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Opinion piece

The latest (2017) American College of Cardiology/American Heart Association guideline for hypertension management: Is the verdict on blood pressure levels or on blood pressure measurement methodology?

The latest American College of Cardiology/American Heart Association guideline for hypertension diagnosis and management released a few months ago[1] represents a major change in the definition as to what constitutes "high" blood pressure and normal blood pressure. This distinguishing feature of the new guideline is likely to have a cardinal (jolting) influence on the management of hypertension in the United States (and probably elsewhere). The new classification of hypertension designates a blood pressure level of ≥130/80 mmHg as "hypertension" (Tables 1 and 2). The clinical, social, and economic ramifications of the lower blood pressure thresholds for the diagnosis and treatment of hypertension will only become evident after 5–10 years of the guideline implementation (which may not be homogenous). Nevertheless, the new classification stems from the well-established link between the level of blood pressure and cardiovascular disease (CVD) risk. Indeed, epidemiological data reveal that CVD risk begins at systolic blood pressure (SBP) threshold of 130 mmHg and a diastolic blood pressure (DBP) threshold of 80 mmHg.[2–4] The challenge has been how to apply the observational data to the realm of clinical practice given the high (and increasing) prevalence of 'hypertension'. This provocative proposition has been addressed (not resolved) by the new guideline.

The new definition of hypertension largely stems from the results of Systolic Blood Pressure Intervention Trial (SPRINT) which demonstrated that aggressive lowering of blood pressure to ≤120 mmHg SBP reduced CVD morbidity and mortality.[5] Thus, SPRINT results validated that SBP of ≤120 mmHg was achievable with much benefit and not much harm. It is equitable to reckon that the new guideline is 'SPRINT-centric'. Accordingly, the subsequent discourse is on the methodology of blood pressure measurement in the SPRINT, which is extraordinarily different from the way the blood pressure is measured in clinical practice and from the standard methods used thus far in all the other momentous outcome trials in hypertension.

In the SPRINT, blood pressure was recorded with an automatic device in a 'quiet' room with no observers around which exterminates any environmental influences on blood pressure including the 'white coat' effect. The SPRINT methodology for blood pressure measurement required a 'tranquil' clinical atmosphere. Not a bad idea if it can be replicated in the real world. The catch is how to decode the SPRINT blood pressure method for clinical practices with no (quiet) designated rooms for automated blood pressure measurements. Will the daily grind of clinical practice permit the affluence with which blood pressure was measured in SPRINT? Yes, if we can approximate the SPRINT-equivalent blood pressure in customary clinical practice. Difference between office blood pressure and automated blood pressure (unobserved) can be considered a 'white-coat' effect. If one can calculate the office blood pressure accordingly, we may derive "SPRINT- equivalent" office blood pressure level. So, what is the portion of blood pressure, which can be attributed as 'white-coat' effect? Studies have shown that office blood pressure may differ by up to 15/8 mmHg compared to automatic home blood pressure measurements.[6] However, the 'white-coat' effect is not predictable, is inconsistent and highly variable. So, what could be a creditable white-coat increase in the blood pressure level? Not a shot in the dark but the presumption is about 12–15/6–8 mmHg. Thus, the 'SPRINT-equivalent' of SBP 120 mmHg in the clinic may be 132–135 mmHg. This, equation thus, justifies the new definition of 'elevated' blood pressure and hypertension. Therefore, the verdict of the new hypertension guideline is both on the blood pressure levels and on the blood pressure measurement methodology. One can therefore welcome the new guideline and facilitate its applicability with the 'SPRINT-equivalent' blood pressure levels. Lower levels of blood pressure than currently prevalent will likely

Table 1
New classification of hypertension 2017[1].

BP Category	SBP		DBP
Normal	< 120 mm Hg	and	< 80 mm Hg
Elevated	120–129 mm Hg	and	< 80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	or	80–89 mm Hg
Stage 2	≥140 mm Hg	or	≥90 mm Hg

BP- blood pressure; DBP- diastolic blood pressure; SBP- systolic blood pressure.

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Table 2
The new guideline (ACC/AHA 2017) shifts the blood pressure categories.

Systolic, diastolic blood pressure (mmHg)	JNC 7	2017/ACC/AHA
<120 and <80	Normal BP	Normal BP
120–129 and <80	Prehypertension	Elevated BP
130–139 or 80–89	Prehypertension →	Stage 1 hypertension
140–159 or 90–99	Stage 1 hypertension→	Stage 2 hypertension
≥ 160 or ≥100	Stage 2 hypertension	Stage 2 hypertension

ACC- American College of Cardiology, AHA- American Heart Association, JNC 7- Joint National Committee.

reduce the global CVD burden arising due to hypertension. Soon or sooner (not later), automated blood pressure measurements supplemented by new. less intrusive, ambulatory blood pressure monitoring methods (such as cuff-less techniques) will permit evidence-based scientific basis for the accurate diagnosis and appropriate treatment of hypertension in routine clinical practice. The evolving trends surrounding the new definition of hypertension should help break the painful chain of 7.5 million deaths annually attributable to hypertension.

Thus, to conclude, the verdict from the latest hypertension guideline is not only on the lower thresholds to redefine hypertension but also on blood pressure measurement methodology.

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C. Venkata S.Ram[a,b,c,*]

[a]*Apollo Institute for Blood Pressure Management World Hypertension League/South Asia Office Apollo Hospitals, Apollo Medical College, Hyderabad, India*

[b]*Texas Blood Pressure Institute, DNA UTSW Medical School, Dallas, USA*

[c]*India Campus Macquarie University, Medical School, Sydney, Australia*

* Corresponding author at: Apollo Institute for Blood Pressure Management World Hypertension League/South Asia Office Apollo Hospitals, Apollo Medical College Hyderabad, India.
E-mail address: drram_v@apollohospitals.com (C. Venkata S.R.).

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