

130/80 is the new 140/90: Do we need a tailored approach for older patients?

Nathalia Gonzalez-Jaramillo ¹

Arjola Bano ^{1,2}

¹ Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland.

² Department of Cardiology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland.

Funding: The authors received no financial support for the research, authorship and/or publication of this article.

Declaration of conflicting interests: The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Address all correspondence and requests for reprints to:

Nathalia Gonzalez-Jaramillo, MD, MSc

Institute of Social and Preventive Medicine, University of Bern

Office 488

Mittelstrasse 43

3012 Bern Switzerland

Tel [+41 31 631 55 63](tel:+41316315563)

E-mail nathalia.gonzalez@ispm.unibe.ch

Word count: 972

Key words: Hypertension, Elderly, Guidelines, Mortality, Cardiovascular disease.

Hypertension accounts for a substantial amount of preventable health loss attributable to modifiable risk factors, and its prevalence increases with age (1). With the aging of the population, it has become a global priority to control blood pressure (BP) levels according to the best available evidence. However, inconsistent results from clinical trials and observational studies have led to discrepant hypertension definitions among scientific societies, including the American Heart Association (AHA), the American College of Physicians (ACP) and the European Society of Cardiology (ESC) (2-4). Specifically for older patients, the cut-off values for hypertension in the ACP and ESC guidelines are 150/90 mmHg and 140/90, respectively. Meanwhile, the latest AHA hypertension guideline (2) lowered the threshold of stage 1 hypertension to 130/80. This decision was based on a systematic appraisal of randomized clinical trials (2, 5), indicating that hypertension treated to the new goal can reduce the risk of major cardiovascular events as myocardial infarction, stroke and heart failure.

Since its inception in 2017, the rigorous modification of BP thresholds in the AHA guideline has stimulated intense debate (6, 7). Most of the criticism regarding the lowering of BP threshold is based on the potential risks of overdiagnosis and overtreatment. With the 130/80 mm Hg as a new cut-off value for stage 1 hypertension, more individuals would be identified as prevalent cases and consequently, more would require antihypertensive therapy. This could be particularly challenging when implementing the new AHA guidelines in the elderly, given the potential increase in the health care costs (8) and the putative side effects of antihypertensive treatments related to the older age (7). Against the overtreatment arguments, the AHA guideline indicates that based on the cardiovascular risk score calculation, only a small proportion of the newly diagnosed patients would require medical treatment. The majority would control BP values through lifestyle modifications, which would imply the development of comprehensive preventive strategies targeting cardiovascular risk factors. Still, the implications of the current AHA guideline remain to be further explored in real life settings, beyond the clinical trials that originated the existing recommendations.

In this issue of the *European Journal of Preventive Cardiology*, An Pan et al investigated the association of the new BP criteria with all-cause and cardiovascular disease (CVD) mortality, based on the pooled data from three prospective Chinese cohorts. In a total population of 154,000 participants, the prevalence of stage 1 hypertension was 45.6%. Stage 1 hypertension was associated with an increased risk of mortality due to CVD, ischaemic heart disease and cerebrovascular disease. Importantly, 27.4% and 9.8% of CVD deaths could be prevented if stage 1 hypertension was eliminated among adults younger and older than 65 years, respectively. However, as the authors acknowledge, the proportion of patients that would require antihypertensive medications according to the new AHA guideline could not be calculated in this setting due to the lack of available data on baseline cardiovascular risk score. Of note, An Pan et al found that the association of stage 1 hypertension with mortality was stronger among participants younger than 65 years old and was attenuated with increasing age. In line with the current AHA recommendations, it was concluded that for individuals younger than 65 years old and without pre-existing CVD, a comprehensive management of BP to less than 130/80 mm Hg (via lifestyle modifications and home BP monitoring) could contribute to the prevention of CVD mortality. This is also supported by other prospective studies performed in multi-ethnic populations, reporting that the risk of CVD for younger adults diagnosed with stage 1 hypertension is higher compared to those with normal BP values (9). On the other hand, the evidence for older patients is not as consistent as it is for younger patients, and this may be attributable to the large clinical heterogeneity within the elderly population. Hence, some previous studies have shown that the association of BP with CVD mortality is attenuated with older age and poorer health status, while additional evidence supports the benefits of lowering BP in older people with few comorbidities and preserved autonomy (2, 5, 10)

In view of the discrepancies among the current guidelines of hypertension, several issues need to be considered by future research in order to facilitate heading towards an agreement. Generally, selected subgroups of older people are excluded from clinical trials due to safety concerns and comorbid conditions, thus limiting the generalizability of results and making it difficult to obtain definitive evidence to modify the guidelines. To address this, observational studies including large and clinically heterogeneous samples of the general population are needed to explore the potential risk differences by sex, age, comorbidities, functionality, and other factors that may explain current inconsistencies. A specialized geriatric assessment, the calculation of ageing scores, and a comprehensive evaluation of age-related factors could further contribute to the development of elderly-tailored recommendations for the management of hypertension. Moreover, the recommendations need to ultimately reflect the multidimensional impact of BP trajectories on the overall health of older people. Besides focusing on mortality and CVD, future studies may also need to take into account the role of different BP targets on cognitive decline, physical dysfunction, falls, fractures, and quality of life. Given that the utilization of health care resources increases with increasing age, the economic burden of different hypertension guidelines should be also carefully investigated in the older patients.

In conclusion, the current available evidence on the management of hypertension indicates that for older patients, the strategy of one-size fits all does not apply. The concern of overdiagnosis is globally increasing, and possible risks of antihypertensive treatments may outweigh their potential benefits. The lack of consensus in the current guidelines call for interdisciplinary work among cardiologists and geriatricians, and encourages a careful personalized management of hypertension in older patients. In this context, the development of elderly-tailored recommendations for hypertension could improve the health and wellbeing of older patients.

References

1. Gakidou E, Afshin A, Abajobir AA, Abate KH, Abbafati C, Abbas KM, et al. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2017;390(10100):1345-422.
2. Whelton PK, Carey RM, Aronow WS, Casey DE, Jr., Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension (Dallas, Tex : 1979)*. 2018;71(6):e13-e115.
3. Qaseem A, Wilt TJ, Rich R, Humphrey LL, Frost J, Forciea MA, et al. Pharmacologic Treatment of Hypertension in Adults Aged 60 Years or Older to Higher Versus Lower Blood Pressure Targets: A Clinical Practice Guideline From the American College of Physicians and the American Academy of Family Physicians. *Annals of Internal Medicine*. 2017;166(6):430-7.
4. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension. *Journal of hypertension*. 2018;36(10):1953-2041.
5. Reboussin DM, Allen NB, Griswold ME, Guallar E, Hong Y, Lackland DT, et al. Systematic Review for the 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults. A Report of the

American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. 2018;71(19):2176-98.

6. Cohen JB, Townsend RR. The ACC/AHA 2017 Hypertension Guidelines: Both Too Much and Not Enough of a Good Thing? ACC/AHA 2017 Hypertension Guidelines. *Annals of Internal Medicine*. 2018;168(4):287-8.

7. Vaucher J, Marques-Vidal P, Waeber G, Vollenweider P. Population impact of the 2017 ACC/AHA guidelines compared with the 2013 ESH/ESC guidelines for hypertension management. *European Journal of Preventive Cardiology*. 2018;25(10):1111-3.

8. Schutte AE. What are the financial implications of the 2017 AHA/ACC High Blood Pressure Guideline? *European Journal of Preventive Cardiology*. 2018;25(10):1109-10.

9. Son JS, Choi S, Kim K, Kim SM, Choi D, Lee G, et al. Association of Blood Pressure Classification in Korean Young Adults According to the 2017 American College of Cardiology/American Heart Association Guidelines With Subsequent Cardiovascular Disease Events. *Jama*. 2018;320(17):1783-92.

10. Ravindrarajah R, Hazra NC, Hamada S, Charlton J, Jackson SHD, Dregan A, et al. Systolic Blood Pressure Trajectory, Frailty, and All-Cause Mortality >80 Years of Age: Cohort Study Using Electronic Health Records. *Circulation*. 2017;135(24):2357-68.