Hypertension and blood pressure

**Hypertension**
- High blood pressure
- Defined by the Seventh Report of the Joint National Commission on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) as a systolic pressure greater than 140 mm Hg and a diastolic pressure greater than 90 mm Hg.
- Based on the average of two or more accurate blood pressure measurements taken during two or more contacts with a health care provider.

- About 30% of the adult population of the U.S. has hypertension.
- About 54% of adults with HTN do not have it under control.
- Highest prevalence in African Americans and Hispanics

**Types of hypertension**

- **primary hypertension**: denotes high blood pressure from an unidentified cause; also called essential hypertension

- **rebound hypertension**: blood pressure that is controlled with medication and becomes uncontrolled (abnormally high) with the abrupt discontinuation of medication

- **secondary hypertension**: high blood pressure from an identified cause, such as renal disease

- **isolated systolic hypertension**: a condition most commonly seen in the older adult in which the systolic pressure is greater than 140 mm Hg and the diastolic pressure is within normal limits (less than 90 mm Hg)

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- **hypertensive emergency**: a situation in which blood pressure is severely elevated and there is evidence of actual or probable target organ damage

- **hypertensive urgency**: a situation in which blood pressure is severely elevated but there is no evidence of target organ damage

<table>
<thead>
<tr>
<th>BP Classification*</th>
<th>Systolic BP (mm Hg)</th>
<th>Diastolic BP (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>and &lt;80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120–139</td>
<td>or 80–89</td>
</tr>
<tr>
<td>Stage 1 hypertension</td>
<td>140–159</td>
<td>or 90–99</td>
</tr>
<tr>
<td>Stage 2 hypertension</td>
<td>≥160</td>
<td>or ≥100</td>
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</tbody>
</table>

BP blood pressure.

*Based on the average of two or more properly measured, seated readings taken on each of two or more office visits.

**Major risk factors**

- Hypertension
- Smoking
- Obesity
- Physical inactivity
- Dyslipidemia
- Diabetes mellitus
- Microalbuminuria <60 GFR ml/min
- Older age
- Family HX

**Patient assessment**

- History and physical examination
- Laboratory tests
  - Urinalysis
  - Blood chemistry
  - Cholesterol levels
- ECG

**Management of HTN**

**Lifestyle modifications**

- Weight reduction
- DASH diet, decreased Na intake
- Physical activity
- Moderate alcohol consumption

**Medication therapy**

- Diuretics, beta-blockers, alpha1-blockers, combined alpha- and beta-blockers, vasodilators, ACE inhibitors, ARBs, Ca channel blockers, dihydropyridines, and direct renin inhibitors

- Usually initial medication treatment is a thiazide diuretic.
- Low doses are initiated, and the medication dosage is increased gradually if blood pressure does not reach target goal.
- Additional medications are added if needed.
- Multiple medications may be needed to control blood pressure.
- Lifestyle changes initiated to control BP must be maintained.
Nursing assessment

- History and risk factors
  - Assess potential symptoms of target organ damage
    - Angina, shortness of breath, altered speech, altered vision, nosebleeds, headaches, dizziness, balance problems, nocturia
  - Cardiovascular assessment: apical and peripheral pulses
- Personal, social, and financial factors that will influence the condition or its treatment

Nursing diagnosis

- 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

Complications

- Left ventricular hypertrophy
- Myocardial infarction
- Heart failure
- Transient ischemic attack (TIA)
- Cerebrovascular accident (CVA, stroke, or brain attack)
- Renal insufficiency and failure
- Retinal hemorrhage

Planning/ goals

- Understanding of the disease process and its tx, Participation in a self-care program
- Absence of complications

Interventions

- Patient education
- Support adherence to the treatment regimen
- Consultation and collaboration
- Follow-up care
- Emphasize control rather than cure
- Reinforce and support lifestyle changes
- A lifelong process

Evaluation

- Reports knowledge of disease management sufficient to maintain adequate tissue perfusion
  - Maintains blood pressure at less than 140/90 mm Hg with no symptoms of angina, palpitations, or vision changes; stable BUN and serum creatinine levels; and palpable peripheral pulses
- Adheres to the self-care program
  - Reduces calorie, Na, and fat intake; exercises regularly; takes medications as prescribed and reports side effects; measures BP; abstains from tobacco and excessive alcohol intake; keeps appointments
  - Has no complications
    - Reports no changes in vision; exhibits no retinal damage on vision testing
    - Maintains pulse rate and rhythm and respiratory rate within normal ranges; reports no dyspnea or edema
    - Maintains urine output consistent with intake; has renal function test results within normal range
    - Demonstrates no motor, speech, or sensory deficits
    - Reports no headaches, dizziness, weakness, changes in gait, or falls
**Hypertensive Crises**

- Hypertensive emergency
  - Blood pressure >180/120 mm Hg and must be lowered immediately to prevent damage to target organs
- Hypertensive urgency
  - Blood pressure is very high but no evidence of immediate or progressive target organ damage

**Hypertensive Emergency**

- Reduce blood pressure 25% in first hour.
- Reduce to 160/100 over 6 hours.
- Then gradual reduction to normal over a period of days.
- Exceptions are ischemic stroke and aortic dissection.
- Medications
  - IV vasodilators: sodium nitroprusside, nicardipine, fenoldopam mesylate, enalaprilat, nitroglycerin
- Need very frequent monitoring of BP and cardiovascular status

**Hypertensive Urgency**

- Patient requires close monitoring of blood pressure and cardiovascular status.
- Assess for potential evidence of target organ damage.
- Medications
  - Fast-acting oral agents: beta-adrenergic blocker—labetalol; angiotensin-converting enzyme inhibitor—captopril; or alpha2-agonist—clonidine