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Editors' Commentary on the 2023 ESH Management of Arterial Hypertension Guidelines

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Abstract:

Clinical practice guidelines are ideally suited to the provision of advice on the prevention, diagnosis, evaluation, and management of high blood pressure (BP). The recently published European Society of Hypertension (ESH) *2023 ESH Guidelines for the management of arterial hypertension* is the latest in a long series of high BP clinical practice guidelines. It closely resembles the 2018 European Society of Cardiology/ESH guidelines, with incremental rather than major changes. Although the ESH guidelines are primarily written for European clinicians and public health workers, there is a high degree of concordance between its recommendations and those in the other major BP guidelines. Despite the large number of national and international BP guidelines around the world, general population surveys demonstrate that BP guidelines are not being well implemented in any part of the world. The level of BP, which is the basis for diagnosis and management, continues to be poorly measured in routine clinical practice and control of hypertension remains sub-optimal, even to a conservative blood pressure target such as a systolic/diastolic BP <140/90 mm Hg. BP guidelines need to focus much more on implementation of recommendations for accurate diagnosis and strategies for improved control in those being treated for hypertension. An evolving body of implementation science can assist in meeting this goal. Given the enormous health, social, and financial burden of high BP better diagnosis and management should be an imperative for clinicians, government, and others responsible for the provision of healthcare services. Hopefully, the 2023 ESH will help enable this.

Keywords: Financial Stress; Goals; Hypertension; Cardiology; Government

On June 24th, the 2023 European Society of Hypertension (ESH) Hypertension guidelines were presented and simultaneously published¹. This is the latest in a long series of blood pressure (BP) clinical practice guidelines (CPG), starting with the publication of the first Joint National Committee Report in 1977². CPGs are ideally suited to high BP because 1) it is very common in the community and its management requires the commitment of substantial resources, 2) practice patterns vary widely within and across communities, 3) globally, high BP is poorly controlled, and 4) there is a substantial body of high quality observational and clinical trial evidence related to the risk and management of high BP³. The primary responsibilities of any CPG writing committee are to provide the best evidence-based recommendations and to enhance the potential for implementation of those recommendations. The ESH has published at least four previous hypertension CPGs, alone or in cooperation with the European Society of Cardiology (ESC), and the organization is well versed in addressing the BP topic areas that are relevant to clinicians and other health care providers.

The 2023 CPG is composed of 22 sections that cover a wide range of diagnostic and management questions. Some of the more important CPG recommendations, including BP measurement methods, classification, CVD risk estimation, and treatment are summarized in Table 1. Using the ESH definition of hypertension and the World Bank classification for grouping of countries, the 2010 age-standardized prevalence of hypertension in European and Central Asian adults was estimated to be approximately 39% in men and 35.7% in women⁴. The prevalence in Europe per se is likely to be somewhat less than this, with a lower prevalence in Western compared with Eastern Europe countries.

What is New?

Overall, the new report closely resembles its predecessor published in 2018⁵. The recommendations for BP measurement, classification, lifestyle interventions, institution and choice of antihypertensive drug therapy, use of single-pill combinations, and up-titration in adults with inadequate control reflect incremental rather than major changes. Some of the changes compared to the 2018 guideline include a greater emphasis on out-of-office BP measurements, addition of potassium supplementation as a lifestyle recommendation, more explicit advice for use of beta blockers as initial antihypertensive drug therapy, consideration of renal denervation as an additive or alternative to increasing medication in patients with uncontrolled resistant hypertension, a new simplified approach to antihypertensive drug treatment in patients with heart failure, a more detailed set of recommendations for management of patients with chronic kidney disease, including the use of SGLT-2 inhibitors and the non-steroidal mineralocorticoid antagonist finerenone, a recommendation for antihypertensive therapy to prevent cognitive decline and progression to dementia.

Major Takeaways

First, the ESH guidelines are written primarily for practitioners in Europe. Some of the advice, such as the BP measurement recommendations, is quite generalizable whereas other suggestions, such as the use of the SCORE2 and SCORE2-OP are very specific for Europe. Clinical judgement should be used in generalizing the recommendations. The new CPG recommends drug therapy in those with an average SBP 130-139 mm Hg or DBP 80-89 mm Hg at a higher threshold of CVD risk (presence of CVD) compared with the ACC/AHA guideline⁶ (10-year risk of atherosclerotic CVD [ASCVD] $\geq 10\%$).

Implementation of BP CPG Recommendations

Given the high degree of concordance between the core recommendations in most major guidelines around the world⁶⁻¹⁰, an important question is whether and to what extent BP guideline CPG recommendations are being implemented. The best opportunity to assess hypertension treatment and control rates may be in the United States (US) where results from the National Health and Nutrition Examination Survey (NHANES) are published biannually¹¹. The NHANES hypertension awareness, treatment, and control assessment methods have remained unchanged over successive surveys, providing a good basis for temporal comparisons. The news from the US is not good – the rates of antihypertensive drug treatment and control to an SBP/DBP $< 140/90$ mm Hg have declined progressively in recent years (age-adjusted control rates for adults ≥ 18 years, 52.8% in 2009-2012, 51.3% in 2013-2016, and 48.2% in 2017-2020; p for trend 0.034)¹². The explanation is uncertain but may have resulted, in part, from confusion related to different US guideline BP target recommendations^{6,13,14} and more recently from effects of the COVID-19 pandemic^{15,16}. A similar worsening of hypertension awareness (85.6% to 77.4%), antihypertensive drug treatment (82.3% to 72%), and control to an SBP/DBP $< 140/90$ mm Hg (69% to 58.3%) between 2007 and 2017, pre-COVID, has been noted in Canada, especially for women¹⁷. Tracking the achievement of guidelines BP targets in Europe and many other countries is challenging due to fragmented and irregular conduct of relevant general population surveys. There is a need for a recurrent Europe-wide general population survey with the use of the same methods to track hypertension prevalence and control rates. Based on the most recent data, hypertension prevalence varies across countries but is generally high in Europe and worldwide^{4,18-20}.

Independent of the above, the time has come for BP CPGs to devote their major focus to implementation. We know how to diagnose and treat high BP, however defined. Unfortunately, hypertension prevention, diagnosis and treatment are suboptimal worldwide. The measurement of BP in routine adult clinical practice is typically inaccurate and, on average, leads to substantial overdiagnosis and overtreatment of hypertension²¹. In a minority of adults, the reported BPs are falsely low leading to undertreatment. To complicate matters, the measurement errors vary by level of BP and time, making it impossible to employ a correction

factor. Unlike laboratory measurements, which are closely scrutinized, examination and accreditation bodies, and payors give little if any attention to the quality of BP measurements. Professional societies and government agencies have raised the alarm and have identified solutions^{22,23} but this on its own is unlikely to result in much improvement. If clinically valid cuffless wearable and other non-traditional BP measurements become available, implementation of the recommendations for BP measurement accuracy and precision in clinical practice may be more feasible. However, the methods for clinical validation of these new measurement approaches are different to the ISO requirements for currently used BP measurement devices and methodologically more difficult²⁴⁻²⁶. They need to be clinically validated to ensure they provide accurate and precise measurement of BP. Currently, no cuffless BP measurement device is recommended for use in clinical practice.

Implementing CPG recommendations for treatment and control of hypertension is the other priority. Efficacy clinical trials have repeatedly demonstrated a capacity to achieve large reductions in BP, with the more intensively treated arms in the ACCORD and SPRINT trials achieving a sustained SBP lowering of 14.2 mm Hg and 16.2 mm Hg, respectively, compared to the standard care arms after treatment titration^{27,28}. Unfortunately, post-trial monitoring in the SPRINT suggested that these differences diminished progressively to the point where there was no longer any disparity in SBP after about 5-6 years following the termination of the trial²⁹. Many factors influence BP management in routine clinical practice, only one of which is the results of efficacy trials^{30,31}. Although some countries and regions do better than others^{4,20}, the current model of care is not yielding satisfactory rates of hypertension control in any part of the world. Table 2 provides a list of strategies to improve the implementation of BP guideline recommendations for treatment of hypertension. A model that includes elements of accurate and precise measurement of BP, health promotion, easy access to a convenient knowledgeable community-based patient-centered healthcare team, use of simple evidence-based protocols for lifestyle counseling and antihypertensive drug treatment, reliable access to effective and affordable antihypertensive medications, with preference for the use of single pill combinations to administer combination drug therapies, and use of information systems to track progress and conduct case-management seems to result in better BP control for adults with uncomplicated hypertension in implementation trials and in routine practice settings. For example, a community healthcare worker led cluster-designed trial in rural Chinese villages that employed many of the previously mentioned model elements resulted in an SBP reduction of >20 mm Hg and big CVD event and all-cause mortality benefits in the intervention compared to control villages³². Similarly, in the Kaiser Permanente Healthcare System in Northern California the rate of hypertension control to an SBP/DBP <140/90 mm Hg was improved progressively from approximately 44% in 2001 to slightly more than 80% in 2009 and 90% in 2015^{33,34}. The World Health Organization (WHO) employs most of the previously mentioned desirable model elements in its Global HEARTS Initiative³⁵. Launched in 2016 and now being implemented in 33 countries, it is focused on the detection, treatment, and control of hypertension in middle- and

low-income countries³⁵. Early results suggest that the initiative has identified and treated approximately 12 million adults in middle- and low-income countries (personal communication from Dr. Taskeen Khan, WHO). In India, control to an SBP/DBP <140/90 mm Hg is reported to have improved more than threefold to 43% between 2018 and 2020 in 570,365 adults who were enrolled in the HEARTS initiative³⁶. After approximately one year, the corresponding control rates in the Cuban³⁷ and Chilean³⁸ HEARTS sites were reported to be 68% and 65%, respectively. Whatever the approach to hypertension detection, treatment, and control, new tactics are needed to achieve better results, worldwide. In addition to the previously mentioned hypertension treatment strategies, use of new more mechanistically targeted BP lowering drugs may play a useful role. Treatment of hypertension is well known to be a cost-effective intervention³⁹, especially in populations at higher risk for CVD⁴⁰ and in those being treated more intensively⁴¹. Reliance on the traditional model of care in clinical practice, where the physician is responsible for all aspects of the patient's care, is not yielding the desired results and is unlikely to do so unless substantially modified. In combination, the use of innovative treatment implementation strategies, provision of user-friendly BP CPGs that highlight treatment implementation, and the potential for use of new antihypertensive medications, including endothelin-1 receptor antagonists, non-steroidal mineralocorticoid receptor blockers, aldosterone synthase inhibitors, and gene-targeting of angiotensinogen, there is a realistic potential for better management of hypertension. Given the enormous burden of illness, financial, and social consequences of high BP, better management should be an imperative for governments and others responsible for the provision of health care services.

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Table 1. Summary and commentary on selected 2023 European Society of Hypertension arterial hypertension clinical practice guidelines recommendations.

Characteristic	Definition	Comment
Classification of blood pressure	Eight categories: optimal, normal, high normal, and five categories of hypertension (grade 1, 2 and 3 hypertension and isolated systolic and diastolic hypertension)	Multiple categories mimics biology but may complicate implementation
CVD risk	High or very high <ul style="list-style-type: none"> - Established CVD or CKD - Long-lasting or complicated diabetes - Severe HMOD - Markedly elevated single risk factor <p>All others: assess risk using the SCORE2 or SCORE2-OP system</p>	Broad list of risk indicators, with many based on clinician judgement. Cut points for identification of SCORE2/SCORE2-OP CVD risk level not identified.
Diagnosis of hypertension	Average last two of three accurately measured BP readings, with presumed hypertension confirmed by at least one additional set of office BPs unless initial BPs markedly elevated or CVD risk is high.	Role of antihypertensive medication for diagnosis not specifically mentioned.
Out-of-office BPs	ABPM, HBPM or both encouraged as a source of multiple BP measurements for CVD risk prediction and for diagnosis of white-coat and masked hypertension.	Recommendations strengthen previous CPG recommendations
Lifestyle interventions	BP reduction with weight loss, reduced dietary sodium, increased dietary potassium, physical activity, moderation of alcohol intake, and healthy diet. Smoking cessation to reduce CVD risk.	Recommendations are like other BP CPGs.
Initiation of antihypertensive medication	Adults 18-79 years with SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg Adults ≥ 80 years with SBP ≥ 160 mm Hg but ≥ 140 mm Hg can be considered. In frail patients, individualize treatment. In patients with CVD, especially CAD, SBP ≥ 140 mm Hg or DBP ≥ 80 mm Hg.	Recommendations are like previous ESH Guideline
Treatment BP targets	Adults 18-79 years, primary SBP/DBP goal $< 140/90$ mm Hg; if treatment well tolerated target SBP/DBP $< 130/80$ mm Hg but not SBP < 120 mm Hg or DBP < 70 mm Hg. For adults with isolated systolic hypertension, target SBP lowering, albeit cautiously. In adults ≥ 80 years target SBP/DBP $< 140/90$ mm Hg, if well tolerated.	Recommendations are like previous ESH Guideline

CVD: cardiovascular disease. CKD: chronic kidney disease. HMOD: hypertension-mediated organ damage. SCORE2: Systematic COronary Risk Evaluation2. SCORE2-OP: SCORE2-Older Persons. BP: blood pressure. ABPM: ambulatory BP measurements. HBPM: home BP measurements. CPG: clinical practice guideline. SBP: systolic BP. DBP: diastolic BP.

Table 2. Strategies to improve the implementation of blood pressure guideline recommendations for treatment of hypertension.

- Accurate and precise measurements of blood pressure, including the use of clinically validated blood pressure measurement devices.
- Health promotion.
- Easy access to convenient community-based healthcare.
- Knowledgeable patient-centered healthcare team.
- Use of simple, evidence-based protocols for lifestyle counseling and antihypertensive drug treatment in patients with uncomplicated hypertension.
- Reliable access to effective and affordable antihypertensive medications, with preference for use of single pill combinations to administer combination drug therapies.
- Information systems to track progress and conduct case-management.