patient status, order and identify abnormal labs, develop and implement treatment and educational plan of care
5. Documentation - RN will maintain record of patient encounters (in person, group, telephone) patient ID, complaints, assessment of adherence to meds, diet, exercise, BP records (home, clinic), pertinent lab results, plan for med changes, follow-up labs and visits; physician notification if needed

Roles and responsibilities of the Champion & the primary care physician:

1. Champions should be identified for each site and meet with PHASE consultant prior to implementation.
2. The Champion will assure a physician will be available when the nurse consultation or for the physician to see the patient, the patient requests to see the physician, and/or there is an onsite emergency.
3. Primary care physician is responsible for patient management. He/she will be available for consultation and collaboration with RN.
4. The physician will see the patient or review the care of each patient at least once a year and renew the patient specific medication order on an annual basis.

### III. Development and Approval of the Standardized Procedure

A. Method – this procedure was developed using the most current guidance from the Board of Registered Nursing, American Academy of Family Practice and technical references from the PHASE program.

B. Review schedule – the procedure shall be assessed at 3 and 6 months following implementation, and then annually.

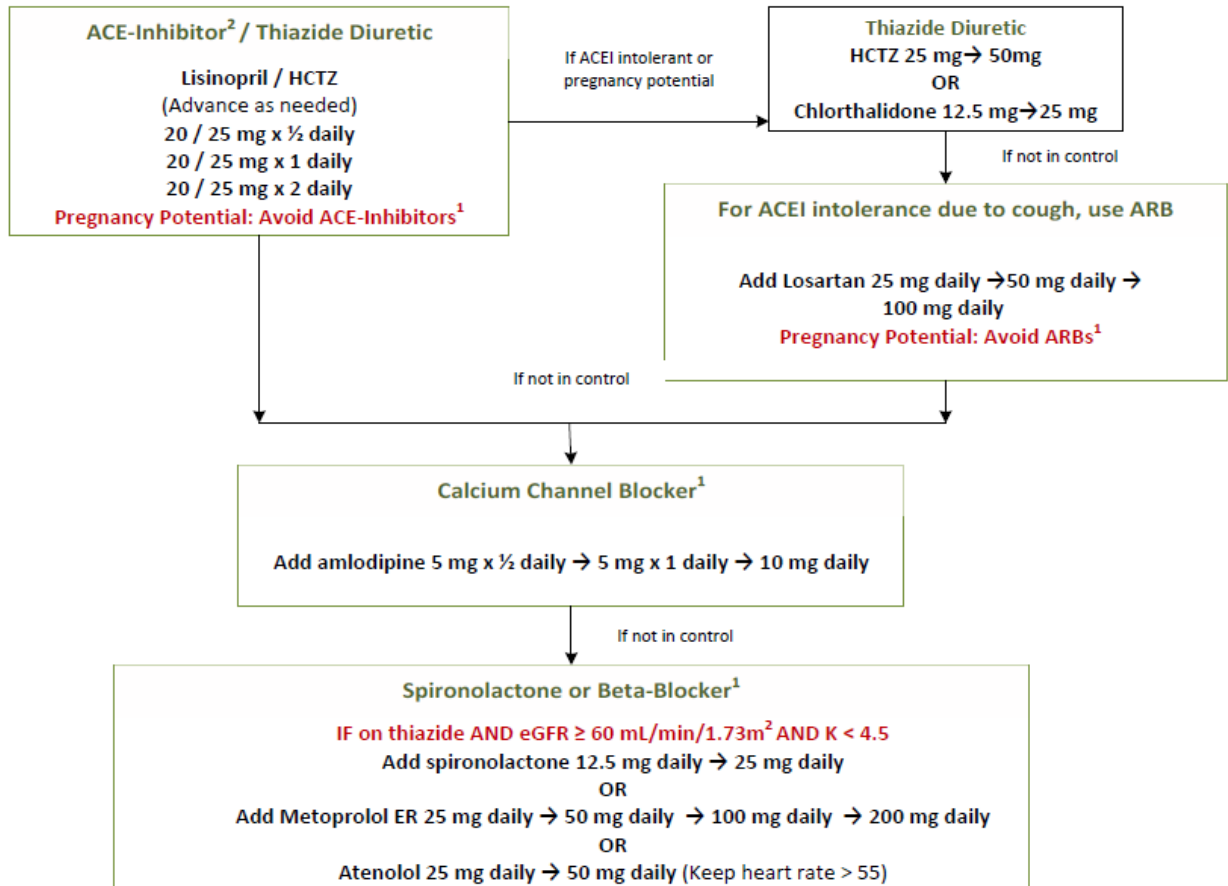


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**Appendix I:**  
**Medication Formulary**

<b>BRAND NAME</b>	<b>Drug class/GENERIC NAME</b>
<b>Microzide, HydroDIURIL</b>	DIURETICS/ Hydrochlorothiazide
<b>Diuril</b>	Chlorthalidone
<b>Aldactone</b>	ALDOSTERONE BLOCKER Spironolactone
<b>Prinivil, Zestril</b>	ANGIOTENSIN CONVERTING ENZYME Inhibitor (ACE-I) Lisinopril
<b>Capoten</b>	Captopril
<b>Lotensin</b>	Benazepril
<b>Cozaar</b>	ANGIOTENSIN RECEPTOR BLOCKER (ARB) Losartan
<b>Diovan</b>	Valsartan
<b>Benicar</b>	Olmesartan
<b>Prinzide, Zestoretic</b>	COMBINATION (ACE-I + diuretic) Lisinopril/Hydrochlorothiazide
<b>Lotensin HCT</b>	Benazepril/Hydrochlorothiazide
<b>Capozide</b>	Captopril/Hydrochlorothiazide
<b>Hyzaar</b>	COMBINATION (ARB + diuretic) Losartan/Hydrochlorothiazide
<b>Diovan-HCT</b>	Valsartan/Hydrochlorothiazide
<b>Benicar HCT</b>	Olmesartan medoxomil /hctz
<b>Tenormin</b>	BETA BLOCKER Atenolol
<b>Lopressor, Toprol XL</b>	Metoprolol
<b>Coreg</b>	Carvedilol
<b>Norvasc</b>	CALCIUM CHANNEL BLOCKER Amlodipine
<b>Calan, Isoptin, Covera HS, Verelan</b>	Verapamil
<b>Cardizem, Dilacor XR, Tiazac</b>	Diltiazem

## Medication Algorithm



## Appendix II:

### Medication Contraindications

Ace inhibitors (lisinopril) or ARB's (losartan)

- Absolute: angioedema (due to ACE inhibitor)

Relative contraindications: prior allergic reaction, orthostatic hypotension

### Medication Side Effects

- General: dizziness, hypotension, rash, headache, nausea
- Medication specific:
  - Diuretics: Hydrochlorothiazide / Chlorthalidone
    - hypokalemia, hyponatremia, increased urination
  - ACE Inhibitors: Lisinopril
    - angioedema, hyperkalemia, >10% increase in serum Cr, cough
  - Calcium Channel Blockers: Amlodipine
    - Reflex tachycardia, hypotension, peripheral edema, constipation, flushing
  - Spirolactone
  - Beta-Blockers
  - Atenolol: as above, bradycardia, exacerbation of bronchospasm

**Appendix III:**  
Prescription Templates

Lisinopril/Hydrochlorothiazide in medical record under provider approval to transmit prescription change to pharmacy for Lisinopril/Hydrochlorothiazide 20 mg/25 mg tablet, #100, sig: Take 1/2 tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Lisinopril/Hydrochlorothiazide in medical record under provider approval to transmit prescription change to pharmacy for Lisinopril/Hydrochlorothiazide 20 mg/25 mg tablet, #100, sig: Take 1 tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Lisinopril/Hydrochlorothiazide in medical record under provider approval to transmit prescription change to pharmacy for Lisinopril/Hydrochlorothiazide 20 mg/25 mg tablet, #100, sig: Take 2 tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, add ½ tab Amlodipine 5 mg 1 tablet daily = 2.5 mg daily:*

Add in medical record under provider approval to transmit prescription change to pharmacy Amlodipine 5 mg tablet, #50, sig: Take one half tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Amlodipine in medical record under provider approval to transmit prescription change to pharmacy for Amlodipine 5 mg tablet, #100, sig: Take one tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home  
*If BP not at goal in 2-4 weeks, increase dosage:*



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Amlodipine in medical record under provider approval to transmit prescription change to pharmacy for Amlodipine 5 mg tablet, #200, sig: Take two tablets by mouth daily for high blood pressure. Refills: 1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, add:*

Option 1: Metoprolol ER 25mg 1 daily orally = 25 mg daily

Add in medical record under provider approval to transmit prescription change to pharmacy tablets, Metoprolol ER 25mg #100, sig: Take 1 tablet by mouth daily for high blood pressure.

Refills: 1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Add in medical record under provider approval to transmit prescription change to pharmacy tablets, Metoprolol ER 50 mg #100, sig: Take 1 tablet by mouth daily for high blood pressure.

Refills: 1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Add in medical record under provider approval to transmit prescription change to pharmacy tablets, Metoprolol ER 100 mg #100, sig: Take 1 tablet by mouth daily for high blood pressure.

Refills: 1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home

*If BP not at goal in 2-4 weeks, increase dosage:*

Add in medical record under provider approval to transmit prescription change to pharmacy tablets, Metoprolol ER 200 mg #100, sig: Take 1 tablet by mouth daily for high blood pressure.

Refills: 1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home

Option 2: *If BP not at goal in 2-4 weeks, add:*

Add Atenolol 50 mg, 1/2 daily orally = 25 mg daily

Add in medical record under provider approval to transmit prescription change to pharmacy Atenolol 25 mg tablets, #50, sig: Take 1/2 tablet by mouth daily for high blood pressure. Refills:

1

Cosign to PCP

Recheck BP in clinic in 2-4 weeks

Encourage patient BP check daily at home



*If BP not at goal in 2-4 weeks, increase dosage:*

Add in medical record under provider approval to transmit prescription change to pharmacy  
Atenolol 50 mg tablets, #100, sig: Take 1 tablet by mouth daily for high blood pressure. Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

Option 3: *If BP not at goal in 2-4 weeks and on thiazide and eGFR  $\geq$  60mL/min/1.73m<sup>2</sup> and K < 4.5, add spironolactone 25 mg, ½ tablet = 12.5 mg daily:*

Add in medical record under provider approval to transmit prescription change to pharmacy  
tablets, Spironolactone 12.5 mg #50, sig: Take 1/2 tablet by mouth daily for high blood pressure.  
Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks

*If BP not at goal in 2-4 weeks, increase dosage:*

Add in medical record under provider approval to transmit prescription change to pharmacy  
tablets, Spironolactone 25 mg #100, sig: Take 1 tablet by mouth daily for high blood pressure.  
Refills: 1  
Cosign to PCP  
Recheck BP in clinic in 2-4 weeks

If ACEI intolerant or pregnancy potential:

Hydrochlorothiazide in medical record to transmit prescription change to pharmacy for  
Hydrochlorothiazide 25 mg tablet, #200, sig: Take 2 tablets by mouth daily for high blood  
pressure

Or

Switch to Chlorthalidone 25 mg orally daily #100; repeat labs in 2-4 weeks along with BP check  
Recheck BP in clinic in 2-4 weeks  
Encourage patient BP check daily at home

#### **Appendix IV:** Measuring Blood Pressure

Practice Guidelines “American Heart Association Recommendations for Blood Pressure  
Measurement”; Smith, L., *Am Fam Physician*. 2005 Oct 1; 72(7):1391-1398.  
<http://www.aafp.org/afp/2005/1001/p1391.html#>



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## American Heart Association Guidelines for In-Clinic Blood Pressure Measurement

Recommendation	Comments
Patient should be seated comfortably, with back supported, legs uncrossed, and upper arm bared.	<p>Diastolic pressure is higher in the seated position, whereas systolic pressure is higher in the supine position.</p> <p>An unsupported back may increase diastolic pressure; crossing the legs may increase systolic pressure.</p>
Patient's arm should be supported at heart level.	<p>If the upper arm is below the level of the right atrium, the readings will be too high; if the upper arm is above heart level, the readings will be too low.</p> <p>If the arm is unsupported and held up by the patient, pressure will be higher.</p>
Cuff bladder should encircle 80 percent or more of the patient's arm circumference.	An undersized cuff increases errors in measurement.
Mercury column should be deflated at 2 to 3 mm per second.	Deflation rates greater than 2 mm per second can cause the systolic pressure to appear lower and the diastolic pressure to appear higher.
The first and last audible sounds should be recorded as systolic and diastolic pressure, respectively. Measurements should be given to the nearest 2 mm Hg.	
Neither the patient nor the person taking the measurement should talk during the procedure.	Talking during the procedure may cause deviations in the measurement.

Information from Pickering TG, Hall JE, Appel LJ, Falkner BE, Graves J, Hill MN, et al.; Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. Recommendations for blood pressure measurement in humans and experimental animals. Part 1: blood pressure measurement in humans. Hypertension 2005; 45:142–61.

Video: "Blood-Pressure Measurement" Source: Jonathan S. Williams, M.D., M.M.Sc., Stacey M. Brown, M.S., and Paul R. Conlin, M.D.; N Engl J Med 2009; 360:e6; [January 29, 2009](http://www.nejm.org/doi/full/10.1056/NEJMvcm0800157); DOI: 10.1056/NEJMvcm0800157  
<http://www.nejm.org/doi/full/10.1056/NEJMvcm0800157>