

***Comment on the following guideline and its implications: Whelton, P. K. 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:***

## **Title: Who asked the patients?**

### **Authors**

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### **Biographies**

Richard McManus is Professor of Primary Care Research at the University of Oxford and a part time General Practitioner in Oxford. His research interests lie mainly in the prevention of cardiovascular disease with particular emphasis on blood pressure measurement and the management of hypertension in primary care. He holds an NIHR Professorship and leads programmes of work around Self-Monitoring and Self-Management of Blood Pressure in Hypertension and Pregnancy.

Jonathan Mant is Professor of Primary Care Research and Head of the Primary Care Unit at the University of Cambridge. He trained as a public health physician and subsequently worked in Oxford and Birmingham before taking up his chair in Cambridge in October 2008. He has chaired several NICE guideline development groups, including most recently primary hyperparathyroidism. He is an NIHR Senior Investigator, and chairs one of the NIHR sub-panels for Programme Grants for Applied Research.

### **Competing Interests**

Richard McManus has received blood pressure monitoring equipment for research purposes from Omron and Lloyds Pharmacies.

*The radical new US Joint Colleges Guidelines, released three years after their last scientific statement, have implications far beyond their intended recipients. They include a new definition for hypertension, lower treatment targets and extended guidance on the implementation of multidisciplinary care including self-monitoring of blood pressure. Some recommendations are likely to generate controversy.*

Perhaps the biggest change—one that puts the US at odds with most other guideline – is to reclassify “hypertension”. A systolic blood pressure  $>120$  mmHg is now labelled as ‘elevated blood pressure’; a systolic BP of 120-129 mmHg or diastolic blood pressure of 80-89 mmHg is labelled as ‘stage 1 hypertension’; and a systolic blood pressure of 140mmHg or over or a diastolic blood pressure of 90 mmHg or over is labelled as stage 2 hypertension. (1) The Writing Committee estimate that this will increase the proportion of the US adult population labelled as having hypertension from 32% to 46% – is this reasonable?

Hypertension is the most significant risk factor worldwide for disability and death, surpassing infection and smoking.(2) Reducing blood pressure all but reverses the increased population attributable risk from hypertension down to below 130mmHg systolic with those at highest risk gaining most in absolute terms.(3) Since the last guidance in 2014, the large SPRINT trial has demonstrated that lowering systolic blood pressure to a target of 120mmHg lowers the risk of cardiovascular disease in people at increased cardiovascular risk.(4) The question is not whether treatment of individuals at lower pressures is reasonable – a risk based approach targeting those at highest risk seems appropriate – but whether hypertension as a concept is still relevant.

Guidelines for the use of lipid lowering treatment and for cardiovascular risk have all but removed the concept of thresholds for individual risk factors, preferring rather to consider them in combination.(5) For the first time, the new US hypertension guidelines include a risk threshold – of 10% 10 year cardiovascular risk – for treatment decisions where an individuals’ blood pressure falls below 140/90mmHg. At this level, an intervention reducing risk by 20% will have a number needed to treat (NNT) of around 50 people for 10 years to prevent one cardiovascular event. However, somewhat contradictorily, treatment is recommended for all those  $>140/90$ mmHg, many of whom (especially the young), will have

NNTs well into the hundreds and 10 year cardiovascular risk below 10%. The justification provided is that younger people have most to gain across a lifetime.(1)

The change in definition will label individuals with a “condition” they did not previously have. Such labelling is not without its own problems.(6) Even at current thresholds, many individuals stop taking their medication or take it intermittently,(7) hence expanding treatment recommendations may have little impact, without paying attention (which the guidelines do) to other aspects such as promoting medication adherence, and lifestyle changes to lower blood pressure.

The reclassification of hypertension is accompanied by new treatment recommendations with a target blood pressure of 130/80mmHg for (almost) all and treatment for those at increased risk (>10% risk of a cardiovascular event in 10 years) or cardiovascular co-morbidities. These recommendations appear to be driven by the results of the SPRINT trial.(4) However, 90% of those in SPRINT were on treatment at baseline meaning that their true baseline blood pressure was likely above 140/90mmHg.

Furthermore, a recent meta-analysis has shown that in the absence of other risk factors, there is no trial evidence for lowering of blood pressure below 140/90mmHg and in low risk individuals, the number needed to treat even at this threshold is high.(8) A trial specifically assessing the value of treatment in those with intermediate cardiovascular risk, the majority of whom were not conventionally hypertensive, found no benefit overall from dual antihypertensive treatment, although those in the highest tertile of blood pressure (>143.5mmHg systolic) did show benefit.(8)

For people of all ages, and those with co-morbidities, such as coronary heart disease, diabetes mellitus, peripheral vascular disease and chronic renal failure, treatment targets are set at  $\leq 130/80$  mmHg. The one exception to this is people with stroke, for whom a target of  $\leq 140/90$  mmHg is proposed, unless the patient has had a lacunar stroke, in which case a target of  $\leq 130/80$  is used. This is based on a sub-group analysis of the PROGRESS trial which the Writing Group interpreted as evidence that the effect of blood pressure lowering was less in people with stroke with lower baseline blood pressure. (9) However, this effect

was confounded by the number of drugs that people in this trial were randomised to. If treatment effects are stratified by whether patients were randomised to one or to two drugs, then the apparent association between lower baseline blood pressure and lower benefit of treatment disappears. (9) It would have been more straightforward (and in keeping with the evidence) to have assigned people with stroke the same target blood pressure as people with other co-morbidities.

The writing group included two lay members (out of 21) which is to the credit of the guideline developers but it is not clear how easily the voices of the millions of people taking (or potentially taking) antihypertensive treatment were heard. The level of risk that members of the public are willing to accept before treatment may be significantly higher than that of the medical profession, with more than 1/3 refusing medication that would reduce their absolute risk by even 5% (NNT less than 20), a much larger gain than typically available from antihypertensives.(10) This may reflect the confusion that many feel regarding the aetiology of raised blood pressure – widely considered to be caused by stress across a variety of international settings.(7) Furthermore, the evidence that people aged over 80 years old want blood pressure lowering to below 130mmHg systolic with the adverse effects that this brings is lacking.(4)

Positives for primary care include explicit acknowledgement of the impact of multidisciplinary “team based” care. Good evidence now exists (and is cited) for the wider primary care team to become involved in hypertension care including pharmacists.(1) Self-monitoring and ambulatory monitoring are endorsed: those whose blood pressure remains between 130/80-160/100mmHg following lifestyle intervention are recommended for screening for white coat hypertension with either home or ambulatory blood pressure monitoring. The use of out-of-office measurement for ongoing management, including self-management, also receives backing.

In conclusion, while there is much of value in these new guidelines – particularly consideration of a risk based approach - attention is likely to focus on the re-definition of hypertension. The key question is, did anyone ask the patients about this?

## References

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