Assessment and Management of Patients With Hypertension

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Learning objectives

On completion of this chapter, the students will be able to:

1. Define blood pressure and identify risk factors for hypertension.
2. Explain the difference between normal blood pressure and hypertension & discuss the significance of hypertension.
3. Describe the treatment approach for hypertension, including lifestyle changes and medication therapy.
4. Use the nursing process as a framework for care of the patient with hypertension.
5. Describe the necessity for immediate treatment of hypertensive crisis.

Hypertension

- Hypertension is a systolic BP greater than 140 mmHg and a diastolic pressure greater than 90 mm Hg over a sustained period, based on the average of two or more BP measurements taken in two or more contacts with the health care provider after an initial screening.

Classification of Blood Pressure for Adults Age 18 and Older

CATEGORY	SYSTOLIC		DIASTOLIC
Optimal	<120	and	<80
Normal	<130	and	<85
High-normal	130–139	or	85–89
Hypertension Stage 1 Stage 2 Stage 3	 140–159 160–179 ≥180	 Or Or or	 90–99 100–109 ≥110

Hypertension

- **Primary hypertension means** that the reason for the elevation in BP cannot be identified.
- **Secondary hypertension is** the term used to signify high BP from an identified cause.
- Hypertension is sometimes called "the silent killer" because people who have it are often symptom free.
- Hypertension often accompanies risk factors for atherosclerotic heart disease, such as **dyslipidemia** and diabetes mellitus.
- Cigarette smoking does not cause high BP; however, if a person with hypertension smokes, his or her risk of dying from heart disease or related disorders increases significantly.

Hypertension

- High BP can be viewed in three ways: as a sign, a risk factor for atherosclerotic cardiovascular disease, or a disease.
- As a sign, nurses and other health care professionals use BP to monitor a patient's clinical status. Elevated pressure may indicate an excessive dose of vasoconstrictive medication or other problems.
- As a risk factor, hypertension contributes to the rate at which atherosclerotic plaque accumulates within arterial walls.
- As a disease, hypertension is a major contributor to death from cardiac, renal, and peripheral vascular disease.

Hypertension

- The usual consequences of prolonged, uncontrolled hypertension are myocardial infarction, heart failure, renal failure, strokes, and impaired vision.
- The left ventricle of the heart may become enlarged (left ventricular hypertrophy) as it works to pump blood against the elevated pressure.

Pathophysiology

Hypertension may be caused by one or more of the following:

- Increased SNS activity related to dysfunction of the autonomic nervous system
- Increased renal reabsorption of sodium, chloride, and water
- Increased activity of the renin-angiotensin-aldosterone system, resulting in expansion of extracellular fluid volume and increased systemic vascular resistance
- Decreased vasodilation of the arterioles related to dysfunction of the vascular endothelium
- Resistance to insulin action, which may be a common factor linking hypertension, type 2 diabetes mellitus, hypertriglyceridemia, obesity, and glucose intolerance

Clinical Manifestations

- asymptomatic and remain so for many years.
- retinal changes such as hemorrhages and small infarctions
- In severe hypertension, papilledema (swelling of the optic disc) .
- Coronary artery disease with angina or myocardial infarction is a common consequence of hypertension.
- Pathologic changes in the kidneys may manifest as nocturia.
- Cerebrovascular involvement may lead to a stroke or transient ischemic attack.

Assessment and Diagnostic Evaluation

- Routine laboratory tests include urine analysis, blood chemistry (i.e. analysis of sodium, potassium, creatinine, fasting glucose, and total and high-density lipoprotein [HDL] cholesterol levels).
- A 12-lead electrocardiogram(ECG).
- Left ventricular hypertrophy can be assessed by echocardiography.
- Creatinine clearance **(compares the level of creatinine in urine with the creatinine level in the blood),** rennin level, urine tests, and 24-hour urine protein.

Medical Management

Lifestyle Modifications for Hypertension Prevention and Management

- Lose weight if overweight.
- Increase aerobic physical activity (30 to 45 minutes most days of the week).
- Reduce sodium intake .
- Maintain adequate intake of dietary potassium .
- Maintain adequate intake of dietary calcium and magnesium
- Stop smoking and reduce intake of dietary saturated fat and cholesterol for overall cardiovascular health.

Nursing process: The patient with hypertension

Assessment:

- monitoring BP at frequent intervals & then, after diagnosis, at routinely scheduled intervals.
- When the patient begins antihypertensive treatment, BP assessments are needed to determine the effectiveness of medication therapy & to detect any changes in BP that indicate the need for a change in the treatment plan.
- A complete history is obtained to assess for symptoms that indicate target organ damage.
- During the physical examination, attention to the heart rate, rhythm, and character of the apical & peripheral pulses to detect effects of hypertension on the heart & blood vessels.

Nursing process: The patient with hypertension

Nursing diagnoses

- Deficient knowledge regarding the relation between the treatment regimen and control of the disease process
- Noncompliance with therapeutic regimen related to side effects of prescribed therapy

Nursing process: The patient with hypertension

potential complications that may develop include the following:

- Left ventricular hypertrophy
- Myocardial infarction
- Heart failure
- TIAs
- Cerebrovascular accident (stroke or brain attack)
- Renal insufficiency and failure
- Retinal hemorrhage

Nursing process:
The patient with hypertension

Planning and Goals

The major goals for the patient include understanding of the disease process and its treatment, participation in a self-care program, and absence of complications.

Nursing Interventions

1- increasing knowledge

2- promoting home and community-based care

3- monitoring and managing potential complications

Nursing process: The patient with hypertension

Evaluation

Expected patient outcomes may include the following:

1. Maintains adequate tissue perfusion

a. Maintains blood pressure at less than 140/90 mm Hg (or less than 130/85 mm Hg for persons with diabetes mellitus with lifestyle modifications, medications, or both

b. Demonstrates no symptoms of angina, palpitations, or vision changes

c. Has stable BUN and serum creatinine levels

d. Has palpable peripheral pulses

2. Complies with the self-care program

a. Adheres to the dietary regimen as prescribed: reduces calorie, sodium, and fat intake; increases fruit and vegetable intake

b. Exercises regularly

c. Takes medications as prescribed and reports any side effects

d. Measures BP routinely

e. Abstains from tobacco and excessive alcohol intake

f. Keeps follow-up appointments

Hypertensive Crises

There are two hypertensive crises that require nursing intervention:

- hypertensive emergency and hypertensive urgency.

Hypertensive emergency:

- is a situation in which BP must be lowered immediately (not necessarily to less than 140/90 mm Hg to stop or prevent damage to the target organs.
- Conditions associated with hypertensive emergency include acute myocardial infarction, dissecting aortic aneurysm, and intracranial hemorrhage.
- Hypertensive emergencies are acute, life threatening BP elevations that require prompt treatment in an intensive care setting because of the serious target organ damage that may occur.

The medications of choice Intravenous vasodilators and nitroglycerin have an immediate action .

Hypertensive urgency:

- is a situation in which BP must be lowered within a few hours.
- Severe perioperative hypertension is considered a hypertensive urgency and it is managed with oral doses of fast-acting agents such as loop diuretics, beta-blockers, angiotensin-converting enzyme inhibitors, calcium antagonists or alpha2-agonists.