Even examples from the animal world can be used, for example why hibernating bears with high LDL cholesterol levels do not develop atherosclerosis [20]. The goal is to find such causal protective mechanisms that could one day turn into new drug targets. If so, traditional drugs to lower risk factors could be combined with true protective drugs that enhance protective mechanism - a new polypill to be tested!

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A summary of the NICE 2019 Hypertension guidelines DOI: 10.30824/1911-12

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In August 2019, the National Institute for Health and Care Excellence (NICE) published a new clinical guideline on the diagnosis and management of hypertension in adults.¹ A new guideline was needed to reflect the findings from a number of important research studies since the last NICE Hypertension guideline [CG127] was published in 2011.² The results of these studies has seen a shift in the American College of Cardiology/ American

Heart Association (ACC/AHA) guidelines towards diagnosing hypertension at the lower blood pressure threshold of 130/80 mmHg, though only initiating treatment for people with a blood pressure between 130/80 mmHg and 140/90 mmHg who are deemed at 'high risk' of cardiovascular disease.³ These recommendations have been controversial, given the prevalence of hypertension is predicted to rise by around 15% due to this threshold reclassification, despite many of those newly diagnosed not needing treatment.³ How have NICE interpreted the same data and how does the latest guideline differ from 2011?

Key recommendations that remain unchanged

The threshold for diagnosing and treating hypertension recommended by NICE remains unchanged, at 140/90mmHg for clinic readings or 135/85mmHg for average home blood pressure measurement (HBPM) or daytime ambulatory blood pressure monitoring (ABPM). The threshold for stage 2 remains the same at 160/100 mmHg but stage 3 or 'severe hypertension' has a new diastolic cut off 180/110 mmHg. Diagnosing hypertension should not rely on single clinic readings, but instead use either HBPM or ABPM. Whilst ABPM remains the gold-standard there are resource and cost implications associated with its uptake. HBPM is a cost-effective and well tolerated alternative.

Treatment targets and diagnostic thresholds remain equivalent. The landmark SPRINT study, a randomised controlled trial of intensive versus standard blood pressure control, reported that treating to a lower target of 130/80 mmHg

led to reductions in cardiovascular events and mortality, improvements supported by the results of a subsequent meta-analysis.^{4,5} However, in considering the applicability of these results to UK recommendations, NICE took account of potential limitations in the SPRINT study design and generalisability, particularly to primary prevention across populations with hypertension. For example, SPRINT involved higher risk groups, (including people with cardiovascular disease, chronic kidney disease or a 10-year cardiovascular risk score >15%) and also reduced the dose of medication, particularly diuretics, in the 'usual care' arm. A further meta-analysis including trials of primary prevention failed to show benefit of reduction below 140mmHg systolic.⁶

Furthermore, the SPRINT trial used 'unattended', automated blood pressure measurements, which typically result in significantly lower readings, perhaps as much as 10mmHg.⁷ Applying these results directly to healthcare settings where titration is based on routine clinic measurements may risk over treatment and the results themselves may reflect under treatment in the control arm (if the target was more akin to <150 mmHg systolic). Lower target treatment thresholds also led to higher rates of adverse events, including hypotension, syncope, electrolyte imbalance and acute kidney injury.^{5,8} Maintaining a single diagnostic and treatment threshold was felt to have the additional benefit of offering a clear, unambiguous recommendation. There were limited data meeting the NICE guideline inclusion criteria as to the relative merits of starting treatment in confirmed hypertension with either a single antihypertensive medication or dual therapy. The Pathway 1 trial, which suggested dual therapy may help achieve target blood pressure control more quickly, was excluded because the outcome was a surrogate marker.⁹ As a result and in the absence of other evidence, NICE continues to recommend starting with monotherapy treatment.

Key changes in the 2019 guideline

A lower QRISK2 threshold for treatment in stage 1 hypertension

The change that has captured the most attention in the latest NICE guideline is the move to offer people aged below 80 years with stage 1 hypertension treatment using a 10-year cardiovascular risk (QRISK2) threshold of 10% instead of the previous 20%. There is clear evidence that people with stage 2 hypertension benefit from blood pressure lowering treatment in terms of a reduction in both cardiovascular events and mortality.⁶ However, the evidence is more limited for people with stage 1 hypertension who do not have diabetes, renal disease, cardiovascular disease or target organ damage and so NICE undertook a health economic analysis to inform their recommendation on this question. They assessed threshold cardiovascular risk levels of 5%, 10%, 15% and 20%. For people aged 60 years, treatment was cost-effective at the 10% threshold but not at the 5% threshold. For people younger than 60, a lower risk threshold of 5% may be cost-effective, so consideration should be given to treatment in this group based on patient preference. The guideline recognises the balance between benefit and harms when treating low-risk people with stage 1 hypertension and therefore gives flexibility to patients and professionals in their choices, emphasising the importance of lifestyle change.⁸ Despite these apparently modest changes, NICE recognise that these recommendations would mean over 500,000 people becoming eligible for treatment with around £10m net impact in the first five years if only a quarter of these take up long term treatment.

New advice on taking blood pressure measurements

NICE continue to recommend that blood pressure should be measured in both arms at the time of diagnosis but suggest a difference of 15 mmHg should now be considered significant, compared to the previous 20 mmHg.¹⁰ Subsequent blood pressure readings should be measured from the arm with the higher reading and patients informed which this is. This reflects the fact that even small differences in blood pressure between arms can indicate a significant increase in cardiovascular risk. A standing blood pressure should be measured in people with diabetes, symptoms of postural hypotension or aged over 80 years. If there is a significant postural drop (>20 mmHg systolic), blood pressure treatment should be based on the standing reading.

Accelerated and severe hypertension

Differentiating accelerated from severe hypertension is difficult and there is limited evidence on this topic. NICE have clarified clinical signs consistent with accelerated hypertension that may help guide clinicians in deciding which patients need urgent assessment, to avoid unnecessary emergency referrals to hospital on the basis of very high single blood pressure measurements alone. These include retinal haemorrhage, papilloedema or life-threatening symptoms. In the absence of these features, it is recommended clinicians arrange urgent investigations for end-organ damage, including urine dipstick, blood tests and an electrocardiogram. Such patients should be reviewed and have their blood pressure repeated within a week.

Inclusion of diabetes

People with diabetes are now included in the NICE 2019 hypertension guidance and their target blood pressure thresholds are now equivalent to those without diabetes, i.e. 140/90 mmHg on clinic readings or 135/85 mmHg on ABPM or HBPM. The previous recommendation was a consensus opinion based on the Hypertension Optimal Treatment (HOT) trial.¹¹ However, this was prior to the ACCORD study, which found treating to a target of 120 mmHg compared to 140 mmHg systolic in people with type 2 diabetes did not reduce the composite primary outcome of fatal and non-fatal major cardiovascular events.¹²

Conclusion

The new NICE guideline differs from American guidelines and retains target blood pressure thresholds of 140/90 mmHg or 135/85 mmHg out-of-office measurement for both diagnosis and treatment. This target is now equivalent for people with or without type 2 diabetes, providing a clear and consistent threshold. The major change has seen the QRISK2 threshold for treatment in stage 1 hypertension reduced to 10%. There are also changes to help clinicians identify high risk patients based on between arm blood pressure difference and clinical signs relevant to severe hypertension.

Disclaimer

The NICE guideline referred to in this article was produced by the National Guideline Centre for the National Institute for Health and Care Excellence (NICE). The views expressed in this article are those of the authors and not necessarily those of NICE.

National Institute for Health and Care Excellence (2019) Hypertension in adults.

Available from <https://www.nice.org.uk/guidance/ng136>

Hypertension in adults: diagnosis and treatment

NICE National Institute for Health and Care Excellence

Abbreviations: ABPM, ambulatory blood pressure monitoring; BP, blood pressure; CVD, cardiovascular disease; HBPM, home blood pressure monitoring.

This is a summary of the recommendations on diagnosis and treatment from NICE's guideline on hypertension in adults. See the original guidance at www.nice.org.uk/guidance/NG136

Choice of antihypertensive drug¹, monitoring treatment and BP targets

Monitoring treatment

Use clinic BP to monitor treatment.

Measure standing and sitting BP in people with:

- type 2 diabetes or
- symptoms of postural hypotension or
- aged 80 and over.

Advise people who want to self-monitor to use HBPM. Provide training and advice.

Consider ABPM or HBPM, in addition to clinic BP, for people with white-coat effect or masked hypertension.

BP targets

Reduce and maintain BP to the following targets:

Age <80 years:

- Clinic BP <140/90 mmHg
- ABPM/HBPM <135/85 mmHg

Age ≥80 years:

- Clinic BP <150/90 mmHg
- ABPM/HBPM <145/85 mmHg

Postural hypotension:

- Base target on standing BP

Frailty or multimorbidity:

- Use clinical judgement

¹For women considering pregnancy or who are pregnant or breastfeeding, see NICE's guideline on [hypertension in pregnancy](#). For people with chronic kidney disease, see NICE's guideline on [chronic kidney disease](#). For people with heart failure, see NICE's guideline on [chronic heart failure](#).

²See MHRA drug safety updates on [ACE inhibitors and angiotensin-II receptor antagonists: not for use in pregnancy](#), which states 'Use in women who are planning pregnancy should be avoided unless absolutely necessary, in which case the potential risks and benefits should be discussed'. [ACE inhibitors and angiotensin II receptor antagonists: use during breastfeeding and clarification: ACE inhibitors and angiotensin II receptor antagonists](#). See also NICE's guideline on [hypertension in pregnancy](#).

³Consider an ARB, in preference to an ACE inhibitor in adults of African and Caribbean family origin.

⁴At the time of publication (August 2019), not all preparations of spironolactone have a UK marketing authorisation for this indication.

Abbreviations: ABPM, ambulatory blood pressure monitoring; ACEi, ACE inhibitor; ARB, angiotensin-II receptor blocker; BP, blood pressure; CCB, calcium-channel blocker; HBPM, home blood pressure monitoring.

This visual summary builds on and updates previous work on treatment [published by the BIHS](#) (formerly BHS)

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