

Association of Systolic Blood Pressure Levels with Cardiovascular Events and All-Cause Mortality in Older Adults Taking Antihypertensive Treatment in the REGARDS Study

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Hypertension is a major risk factor for cardiovascular disease in older adults [1]. Hypertension is present in 69% of patients with a first myocardial infarction [2], in 77% of patients with a first stroke [2], in 74% of patients with congestive heart failure [2], and in 60% of patients with peripheral arterial disease [3].

The Systolic Hypertension in the Elderly Program (SHEP) showed reduction in cardiovascular events in elderly patients whose Systolic Blood Pressure (SBP) was lowered to between 140-145 mm Hg by antihypertensive drug therapy [4]. The Hypertension in the Very Elderly Trial (HYVET) showed a reduction in cardiovascular events and in all-cause mortality in patients aged 80 years and older whose SBP was reduced to between 140-145 mm Hg by antihypertensive drug therapy [5].

The 2011 American College of Cardiology Foundation/American Heart Association 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 recommended on the basis of clinical trial data that the SBP be lowered to less than 140 mm Hg in older patients younger than 80 years and to between 140 -145 mm Hg if tolerated in patients aged 80 years and older [1]. The European Society of Hypertension/European Society of Cardiology 2013 guidelines for management of hypertension recommend In older patients younger than 80 years with a SBP of 160 mm Hg or higher that the SBP should be lowered to between 140-150 mm Hg with consideration of a SBP less than 140 mm Hg [6]. In patients older than 80 years with a SBP of 160 mm Hg or higher, the SBP should be lowered to between 140-150 mm Hg provided they are in good physical and mental conditions [6].

The 2014 guidelines report from the Eighth Joint National Committee (JNC 8) on management of high blood pressure in adults recommended use of antihypertensive drug therapy in patients aged 60 years and older without chronic kidney disease or diabetes mellitus to lower the SBP to less than 150 mm Hg and the diastolic blood pressure to less than 90 mm Hg [7]. I agree with the diastolic blood pressure goal but disagree with the SBP goal recommendation as does a minority report from JNC 8 which recommends that the SBP goal in patients younger than 80 years with hypertension without

chronic kidney disease or diabetes mellitus should be less than 140 mm Hg [8].

Elderly persons have the lowest rates of adequate blood pressure control and the highest incidence of cardiovascular events. Blood pressure is adequately controlled in 36% of men and 28% of women between ages 60-79 years and in 38% of men and 23% of women aged 80 years and older [9]. I am very concerned that the higher SBP goal in older persons recommended by JNC 8 will lead to a higher incidence of cardiovascular events and mortality.

The Reasons for Geographic and Racial Differences in Stroke (REGARDS) study is an observational study of risk factors for stroke which includes 4,181 patients aged 55 to 64 years, 3,767 patients aged 65 to 74 years, and 1,839 patients aged 75 years and older (mean age 79.3 years) living in the stroke belt and stroke buckle regions of the United States and taking antihypertensive medication [10]. Median follow-up was 4.5 years for cardiovascular disease (CVD), 4.5 years for coronary heart disease (CHD), 5.7 years for stroke, and 6.0 years for all-cause mortality.

For persons aged 55 to 64 years, the lowest incidence of CVD, CHD, stroke, and all-cause mortality occurred with a SBP less than 140 mm Hg [10]. The numerically highest risk for CVD, CHD, stroke, and all-cause mortality occurred with a SBP of 140 to 149 mm Hg, and especially for SBP values of 150 mm Hg and higher [10].

For persons aged 65 to 74 years, there was a significant increased incidence of CVD and CHD at SBP levels of 150 mm Hg and higher, for stroke at SBP levels of 130 mm Hg and higher, and for all-cause mortality at SBP levels of 140 mm Hg and higher [10]. For patients aged 75 years and older, there was a significant increase in CVD, CHD, and stroke at SBP levels of 140 mm Hg and higher and a significant increase in CVD, CHD, and all-cause mortality at SBP levels below 120 mm Hg [10]. We concluded from these data that among adults aged 55 years and older taking antihypertensive medication that a SBP between 120 to 139 mm Hg was significantly associated with a

reduced risk for cardiovascular and all-cause mortality outcomes [10].

We presented data from the REGARDS study at the 2014 European Society of Cardiology Meeting in Barcelona, Spain that showed for adults aged 55 years and older taking antihypertensive medication, the optimal diastolic blood pressure to reduce cardiovascular risk was between 70 and 90 mm Hg [11]. We also presented at this meeting data from the REGARDS study in 10,983 persons aged 55 years and older without hypertension that the recommended SBP level for persons aged 55 to 74 years should be less than 140 mm Hg if tolerated, and due to significant stroke reduction, a SBP level less than 140 mm Hg should also be considered for persons aged 75 years and older [12].

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