

## Systolic Blood Pressure Levels Associated with Cardiovascular Events and All-cause Mortality: Results from the REGARDS Study

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The reasons for Geographic and Racial Differences in Stroke (REGARDS) study is a population-based observational study of 30,239 persons aged 45 years and older living in the stroke belt and stroke buckle of the United States. The stroke belt and stroke buckle include North Carolina, South Carolina, Georgia, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana. This editorial will discuss data from the REGARDS study in 4,181 adults aged 55 to 74 years, 3,767 adults aged 65 to 74 years, and 1,839 adults aged 75 years and older, mean age 79.3 years, taking antihypertensive medication [1]. The persons aged 55 to 64 years included 38% men, 62% women, and 56.2% blacks. The persons aged 65 to 74 years included 39.3% men, 60.7% women, and 50% blacks. The persons aged 75 years and older included 36.9% men, 63.1% women, and 45.4% blacks. Cardiovascular disease events included the first occurrence of a coronary heart disease or stroke event. Median follow-up was 4.5 years for cardiovascular disease, 4.5 years for coronary heart disease, 5.7 years for stroke, and 6.0 years for all-cause mortality [1].

For persons aged 55 to 64 years, a systolic blood pressure below 140 mm Hg was associated with the lowest incidence of cardiovascular disease, coronary heart disease, stroke, and all-cause mortality, with numerically the highest risk at a systolic blood pressure of 140 to 149 mm Hg, and especially for a systolic blood pressure of 150 mm Hg and higher [1]. The risk of recurrent falls was also increased at systolic blood pressure levels of 150 mm Hg and higher [1].

For persons aged 65 to 74 years, there was a significant increased incidence of cardiovascular disease and of coronary heart disease at systolic blood pressure levels of 150 mm Hg and higher, of stroke at systolic blood pressure levels of 130 mm Hg and higher, and of all-cause mortality at systolic blood pressure levels of 140 mm Hg and higher [1]. In this age group, systolic blood pressure was not associated with recurrent falls [1].

For persons aged 75 years and older, there was a significant increased incidence of cardiovascular disease, coronary heart disease, and stroke at systolic blood pressure levels of 140 mm Hg and higher [1]. The incidence of cardiovascular disease, coronary heart disease, stroke, all-cause mortality, and recurrent falls was significantly increased at systolic blood pressure levels below 120 mm Hg [1].

These data from the REGARDS study support the recommendations from the American College of Cardiology Foundation 2011 expert consensus document on hypertension in the elderly [2]. These guidelines recommend reducing the systolic blood pressure to less than 140 mm Hg in persons with hypertension aged younger than 80 years and to 140 to 145 mm Hg if tolerated in persons aged 80 years and older [2]. The European Society of Hypertension/European Society of Cardiology 2013 guidelines recommend reducing the systolic blood pressure in fit persons younger than 80 years to less than 140 mm Hg and in persons aged 80 years and older to between 140 and 150 mm Hg [3].

I disagree strongly with the 2014 guidelines report from the Eighth Joint National Committee (JNC 8) which recommends reducing

the systolic blood pressure to less than 150 mm Hg in persons aged 60 years and older with hypertension without diabetes mellitus or chronic kidney disease [4]. I agree with the JNC 8 minority report which recommends that the systolic blood pressure goal should be less than 140 mm Hg in persons with hypertension younger than 80 years without diabetes mellitus or chronic kidney disease [5]. The data from the REGARDS study [1] support this recommendation.

Older persons with hypertension 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 aged 60 to 79 years and in 38% of men and 23% of women aged 80 years and older [6]. I am very much concerned that the higher systolic blood pressure goal in persons aged 60 years and older without diabetes mellitus or chronic kidney disease recommended by the JNC 8 guidelines will lead to a higher incidence of cardiovascular events and mortality.

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