

# Review of new hypertension guidelines

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**Abstract.** – The Eighth Joint National Committee (JNC 8) released its new guidelines on the management of adult hypertension in Dec 2013. The key departures from JNC 7 include target blood pressures and thresholds for initiation of elderly patients and in patients under age 60 with diabetes and kidney disease. In this review, we analyse the critical questions, basis of new recommendations, major deviations from JNC 7, the strengths and limitations of changes in previous management guidelines.

*Key Words:*

JNC7, JNC8, Hypertension, Guidelines, Management, Recommendations.

## Introduction

The report of the panel appointed to the eighth Joint National Committee On Prevention, Detection, Evaluation, and Treatment Of High Blood Pressure (JNC 8) was published in December 2013. The JNC has issued guidelines for managing hypertension since 1976 sanctioned by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health and the last published guideline was JNC 7 in 2003<sup>2</sup>. JNC 8 recommendations are evidence-based, simpler and less aggressive than the prior guidelines. In this review we discuss the critical questions, recommendations and changes in previous management guidelines<sup>1</sup>.

The JNC 8 panel came up with the 3 highest-ranked questions or critical questions which guided the review of evidence<sup>1</sup>.

### **Critical Questions of JNC8**

1. When to initiate treatment? ('In adults with hypertension, does initiating antihypertensive pharmacologic therapy at specific BP thresholds improve health outcomes?')
2. How low should the BP goal be? ('In adults with hypertension, does treatment with antihypertensive pharmacologic therapy to a specified BP goal lead to improvements in health outcomes?')

3. Which antihypertensive medication should be used? ('In adults with hypertension, do various antihypertensive drugs or drug classes differ in comparative benefits and harms on specific health outcomes?').

The JNC 8 panel focused on the above three questions as they believed these were most relevant to primary care providers<sup>1</sup>.

### **Review of Evidence and Guideline Development**

The JNC 8 panel comprising of 17 members was commissioned in 2008. Studies published from January 1966 through December 2009 meeting specified criteria were included for evidence review. Only randomized controlled trials with a sample size of more than 100 were included. Participants had to be > 18 yrs of age with hypertension. Another bridging search for studies published between Dec 2009-Aug 2013 was conducted and major multicenter studies with sample sizes of more than 2,000 included. Initial literature review and data summary was carried out by an external methodology team. Evidence statements and clinical recommendations were then made by the JNC 8 panel using the evidence quality rating and grading systems developed by the NHLBI<sup>3</sup>.

### **Nine Recommendations and One Corollary of JNC 8<sup>1</sup>**

#### **Recommendation 1**

In individuals aged  $\geq 60$  yrs, the panel recommends initiating antihypertensive drug treatment if systolic blood pressure (SBP)  $\geq 150$  mm Hg or diastolic blood pressure (DBP)  $\geq 90$  mm Hg and to aim for systolic and diastolic goal of  $< 150$  mm and  $< 90$  mm Hg respectively. (Strong Recommendation – Grade A).

#### **Corollary Recommendation**

In individuals aged  $\geq 60$  years, dosage of antihypertensive treatment need not be adjusted if

lower SBP (e.g. < 140 mm Hg) than the desired goal is achieved without adverse effects on health or quality of life. (Expert Opinion – Grade E).

### **Recommendation 2**

In individuals aged < 60 years, begin pharmacologic treatment when DBP  $\geq$  90 mm Hg and treat to a goal DBP < 90 mm Hg. (Strong Recommendation – Grade A for ages 30-59 years; (Expert Opinion – Grade E for ages 18-29 years).

### **Recommendation 3**

In individuals < 60 years, start pharmacologic treatment when SBP  $\geq$  140 mm Hg and treat to a goal SBP < 140 mm Hg. (Expert Opinion – Grade E).

### **Recommendation 4**

In individuals 18 years or older with chronic kidney disease (CKD), begin pharmacologic treatment at SBP  $\geq$  140 mm Hg or DBP  $\geq$  90 mm Hg and aim for SBP < 140 mm Hg and DBP < 90 mm Hg. (Expert Opinion – Grade E).

### **Recommendation 5**

In individuals 18 years or older with diabetes, start pharmacologic treatment at SBP  $\geq$  140 mm Hg or DBP  $\geq$  90 mm Hg and aim for SBP and DBP goal of < 140 mm Hg and < 90 mm Hg respectively. (Expert Opinion – Grade E).

### **Recommendation 6**

Begin antihypertensive treatment with a thiazide-type diuretic, calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor blocker (ARB) in the general non-black population including diabetics. (Moderate Recommendation – Grade B).

### **Recommendation 7**

In black patients including diabetics, initiate treatment with a thiazide-type diuretic or CCB. (For general black population: Moderate Recommendation – Grade B; for black patients with diabetes: Weak Recommendation – Grade C).

### **Recommendation 8**

In individuals 18 years or older with CKD, irrespective of race or diabetes status, initial (or add-on) antihypertensive treatment should include an ACEI or ARB to improve kidney outcomes. (Moderate Recommendation – Grade B).

### **Recommendation 9**

If target BP is not reached within a month of treatment, the dose of the initial drug should be increased or a second drug (thiazide-type diuretic, CCB, ACEI, or ARB) added. BP should be continuously monitored and treatment regimen adjusted until target BP is reached. A third drug should be added and titrated if target BP is not achieved with 2 drugs. ACEI and ARB

**Table 1.** Hypertension treatment targets as per JNC 8 recommendations<sup>3</sup>.

	General population		With diabetes		With chronic kidney disease	
<b>Age (years)</b>	$\geq$ 60	18–59	$\geq$ 18		$\geq$ 18	
<b>Goal blood pressure (mm Hg)</b>	< 150/90	< 140/90	< 140/90		< 140/90	
<b>Initial antihypertensive drugs to use</b>						
	General population		With diabetes		With chronic kidney disease	
<b>Race</b>	Nonblack	Black	Nonblack	Black	Nonblack	Black
<b>Initial drugs<sup>b</sup></b>	ACE inhibitor, ARB, calcium channel blocker, or diuretic	Calcium channel blocker or diuretic	ACE inhibitor, ARB, calcium channel blocker, or diuretic	Calcium channel blocker or diuretic	ACE inhibitor or ARB	ACE inhibitor or ARB
<sup>a</sup> Hypertension is defined as office blood pressure $\geq$ 140/90 mm Hg on more than two visits <sup>2</sup> <sup>b</sup> Lifestyle modifications should be emphasized throughout treatment, including a low-sodium Dietary Approaches to Stop Hypertension (DASH) diet, physical activity, and weight loss						

should not be used concomitantly in one patient. If target BP is still not reached or there exists a contraindication to use then antihypertensive drugs from other classes can be used. (Expert Opinion – Grade E).

Goals of hypertension treatment as per JNC 8 are summarized in Table I.

### **Major changes from JNC 7**

The blood pressure goal was less than 140/90 mm Hg in JNC 7 which has been changed to less than 150/90 mm Hg in people  $\geq$  60 yrs of age<sup>1,2</sup>.

The target BP in all others has been set at less than 140/90 mm, including diabetics and CKD patients. In JNC 7, the latter two groups had a goal of less than 130/80 mm Hg<sup>1,2</sup>.

The initial choice of therapy as per JNC 8 should be from any of four classes of drugs: thiazide-type diuretics, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, or angiotensin receptor blockers (ARBs). Beta-blockers have been removed from the list of drugs of first choice of antihypertensive therapy. This is in direct contrast to The European Society of Hypertension/European Society of Cardiology guideline which included beta-blockers as one of the options for first-line treatment<sup>4</sup>.

### **Strengths of JNC 8 Recommendations**

JNC 8 followed a rigorous, evidence-based approach and focused on a few key questions<sup>1,3</sup>.

JNC 8 reviewed and evaluated evidence from randomized controlled trials, adhering closely to standards set by the Institute of Medicine for guideline development where as JNC 7 relied heavily on consensus and expert opinion<sup>1,3</sup>.

It simplified recommendations where in only two targets were set – treat to lower than 150/90 mm Hg in patients age 60 and older, and lower than 140/90 mm Hg for all else<sup>1,3</sup>.

It also simplified initial drug regimen in management of hypertension by providing any four initial drug options in non-blacks and two in blacks<sup>1,3</sup>.

Reducing blood pressure goal to  $<$  150/90 for those 60 and older allays concerns of overtreatment of hypertension in this population and preventing associated adverse events<sup>1,3</sup>.

### **Limitations of JNC 8 Recommendations**

Information from observational studies, systematic reviews, and meta-analyses were excluded from formulation of these guidelines<sup>1,3</sup>.

Five of the 10 recommendations (including the corollary recommendation) are still based on expert consensus opinion rather than available evidence<sup>1,3</sup>.

Blood pressure targets in subgroups such as those with proteinuria and with a history of stroke are not defined. Therefore, there is a need for larger randomized controlled trials comparing different blood pressure thresholds in specific patient populations<sup>1,3</sup>.

Relaxing blood pressure targets could result in higher blood pressures, subsequently leading to adverse cardiovascular outcomes<sup>1,3</sup>.

JNC 8 did not provide specific recommendations for the use of Ambulatory blood pressure monitoring<sup>1,3</sup>.

It did not cover several subjects included in the JNC 7 recommendations including definitions of pre-hypertension and hypertension, patient evaluation, secondary hypertension, adherence to treatment regimens and resistant hypertension<sup>1,3</sup>.

## **Key Points**

- JNC 8 focuses on when to initiate treatment, how low to set the BP target and which antihypertensive medications to use.
- It recommends starting antihypertensive treatment if the blood pressure is 150/90 mm Hg or higher, with a goal of less than 150/90 in patients  $\geq$  60 yrs of age.
- The recommended class of drugs for initiation of therapy include thiazide-type diuretics, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, and angiotensin receptor blockers (ARBs) in non-blacks.
- However, treatment decisions should be made on an individual patient basis using guidelines only as a framework.

### **Conflict of Interest**

The Authors declare that there are no conflicts of interest.

## **References**

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