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PHARMACIST'S LETTER / PRESCRIBER'S LETTER
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Treatment of Hypertension: JNC 8 and More

Hypertension guidelines from the Eighth Joint National Committee (JNC 8) are finally here. While we were waiting for JNC 8, the American Society of Hypertension (ASH) in collaboration with the International Society of Hypertension released their own expert opinion piece aimed at prescribers' "real-life" practice settings. Lifestyle recommendations were also published in 2013. The chart below summarizes recommendations based on the latest evidence, with an emphasis on pharmacotherapy. Also see our *PL Algorithm, Stepwise Approach to Hypertension Treatment*. For antihypertensive dosing information and more, see our *PL Charts, Angiotensin Converting Enzyme (ACE) Inhibitor Antihypertensive Dose Comparison*, *Comparison of Angiotensin Receptor Blockers*, *Comparison of Commonly Used Diuretics*, and *Antihypertensive Combinations*. For your patients, get our *PL Patient Education Handout, Blood Pressure Medications and You*.

Abbreviations: ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; ASH = American Society of Hypertension; BB = beta-blocker; CAD = coronary artery disease; CCB = calcium channel blocker; CKD = chronic kidney disease; HTN = hypertension; ISH = isolated systolic hypertension; RCT = randomized controlled trial

What lifestyle changes are recommended to reduce cardiovascular risk?

Recommendations	Major Changes	Comments
• See our *PL Chart, Lifestyle Changes to Reduce Cardiovascular Risk* and *PL Patient Education Handout, How to Eat a Heart-Healthy Diet*.	• None	• Encourage lifestyle changes even in patients with prehypertension (120 to 139/80 to 89 mmHg).[2]

How should blood pressure be measured?

• Blood pressure should be measured after the patient has emptied their bladder and has been seated for five minutes with back supported and legs resting on the ground (not crossed).[2] • Arm used for measurement should rest on a table, at heart-level.[2] • Use a sphygmomanometer/stethoscope or automated electronic device (preferred) with the correct size arm cuff.[2] • Take two readings one to two minutes apart, and average the readings (preferred). • Measure blood pressure in both arms at initial evaluation. Use the higher reading for measurements thereafter.[2]	• None	• Consider checking standing readings after one and three minutes to screen for postural hypotension, especially in the elderly.[2]

More. . .

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How is hypertension diagnosed?

Recommendations	Major Changes	Comments
• Confirm the diagnosis of HTN at a subsequent visit one to four weeks after the first.[2] If blood pressure is very high (e.g., systolic 180 mmHg or higher), or timely follow-up unrealistic, treatment can be started after just one set of measurements.[2]	• None	• Consider home blood pressure monitoring or ambulatory blood pressure monitoring if white coat HTN is suspected.[2]

Who should be treated with pharmacotherapy?

Recommendations	Major Changes	Comments
JNC 8:[1] • Patients <60 years of age: start pharmacotherapy at 140/90 mmHg. • Patients with diabetes: start pharmacotherapy at 140/90 mmHg. • Patients with CKD: start pharmacotherapy at 140/90 mmHg. • Patients 60 years of age and older: start pharmacotherapy at 150/90 mmHg. **ASH**:[2] • Patients younger than 80 years of age: start pharmacotherapy at 140/90 mmHg • Patients 80 years of age and up: start pharmacotherapy at 150/90 mmHg. Consider starting at 140/90 mmHg in those with diabetes or CKD. • Patients with uncomplicated stage 1 HTN: (140 to 159/90 to 99 mmHg without CV abnormalities or risk factors): consider six to 12 months of lifestyle changes (e.g., weight loss, sodium restriction, exercise, smoking cessation) alone before pharmacotherapy.	• Higher cut-off for elderly. • Lower threshold for diabetes, CKD, and CAD no longer recommended.	• Continue lifestyle changes in addition to pharmacotherapy.[2]

More. . .

What is the goal blood pressure?

Recommendations	Major changes	Comments
JNC 8:[1] • Patients <60 years of age: <140/90 mmHg • Patients with diabetes: <140/90 mmHg [Evidence level A; high-quality RCTs][7-10] • Patients with CKD: <140/90 mmHg • Patients 60 years of age and older: <150/90 mmHg [Evidence level B; lower quality RCTs].[4,5] **ASH**:[2] • Patients younger than 80 years of age: <140/90 mmHg • Patients 80 years of age and up: systolic of up to 150 mmHg is acceptable [Evidence level A; high-quality RCT].[3] A goal of <140/90 mmHg can be considered for those with diabetes or CKD. • Patients 18 to 55 years of age: lower target (e.g., <130/80 mmHg) can be considered, per prescriber discretion, if treatment is tolerated. However, evidence of additional benefit vs goal of <140/90 mmHg is lacking. • CKD with albuminuria: some experts recommend <130/80 mmHg.[2]	• Higher goals for elderly, diabetes, CKD, and CAD vs JNC 7.	• In patients 60 years of age and older, no need to back off on tolerated treatment if lower systolic (e.g., <140 mmHg) achieved.[1] • Use clinical judgment; consider risk/benefit of treatment for each individual when setting goal.[1] • Unproven clinical benefit of lower targets previously recommended in diabetes, CKD, and CAD.[2]

What pharmacotherapy is recommended?

Recommendations	Major Changes	Comments

JNC 8:[1]
• Nonblack, including those with diabetes: thiazide, CCB, ACEI, or ARB
• African American, including those with diabetes: thiazide or CCB
• CKD: regimen should include an ACEI or ARB (including African Americans)
• Can initiate with two agents, especially if systolic >20 mmHg above goal or diastolic >10 mmHg above goal.
• If goal not reached:
  ◦ stress adherence to medication and lifestyle
  ◦ increase dose or add a second or third agent from one of the recommended classes.
  ◦ choose a drug outside of the classes recommended above only if these options have been exhausted. Consider specialist referral.
 	
ASH:[2]
• Nonblack <60 years of age:
First-line: ACEI or ARB
Second-line (add-on): CCB or thiazide
Third-line: CCB plus ACEI or ARB plus thiazide
• Nonblack 60 years of age and older:
First-line: CCB or thiazide preferred, ACEI, or ARB
Second-line (add-on): CCB, thiazide, ACEI, or ARB (don't use ACEI plus ARB)
Third-line: CCB plus ACEI or ARB plus thiazide
• African American:
First-line: CCB or thiazide
Second-line (add-on): ACEI or ARB
Third-line: CCB plus ACEI or ARB plus thiazide
 	
Continued…
	• Thiazides no longer given preference as initial therapy.[1]
	• JNC 8 options for diabetes same as for the general population; no evidence they benefit differently from general hypertensive population.[1]
	• Specific pharmacotherapy recommendations provided for African Americans.[1,2]
	• De-emphasis in JNC 8 on choice of agent for compelling indications; focus is on BP control using four medication classes with outcomes evidence from RCTs.[1]
		• Choose once-daily or combination products to simplify the regimen.[2]
		• In general, wait two to three weeks before increasing dose or adding new drug.[2]
		• Pivotal studies showing clinical benefits of treating HTN included a thiazide.[1]
		• Consider chlorthalidone or indapamide over hydrochlorothiazide due to better evidence of benefit.[2]
		• Because patients with diabetes are at increased risk of nephropathy, coronary artery disease, and heart failure, conditions known to benefit from ACEIs and ARBs, it makes sense to choose one of them first-line for hypertension in patients with diabetes.[3]
		• For HTN, beta- and alpha-blockers have worse CV outcomes data than the recommended agents.[1]
		• African Americans have high stroke risk.[11] CCBs provide better stroke prevention and blood pressure reduction in African Americans vs ACEIs.[1]
		• Thiazides produce better CV outcomes (including reduced stroke risk) than ACEIs in African Americans.[1]
		• African Americans tend to be "salt-sensitive."[2] This may explain their relatively poor response to ACEIs.[2] Encourage sodium restriction.
		• Most African Americans will need at least two antihypertensives to control blood pressure.[11] African Americans and nonblacks have similar responses to combination therapy (i.e., thiazide plus ACEI; CCB plus ACEI).[2]
		• Do ***not*** use an ACEI plus an ARB; no added benefit, more side effects (e.g., hyperkalemia).[1,2,12]

What pharmacotherapy is recommended? (continued)

Recommendations	Major Changes	Comments
• Comorbidities (**ASH**): Diabetes: First-line: ACEI or ARB [Evidence level C; consensus] (can start with CCB or thiazide in African Americans) Second-line: add CCB or thiazide (can add ACEI or ARB in African Americans) Third-line: CCB plus ACEI or ARB plus thiazide CKD First-line: ARB or ACEI (ACEI for African Americans) Second-line (add-on): CCB or thiazide Third-line: CCB plus ACEI or ARB plus thiazide CAD: First-line: BB plus ARB or ACEI Second-line (add-on): CCB or thiazide Third-line: BB plus ARB or ACEI plus CCB plus thiazide Stroke history: First-line: ACEI or ARB Second-line: add CCB or thiazide Third-line: CCB plus ACEI or ARB plus thiazide Heart failure: ACEI or ARB plus BB plus diuretic plus aldosterone antagonist. Amlodipine can be added for additional BP control. (Start with ACEI, BB, diuretic. Can add BB even before ACEI optimized. Use diuretic to manage fluid.)[13]		• Thiazides and CCBs reduce systolic BP more than diastolic BP.[6]

Users of this PL Detail-Document are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

Levels of Evidence

In accordance with the trend towards Evidence-Based Medicine, we are citing the **LEVEL OF EVIDENCE** for the statements we publish.

Level	Definition
A	High-quality randomized controlled trial (RCT) High-quality meta-analysis (quantitative systematic review)
B	Nonrandomized clinical trial Nonquantitative systematic review Lower quality RCT Clinical cohort study Case-control study Historical control Epidemiologic study
C	Consensus Expert opinion
D	Anecdotal evidence In vitro or animal study

Adapted from Siwek J, et al. How to write an evidence-based clinical review article. *Am Fam Physician* 2002;65:251-8.

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