

A Review of the JNC 8 Blood Pressure Guideline

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Hypertension is a major independent risk factor for coronary artery disease, stroke, heart failure, and renal failure. One of every 3 American adults—or approximately 67 million adults (31%)—has hypertension (HTN).¹ A person over the age of 55 years has a 90% lifetime risk of developing HTN.² Hypertension accounts for 18% of cardiovascular disease deaths in Western countries.³ High blood pressure (BP) costs the nation \$47.5 billion each year.⁴

In 2014, the Eighth Joint National Committee (JNC 8) published the evidence-based guideline for the management of high BP in adults. This new guideline was characterized by a systematic review of the literature with an emphasis on randomized, controlled clinical trials. The guideline attempted to answer 3 key questions.⁵

- In adults with HTN, does initiating antihypertensive pharmacologic therapy at specific BP thresholds improve health outcomes?
- In adults with HTN, do attempts to reach specified BP goals with antihypertensive pharmacologic therapy lead to improvements in health outcomes?
- In adults with HTN, do various antihypertensive drugs or drug classes differ in regard to specific health outcomes?⁵

The committee provided 9 graded recommendations to answer the 3 key questions. Grading was performed on the basis of the strength of the available evidence used to make the recommendation: grade A is indicative of strong evidence, grade B of moderate evidence, grade C of weak evidence, and grade E of expert opinion (in lieu of sufficient evidence). Below are the 9 recommendations.⁵

Recommendation 1. The guideline recommends the initiation of drug therapy in order to lower a systolic BP (SBP) of ≥ 150 mmHg or a diastolic BP (DBP) of ≥ 90 mmHg for the general population at 60 years of age or older (Grade A). A corollary recommendation is that patients whose achieved SBP on pharmacologic therapy is lower than the new guideline recommendation can be continued at that level of therapy, if well tolerated (Grade E).

Recommendation 2. The target DBP to start pharmacologic therapy for subjects younger than 60 years of age is ≥ 90 mmHg. On the basis of available evidence, the recommendation for patients aged 30 to 59 years is strong (Grade A). For those between the ages of 18 and 29, the recommendation is on the basis of expert opinion (Grade E).

Recommendation 3. The target SBP to start pharmacologic therapy for subjects younger than 60 years of age is ≥ 140 mmHg (Grade E).

Recommendation 4. In the population aged 18 years or older with chronic kidney disease, initiate pharmacologic treatment to lower BP at SBP ≥ 140 mmHg or DBP ≥ 90 mmHg and treat to a goal of SBP < 140 mmHg and a goal of DBP < 90 mmHg (Grade E).

Recommendation 5. The target blood pressure in beginning pharmacologic therapy for the diabetic population aged 18 years or older is < 140 mmHg for SBP and < 90 mmHg DBP (Grade E).

Recommendation 6. Initial drug therapy for nonblack patients (including diabetic patients) should include a thiazide-type diuretic, a calcium channel blocker, an angiotensin-converting enzyme (ACE) inhibitor, or an angiotensin receptor blocker (Grade B).

Recommendation 7. Initial drug therapy for black patients should include a thiazide-type diuretic or a calcium channel blocker. This includes patients with diabetes mellitus (Grade B; for diabetic black patients, Grade C).

Recommendation 8. For patients 18 years and older with chronic kidney disease, initial or additional therapy should include an ACE inhibitor or angiotensin receptor blocker, regardless of race or diabetic status (Grade B).

Recommendation 9. An algorithm for managing patients who do not achieve control within one month is recommended. If the goal is not achieved, increase the dose of the initial drug or add a 2nd drug from one of the classes in recommendation 6. A 3rd drug should be added if the goal is not achieved with 2 drugs. Drugs from other classes can be used if the target is not achieved with the recommended classes, or if there is a contraindication to one of the recommended drug classes. ACE inhibitors should not be combined with angiotensin receptor blockers in the same patient. Referral to an HTN specialist should be considered in complicated cases or in the event of inability to control BP (Grade E).⁵

Discussion

More than 2 decades have passed since the publication of the JNC 7 guidelines.⁶ In 2013, the National Heart, Lung, and Blood Institute announced that after JNC 8, it would no longer develop guidelines and would instead support the medical societies in the development of their own guidelines.⁷ The Institute of Medicine's report "Clinical Practice Guidelines We Can Trust" outlined a pathway to guideline development that placed strong emphasis on the use of randomized clinical trials, which was the approach that this panel followed in the creation of this 2013 report.⁸ Controversy arose, especially in regard to the first recommendation in the guideline. An increase in the systolic threshold for treatment of patients older than 60 years was thought by some of the members of the committee to lack support by the available data and to result, possibly, in suboptimal treatment of patients at increased risk of cardiovascular events.⁹ The decision to increase the BP threshold arose, in part, in response to data from the VALISH and JATOS trials, 2 Japanese studies that did not show benefit when an ambitious target (BP goal of <140/90 mmHg) was compared with a milder one (BP goal of ≤150/90 mmHg).^{10,11} However, these studies were remarkable for low event rates, which rendered them underpowered to detect a significant difference in major endpoints. Other guidelines, such as those of the European Society of Cardiology, recommended a higher threshold for treatment (SBP ≥150/90 mmHg) of patients older than 80 years.¹² In response to JNC 8, the American Heart Association and the American

College of Cardiology, in association with the American Society of Hypertension, are in the process of producing an HTN guideline this year that will provide clinicians with another layer of information, to assist in determining optimal treatment thresholds for their patients. In tailoring medical therapy for HTN, clinicians should use their best judgment with the available evidence in determining reasonable BP goals. This is particularly true in the elderly (age, >60 yr), in whom issues such as cardiovascular risk, frailty, side effects, cost, and patient preference affect therapy more acutely.

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