

## Are the American Heart Association/American College of Cardiology High Blood Pressure Guidelines Fit for Global Purpose?

### Thoughts From the International Society of Hypertension

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In 2017, the American College of Cardiology (ACC), the American Heart Association (AHA), and 9 other American societies released guidelines for the prevention, detection, evaluation, and management of high blood pressure (BP) in adults.<sup>1</sup>

These guidelines are perhaps the most controversial set of US guidelines—even more so than those attributed to some of the committee set up to produce the guidelines of the Eighth Joint National Committee in 2014.<sup>2</sup>

Before discussing the various controversial aspects of the ACC/AHA guidelines, the International Society of Hypertension would like to congratulate the authors on 3 counts. First, emphasis was placed on the appropriate technique of BP measurements and the increased need for out-of-office BP measurement. Second, the value of risk assessment was recognized and introduced for the first time in US guidelines and finally, perhaps in part because of the controversial nature of the document, awareness of the importance of BP as a global cause of morbidity and mortality has been raised.

The central controversy around which several others arise is the redefining of hypertension—as a systolic BP  $\geq 130$  mmHg or a diastolic BP  $\geq 80$  mmHg. Although there is a clear dose-response relationship between increasing BP levels and adverse cardiovascular outcomes,<sup>3</sup> this preempts the

ability, based on predicting cardiovascular events, of precisely defining hypertension. However, the pragmatic definition proposed by Geoffrey Rose decades ago should perhaps be considered—viz: “that level of BP above which investigation and management does more good than harm.”<sup>4</sup> Does the new BP level proposed in the ACC/AHA guidelines fully satisfy that criterion? Perhaps not. To date, the relevant data are inconsistent and hence controversial.

The problem arises because the definition of hypertension, treatment thresholds, and BP targets should be inexorably linked, if we are to be logical about diagnosis and treatment.

It seems likely that the new ACC/AHA definition arose, in large part, from the results of the SPRINT (Systolic Blood Pressure Intervention Trial) trial.<sup>5</sup> The ACC/AHA authors have apparently modified the systolic BP target of  $<120$  mmHg established as superior in the SPRINT trial, in light of concerns over the method of measurement used<sup>6</sup> and set a systolic BP of  $<130$  mmHg as the target BP. This makes the setting of the treatment threshold difficult unless target and threshold are to be dissociated. Inevitably, if threshold and target unite, the definition of hypertension follows on as a systolic BP  $\geq 130$  mmHg.

However, as a multinational society whose role is to present a global perspective, the International Society of Hypertension is concerned at the impact of redefining hypertension in countries around the world—particularly those of low and middle income.

The reality for most of the world is that BP control rates (to  $<140$  mmHg and  $<90$  mmHg) are  $<15\%$ .<sup>7</sup> Surely this is not the time to impose a huge increase in hypertension prevalence by redefining it, particularly when the data about optimal targets are inconsistent and hence remain subject to debate.<sup>8–11</sup>

In an article written before publication of the ACC/AHA guidelines, the International Society of Hypertension provided a global perspective on BP thresholds and targets.<sup>12</sup> We concluded that although the data were (and still are) by no means definitive, in an ideal world, where resources allow, and in the interest of simplicity a systolic target of 130 mmHg could reasonably be set for people with or without diabetes mellitus. However, we acknowledged that thresholds as low as 140 mmHg may be inappropriately low, which is supported by some current guidelines,<sup>13,14</sup> that recommend that treatment may not be indicated for low-risk patients with a systolic BP  $<160$  mmHg.

Pending more definitive information we think focus should be placed on improving BP awareness<sup>15</sup> and once hypertension is diagnosed, ensuring that effective, low-cost,

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evidence-based medicines are available to lower BP to current targets (<140/90 mmHg).<sup>4,16</sup> Only as resources allow might the systolic target of 130 mmHg be invoked and then possibly only for those at highest cardiovascular risk.

We think that even though the ideal systolic BP target may be 130 mmHg the standard definition of hypertension should not change and to square the circle of having a mismatch between definition and target, those with systolic BPs between 130 and 139 mmHg should be labeled as high normal or prehypertensive (as per the Seventh Joint National Committee guidelines).<sup>17</sup> All such people should receive nonpharmacological advice and as resources allow drug therapy could be initiated for those at highest risk including those with a history of established cardiovascular disease.

The global uptake of the newly proposed hypertension definition seems unlikely and may be inappropriate. Even in the United States, 2 major societies, the American Academy for Family Physicians and the American College of Physicians have raised concerns about potential harm associated with implementing the ACC/AHA guidelines<sup>18</sup> and others have suggested that no likely benefit in terms of cost-efficacy might accrue.<sup>19</sup>

Elsewhere around the world, recommended BP levels differed in 8 of 14 comparisons of thresholds and targets for patient subgroups in ACC/AHA versus Canadian guidelines<sup>20</sup> and in the Australian National Heart Foundation guidelines<sup>21</sup> all 11 direct comparisons of thresholds and targets differ from those in the ACC/AHA guidelines. This is not to say that any of these 3 sets of guidelines are correct, but rather to highlight that there is no consensus about these data.

The concerns raised about the new ACC/AHA definition of hypertension and the associated clinical fallout include the dangers of inappropriately labeling people as hypertensive and thereby causing anxiety,<sup>22</sup> and overinflated hypertension treatment in low risk younger people (especially women) who get caught up in the newly-enhanced hypertensive population for whom evidence of treatment benefit is not yet established.<sup>23</sup>

Other issues that we think reflect the lack of suitability of the ACC/AHA guidelines for exportation to most of the world, include the recommended method of unattended clinic BP measurement which, although it has undoubted benefits, is aspirational in most of the world. In addition, the idea that adults with stage 2 hypertension—hitherto defined as mild or stage 1 hypertension—should be seen within 1 month of diagnosis and at that time receive 2 agents as first-line therapy lacks a robust evidence base. Furthermore, that follow-up for such patients should occur in 1 month after initiating therapy is an unrealistic expectation for the vast majority of the world and, given that most agents—alone or in combination—usually produce maximal BP-lowering effects well after 4 weeks is probably unnecessarily soon.

## Summary

On the basis of currently available evidence,

1. We welcome the increased emphasis on out-of-office BP measurement which the ACC/AHA guidelines provide, but advise caution on the reported equivalence levels by type of measurement.

2. We support the use of risk assessment recommended in the ACC/AHA guidelines but note that the levels recommended as defining high risk do not accurately match those used in SPRINT.
3. We welcome the increased awareness about the importance of raised BP which the ACC/AHA guidelines have raised.
4. We suggest that in the global context, the definition of hypertension should remain as systolic BP  $\geq 140$  mmHg and diastolic BP  $\geq 90$  mmHg.
5. We think that ideal systolic BP targets for those with or without diabetes mellitus should probably be 130 mmHg. However, people with systolic BP in the range 130 to 139 mmHg should receive nonpharmacological advice, and only where resources allow and for those at high cardiovascular risk should drug therapy be considered for such people.

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