

Hypertension Guidelines: Does JNC 8 Represent a Paradigm Shift?

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Hypertension is the most commonly encountered medical condition in clinical setting. Being a risk factor for myocardial infarction, stroke, and chronic renal failure, it warrants early recognition and optimal management [1, 2].

The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC) of the United States has provided guidelines for the management of hypertension since 1976. In December 2013, after a hiatus of ten years, 8th revision of the guidelines for the management of hypertension, also called JNC 8, were published. Unlike the previous revisions, the committee based its recommendations solely from the evidence gleaned from randomized clinical trials consistent with the standards set by the United States' Institute of Medicine for guideline development. The principle questions addressed by these guidelines are: when to initiate treatment, how low to aim for, and which antihypertensive medications to use.

JNC 8 contains nine recommendations and one corollary recommendation. Each recommendation is graded based on the strength of the evidence available. Although the bulk of JNC 7 (7th revision of the JNC guidelines published in December 2003) [3] was left intact, some important changes introduced in the JNC 8 include:

1. Raising the systolic blood pressure (SBP) goal from 140 mm Hg or less to 150 mm Hg or less in adults aged 60 or more (Strong recommendation - Grade A).
2. Blood pressure goal of 140/90 mm Hg or less in those with diabetes or with chronic kidney disease (Expert opinion - Grade E).
3. Thiazide-type diuretics, calcium-channel blockers, angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) are now the initial choice of therapy. Thiazide-type diuretics are no longer the only preferred drug of choice. Beta blockers have been removed from the initial choice of therapy due to evidence showing lower efficacy at increased risk of adverse events compared to the other agents. (Moderate recommendation – Grade B)

The most significant change made by the JNC 8

panel is in setting a higher SBP target for adults age 60 or older. The previous SBP goal of 140 mm Hg or less was difficult to achieve with anti-hypertensive mono-therapy and physicians have been reluctant to use multiple agents to achieve this goal because of the increased risk of adverse effects, particularly falls [4]. But now with a higher SBP target, achieving the blood pressure target will be easier. However, the randomized clinical trials used to formulate this recommendation may not represent the real world experience, and because older studies focused primarily on diastolic pressure, strong evidence on systolic pressure was not available. Additionally, a large meta-analysis of clinical trials showed that a reduction in SBP of even 10 mm Hg lowers the risk of coronary heart disease events by 22% and of stroke by 41% up to a SBP of 110 mm Hg [5]. Some studies have also proposed that undetected high blood pressure, rather than antihypertensive drugs, is a cause of orthostatic hypotension and falls in older age group [6]. With the possibility that a SBP goal of less than 140 mm Hg may provide a clinically important benefit, a corollary recommendation based on expert opinion was made which states that if a blood pressure of less than 140/90 mm Hg is achieved without undue burden from treatment related side-effects, treatment does not need to be adjusted.

For patients with diabetes, the JNC 8 panel decided to base recommendations on the results of the Action to Control Cardiovascular Risk in Diabetes—Blood-pressure-lowering Arm (ACCORD-BP) trial. ACCORD-BP trial showed no differences in outcomes with a SBP goal lower than 140 mm Hg vs. lower than 120 mm Hg after a mean follow-up of 4.7 years with serious adverse effects more frequently seen in the intensive therapy group [7]. However, it is plausible that a trial with a higher risk population might have shown a more pronounced benefit [8]. The rationale behind raising the target for patients with chronic kidney disease from 130/80 mm Hg set by JNC 7 was insufficient evidence of any additional benefit on outcomes when compared with a goal of less than 140/90 mm Hg. In persons with chronic kidney disease, SBP is refractory to antihypertensive therapy because

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of large artery stiffness associated with reduced kidney function and thus a combination of antihypertensive medications are used in an attempt to achieve good SBP control in this population. However, this is also accompanied by large decreases in diastolic blood pressure and wider pulse pressures. With studies linking lowering of diastolic blood pressure to 85 mm Hg or less with a higher risk of death and adverse cardiovascular outcomes [9], the higher target recommended by JNC 8 will lessen the risk by obviating the need for multiple antihypertensive medications.

Under JNC 8, thiazide-type diuretics, ACE inhibitors, ARBs, and calcium channel blockers are now the initial therapy of choice. All these drug classes have comparable outcome benefits with the exception of heart failure for which thiazide-type diuretics are superior to the other three classes [1][10]. With most patients requiring two or more drugs to achieve target blood pressure, a combination of drugs from these four classes has not only demonstrated a more efficacious response but also reduced adverse effects. For example, ARBs when combined with thiazide diuretics can improve the latter's safety profile [11-12].

The JNC panel with these new guidelines has aimed to simplify recommendations and clarify goals for primary care providers thereby making treatment standards more understandable and uniform. However, JNC 8 does not address all the relevant issues related to management of hypertension. For instance, it is unclear if patients with history of stroke should have blood pressure target similar to patients without stroke. Hypertension is a well-established modifiable risk factor for stroke and new recommendations may have a significant impact on the incidence of stroke. Although JNC 8 has set a new precedent in the formulation of guidelines by adhering only to the highest-quality evidence, 5 of their 10 recommendations were based on expert opinion. This highlights the need for larger randomized controlled trials to compare different blood pressure thresholds in various patient populations. While these guidelines provide important tools for decision making, it is important that physician and patients should work together to establish treatment goals based on the best evidence and patient's preferences.

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