

Clinical Intelligence: NICE 2019 Hypertension Guideline review

Introduction

Hypertension affects between 30 to 45% of adults, with global prevalence estimated at 1.13 billion in 2015.¹ Ageing populations and changing global demographics mean prevalence is increasing and predicted to reach 1.5 billion by 2025.² The diagnosis and management of hypertension therefore represents an important issue for general practitioners internationally. In August 2019, the National Institute for Health and Care Excellence (NICE) released their new hypertension guidelines.³ These incorporate the latest evidence from a number of landmark clinical trials and systematic reviews that have been published since the NICE hypertension guidelines were reviewed in 2011.⁴ The NICE committee aimed to produce a guideline that offers pragmatic recommendations on diagnosis and treatment that are easy to interpret and implement as well as cost-effective in the context of the National Health Service. This article highlights the key recommendations and changes since 2011.

Diagnosing hypertension

The diagnostic threshold for hypertension remains 140/90 mmHg on clinic blood pressure (BP). As previously, it is recommended that diagnosis is based on out-of-office measurement, given the risk of white coat hypertension, defined as a difference of greater than 20/10 mmHg between clinic readings and average daytime home or ambulatory measurements.³ The gold standard is ambulatory blood pressure monitoring (ABPM) but as this is not suitable or tolerated by everyone, home blood pressure monitoring (HBPM) is offered as an alternative. For HBPM, patients should be advised to take at least two recordings, one minute apart, twice a day for four to seven days. The first day of readings should be discounted and the mean of the remaining readings used. If the mean BP is close to the diagnostic threshold, ABPM may be needed to confirm the diagnosis, particularly in younger people (e.g. aged under 60) where the implications of a new hypertension diagnosis may be more significant. The diagnostic threshold for ABPM or HBPM remains 135/85 mmHg. Standing BP should be measured in those with type 2 diabetes, aged 80 or

over and people with symptoms of postural hypotension. The standing BP should be measured after the person has been standing for at least 1 minute. Where there is a significant postural drop in systolic BP (>20 mmHg), treatment should be targeted at the standing BP.

Between arm blood pressure differences

BP should be checked in both arms at the time of diagnosis as a significant difference in readings between arms is an important marker of vascular disease and can lead to under treatment.⁵ In recognition, NICE have lowered their definition of what is considered a significant between arm difference from 20 mmHg to 15 mmHg. BP should be measured consistently in the arm with higher BP during subsequent monitoring where possible.

Recognition of malignant hypertension

NICE have attempted to provide greater guidance on which patients may need urgent admission for BP assessment or control, aiming to reduce unnecessary workload in both primary and secondary care. Urgent admission is only recommended for individuals with stage 3 hypertension (Table 1) who also have signs of acute end organ damage, including papilloedema or retinal haemorrhage or life-threatening symptoms such as acute chest pain, confusion or decompensated heart failure. Urgent admission is also recommended if a pheochromocytoma is suspected based on significant hypertension alongside symptoms such as headache, abdominal pain, pallor or diaphoresis.

In the absence of one of these indications for acute referral, NICE suggest assessing for target organ damage and, if present, considering initiating treatment without waiting for ABPM or HBPM (Table 2). If there is no evidence of target organ damage, repeat a clinic BP within one week and re-evaluate.

Treatment thresholds

Patients newly diagnosed with hypertension should be offered tests for target organ damage (Table 2) and a cardiovascular risk score calculated (e.g. using the latest version of the QRISK score for patients residing in the United Kingdom). Treatment is now suggested for people aged under 80 years with stage 1 hypertension who have a ten year risk score of 10% or greater, or those with either target organ damage, renal disease, cardiovascular disease or diabetes. This brings the risk threshold for treatment in hypertension in line with that for statins.⁶ The reduction in risk threshold from 20% was driven by a new cost effectiveness analysis, which found that initiating treatment at the 10% threshold gave an incremental cost-effectiveness ratio of £10k at age 60 and therefore was deemed to be cost-effective.⁷ The same cost effectiveness analysis found treating at a 5% risk threshold may be cost effective in people aged younger than 60 and given risk calculators tend to underestimate lifetime cardiovascular risk in these younger people, NICE suggest considering treatment for people diagnosed before 60 where the QRISK is below 10% based on shared decision making and patient preference. The recommendation means that most people with stage 1 hypertension aged between 60 and 80 will now be eligible for treatment. In practice around 50% of those with uncomplicated stage 1 hypertension in the United Kingdom are already prescribed BP lowering medication and many of these have below 10% risk, suggesting a shift in treatment focus might mean little additional workload.⁸

Other than the landmark HyVET trial which used a treatment threshold of 150 mmHg systolic BP, there is a lack of evidence regarding treatment targets for people aged over 80 and the potential risks of treatment are greater in this group.⁹ NICE therefore advocates clinicians judging whether to recommend treatment based on individual case merit but taking into account factors such as frailty and other co-morbidities, particularly where treatment below 150 mmHg is being considered.

Hypertension in people with diabetes is now included in the guideline and importantly, the thresholds for both diagnosis and treatment have been brought into line with the recommendations for people without diabetes. The previous recommendation for a lower treatment target for people with diabetes was based on a subgroup analysis from the Hypertension Optimal Treatment (HOT) trial but more recently the ACCORD study found no

benefit in terms of fatal and non-fatal major cardiovascular events when people with type 2 diabetes were treated to a target systolic BP of 120 mmHg compared to 140 mmHg.^{10, 11}

For people aged under 80, treatment should aim to reduce clinic BP below 140/90 mmHg or 135/85 mmHg if using HBPM. Unlike recent US and European guidance, NICE do not suggest aiming for lower BP targets, due to a lack of evidence in primary prevention as well as the increased risk associated with this strategy, including falls and electrolyte imbalance.^{7, 12}

Treatment approach

Treatment recommendations remain largely unchanged but as with the rest of the guideline combine recommendations for those with or without type 2 diabetes as well as being more flexible. Clinicians should offer regular lifestyle advice, including diet and exercise, to all people with suspected or diagnosed hypertension. People with either type 2 diabetes, aged under 55 or of African or Caribbean family origin should be offered an angiotensin converting enzyme inhibitor (ACE) or angiotensin II receptor blocker (ARB) first line. All other patients should be offered a calcium channel blocker (CCB). If the CCB is not tolerated, a thiazide-like diuretic such as indapamide, should be offered as a replacement. Dual therapy (e.g. with an ACE and CCB) is not recommended in the first instance, even if a combined pill is used, as NICE found insufficient evidence regarding the risks and benefits of this approach and suggest further research is needed in this area.

People with hypertension should receive at minimum an annual review, to discuss BP, lifestyle, symptoms and medication. If BP control is inadequate on a single agent, a second drug should be added (Figure 1). Step 3 treatment combines an ACE/ARB, CCB and thiazide-like diuretic at optimal tolerated doses. People who remain hypertensive despite this are considered to have resistant hypertension. Check adherence and confirm BP readings using ABPM or HBPM. If further treatment is indicated, low-dose spironolactone may be most suitable for those with a potassium level of 4.5mmol/l or less, or an alpha or beta- blocker for other patients. More frequent monitoring and expert advice may be required.

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>

References

1. Chow CK, Teo KK, Rangarajan S, et al. PURE Study Investigators. Prevalence, awareness, treatment, and control of hypertension in rural and urban communities in high-, middle-, and low-income countries. *JAMA* 2013; 310: 959–968.
2. Kearney PM, Whelton M, Reynolds K, et al. Global burden of hypertension: analysis of worldwide data. *Lancet* 2005; 365: 217–223.
3. National Clinical Guideline Centre. *Hypertension in adults: Diagnosis and Management*. London, England: Royal College of Physicians; 2019.
4. National Clinical Guideline Centre. *Hypertension: Clinical Management of Primary Hypertension in Adults; Clinical Guideline 127*. London, England: Royal College of Physicians; 2011.
5. Clark CE, Taylor RS, Shore AC and Campbell JL. The difference in blood pressure readings between arms and survival: primary care cohort study *BMJ* 2012; 344: e1327.
6. National Institute for Health and Care Excellence Lipid modification: cardiovascular risk assessment and reduction, including lipid modification. NICE guidelines [CG181]. <https://www.nice.org.uk/guidance/cg181> (accessed 5 August 2019).
7. Brunström M and Carlberg B. Association of Blood Pressure Lowering With Mortality and Cardiovascular Disease Across Blood Pressure Levels: A Systematic Review and Meta-analysis. *JAMA Intern Med.* 2018; 178(1):28-361.
8. Sheppard JP, Stevens S, Stevens RJ, et al. Association of guideline and policy changes with incidence of lifestyle advice and treatment for uncomplicated mild

hypertension in primary care: a longitudinal cohort study in the Clinical Practice Research Datalink *BMJ Open* 2018;8:e021827.

9. Beckett N, Peters R, Tuomilehto J et al. Immediate and late benefits of treating very elderly people with hypertension: results from active treatment extension to Hypertension in the Very Elderly randomised controlled trial. *BMJ* 2011; 344:d7541
10. Kjeldsen SE, Hedner T, Jamerson K, et al. Hypertension optimal treatment (HOT) study: home blood pressure in treated hypertensive subjects. *Hypertension* 1998;31(4):1014-20.
11. The Accord Study Group. Effects of intensive blood-pressure control in type 2 diabetes mellitus. *N Engl J Med* 2010;362(17):1575-85.
12. Sheppard JP, Stevens S, Stevens RJ, et al. Benefits and harms of antihypertensive treatment in low-risk patients with mild hypertension. *JAMA Intern Med.* 2018; 178(12): 1626-1634.