Guidelines for the Management of Hypertension

Disclaimer

The Permanente Medical Group (TPMG) Clinical Practice Guidelines (and those developed with CMI) have been developed to assist clinicians by providing an analytical framework for the evaluation and treatment of selected common problems encountered in patients. These guidelines are not intended to establish a protocol for all patients with a particular condition. While the guidelines provide one approach to evaluating a problem, clinical conditions may vary significantly from individual to individual. Therefore, the clinician must exercise independent professional judgment and make decisions based upon the situation presented. While great care has been taken to assure the accuracy of the information presented, the reader is advised that TPMG cannot be responsible for continued currency of the information, for any errors or omissions in these guidelines, or for any consequences arising from their use.

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Definition of Hypertension

The CMI Hypertension Guidelines Project Management Team used the definition of hypertension to be a blood pressure at or above 140/90 mm Hg. The guidelines pertain to uncomplicated hypertension which is defined as hypertension in nonpregnant adults who do not have diabetes, heart failure, renal insufficiency, or known coronary heart disease.

Blood Pressure:	Systolic Blood Pressure (SBP) mm Hg	Diastolic Blood Pressure (DBP) mm Hg
Normal	< 120	< 80
Prehypertension	120 – 139	80 – 89
Stage I Hypertension	140 – 159	90 – 99
Stage II Hypertension	≥ 160	≥ 100

I. Treatment of Hypertension

A. When to begin pharmacotherapy for hypertension.*

In addition to lifestyle interventions:

If an individual has blood pressure of 140 to 159 mm Hg systolic OR 90 to 99 mm Hg diastolic (Stage 1), and does not have target organ damage or diabetes mellitus, then:

A. If there is documentation of elevated blood pressure (≥140 mm Hg systolic OR ≥90 mm Hg diastolic) for two or more months prior to the current measurement, then initiate pharmacotherapy.

B. If this is the first elevated measurement, wait approximately two months. After two months, if blood pressure is ≥140 mm Hg systolic OR ≥90 mm Hg diastolic, then initiate pharmacotherapy.

* In nonpregnant adults who do not have diabetes, heart failure, chronic kidney disease, or known coronary heart disease.

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If an individual has blood pressure of 160 to 179 mm Hg systolic OR 100 to 109 mm Hg diastolic (Stage 2), and does not have target organ damage or diabetes mellitus, then:

A. If there is documentation of elevated blood pressure (≥140 mm Hg systolic OR ≥90 mm Hg diastolic) for one or more months prior to the current measurement, then initiate pharmacotherapy.

B. If this is the first elevated measurement, wait approximately one month. After one month, if blood pressure is ≥140 mm Hg systolic OR ≥90 mm Hg diastolic, then initiate pharmacotherapy.

If an individual has blood pressure ≥180 mm Hg systolic OR ≥110 mm Hg diastolic, then initiate pharmacotherapy.

Methodology – Consensus

B. Appropriate office-based target blood pressure for hypertension.

When treating an individual with hypertension, the target office blood pressure is ≤139/≤89 mm Hg.

Methodology – Consensus

C. Home blood pressure monitoring for diagnosis and management.

Diagnosis of hypertension should be established in the medical office.

Home self-measurement of blood pressure is recommended to:

- Identify a low-risk subpopulation of individuals with 'white coat hypertension,' without target organ disease or diabetes, for whom medication may not necessary. These individuals have home blood pressure levels <130/80 mm Hg but have office blood pressure levels ≥140/≥90 mm Hg.

- Attain control in patients with uncontrolled hypertension (>135/85 mm Hg by home monitoring) according to drug treatment algorithms, and by using telephone/e-mail/fax or other electronic patient communications in conjunction with standard provider-based clinic visits.

- Monitor controlled hypertension over time.

Methodology – Consensus

D. First-line treatment of hypertension.

Thiazide diuretics are recommended as first-line agents for initial therapy in people with hypertension.

Methodology – Evidence-based

E. Initial combination treatment of hypertension.[†]

Combination therapy consisting of a thiazide diuretic plus an ACEI (or a thiazide diuretic plus other medication if the patient is ACEI-intolerant) is an option for initial therapy for Stage 1 hypertension (systolic blood pressure 140 to 159 mm Hg OR diastolic blood pressure 90 to 99 mm Hg).

Combination therapy of a thiazide diuretic plus an ACEI (or a thiazide diuretic plus other medication if ACEI-intolerant) is recommended for Stage 2 hypertension (systolic blood pressure > 160 mm Hg OR diastolic blood pressure > 100 mm Hg).

Methodology – Consensus

F. Step-care therapy for hypertension.

Because most people with hypertension will need more than one drug to control their hypertension effectively:

A. **For two drugs:**
If blood pressure is not controlled on a thiazide-type diuretic alone, then a thiazide-type diuretic + ACE inhibitor is recommended.

B. **For three drugs:**
If blood pressure is not controlled on a thiazide-type diuretic + ACE inhibitor, then a thiazide-type diuretic + ACE inhibitor + beta-blocker is recommended.

C. **For four drugs:**
If blood pressure is not controlled on a thiazide-type diuretic + ACE inhibitor + beta-blocker, then a thiazide-type diuretic +ACE inhibitor + beta-blocker + dihydropyridine calcium channel blocker is recommended.

Methodology – Consensus

[†] In nonpregnant adults who do not have diabetes, heart failure, chronic kidney disease, or known coronary heart disease.

G. Supplementary treatment of uncomplicated hypertension with behavior change measures.

A. A moderately low-sodium, low-fat diet with a high intake of fruits and vegetables is recommended to supplement pharmacotherapy for patients with hypertension.

B. Weight reduction is recommended for patients with a BMI $\geq$25 kg/m^2 on antihypertensive medications.

C. It is recommended that hypertension patients who consume alcohol have no more than one alcoholic drink (for women) or two alcoholic drinks (for men) daily.

D. Physical activity (at least 30 minutes of walking or equivalent at least three times per week) is recommended for patients with hypertension who are on medications.

Methodology – Consensus

II. Concomitant Therapy

A. Use of aspirin in hypertensive patients receiving antihypertensive medications.

For individuals aged 50 to 80 years, whose hypertension is controlled by antihypertensive medications, low-dose aspirin (81 mg) is recommended as an adjunct therapy to further reduce risks of long-term cardiovascular outcomes (excluding mortality). When recommending aspirin, consider potential side effects, especially gastrointestinal bleeding.

Methodology – Evidence-based

B. Use of statins in hypertensive patients taking antihypertensive medications.

There is insufficient evidence to recommend the use of statins in hypertensive patients in the absence of other significant risk factors. Patients with hypertension should be treated for hyperlipidemia according to their total cardiovascular risk profile.

Methodology – Evidence-based

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