

Review Article

# Hypertension in the frail elderly



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## Abstract

Extant data indicate that treating to lower systolic pressure confers significant advantage to younger people in general good health and to relatively healthy octogenarians. Few data exist to guide practitioners on the treatment of frail elderly hypertensives. Chronological age alone does not suffice to make useful judgments regarding therapy. The definition of frailty remains controversial. One method, use of a simple questionnaire or a test of walking speed is practical but not universally accepted. Frail subjects, while at higher risk for cardiovascular complications, seem to benefit less or not at all from antihypertensive drug treatment. Clinicians should treat robust older patients as they would younger patients because the benefits far outweigh the low risk of adverse effects. Successful antihypertensive therapy in those younger than 80 years should not be discontinued simply because that age milestone has been crossed. Treatment of frail older patients must be individualized. Some frail survivors age 80 years or older may actually fare better with elevated systolic pressures. Pending the cognitive function substudy of Systolic Blood Pressure Intervention Trial, there is little evidence that antihypertensive treatment benefits established cognitive dysfunction. Because hypertension in middle age is a good predictor of later cognitive dysfunction, the clinical approach should be one of early prevention. *J Am Soc Hypertens* 2016;10(6):536–541. © 2016 American Society of Hypertension. All rights reserved.

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## Introduction and Background

As the population in developed countries ages and as the prevalence of hypertension in that population increases, there is some new evidence favoring antihypertensive treatment of relatively healthy elderly patients. In contrast, there is a dearth of evidence to the point of whether or how hypertension in the frail elderly should be treated. In this review, we shall indicate that chronological age alone should not be used for clinical decision making. Instead, the

clinician should identify those patients whose health is robust versus those who are frail. We shall discuss means of making that determination. Although there is no consensus on the definition of frailty, we shall proffer suggestions on how to identify it and conclude with recommendations on how to manage hypertension in this cohort.

### Elderly

Epidemiologists and clinical trialists must use definitive age groups to preserve the integrity of their research. Clinicians, in contrast, should not rely on chronological age alone to categorize their patients. Many people of advanced age enjoy robust health, whereas some chronologically younger people may be unable to work, perform usual activities of daily living, or may even require specialized care. In this brief review, we shall recognize that for purposes of clinical trials, subjects aged 60–79 years are

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generally considered to be “old” and those 80 years and older are designated as “very old.” Governments and employers have their own age standards as to when people qualify for pensions.

In the US census of 2010, there were 5,743,327 persons aged 80–84 years (1.9% of the total US population and a 16.1% increase over the 2000 census). Those 85–89 years (3,620,459) were 1.2% of the total population but had increased by 29.8% over the prior decade. The 90 to 94-year group (1,448,366) has increased by 30.2%, those 95–99 years (371,244) by 29.5%, and even those 100 years and older (53,364) have increased by 5.8%.<sup>1</sup> It is projected that by 2050 those  $\geq 65$  years will be 83.7 million, almost double that of 2012.<sup>2</sup> Those 85 years and older in 2050 will number almost 18 million or 4.5% of the population. Most, of these people will have hypertension and will thereby pose substantial problems for their clinicians.<sup>3,4</sup>

### Frail

Fried et al<sup>5</sup> defined frailty as a clinical syndrome characterized by three or more of the following: unintentional weight loss of 10 lbs or more in the past year, self-reported exhaustion, weakness measured by grip strength, slow walking speed, and low physical activity. This simple survey,<sup>6</sup> the FRAIL score, has been validated in a number of different populations.<sup>6–9</sup> The several extant surveys of frail compare well with each other, but the FRAIL score is the simplest for use by clinicians.<sup>10</sup> The FRAIL score can be used to separate the frail from the robust and to identify the “pre-frail,” those with intermediate scores. Nevertheless, the diagnosis of frailty is very complicated, and there is not universal agreement on criteria. An international task force emphasized the need to diagnose frailty to administer effective treatment.<sup>11</sup> Treatments include programmed physical exercise, caloric and protein support, reduction of polypharmacy, and hormonal therapy when indicated.

An easily performed timed walking test in an office hallway is one measure of frailty. Fried et al<sup>5</sup> used a 15 foot walk with a time cutoff of  $<6$  or  $<7$  seconds depending on the height of the subject. The National Health and Nutrition Examination Survey (NHANES) as quoted by Odden et al<sup>12</sup> used a 20-foot course. Those who cannot walk 20 feet in about 7.5 seconds can be designated as frail. One can simply mark a 20-foot course in an office hallway with tape and time the gait speed of the patient with a stopwatch (most smart phone have that function).

### The NHANES Study on Frailty

NHANES used mobile units in which they derived comprehensive historical, physical, and laboratory data from 2340 persons aged  $\geq 65$  years, a sample population selected to be representative of the much larger similar United States population. This included determination of blood pressure and walking speed over a 20-foot distance

marked by tape in the hallway and timed with a stopwatch. They divided their group into fast and slow walkers and those unable to complete the walk. There were significant differences at baseline. Fast walkers were younger (72 vs. 77 years), more likely to be female and black, more likely to have more than a high school education, but also more likely to be current smokers. Their estimated glomerular filtration rate was higher, and they were less likely to have a history of diabetes, stroke, or heart failure. Their baseline BP was lower, and they were less likely to be taking antihypertensive medication.

Odden et al<sup>12</sup> used the NHANES data to compare the hazard risk for mortality for each group of gait speed related to their SBP and DBP. The study is limited by being cross sectional. The observations are interesting and pertinent to this topic. Fast walkers with elevated SBP ( $\geq 140$  mm Hg) had a 35% higher risk of mortality compared with those fast walkers with SBP  $<140$  mm Hg. Slow walkers did not have a significant mortality difference irrespective of SBP or DBP. Those unable to complete the test for other than logistical reasons (arrived late, left early, refused) had a strongly reduced hazard ratio for mortality (0.38; 0.23–0.62) when their blood pressure was elevated to 140 mm Hg or more. The more robust subjects were the ones at greatest risk for elevated SBP and were the ones who benefitted the most from antihypertensive treatment. As noted in a strongly worded editorial,<sup>13</sup> epidemiological studies have previously made the observation that some elderly patients fare better with elevated BP. It is possible that some frail elderly need an elevated BP for adequate tissue perfusion.

Other measures of frailty include both orthostatic hypotension and orthostatic hypertension.<sup>14</sup> Patients with either finding had an increased risk of cardiovascular mortality.

### Treatment of Hypertension in the Elderly

#### Relatively Healthy Elderly

Many clinical trials on hypertension excluded older subjects. In contrast, the Hypertension in the Very Old Trial (HYVET) focused exclusively on patients who were  $\geq 80$  years.<sup>15</sup> There was no solid evidence at the time this trial was conducted that antihypertensive drug treatment in this age group was either safe or effective. This justified the investigators randomly assigning subjects to either placebo or active treatment. The 3845 subjects averaged 83.6 years, had a baseline seated SBP of 173 mm Hg, and were relatively robust although about one-third had isolated systolic hypertension. There was good separation between the SBP and DBP of the placebo and active treatment groups. The study was stopped early because of substantial reduction in many of the primary end-points, especially heart failure, death from any cause, and death from stroke.

The HYVET study can be criticized for many reasons. The subjects were largely recruited from China and Eastern

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