

Hypertension: Guidelines, personalized care, technology, challenges.

Laura Chen*

Department of Internal Medicine, Harvard Medical School, Boston, USA

Introduction

Comprehensive guidelines provide a significant update on the diagnosis and management of arterial hypertension, emphasizing individualized treatment strategies, the importance of accurate blood pressure measurement, and lifestyle modifications as foundational therapy. These guidelines incorporate new evidence on drug combinations, device-based therapies, and risk stratification for better patient outcomes [1].

The concept of personalized medicine in hypertension explores the complexities of individual variability in blood pressure response to treatment. It discusses challenges in genetic, proteomic, and lifestyle-based tailoring of therapy, advocating for a more stratified approach to improve treatment efficacy and minimize adverse effects [2].

Resistant hypertension represents a significant clinical challenge, and a review focuses on its definition, prevalence, and management. It details the diagnostic workup, secondary causes to exclude, and pharmacologic strategies including mineralocorticoid receptor antagonists, along with emerging device-based therapies to achieve blood pressure control [3].

Digital health technologies, such as remote monitoring, telehealth, and smartphone applications, play an increasingly important role in enhancing hypertension management. Their potential for improving medication adherence, lifestyle modification, and overall blood pressure control is highlighted, while also discussing current limitations and future directions for integration into clinical practice [4].

Managing hypertension in older adults presents unique complexities, addressed from a European perspective that considers age-related physiological changes, multimorbidity, and polypharmacy. This approach emphasizes individualizing treatment targets and strategies to balance blood pressure reduction benefits with potential risks like orthostatic hypotension [5].

Nutritional interventions are a cornerstone of non-pharmacological management; a systematic review and meta-analysis confirm the efficacy of the Dietary Approaches to Stop Hypertension (DASH) diet

in significantly lowering blood pressure in hypertensive patients, advocating for its broader implementation [6].

Comprehensive recommendations are available for identifying and treating secondary causes of hypertension, including primary aldosteronism, renovascular disease, and pheochromocytoma. This involves a structured diagnostic workup and tailored therapeutic strategies, aiming to cure or significantly improve blood pressure control by addressing the underlying pathology [7].

Pharmacist-led interventions have a positive impact on improving blood pressure control in hypertensive patients, as demonstrated by a systematic review and meta-analysis. These interventions highlight pharmacists' roles in medication management, counseling, and adherence support as effective strategies to enhance clinical outcomes and optimize therapeutic regimens [8].

The evolving landscape of home blood pressure monitoring (HBPM) is explored, focusing on technological advancements and their implications for hypertension management. This includes the integration of Artificial Intelligence (AI), wearable devices, and telehealth platforms to provide more accurate readings, personalized feedback, and improved patient engagement in self-management [9].

Adherence to antihypertensive therapy remains a critical barrier to effective blood pressure control. This persistent issue is addressed by examining multifactorial causes of non-adherence and proposing strategies such as simplifying regimens, enhancing patient education, and utilizing digital tools to improve medication persistence and clinical outcomes [10].

Conclusion

The provided data offers a comprehensive look at contemporary hypertension management, integrating various facets from global guidelines to specific therapeutic challenges and technological advancements. The 2023 ESC/ESH Guidelines set a foundational tone, stressing individualized treatment, precise blood pressure measurement, and lifestyle modifications as primary interventions. Concurrently, the evolving concept of personalized medicine in hy-

*Correspondence to: Laura Chen, Department of Internal Medicine, Harvard Medical School, Boston, USA. E-mail: laura.chen@harvardmed.edu

Received: 01-Apr-2025, Manuscript No. aaagim-281; Editor assigned: 03-Apr-2025, Pre QC No. aaagim-281 (PQ); Reviewed: 23-Apr-2025, QC No. aaagim-281; Revised: 02-May-2025, Manuscript No. aaagim-281 (R); Published: 13-May-2025, DOI: 10.35841/aaagim-9.2.281

pertension is explored, acknowledging the complexities of individual patient responses to treatment and advocating for stratified approaches. A significant clinical challenge, resistant hypertension, is thoroughly reviewed, detailing diagnostic workups, secondary causes, and both pharmacologic and emerging device-based therapies.

The dataset also highlights the crucial role of technology in modern care. Digital health technologies, including remote monitoring and smartphone applications, are assessed for their potential to improve medication adherence and overall blood pressure control. Further to this, home blood pressure monitoring (HBPM) is examined, focusing on advancements like AI integration and wearable devices to enhance accuracy and patient engagement. Non-pharmacological interventions are also strongly represented; the Dietary Approaches to Stop Hypertension (DASH) diet's efficacy in lowering blood pressure is confirmed through systematic review, reinforcing nutrition's foundational role.

Specific populations and challenges are addressed, such as the management of hypertension in older adults from a European perspective, considering age-related changes and polypharmacy. Guidelines are also presented for identifying and managing secondary forms of hypertension, emphasizing structured diagnostic approaches to address underlying pathologies. Finally, the persistent issue of poor adherence to antihypertensive therapy is recognized as a major barrier, with proposed strategies including simplified regimens and digital tools, complemented by evidence supporting pharmacist-led interventions in improving blood pressure control through medication management and counseling. This body of work collectively underscores a multi-pronged approach to optimizing hypertension care.

References

1. Giuseppe M, Reinhold K, Martin B. 2023 ESC/ESH Guidelines for the management of arterial hypertension. *Eur Heart J*. 2023;44:3705-3811.
2. David H, Alan B W, Eoin O. Personalized Medicine for Hypertension: *Challenges and Opportunities*. *Hypertension*. 2022;79:477-484.
3. David A C, Raymond R T, Suzanne O. *Current Approaches to Resistant Hypertension*. *Circ Res*. 2021;128:1549-1562.
4. Sverre E K, Peter M N, Thomas M M. Digital Health and Hypertension: A State-of-the-Art Review. *Hypertension*. 2023;80:297-306.
5. Athanase B, Michael B, Anna F W. Management of Hypertension in the Elderly: *A European Perspective*. *J Clin Hypertens (Greenwich)*. 2020;22:189-198.
6. Zohreh V, Fatemeh H, Firoozeh S. *The effect of dietary approaches to stop hypertension (DASH) diet on blood pressure in patients with hypertension: A systematic review and meta-analysis of randomized clinical trials*. *J Cardiovasc Thorac Res*. 2022;14:20-29.
7. Robert M C, Stephen T A, William F Y. Diagnosis and Management of Secondary Forms of Hypertension: *An Endocrine Society Clinical Practice Guideline*. *J Clin Endocrinol Metab*. 2021;106:339-366.
8. Valérie S, David B M S, Lyne G. Pharmacist-led interventions to improve blood pressure control in patients with hypertension: a systematic review and meta-analysis. *J Am Heart Assoc*. 2020;9:e015828.
9. Stefano O, Gianfranco P, Giuseppe M. Home Blood Pressure Monitoring: *Future Directions and Technologies*. *Hypertension*. 2024;81:28-36.
10. Michel B, Atul P, Philippe V D B. Adherence to Antihypertensive Treatment: *Still a Major Challenge*. *Hypertension*. 2021;78:854-862.

Citation: Chen L. *Hypertension: Guidelines, personalized care, technology, challenges*. *aaagim*. 2025;09(02):281.