

What Should the Systolic Blood Pressure Goal be in Adults with Hypertension?

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The American Heart Association (AHA) 2007 guidelines recommend treating patients with hypertension at high risk for coronary events such as those with coronary artery disease, diabetes mellitus, chronic kidney disease, or a 10-year Framingham risk score of 10% or higher to have their systolic blood pressure reduced to less than 130 mm Hg [1]. These guidelines also recommend that patients with hypertension and left ventricular systolic dysfunction have their systolic blood pressure reduced to less than 120 mm Hg [1]. However, clinical trial data do not support these guidelines for treatment of patients with hypertension [2-17].

The American College of Cardiology Foundation (ACCF)/AHA 2011 expert consensus document on hypertension in the elderly developed in collaboration with the American Academy of Neurology, the American Geriatrics Society, the American Society for Preventive Cardiology, the American Society of Hypertension, the American Society of Nephrology, the Association of Black Cardiologists, and the European Society of Hypertension recommends that the systolic blood pressure be reduced to less than 140 mm Hg in persons younger than 80 years and to 140 to 145 mm Hg if tolerated in adults aged 80 years and older [18]. I strongly support these guidelines based on clinical trial data [2-17].

The American Diabetes Society 2013 guidelines recommend that diabetics with hypertension should have their systolic blood pressure reduced to less than 140 mm Hg [19]. These guidelines also state that a systolic blood pressure less than 130 mm Hg may be considered in younger patients with long life expectancy if achieved with few drugs and without side effects

The International Society of Nephrology 2012 guidelines for management of blood pressure in patients with non-dialysis-dependent chronic kidney disease recommend that patients with chronic kidney disease without diabetes mellitus [20] or with diabetes mellitus [21] with hypertension and albuminuria less than 30 mg per 24 hours should have their systolic blood pressure reduced to \leq 140 mm Hg. If albuminuria greater than 30 mg per 24 hours is present, the systolic blood pressure may be reduced to \leq 130 mm Hg with a class II D indication which I would not recommend [20,21].

The European Society of Hypertension/European Society of Cardiology 2013 guidelines for management of hypertension recommend lowering the systolic blood pressure to less than 140 mm Hg in patients at low to moderate cardiovascular risk, in patients with diabetes mellitus, in patients with a prior stroke or transient ischemic attack, in patients with coronary heart disease, and in patients with diabetic or non-diabetic chronic kidney disease [22]. In patients aged 65-79 years of age with a systolic blood pressure of 160 mm Hg or higher, the systolic blood pressure should be reduced to between 140-150 mm Hg with consideration of a systolic blood pressure less than 140 mm Hg [22]. In patients older than 80 years with a systolic blood pressure of 160 mm Hg or higher, the systolic blood pressure should be reduced to between 140-150 mm Hg provided they are in good physical and mental conditions [22].

The 2013 Eighth Joint National Committee (JNC 8) guidelines for

management of hypertension recommend lowering the systolic blood pressure to less than 140 mm Hg in patients younger than 60 years and in patients with diabetes mellitus or chronic kidney disease [23]. These guidelines recommend lowering the systolic blood pressure in patients aged 60 years or older to less than 150 mm Hg if they do not have diabetes mellitus or chronic kidney disease [23]. The minority view from JNC 8 summarizes the evidence that the systolic blood pressure goal in patients younger than 80 years with hypertension without diabetes mellitus or chronic kidney disease should be less than 140 mm Hg [24]. I concur with this view.

Among 8,354 patients aged 60 years and older with coronary artery disease in the International Verapamil SR-Trandolapril Study (INVEST), a baseline systolic blood pressure of 150 mm Hg or higher, and 22,308 patient years of follow-up, 57% had a systolic blood pressure less than 140 mm Hg, 21% had a systolic blood pressure of 140 to 149 mm Hg, and 22% had a systolic blood pressure of 150 mm Hg or higher [25]. The primary outcome of all-cause mortality, nonfatal myocardial infarction, or nonfatal stroke occurred in 9.36% of patients with a systolic blood pressure less than 140 mm Hg, in 12.71% of patients with a systolic blood pressure of 140-149 mm Hg, and in 21.3% of patients with a systolic blood pressure of 150 mm Hg or higher ($p < 0.0001$) [25]. Using propensity score analyses, compared with a systolic blood pressure less than 140 mm Hg, a systolic blood pressure of 140 to 149 mm Hg increased cardiovascular mortality 34% ($p = 0.04$), total stroke 89% ($p = 0.002$), and nonfatal stroke 70% ($p = 0.03$) [25]. Compared with a systolic blood pressure of less than 140 mm Hg, a systolic blood pressure of 150 mm Hg or higher increased the primary outcome 82% ($p < 0.0001$), all-cause mortality 60% ($p < 0.0001$), cardiovascular mortality 218% ($p < 0.0001$), and total stroke 283% ($p < 0.0001$) [25].

Elderly persons are currently being undertreated for hypertension [18,26]. If the JNC 8 panel recommendations are implemented, 6 million USA adults aged 60 years and older would not be eligible for antihypertensive drug therapy, and treatment intensity would be decreased for an additional 13.5 million older persons [27], leading to increased incidences of coronary events, stroke, heart failure, cardiovascular mortality, and other adverse events associated with poor control of hypertension. The JNC 8 guidelines raising the threshold for initiating antihypertensive drug treatment and systolic blood pressure goal for older persons places high-risk women, especially African-American, at unnecessary excess risk for cardiovascular morbidity and mortality [28].

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The 2014 American Society of Hypertension (ASH)/ International Society of Hypertension (ISH) guidelines recommend lowering the systolic blood pressure to less than 140 mm Hg in adults younger than 80 years [29]. In adults aged 80 years and older, these guidelines recommend lowering the systolic blood pressure to less than 150 mm Hg unless these patients have diabetes mellitus or chronic kidney disease when a goal of less than 140 mm Hg can be considered [29].

I would recommend starting antihypertensive drug treatment in patients younger than 80 years when the systolic blood pressure is higher than 140 mm Hg or the diastolic blood pressure is higher than 90 mm Hg. In patients aged 80 years and older without diabetes mellitus or chronic kidney disease, I would recommend starting antihypertensive drug when the systolic blood pressure is higher than 150 mm Hg or the diastolic blood pressure is higher than 90 mm Hg. If these patients have diabetes mellitus or chronic kidney disease, I would consider starting antihypertensive drug treatment when the systolic blood pressure is higher than 140 mm Hg.

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