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Beyond the new blood pressure guidelines: the beat goes on

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ABSTRACT
The scope of hypertension (HTN) even for those involved in the field is staggering with numbers close to 60 million Americans and more than 1 billion individuals across the globe. It is the most common reason to seek medical attention and according to the World Health Organization, the number one cause of mortality in the world. Yet, we still don’t know what is normal or abnormal. Even though the most recent 2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults has created quite a commotion, new questions could be raised.

The purpose of this Editorial not only to fuel more interest on this topic but also to create the notion that HTN needs to be considered a dynamic clinical entity rather than a static blood pressure reading.

To some extent all of us should be very appreciative of the commotion created by the recent 2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults publication [1].

In this joined effort, the American College of Cardiology and American Heart Association certainly created quite the opposite effect its previous predecessor had back in 2003 when the ‘Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure’ (UNC 7) was published [2]. This long and awaited revival of the field certainly has been received with open arms.

Aside from the obvious impact of these new directives resulting in the identification of more individuals with hypertension (HTN), greater need to institute new antihypertensive therapy intensifies existing drug regimens; the new guidelines have also offered valuable information regarding risk of cardiovascular disease (CVD) associated with abnormal high blood pressure (BP) readings as well as offering new insights into BP monitoring [1].

However, for this message to continue being successful, we must be certain that it this momentum persists past all the fanfare of its initial release and that the ripple effects created continues to be felt across the health care continuum. Therefore, so not only we ought to pay close attention to the real message delivered by these new guidelines but most importantly act upon these guidelines and make patients fully participant of these new initiatives.

First and foremost, this new cutoff range for normal BP values (130/80 mmHg) should be taken into its appropriate clinical context [1]. Even though HTN prevalence would undoubtedly increase, we need to realize that the actual number of patients either at risk or that have already experienced a CVD and require antihypertensive therapy would be marginal. Second, it is critically important that patients as well as health-care professionals be reminded of all the necessary steps to ensure proper recording of BP measurements both at home and in the office setting. Failure in following these simple steps could result in inappropriately misleading high BP readings; mislabeling patients as hypertensives. Third, ambulatory BP-monitoring has been recently shown critically important not only playing a key role as a confirmatory tool for diagnosing masked (MH) as well as uncontrolled HTN (MUCH), but also useful in titrating therapy. Aside from showing that routine use of these ambulatory BP testing initiates identified a high prevalence of MH and MUCH than previously recognized, these elevated BP readings were associated with a worse CVD risk profile and more frequent adverse CVD events. Furthermore, the previously labeled white-coat HTN should no longer be considered either casual or benign [3–5].

With this plethora of information, we still have some unanswered questions. One of such questions relates to the potential association between CVD events and equally triggered BP surges as it occurs with mental arithmetic tasks, cold water immersion, and both isometric and dynamic physical activity [6–11]. Consequently, right now would be a great time to re-examine the clinical utility of recording BP during stress testing. Not only these measurements have not received too much attention but also will help to fill an unclarified gap in our understanding with regards the dynamic fluctuations and potential importance of BP readings occurring with exertion, particularly when most of us spend so much time physically active.

Another unanswered question deals with the likely possibility that HTN in its most simplistic form, aside from well-recognized secondary triggers that result in uncontrolled BP readings, might simply represent an innate adaptive functional resistance response to the functional and anatomical...
changes throughout the entire vasculature because of normal aging, further modified by intrinsic ethnic/racial differences.

The latter not only might help explain the distinct phenotypic expression of HTN among Caucasians, Blacks, Hispanics and Asians, but also, be at least useful in principle to help us begin to elucidate plausible explanations as to why some individuals have such resistant forms of HTN while others respond so poorly to some antihypertensive medications.

Surely a great deal has been learned in the last century with regards to HTN, only to realize that much more needs to be learned. In my opinion, it is time we step outside the traditional box. Surely, chronic HTN cannot be minimized to a static number randomly obtained but must be a dynamic range being intricately regulated by the complex interplay of homeostasis, circadian rhythm patterns, hormones and the systemic vasculature, among others. In the end, we might come to the realization that HTN might simply represent an integral and hardwired unbalanced amalgamation of inappropriate corrective responses rather than an incidental, extrinsic aggregate related to consumption of a diet too high in sodium and too low in potassium, physical inactivity, obesity, drinking too much alcohol, or smoking.

On a final note, a few concerns need to be acknowledged. First, the American Academy of Family Physicians has not endorsed these AHA/ACC guidelines based among other reasons that the bulk of the guidelines not only weren’t based on a systematic evidence review but also the disproportionate weight given to the Systolic Blood Pressure Intervention Trial (SPRINT) in comparison to other trials [12,13]. Second, these new guidelines stress the importance of screening and management other CVD risk factors in adults with HTN such as smoking, diabetes, dyslipidemia, excessive weight, low fitness, unhealthy diet, psychosocial stress, and sleep apnea. In terms of diabetic patients, the American Diabetes Association (ADA) issued a position statement zeroing in a very key issue. In most of the HTN trials, automated office BP measurements were used and unfortunately, these could not be directly applied to practices using conventional office BP readings as most of the beneficial evidence regarding HTN treatment among diabetics is based on conventional office BP measurements [14]. Therefore, the ADA not only recommends BP treatment among diabetics to be individualized based on each individual patient comorbidities but also that treatment options, BP goals, potential side effect and possible adverse events be part of a shared decision-making process between the clinician and the individual patient, rather than a set BP number [14]. Finally, what about triggers to initiate treatment in patients that are not at high risk? Surely, controlling BP results in reduction of CVD events among high risk individuals; however, the old-J-curve phenomena effect regarding CVD outcomes because of tight BP control might cast doubt regarding treatment in other patient populations. This was certainly the case when results from The Systolic Blood Pressure Intervention Trial (SPRINT) and Heart Outcomes Prevention Evaluation-3 Trial (HOPE-3) are compared, particularly, no benefit was seen for aggressive BP treatment among patients with mean baseline systolic BP readings of 138mmHg with an intermediate risk for coronary artery disease [12,15]. Along this line, data from McEvoy and colleagues showed that by using coronary artery calcium scores, personalized BP treatment goals was improved, specifically among persons categorized at an intermediate risk and have a BP ranging from 120–140 mmHg. Results that might urge us to consider it is time to implement targeted or personalized therapy for treating HTN considering other associated comorbidities [15].

In summary, we ought to be more visionary and creative. Simply changing the range of BP between normal and abnormal is simply not enough. Implementation of new definitions, diagnostic algorithms and more effective treatment alternatives is what is urgently need. Certainly, a new paradigm shift is required so that we overcome with old and established principles and see HTN under a new continuum rather than some static variable. A more encompassing approach is certainly needed, especially for nurse practitioners, physician assistants, family medicine, generalists and internists that for the most part are the first ones to encounter these individuals at risk of developing HTN patients.

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