

# Potential implications of the new American hypertension guidelines in Australia

There are significant population health and economic implications if Australia were to adopt recently revised American guidelines

**T**here are few things more controversial in medicine than when authoritative bodies shift the goalposts for common conditions and redefine normal values. This is particularly the case when the normative values for common chronic disease risk factors in the community, such as blood pressure or cholesterol, are made more stringent. In the stroke of a pen, millions of people have a disease or a risk factor they did not have the day before. Is this “the medicalisation of life” referred to by Illich?<sup>1</sup>

Is this medicalisation the danger or is the bigger problem that large swathes in the community are not aware that they are at risk of incidents such as heart attack, stroke and sudden cardiac death and need to protect themselves against these future catastrophic events? Blood pressure and most other risk factors for chronic disease are made common by the lifestyle of individuals. If redefining the cut-off for a condition such as hypertension increases the prevalence in the community, it could be asked if it is the community that is getting things wrong or if it is the well meaning authorities that review the evidence and present recommendations.

The issue has attracted significant attention in medical circles and in the international media with the recent release of guidelines under the auspices of the American College of Cardiology (ACC) and the American Heart Association (AHA).<sup>2</sup> It is a rerun of a similar debate that occurred in relation to cholesterol<sup>3</sup> and vitamin D.<sup>4</sup> The United States committee decided to change the threshold based on epidemiological evidence (in particularly the SPRINT [Systolic Blood Pressure Intervention Trial] study<sup>5</sup>) and meta-analyses that supported a lower threshold in their view. There are many recommendations that differ from previous US and other international guidelines, but, for our purposes, we focus on the definition of hypertension in the general population (blood pressure  $\geq 130/80$  mmHg instead of  $\geq 140/90$  mmHg). It has been estimated that the crude prevalence of hypertension in the US among adults increased from 31.9% to 45.6% by changing the threshold alone, affecting an additional 31 million people.<sup>6</sup> According to the guidelines, most of these people would receive lifestyle advice rather than drug treatment, but there would be many people already following a blood pressure-lowering treatment who would require more intensive pharmacotherapy as they are not achieving the new targets.

The Australian guidelines published by the National Heart Foundation make different recommendations, and the definition of hypertension in the general population remains at  $\geq 140/90$  mmHg.<sup>7</sup> What would be the implications if Australia adopted the same threshold as the ACC/AHA guidelines? There have

been discussions relating to country-specific perspectives and whether other countries will follow the US lead.<sup>8-10</sup> The ACC/AHA committee followed benchmark processes in managing conflict of interest and involved a rigorous approach to review the evidence. Other groups may well go down the same path and draw the same conclusions.

Using data from the Australian Bureau of Statistics and the 2014–15 Australian Health Survey<sup>11</sup> reported in our recent article,<sup>12</sup> we have made estimates of the impact on the number of Australians who would be newly diagnosed as having hypertension if Australia were to adopt a threshold of  $\geq 130/80$  mmHg (Box). In short, adopting the ACC/AHA guidelines throughout Australia would double the proportion of adults classified as having hypertension. That is, of the 18 million individuals aged 20 years and over, the health status of 4.5 million would change. It would also increase the proportion of adults recommended for antihypertensive therapy based on blood pressure readings in the general population, and even more so in populations with chronic diseases (individuals who reported having diabetes, heart disease or chronic kidney disease). There would be an increase in the proportion of adults who would require intensification of their antihypertensive therapy due to failure to meet blood pressure targets. It is noted that blood pressure measures were taken twice using automated monitoring devices, consistent with population-level measurement standards.<sup>13,14</sup> The methods used were different to clinical measurement guidelines (in which hypertension diagnosis should be based on multiple measurements taken on several separate occasions), and this may have affected prevalence estimates.

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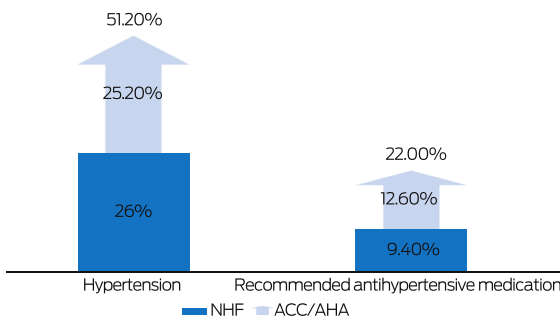
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Prevalence of hypertension and recommendation for antihypertensive medications for Australian adults using both the 2017 American College of Cardiology (ACC) and American Heart Association (AHA) guidelines and the National Heart Foundation (NHF) guidelines



Importantly, the present Australian guidelines rightly point to the importance of overall or absolute risk over and above any single risk factor such as blood pressure. However, the present national standard for assessing absolute risk is not valid for people aged less than 45 years in the non-Indigenous population and less than 35 years in Aboriginal and Torres Strait Islander Australians.<sup>15</sup> Many people who would be labelled as having hypertension using the ACC/AHA recommendations would be younger and would fall outside the age range for absolute risk assessment by the Australian standard. A new guideline would demand a new approach to assessing overall risk.

There are additional considerations if the ACC/AHA guidelines were to be adopted, including the economic impact of an increasing proportion of the population prescribed antihypertensive medication and the potential for non-compliance. Medication non-compliance for hypertension has been shown to be significantly associated with younger age groups,<sup>16</sup> many of whom would be eligible for drug therapy under the new guidelines. It is of interest that the American Academy of Family Physicians has elected not to endorse the new guidelines, citing a number of reasons, including that "harms of treating to a lower blood pressure were not assessed in the systematic review".<sup>17</sup> Australia and other nations will no doubt monitor the practical implementation of the new guidelines in the US, including the implications of such lack of endorsement.

In a sense, changing the guidelines changes nothing but the nomenclature around certain levels of blood pressure. The extensive and rigorous review of the evidence included in the US guidelines suggests that a greater proportion of the community than before should be evaluated for hypertension and treated to a lower target, although initially with lifestyle measures.

However, when this new evidence relates to half of the adult population of Australia, the implications are very significant. It begs the question of whether we have efficient and effective ascertainment of hypertension in the community. Recent evidence suggests we do not. In a national survey, 71% of the population with blood pressure levels  $\geq 140/90$  mmHg, our present threshold, were not aware they had hypertension.<sup>11</sup> We recently found that community awareness of high blood pressure as a forerunner of heart disease and stroke is very low in Australia.<sup>18</sup> Without better community awareness and

engagement, we are unlikely to make progress. Do we have effective ways of ensuring that people at risk adopt and maintain healthy nutrition, physical activity or adhere to prescribed blood pressure-lowering medications regularly? Of course not; yet, hypertension accounts for almost a third of the attributable burden of cardiovascular disease in the Australian community, far more than any other risk factor.<sup>19</sup>

One way of getting rid of this problem, and favoured by some, is to not have guidelines on single risk factors and to rely on absolute risk to evaluate and treat. Notwithstanding the issues and evidence gaps around the methodology of assessing absolute risk, there are aspects of hypertension, dyslipidaemia, diabetes or other risk factors where clinicians need guidance that cannot be provided by an absolute risk algorithm.

Hypertension has arguably been a sleeper in the Australian health scene. If the ACC/AHA guidelines do nothing more than provoke a debate on how we can use new evidence to devise better strategies, we should be grateful. We should not be surprised that this takes blood pressure thresholds back to levels we used to consider normal. We have known for decades that most of the diseases, heart attacks, strokes and sudden death attributable to blood pressure occur within the healthy range. Individuals with the most severe hypertension are the main contributors to the burden of disease.<sup>20</sup>

At this stage, we do not feel it is the time to make such change to the Australian guidelines. There will no doubt be challenges in implementing the US guidelines. We will learn from this and from new evidence that emerges from ongoing trials and further analysis.

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References are available online at [www.mja.com.au](http://www.mja.com.au).

- 1 Illich I. Medical nemesis: the expropriation of health. New York: Pantheon Books, 1976.
- 2 Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol* 2017; 13: 24430.
- 3 Maddox TM, Borden WB, Tang F, et al. Implications of the 2013 ACC/AHA cholesterol guidelines for adults in contemporary cardiovascular practice: insights from the NCDR PINNACLE registry. *J Am Coll Cardiol* 2014; 64: 2183-2192.
- 4 Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Guidelines for preventing and treating vitamin D deficiency and insufficiency revisited. *J Clin Endocrinol Metab* 2012; 97: 1153-1158.
- 5 SPRINT Research Group. A randomized trial of intensive versus standard blood- pressure control. *N Engl J Med* 2015; 373: 2103-2116.
- 6 Muntner P, Carey RM, Gidding S, et al. Potential US population impact of the 2017 ACC/AHA high blood pressure guideline. *J Am Coll Cardiol* 2018; 71: 109-118.
- 7 Gabb GM, Mangoni AA, Anderson CS, et al. Guideline for the diagnosis and management of hypertension in adults – 2016. *Med J Aust* 2016; 205: 85-89. <https://www.mja.com.au/journal/2016/205/2/guideline-diagnosis-and-management-hypertension-adults-2016>
- 8 Wang JG, Liu L. Global impact of 2017 American College of Cardiology/ American Heart Association Hypertension guidelines: a perspective from China. *Circulation* 2018; 137: 546-548.
- 9 Schiffrin EL. Global impact of the 2017 American College of Cardiology/ American Heart Association Hypertension guidelines: a perspective from Canada. *Circulation* 2018; 137: 883-885.
- 10 Wander GS, Ram CVS. Global impact of the 2017 American College of Cardiology/American Heart Association Hypertension guidelines: a perspective from India. *Circulation* 2018; 137: 549-550.
- 11 Australian Bureau of Statistics. National Health Survey: first results, 2014–15 (Cat. No. 4364.0.55.001). Canberra: ABS, 2015. <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.001> (viewed May 2018).
- 12 Hoare E, Kingwell BA, Jennings GLR. Blood pressure Down Under, but down under what? US and Australian hypertension guideline conversation. *Hypertension* 2018; 71: 972-975.
- 13 Gee ME, Campbell N, Sarrafzadegan N, et al. Standards for the uniform reporting of hypertension in adults using population survey data: recommendations from the World Hypertension League Expert Committee. *J Clin Hypertens (Greenwich)* 2014; 16: 773-781.
- 14 Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey; 2013–2014 data documentation, codebook, and frequencies; blood pressure [website]. Atlanta, GA: CDC, 2015. [https://wwwn.cdc.gov/Nchs/Nhanes/2013-2014/BPX\\_H.htm](https://wwwn.cdc.gov/Nchs/Nhanes/2013-2014/BPX_H.htm) (viewed Mar 2018).
- 15 National Vascular Disease Prevention Alliance. Guidelines for the management of absolute cardiovascular disease risk. Melbourne: National Stroke Foundation, 2012. <https://www.heartfoundation.org.au/images/uploads/publications/Absolute-CVD-Risk-Full-Guidelines.pdf> (viewed May 2018).
- 16 Karakaya G, Van Tienen R, Umbach I. [OP.6C.Q2] Risk factors associated with medication non-compliance in arterial hypertension. *J Hypertens* 2016; 34: e72.
- 17 American Academy of Family Physicians. Guidelines developed by external organizations not endorsed by the AAFP [website]. AAFP, 2017. <https://www.aafp.org/patient-care/clinical-recommendations/non-endorsed.html> (viewed Mar 2018).
- 18 Hoare E, Stavreski B, Kingwell BA, Jennings GL. Australian adults' behaviours, knowledge and perceptions of risk factors for heart disease: a cross-sectional study. *Prev Med Rep* 2017; 8: 204-209.
- 19 Australian Institute of Health and Welfare. Australian burden of disease study: impact and causes of illness and death in Australia 2011. Canberra: AIHW, 2016. <https://www.aihw.gov.au/getmedia/d4df9251-c4b6-452f-a877-8370b6124219/19663.pdf.aspx?inline=true> (viewed May 2018).
- 20 Rose G. Sick individuals and sick populations. *Int J Epidemiol* 2001; 30: 427-432. ■