

# Hypertension

MSN  
Chapter 36

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- ## Hypertension
- As BP increases, so does the risk of
    - MI
    - Heart failure
    - Stroke
    - Renal disease
    - Vision loss
  - Affects about 45% of adults in the United States
  - Of the 108 million of adults in the United States with hypertension
    - 71% do not have their BP under control
    - 49% of those with uncontrolled BP are not undergoing treatment

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- ## Promoting Health Equity
- African American
    - Highest prevalence in the world
    - More likely to have resistant hypertension
    - Develop HTN at a younger age compared to other ethnicities
    - HTN more aggressive with more end-organ damage
    - Highest death rate related to HTN
  - Hispanics
    - Less likely to receive treatment for HTN
    - Lowest rates of BP control
    - Lowest levels of awareness related to HTN and its treatment
  - Women
    - 2-3 more times common in those who take oral contraceptives
    - Preeclampsia may be an early sign of CVD
    - HTN harder to control in older women (ages 70-79)

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**TABLE 1**  
**Categories of Blood Pressure (BP) in Adults\***

BP Category	Systolic Blood Pressure (SBP)		Diastolic Blood Pressure (DBP)
<b>Normal</b>	<120 mm Hg	and	<80 mm Hg
<b>Elevated</b>	120-129 mm Hg	and	<80 mm Hg
<b>Hypertension</b>			
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 two categories should be designated to the higher BP category. Blood pressure is based on an average of ≥2 careful readings obtained on ≥2 occasions.

Table 6. 2017 ACC/AHA Guideline on High Blood Pressure.

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Etiology of Hypertension

- Primary hypertension
  - 90% to 95% of all cases
  - Exact cause unknown but several contributing factors

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Etiology of Hypertension

- Secondary hypertension
  - 5% to 10% of adult cases
  - Clinical findings relate to underlying cause
  - Treatment aimed at removing or treating cause

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### Factors Influencing BP

$$\text{Blood Pressure} = \text{Cardiac Output} \times \text{Systemic Vascular Resistance}$$

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### Genetic Link

- Water and Sodium Retention
- Altered Renin-Angiotensin-Aldosterone Mechanism
- Stress and Increased Sympathetic Nervous System (SNS) Activity
- Insulin Resistance and Hyperinsulinemia
- Endothelial Dysfunction

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### Risk Factors

- Modifiable Risk Factors
  - Alcohol use
  - Tobacco use
  - Diabetes
  - Elevated serum lipids
  - Excess dietary sodium
  - Obesity
  - Sedentary lifestyle
  - Stress
- Non-Modifiable Risk Factors
  - Socioeconomic status

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### Clinical Manifestations

- "Silent killer"
- Symptoms of severe hypertension
  - Fatigue
  - Dizziness
  - Palpitations
  - Angina
  - Dyspnea

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### Complications

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- Peripheral Vascular Disease
- Nephrosclerosis
- Retinal Damage

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### Diagnostic studies

- Basic lab studies are performed to identify or rule out:
  - Causes of Secondary Hypertension
- Evaluate Target Organ Disease
- Determine Overall Cardiovascular Risk
- Establish Baseline Levels before Initiating Therapy

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### Diagnostic Studies

- Measurement of BP
- Urinalysis
- BUN and serum creatinine
- Creatinine clearance
- Serum electrolytes, glucose
- Serum lipid profile
- Uric acid levels
- ECG
- Echocardiogram

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### Diagnostic Studies

- Ambulatory blood pressure monitoring (ABPM)
  - Noninvasive, fully automated system that measures BP at preset intervals over a 12 to 24-hour period
  - Teach patient to hold arm still and keep diary
  - Many applications for use

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### Interprofessional Care and management

- Lifestyle Modifications
- Weight loss
- Nutrition and Diet
  - Plant-based and Mediterranean diets
  - DASH Eating Plan
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- Dietary Sodium Reduction

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### Interprofessional Care and management

- Moderation of Alcohol Intake
- Physical Activity
- Avoidance of Tobacco Products
- Other Risk Factors

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### Interprofessional Care and management

- Drug Therapy
  - The main 2 actions of current drug therapy are to:
    - Decreasing the circulating blood volume
    - Reducing systemic vascular resistance
- Table 36.6 page 687
  - ACE inhibitors (Captopril (Capoten))
  - Angiotensin II Receptor Antagonist (losartan (Cozaar))
  - Beta Blockers (metoprolol (Lopressor))
  - Calcium Channel Blockers (nifedipine (Procardia))

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### Drug Therapy and Patient Teaching

- Follow-up care
- Identify, report, and minimize side effects
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  - 
  - 
  -
- Time of day to take drug

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### Resistant Hypertension

- Failure to reach goal BP in patients taking full doses of an appropriate 3-drug therapy regimen that includes a diuretic. Reasons include:
  - Improper BP measurement
  - Inadequate drug doses
  - Inappropriate drug therapy
  - Poor adherence to drug therapy

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### Gerontologic Considerations

- The incidence of hypertension increases with age.
- Altered absorption, metabolism, and excretion of medications.
- Drop in blood pressure after meals.
- Some NSAIDs can cause loss of BP control and heart failure.

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Action - ↓ Peripheral Vascular Resistance Without:

- • ↑ Cardiac Output
- • ↑ Cardiac Rate
- • ↑ Cardiac Contractility

Effects: Dizziness  
Orthostatic Hypotension  
GI Distress  
Nonproductive Cough  
Headache

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Action - Blocks beta Receptors in The Heart Causing:

- ↓ Heart Rate
- ↓ Force of Contraction
- ↓ Rate of A-V Conduction

Side Effects: Bradycardia  
Lethargy  
GI Disturbance  
CHF  
↓ BP  
Depression

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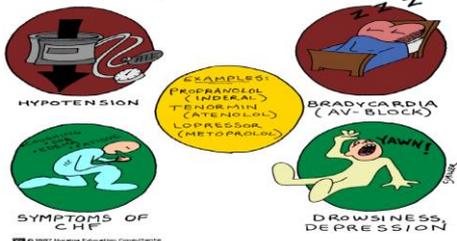
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SIDE EFFECTS OF ADRENERGIC ANTAGONISTS  
**B-BLOCKERS**




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**ANTIHYPERTENSIVES**



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**ANTIHYPERTENSIVE DRUGS**



**ACE INHIBITORS:**

ENDS IN **APRIL**



**B-BLOCKERS:**

ENDS IN **OLE**



**CALCIUM ANTAGONISTS:**



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**ACTION - BLOCKS CALCIUM ACCESS TO CELLS**  
 CAUSING:  
 ↓ CONTRACTILITY + CONDUCTIVITY OF THE **HEART**

↓ DEMAND FOR OXYGEN  
**SIDE EFFECTS:**  
 ↓ BP  
 BRADYCARDIA  
 MAY PRECIPITATE A-V BLOCK  
 HEADACHE  
 ABDOMINAL DISCOMFORT (CONSTIPATION, NAUSEA)  
 PERIPHERAL EDEMA

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### HYPERTENSION NURSING CARE



- Daily weight
- I & O
- Urine Output
- Response of B/P
- Electrolytes
- Take Pulses
- Ischemic Episodes (TIA)
- Complications: 4 C's
  - CAD
  - CHF
  - CVA

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#### NCLEX Question

A patient's BP has not responded consistently to prescribed drugs for hypertension. The **first** cause of this lack of responsiveness the nurse should explore is which of the following?

- a. progressive target organ damage.
- b. the possibility of drug interactions.
- c. the patient not adhering to therapy.
- d. the patient's possible use of recreational drugs.

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Answer: C

Rationale: Side effects of antihypertensive drugs are common and may be so severe or undesirable that the patient does not comply with therapy.

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### NCLEX Question

The nurse takes blood pressures at a health fair. The nurse identifies which person as **most** at risk for developing hypertension?

- A 52-year-old male who smokes and has a parent with hypertension.
- A 30-year-old female advertising agent who is unmarried and lives alone.
- A 68-year-old male who uses herbal remedies to treat an enlarged prostate gland.
- A 43-year-old female who travels extensively for work and exercises only on weekends.

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Answer: A

Rationale: Hypertension is more prevalent in men who are less than 55 years of age. Smoking tobacco greatly increases the risk of cardiovascular disease. A history of a close blood relative (e.g., parents, sibling) with hypertension is associated with an increased risk for developing hypertension. Other risk factors would include increasing age, sedentary lifestyle, and stress.

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### NCLEX Question

The nurse determines that which blood pressure would meet the criteria for a diagnosis of stage 1 hypertension (*select all that apply*)?

- 134/84 mm Hg.
- 138/88 mm Hg.
- 144/92 mm Hg.
- 156/96 mm Hg.
- 182/100 mm Hg.

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Answer: A, B

Rationale: Stage 1 hypertension is diagnosed when the systolic blood pressure is 130-139 mm Hg or the diastolic blood pressure is 80-89 mm Hg.

182/100 meets the criteria for Stage 2.

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NCLEX Question

The nurse determines that the patient has stage 2 hypertension when the patient's average blood pressure is (*select all that apply*)

- a. 120/76 mm Hg.
- b. 155/88 mm Hg.
- c. 132/82 mm Hg.
- d. 128/89 mm Hg.
- e. 182/106 mm Hg.

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Answer: B, E

Rationale: Stage 2 hypertension is diagnosed when systolic blood pressure is greater than or equal to 140 mm Hg or diastolic blood pressure is greater than or equal to 90 mm Hg.

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"In this case, a new high score is not a good thing."

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