

HTN

NUR 142: Linda Mollino

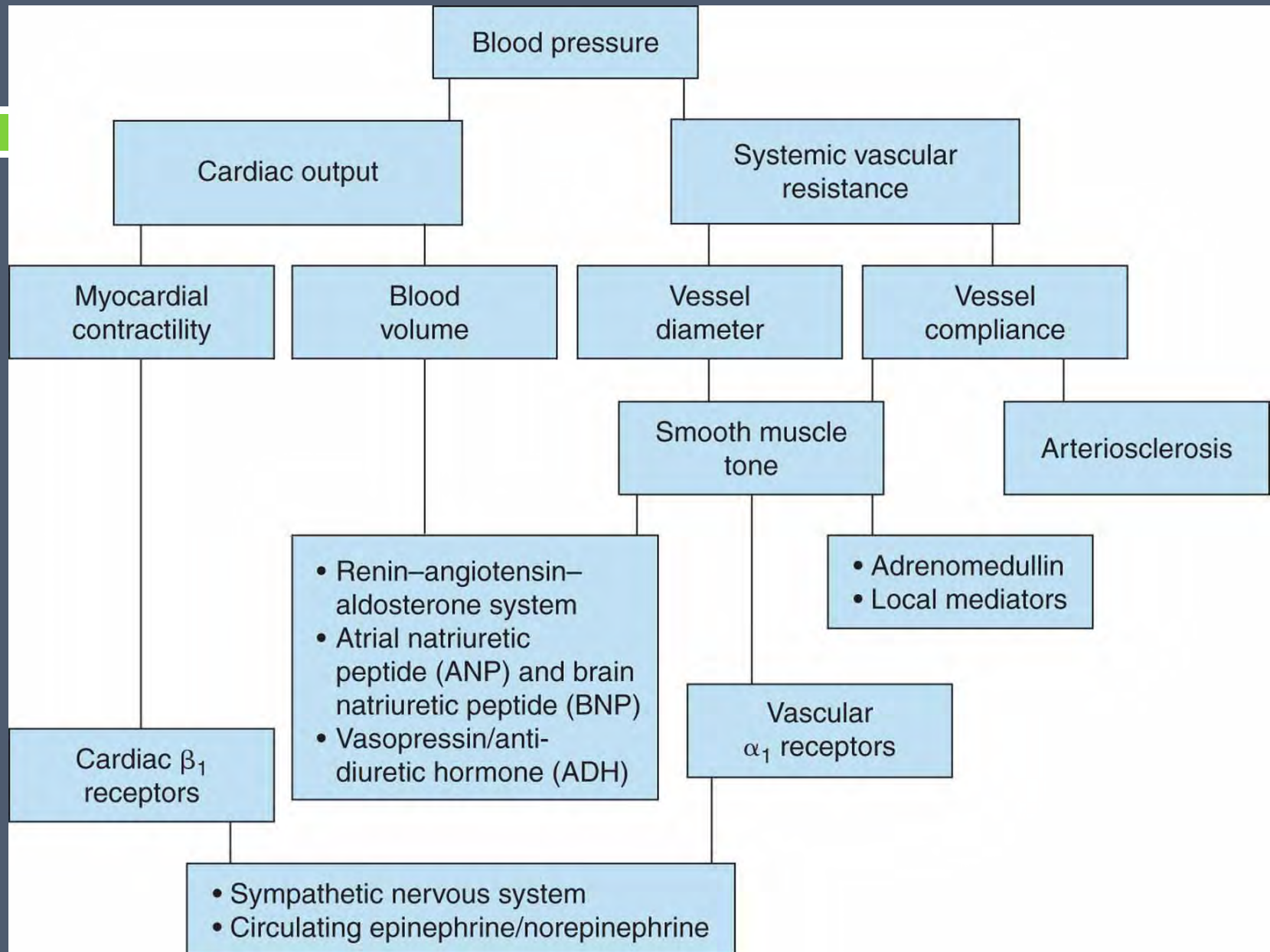
Unit Overview

- This unit will focus on primary and secondary hypertension, including the pathophysiology, clinical manifestations, diagnostic testing and interdisciplinary treatment of this major health concern



Behavioral Objectives

- ❑ Explain the mechanisms involved in the regulation of blood pressure.
- ❑ Discuss the pathophysiology of hypertension.
- ❑ Identify individuals at risk for hypertension.
- ❑ Discuss strategies for the prevention of primary hypertension.
- ❑ List diagnostic tests used to assess target organ damage and determine treatment.
- ❑ Discuss nationally approved treatment recommendations for the management of hypertension.
- ❑ Identify and discuss common classifications of medications used to treat hypertension and nursing implications for patient's taking these medications.



Blood Pressure

- Controlled by
 - Cardiac output
 - Systemic vascular resistance
 - Stimulation of sympathetic nervous system, hormones that control fluid volume
 - Systolic: stroke volume and aortic elasticity
 - Diastolic: energy stored in aorta and resistance of arterioles
 - Pulse pressure: difference between systolic and diastolic pressures

Blood Pressure

- Factors that increase blood pressure:
 - Sympathetic nervous system stimulation
 - Epinephrine and norepinephrine
 - Hormones: angiotensin II and vasopressin,
 - Hormones aldosterone and ADH
 - Promote sodium and water retention

TABLE 32–2 Recommended Blood Pressure Follow-Up

CATEGORY	BLOOD PRESSURE (mmHG)	RECOMMENDED FOLLOW-UP
Normal	< 120/80	Recheck in 2 years
Prehypertension	120–139/80–89	Recheck in 1 year
Stage 1 hypertension	140–159/90–99	Confirm within 2 months
Stage 2 hypertension	≥ 160/≥ 100	Evaluate or refer to care provider within 1 month; for higher pressures (e.g., ≥ 180/≥ 110), evaluate or refer to care provider immediately or within 1 week as indicated

Note: NHLBI. (2004). Adapted from *The Seventh Report of the Joint National Committee on Prevention, Detection, Education, and Treatment of High Blood Pressure*, NIH Publication No. 04-5250, Bethesda, MD: National Institutes of Health. Retrieved from <http://www.nhlbi.nih.gov/guidelines/hypertension>

Primary Hypertension

- Systolic blood pressure of 140 mm Hg or higher
- Diastolic blood pressure of 90 mm Hg or higher

Primary Hypertension

- Three separate readings
- 20 % of Americans
- Only 50% controlled
- African-Americans, Familial, Age
- Primary versus Secondary HTN
- Clinical Manifestations
 - Initially asymptomatic
 - Headache, confusion
 - Nocturia
 - Nausea and vomiting
 - Visual disturbances

Primary Hypertension

□ Risk Factors

- Increased SNS activity
- Increase dietary sodium intake
- Increase body weight
- Increase alcohol intake
- Diabetes Mellitus

□ Complications

- Cardiovascular
- Neurologic
- Renal systems

Risk Factors

- Age
- Ethnicity
- Hereditary
- Excess alcohol consumption
- Smoking
- Obesity
- Sedentary
- Stress
- Diabetics
- Dyslipidemics
- Excess sodium intake
- Insufficient Calcium
- Gender
- Low Socio-Economic Status

BOX 32–1 Factors Contributing to Hypertension

Modifiable Factors

- High sodium intake
- Low potassium, calcium, and magnesium intake
- Obesity
- Excess alcohol consumption
- Insulin resistance

Nonmodifiable Factors

- Genetic factors
- Family history
- Age
- Race

Pathophysiology of Primary HTN

- Increased cardiac output and or persistently increased systemic vascular resistance (SVR)
- H₂O and NA Retention
 - Increased Sodium Intake
- Increased SNS Activity
 - Vasoconstriction, increased HR
- Insulin Resistance and Hyperinsulinemia
 - Stimulate SNS activity

Diagnosis

- ❑ Multiple Readings
- ❑ Real Life & Ambulatory BP Readings
- ❑ BUN & Creatinine
- ❑ Electrolytes
- ❑ U/A
- ❑ EKG
- ❑ Cardiac Dynamics

TABLE 32–1 Classification of Blood Pressure for Adults*

CATEGORY	SYSTOLIC (mmHG)		DIASTOLIC (mmHG)
Normal	< 120	and	< 80
Prehypertension	120–139	or	80–89
Hypertension [‡]			
Stage 1	140–159	or	90–99
Stage 2	≥ 160	or	≥ 100

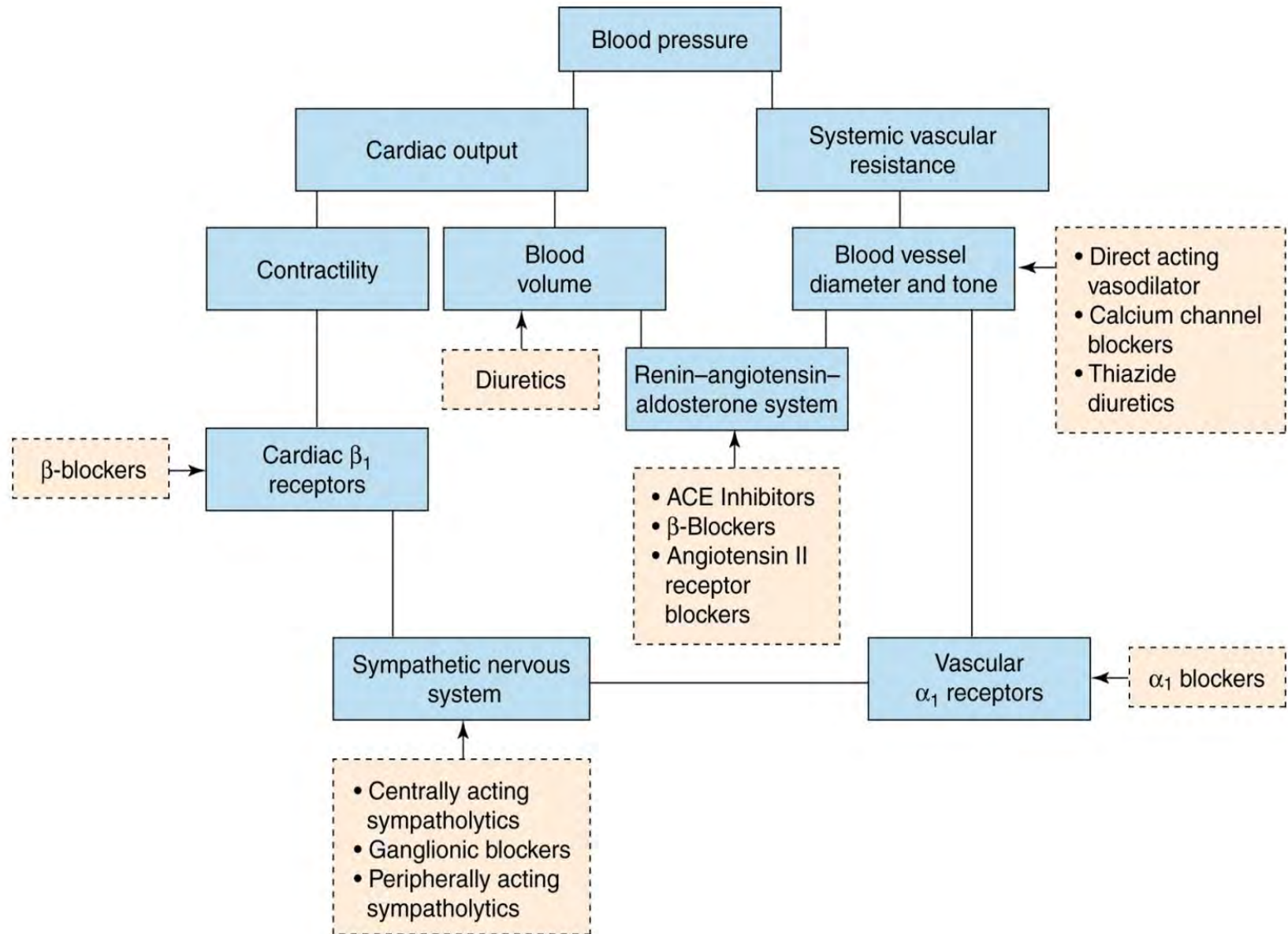
*When systolic and diastolic blood pressures fall into different categories, the higher category is used to classify blood pressure status.

‡Based on the average of two or more readings taken at each of two or more visits after an initial screening.

Note: Adapted from NHLBI. (2004). *The Seventh Report of the Joint National Committee on Prevention, Detection, Education, and Treatment of High Blood Pressure*, NIH Publication No. 04-5250. Bethesda, MD: National Institutes of Health. Retrieved from <http://www.nhlbi.nih.gov/guidelines/hypertension>

HTN: Medication Management

- Management focuses on reducing blood pressure.
- Medications used to treat primary hypertension:
 - Diuretics
 - Beta-adrenergic blockers
 - Central-acting sympatholytics
 - Vasodilators
 - ACE inhibitors
 - Angiotensin II receptor blockers
 - Calcium channel blockers



HYPERTENSION NURSING CARE

D
I
U
R
E
T
I
C

Daily weight

I & **O**

Urine Output

Response of B/P

Electrolytes

Take Pulses

Ischemic Episodes (TIA)

Complications: 4 C's

CAD
CRF
CHF
CVA



Treatment - Hypertension

- Lifestyle modifications to help reduce blood pressure:
 - Weight loss
 - Dietary changes
 - Restricted alcohol use
 - Smoking cessation
 - Increased physical activity
 - Stress reduction

HTN: Nursing Diagnoses

- ▣ Ineffective Health Maintenance
- ▣ Risk for Noncompliance
- ▣ Imbalanced Nutrition
- ▣ Excess Fluid Volume

Secondary Hypertension

- Related to a specific underlying cause
 - Kidney disease
 - Coarctation of the aorta
 - Endocrine disorders
 - Neurologic disorders
 - Drug use
 - Pregnancy

Secondary Hypertension

- ❑ Related to a specific underlying cause
 - Renal Disease (Renal Stenosis)
 - Endocrine disorders
 - Neurologic disorders
 - Drug use
 - Pregnancy induced HTN
- ❑ 5-10% of total cases of Hypertension
- ❑ 80% of HTN in Children
- ❑ Treat the underlying problem

Consequences of HTN

- Silent Killer
- Myocardial Infarction
- Left Ventricular Hypertrophy
- CHF
- Cerebral Vascular Disease
 - Cerebral Vascular Accident
- Peripheral Vascular Disease
 - Accelerated atherosclerosis
- Malignant HTN
- Renal Damage
 - Second leading cause of renal damage
 - Tubule atrophy
 - Glomerular destruction-nephron death
- Retinal Damage
 - Blurred damage
 - Loss of vision

Hypertensive Crisis

- Known as malignant hypertension
- Rapid elevation of blood pressure
- Treatment within 1 hour to prevent complications
- High Diastolic >120
- Person already known to be HTN
- Can be the result of poorly controlled hypertension
- Emergency: potentially fatal
- Possible organ damage if not treated

Hypertensive Crisis

- Sudden discontinuation of medications
- Poorly controlled hypertension
- Those at risk:
 - Woman with HTN during pregnancy
 - Drugs: cocaine and amphetamines
 - Rebound effect from abrupt withdrawal of certain BP meds
- Clinical Manifestations
 - Headache, confusion
 - Papilledema-blurred vision
 - Restlessness
 - Motor and sensory defects

Treatment: Hypertensive Crisis

□ Management of hypertensive crisis:

- IV antihypertensives medications
- Titrating medications to blood pressure readings
- Avoiding rapid blood pressure changes

□ Nursing care

- Continuous blood pressure monitoring
- Avoiding rapid blood pressure changes
- Providing calm reassurance to the client and family

TABLE 32–3 Intravenous Drugs Used to Treat Hypertensive Emergencies

CLASS/DRUG	ONSET	DURATION	NURSING IMPLICATIONS
Vasodilator			
Sodium nitroprusside (Nipride)	seconds	1 to 2 min	■ Effective, easy to titrate ■ May cause nausea, vomiting, muscle twitching, sweating ■ Use with caution in increased intracranial pressure
Nitroglycerin	2 to 5 min	5 to 10 min	■ Used when coronary ischemia accompanies hypertension ■ May cause headache, vomiting ■ Tolerance may develop with prolonged use
Diazoxide (Hyperstat)	1 to 2 min	4 to 24 hr	■ Avoided in patients with coronary artery disease ■ Used with beta-blockers and diuretics ■ Painful if it enters tissues
Fenoldopam (Corlopam)	< 5 min	30 min	■ Use with caution in patients with glaucoma ■ May cause tachycardia, headache, nausea, flushing ■ Do not use concurrently with beta blockers ■ Monitor for heart failure, ischemic heart disease
Hydralazine (Apresoline)	10 to 30 min	2 to 6 hr	■ May be used for hypertension associated with eclampsia ■ Avoided in patients with coronary heart disease ■ May cause tachycardia, flushing, headache, vomiting, angina
Calcium channel blocker			
Nicardipene (Cardene)	5 to 10 min	15 to 30 min; up to 4 hr	■ Use with caution in coronary heart disease ■ Avoid in patients with heart failure ■ May cause tachycardia, headache, flushing, local phlebitis
ACE inhibitor			
Enalaprilat (Vasotec)	15 to 30 min	6 to 12 hr	■ Monitor for hypotension ■ Used in acute left heart failure ■ Avoid in acute myocardial infarction
Adrenergic blockers			
Labetalol (Trandate)	5 to 10 min	3 to 6 hr	■ Avoid in patients with acute heart failure and asthma ■ May cause nausea, vomiting, dizziness ■ Monitor for dyspnea, wheezing, heart block, orthostatic hypotension
Esmolol (Brevibloc)	1 to 2 min	10 to 30 min	■ Avoided in patients with heart failure and asthma ■ May cause nausea ■ Monitor for hypotension, dyspnea, wheezing, heart failure, first degree heart block
Phentolamine (Regitine)	1 to 2 min	10 to 30 min	■ May cause tachycardia, flushing, headache

Patient Education

- Assess lifestyles and identify other CV risk factors or other medical conditions that may affect treatment
- Identify Causes of HTN
- Assess for presence of target organ damage and CV disease
- Goal of Treatment
 - Decrease CV and Renal Morbidity and Mortality
 - Achieving systolic BP goal

Primary Hypertension

- Education regarding risk factors and methods to prevent the development of primary hypertension
 - Aging
 - Race
 - Family history of hypertension
 - High sodium intake
 - Low potassium, calcium, magnesium intake
 - Obesity
 - Insulin resistance
 - Excess alcohol consumption
 - Stress

Treatment Options

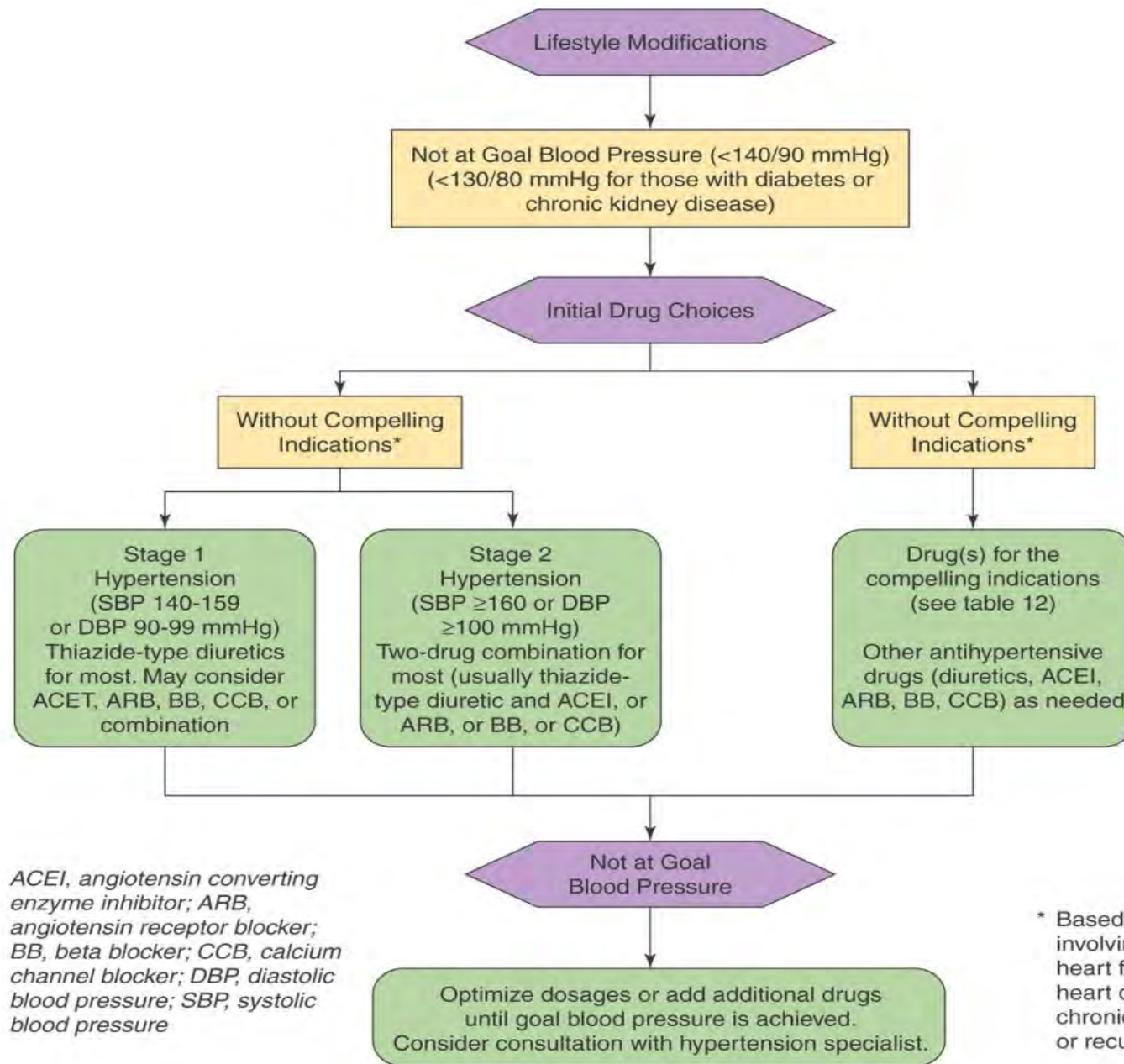
□ Life Style

Modifications:

- Nutritional Therapy
- Smoking Cessation
- ETOH Limitation
- Promote Exercise
- Stress

□ Medications:

- Diuretics
- ACE
Inhibitors/Blockers
- Alpha Blockers
- Beta Blockers
- Calcium Channel
Blockers



ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta blocker; CCB, calcium channel blocker; DBP, diastolic blood pressure; SBP, systolic blood pressure

* Based on clinical trials involving clients with heart failure, coronary heart disease, diabetes, chronic kidney disease, or recurrent stroke risk.

Nursing Interventions

- Screening- be suspicious, take careful readings
- Patient Education- prevention, lifestyle, meds, complications
- Patient Advocacy- obtaining meds
- Education
 - Lifestyle Modifications
 - Weight reduction
 - Alcohol: no more than 1-2 drinks per day
 - Physical Activity: 30-45 minutes of aerobic activity on most days
 - Dietary: DASH diet-diet rich in low fat milk, cheese and yogurt, fruits and vegetables and low in fat and sodium