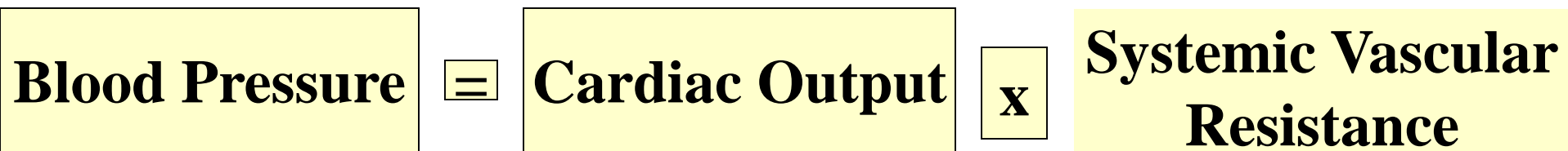




Hypertension

Factors Influencing Blood Pressure



Factors Influencing BP



Hypertension

Definition

Hypertension is sustained elevation of BP □

Systolic blood pressure ≥ 140 mm Hg □

Diastolic blood pressure ≥ 90 mm Hg □

Blood Pressure Classification

BP Classification	SBP mmHg	DBP mmHg
Normal	< 120 and	< 80
Pre-hypertension*	120-139 or	80-89
Stage 1 Hypertension	140-159 or	90-99
Stage 2 Hypertension	≥ 160 or	≥ 100
*newly recognized, requiring lifestyle modifications		

Hypertension

For persons over age 50, SBP is more important than DBP as a CVD risk factor

Starting at 115/75 mmHg, CVD risk doubles with each increment of 20/10 mmHg throughout the BP range

Classification of Hypertension

Primary (Essential) Hypertension □

- Elevated BP with unknown cause
 - 90% to 95% of all cases

Secondary Hypertension □

- Elevated BP with a specific cause
 - 5% to 10% in adults

Classification of Hypertension

Primary Hypertension □

- Contributing factors:
 - ↑ SNS activity
 - Diabetes mellitus
 - ↑ Sodium intake
- Excessive alcohol intake

Classification of Hypertension

- **Secondary Hypertension**
 - Contributing factors:
 - Coarctation of aorta
 - Renal disease
 - Endocrine disorders
 - Neurologic disorders
 - Rx: Treat underlying cause

Risk Factors for Primary Hypertension

Age (> 55 for men; > 65 for women)

Alcohol

Cigarette smoking

Diabetes mellitus

Elevated serum lipids

Excess dietary sodium

Gender

Risk Factors for Primary Hypertension

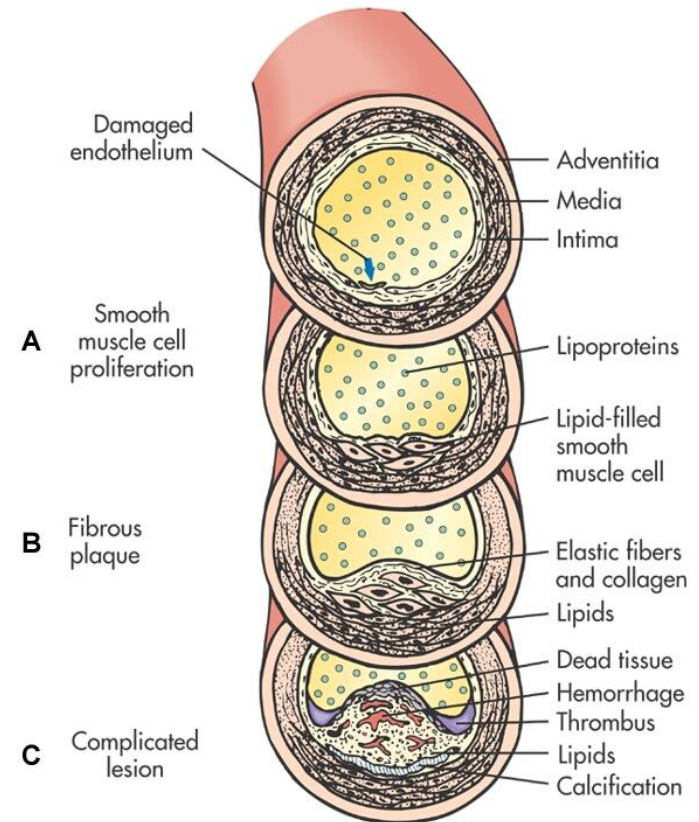
- Family history
- Obesity (BMI \geq 30)
- Ethnicity (African Americans)
- Sedentary lifestyle
- Socioeconomic status
- Stress

Hypertension

Clinical Manifestations

- **Frequently asymptomatic until severe and target organ disease has occurred**
 - Fatigue, reduced activity tolerance** □
 - Dizziness** □
 - Palpitations, angina** □
 - Dyspnea** □

Hypertension: Complications



Hypertension

Complications

The common complications are target organ diseases occurring in the

- Heart
- Brain
- Kidney
- Eyes

Hypertension

Complications

▪ Hypertensive Heart Disease

- Coronary artery disease
- Left ventricular hypertrophy
- Heart failure

Hypertension

Complications

- **Cerebrovascular Disease**
 - Stroke
- **Peripheral Vascular Disease**
- **Nephrosclerosis**
- **Retinal Damage**

Hypertension

Diagnosis

- **Diagnosis requires several elevated readings over several weeks (unless $\geq 180/110$)**
 - **BP measurement in both arms**
 - Use arm with higher reading for subsequent measurements

Treatment Goals



Benefits of Lowering BP



Classification

Table 1. Classification and management of blood pressure for adults*

BP CLASSIFICATION	SBP* MMHg	DBP* MMHg	LIFESTYLE MODIFICATION	INITIAL DRUG THERAPY	
				WITHOUT COMPELLING INDICATION	WITH COMPELLING INDICATIONS (SEE TABLE 8)
NORMAL	<120	and <80	Encourage		
PREHYPERTENSION	120–139	or 80–89	Yes	No antihypertensive drug indicated.	Drug(s) for compelling indications.‡
STAGE 1 HYPERTENSION	140–159	or 90–99	Yes	Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination.	Drug(s) for the compelling indications.‡ Other antihypertensive drugs (diuretics, ACEI, ARB, BB, CCB) as needed.
STAGE 2 HYPERTENSION	≥160	or ≥100	Yes	Two-drug combination for most† (usually thiazide-type diuretic and ACEI or ARB or BB or CCB).	

Algorithm for Treatment of Hypertension

Lifestyle Modifications

Not at Goal Blood Pressure (<140/90 mmHg)
(<130/80 mmHg for those with diabetes or chronic kidney disease)

Initial Drug Choices

Without Compelling Indications

With Compelling Indications

Stage 1 Hypertension

(SBP 140–159 or DBP 90–99 mmHg)
Thiazide-type diuretics for most.
May consider ACEI, ARB, BB, CCB,
or combination.

Stage 2 Hypertension

(SBP \geq 160 or DBP \geq 100 mmHg)
2-drug combination for most (usually
thiazide-type diuretic and
ACEI, or ARB, or BB, or CCB)

Drug(s) for the compelling indications

Other antihypertensive drugs
(diuretics, ACEI, ARB, BB, CCB)
as needed.

Not at Goal
Blood Pressure

Optimize dosages or add additional drugs
until goal blood pressure is achieved.
Consider consultation with hypertension specialist.

Hypertension

Collaborative Care

- **Lifestyle Modifications**

- Weight reduction
- Dietary changes (DASH diet)
- Limitation of alcohol intake (≤ 2 drinks/day for men;
 ≤ 1 /day for women)
- Regular physical activity
- Avoidance of tobacco use
 - Stress management

Hypertension

Collaborative Care

- **Nutritional Therapy: DASH Diet = Dietary Approaches to Stop HTN**
 - Sodium restriction
 - Rich in vegetables, fruit, and nonfat dairy products
 - Calorie restriction if overweight

Hypertension

Collaborative Care

- **Drug Therapy**

- Diuretics •

- Adrenergic inhibitors •

- β - Adrenergic blockers •

- ACE Inhibitors •

- Calcium channel blockers •

Hypertension: Drug Therapy



Hypertension: Drug Therapy



Hypertension: Drug Therapy



Hypertension: Drug Therapy



Hypertension: Drug Therapy



Hypertensive Crisis

Clinical Manifestations

- Hypertensive encephalopathy (H/A, N & V, seizures, confusion, coma)
 - Renal insufficiency
 - Heart failure
 - Pulmonary edema

Hypertensive Crisis

Nursing and Collaborative Management

Hospitalization

- IV drug therapy
- Monitor cardiac and renal function
 - Neurologic checks
 - Determine cause
- Education to avoid future crises

Isolated Systolic Hypertension

- distinguished as a separate entity as far as management is concerned.
- SBP should be primarily considered during treatment and not just diastolic BP.
- Systolic BP is more important cardiovascular risk factor after age 50.
- Diastolic BP is more important before age 50.

Hypertensive Crises

Hypertensive Urgencies: No progressive target-organ dysfunction. (Accelerated Hypertension) □

Hypertensive Emergencies: Progressive end-organ dysfunction. (Malignant Hypertension) □