## Blood Pressure Measurement

**Patient should:**
- Rest for 5 minutes before measurement.
- Refrain from smoking or ingesting caffeine for 30 minutes prior to measurement.
- Be seated with feet flat on floor, back and arm supported, arm at heart level.

**Clinician should:**
- Use the appropriate size cuff for the patient; the bladder should encircle at least 80 percent of the upper arm.
- Use calibrated or mercury manometer.
- Average two or more readings, separated by at least 2 minutes.

## Primary Prevention

Encourage patients to make healthy lifestyle choices:
- Quit smoking to reduce cardiovascular risk.
- Lose weight, if needed.
- Restrict sodium intake to no more than 100 mmol per day.
- Limit alcohol intake to no more than 1-2 drinks per day.
- Get at least 30-45 minutes of aerobic activity on most days.
- Maintain adequate potassium intake—about 90 mmol per day.
- Maintain adequate intakes of calcium and magnesium.

## Goal

Set a clear goal of therapy based on patient’s risk. Control blood pressure to below:
- 140/90 mm Hg for patients with uncomplicated hypertension; set a lower goal for those with target organ damage or clinical cardiovascular disease.
- 130/85 mm Hg for patients with diabetes.
- 125/75 mm Hg for patients with renal insufficiency with proteinuria greater than 1 gram per 24 hours.

## Treatment

Begin with lifestyle modifications (see primary prevention box) for all patients. Be supportive!
- Add pharmacologic therapy if blood pressure remains uncontrolled.
- Start with a diuretic or beta-blocker unless there are compelling indications to use other agents. Use low dose and titrate upward. Consider low dose combinations.
- If no response, try a drug from another class or add a second agent from a different class (diuretic if not already used).

## Adherence

- Encourage lifestyle modifications. Be supportive!
- Educate patient and family about disease. Involve them in measurement and treatment.
- Maintain communications with patient.
- Discuss how to integrate treatment into daily activities.
- Keep care inexpensive and simple.
- Favor once-daily, long-acting formulations.
- Use combination tablets, when needed.
- Consider using generic formulas or larger tablets that can be divided. This may be less expensive.
- Be willing to stop unsuccessful therapy and try a different approach.
- Consider using nurse case management.
**JNC VI Risk Stratification and Treatment Recommendations**

- Determine blood pressure stage.
- Determine risk group by major risk factors and TOD/CCD.
- Determine treatment recommendations (by using the table below).
- Determine goal blood pressure.
- Refer to specific treatment recommendations.

### Major Risk Factors
- Smoking
- Dyslipidemia
- Diabetes mellitus
- Age > 60 years
- Gender:
  - Men
  - Postmenopausal women
- Family history:
  - Women < age 65
  - Men < age 65

### TOD/CCD (Target Organ Damage/ Clinical Cardiovascular Disease)
- Heart diseases
  - LVH
  - Angina/prior MI
  - Prior CABG
  - Heart failure
- Stroke or TIA
- Nephropathy
- Peripheral arterial disease
- Hypertensive retinopathy

### Blood Pressure Stages
- **High-normal** (130-139/85-89)
- **Stage 1** (140-159/90-99)
- **Stages 2 and 3** (≥160/≥100)

### Risk Groups
- **Risk Group A**: No major risk factors, No TOD/CCD
- **Risk Group B**: At least one major risk factor, not including diabetes, No TOD/CCD
- **Risk Group C**: TOD/CCD and/or diabetes, with or without other risk factors

#### Treatment Recommendations

**Example**: A patient with diabetes and a blood pressure of 142/94 mm Hg plus left ventricular hypertrophy should be classified as having stage 1 hypertension with target organ disease (left ventricular hypertrophy) and with another major risk factor (diabetes). This patient would be categorized as **Stage 1, Risk Group C**, and recommended for immediate initiation of pharmacologic treatment.

**Goal Blood Pressure**
- **<140/90 mm Hg**: Uncomplicated hypertension, Risk Group A, Risk Group B, Risk Group C except for the following:
- **<130/85 mm Hg**: Diabetes; renal failure; heart failure
- **<125/75 mm Hg**: Renal failure with proteinuria > 1 gram/24 hours

**Specific Treatment Recommendations**
Lifestyle modification should be definitive therapy for some patients and adjunctive therapy for all patients recommended for pharmacologic therapy. Turn page over for a list of recommended lifestyle modifications.

**Initial Drug Choices**
- Start with a low dose of a long-acting once-daily drug, and **titrate dose**
- Low-dose combinations may be appropriate

### Uncomplicated Hypertension
- Diuretics
- Beta-blockers

### Compelling Indications
- Diabetes type 1 (IDDM) start with ACE inhibitor if proteinuria is present
- Heart failure start with ACE inhibitor or diuretic
- Myocardial infarction beta-blocker (non-ISA) after MI; ACE inhibitor for LV dysfunction after MI
- Isolated systolic hypertension (older patients) diuretics (preferred) or calcium antagonists (long-acting DHP)

### Specific Indications for the Following Drugs:
(See Table 9 in JNC VI for specific indications)
- ACE inhibitors
- Angiotensin II receptor blockers
- Alpha-blockers
- Anti-beta-blockers
- Beta-blockers
- Calcium antagonists
- Diuretics