What and why

- Hypertension is twice as common in people with diabetes, and coexistence of these conditions significantly increases the risk for coronary heart disease, left ventricular hypertrophy, congestive heart failure and stroke.[1]
- Nationally, a third of people with diabetes who have had a blood pressure (BP) measurement recorded in the previous 12 months are deemed to have uncontrolled BP.[2]
- **NICE updated its *Hypertension in adults: diagnosis and management* (NG136) guideline in November 2023.**[3] This guidance overrides the BP recommendations that appeared in *Type 2 diabetes in adults* (NG28), last updated in June 2022.
- For those with diabetes and chronic kidney disease (CKD), refer to NICE *Chronic kidney disease: assessment and management* (NG203).[4]
- This document does not cover hypertension management in children or in women during pregnancy.

Diagnosing hypertension

Clinic BP ≥140/90 mmHg

Offer ambulatory BP monitoring (ABPM) to confirm diagnosis of hypertension. If unsuitable for ABPM, offer home BP monitoring (HBPM). Refer to ***Box A***.

Clinic BP from 140/90 to 159/99 mmHg, and subsequent ABPM daytime average or HBPM average from 135/85 to 149/94 mmHg

Clinic BP ≥160/100 but <180/120 mmHg, and subsequent ABPM daytime average or HBPM average ≥150/95 mmHg

Diagnose Stage 1 hypertension	Diagnose Stage 2 hypertension

Stage 1 and 2 hypertension

- Investigate for target organ damage (e.g. kidney damage, retinopathy, left ventricular hypertrophy.
- Complete all of the tasks listed in ***Box B***.

Clinic systolic BP ≥180 mmHg **or** clinic diastolic BP ≥120 mmHg

Diagnose Stage 3 hypertension

Stage 3 hypertension

- Assess target organ damage as soon as possible.
- Consider starting drug treatment immediately without ABPM/HBPM if target organ damage.
- Repeat clinic BP in 7 days if no target organ damage.
- Refer for same-day specialist review if signs of retinal haemorrhage or papilloedema or life-threatening symptoms (e.g. chest pain, signs of heart failure, acute kidney injury or new-onset confusion) or suspected phaeochromocytoma (e.g. labile or postural hypotension, palpitations, pallor, headache, abdominal pain or diaphoresis).
- Complete all of the tasks listed in ***Box B***.

Box A. Ambulatory and home blood pressure monitoring

ABPM

- Use ABPM to confirm a diagnosis of hypertension.
- Ensure at least two measurements per hour are taken during waking hours (e.g. between 8 a.m. and 10 p.m.).
- Use the average value of at least 14 measurements.
- If ABPM is not tolerated, use HBPM.

HBPM

For information on how to monitor BP correctly at home and a diary sheet for recording measurements, see BIHS resources:

- ➤ The basics explained: bit.ly/3g1xnPa
- ➤ Diary: bit.ly/2XexWMS

- For each BP reading, ensure that two consecutive measurements are taken, at least 1 minute apart and with the person seated; **AND**
- BP is recorded twice daily (ideally morning and evening); **AND**
- BP recording continues for at least 4 days, ideally 7 days.
- Discard measurements taken on the first day. Use the average value of all remaining measurements.

Box B. At diagnosis

- Code hypertension.
- Record height, weight, BMI, smoking status, family history of heart disease.
- Take baseline U&E, eGFR, lipids, TSH and LFT.
- Obtain urine specimen (dipstick to check for haematuria and send for ACR).
- Use results above to calculate CVD risk using QRISK®3 tool. If QRISK3 >10%, offer statin (refer to NICE NG238).[7]
- Consider QRISK3-Lifetime calculator for people aged <40 years.
- Arrange non-urgent 12-lead ECG (to assess for LVH).
- Examine the fundi for the presence of hypertensive retinopathy.

Measuring blood pressure

- Measure BP at least annually in a person without previously diagnosed hypertension or renal disease.
- Use validated equipment.
- Select the correct cuff size:

Upper arm measurement	Cuff size
17–22 cm (6.75–8.75″)	Small
22–32 cm (8.75–12.5″)	Medium
32–42 cm (12.5–16.5″)	Large

The bladder should fit around at least 80% of the arm, but not more than 100%. Measure around the upper arm at the midpoint between the shoulder and elbow.

- Promote a relaxed and temperate environment.
- Check pulse rate and rhythm. Do not use an electronic BP monitor in the presence of an irregular pulse.
- Measure BP in both arms. Repeat if difference between arms is >15 mmHg and, if difference remains >15 mmHg, use the arm with the higher reading for subsequent BP measurements.

Postural hypertension:

- In people with hypertension and diabetes, measure standing as well as seated BP. If systolic BP falls by ≥20 mmHg, or diastolic BP falls by ≥10 mmHg:
  - ➤ Consider likely causes, including current medication.
  - ➤ Manage appropriately (for example, for advice on preventing falls in older people, see NICE CG161).[5]
  - ➤ Measure subsequent BP with the person standing.
  - ➤ Consider referral to specialist care if symptoms of postural hypotension persist despite addressing likely causes.
- If the BP drop is <20 mmHg (systolic) or <10 mmHg (diastolic) but symptoms suggest postural hypotension, repeat the measurements with the person lying on their back.
- In people with a significant postural drop or symptoms of postural hypotension, treat to a target based on standing BP.
- Postural hypotension can occur secondary to autonomic neuropathy.[6]

Blood pressure targets

According to NICE,[3,4] **there is insufficient evidence to support the previously recommended lower BP targets for people with type 2 diabetes, other than for people with coexisting CKD and an ACR ≥70 mg/mmol.**

The recommendation is to reduce and maintain BP to the targets in the ***Table alongside*** depending on the person's age. **BP targets are the same for people with and without cardiovascular disease.**

⚠ Consider appropriate BP target level in special circumstances (e.g. those at risk of falls or postural hypotension, or with frailty, reduced life expectancy or polypharmacy).

Be mindful of low BP and consider reduction of treatment if a person's systolic BP is <110 mmHg.

For adults <40 years, consider seeking specialist evaluation of secondary causes of hypertension, as appropriate.

Profile	Clinic BP target	Home average BP target
Age <80 years		
With hypertension (with or without T2DM)	<140/90 mmHg	<135/85 mmHg
T1DM + ACR <70 mg/mmol	<140/90 mmHg	<135/85 mmHg
CKD + ACR <70 mg/mmol	<140/90 mmHg	<135/85 mmHg
T1DM + ACR ≥70 mg/mmol	<130/80 mmHg	<125/75 mmHg
CKD + ACR ≥70 mg/mmol	<130/80 mmHg	<125/75 mmHg
Age ≥80 years		
With hypertension (with or without T2DM)	<150/90 mmHg	<145/85 mmHg
CKD + ACR <70 mg/mmol	<140/90 mmHg	<135/85 mmHg
CKD + ACR ≥70 mg/mmol	<130/80 mmHg	<125/75 mmHg

KDIGO recommendations for people with CKD[8]

- Adults with high BP and CKD should be treated to a target SBP of <120 mmHg (also applies to the subgroups of older adults and those with increased albuminuria).
- The balance of benefits and harms is less certain in people with CKD G5 and in those with severely increased albuminuria (A3).
- The benefits of intensive BP lowering are less certain among patients with concomitant CKD and diabetes, compared to patients with CKD without diabetes.

2023/2024 QOF BP indicators

- Diabetes (excluding moderate or severe frailty: **≤140/90 mmHg**
- Coronary heart disease/hypertension/stroke/TIA:
  - Age <80 years: **≤140/90 mmHg**
  - Age ≥80 years: **≤150/90 mmHg**
- There is no QOF BP target for those with CKD.

Treatment of hypertension

Lifestyle advice

- Ask about lifestyle. Where appropriate, offer lifestyle advice that includes healthy eating:
  - A diet rich in a variety of vegetables, fruits and whole grains.
  - Healthy natural fats (olive oil, nuts and fish) and dairy (milk, yoghurt and cheese).
  - A variety of proteins, including seafood, lean meat, poultry, eggs, legumes, soy, seeds and nuts.
  - Limit sugar-sweetened foods and drinks, refined carbohydrates and processed foods.
- The DASH (Dietary Approaches to Stop Hypertension) eating plan recommends reducing salt intake.
  - Standard DASH=2300 mg/day sodium (6 g salt); lower-sodium DASH=1500 mg/day sodium (3–4 g salt).
- Support individuals who are overweight to lose weight.
- Offer smoking cessation advice to smokers (see **Useful resources**, *overleaf*).
- Provide information about local initiatives that support and promote a healthy lifestyle.

When to start/consider antihypertensive drug treatment

- Discuss individual CVD risk and preferences for treatment, including no treatment, and explain the risks and benefits before starting antihypertensive drug treatment.
- Continue to offer lifestyle advice and support them to make lifestyle changes.
- **Offer** antihypertensive drug treatment in addition to lifestyle advice to adults of any age with persistent stage 2 hypertension. Use clinical judgement for people of any age with frailty or multimorbidity.
- **Discuss starting** antihypertensive drug treatment, in addition to lifestyle advice, with adults aged <80 years with persistent stage 1 hypertension who have diabetes.
- **Consider** antihypertensive drug treatment in addition to lifestyle advice for people aged >80 years with stage 1 hypertension, if their clinic blood pressure is over 150/90 mmHg. Use clinical judgement for people with frailty or multimorbidity.

Special groups

- For choice of hypertensive agent in people with CKD, see NICE NG203 guideline on chronic kidney disease.[4]
- For women considering pregnancy or who are pregnant or breastfeeding, manage hypertension in line with NICE NG133 recommendations[9] on management of pregnancy with chronic hypertension, and on antihypertensive treatment postnatally and while breastfeeding.
- For adults aged <40 years with hypertension, consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of the long-term balance of treatment benefit and risks.

Treatment of hypertension (continued)

Stepwise approach to the pharmacological management of hypertension in adults with type 2 diabetes

- Offer people with isolated systolic hypertension (systolic BP ≥160 mmHg) the same treatment as people with both raised systolic and diastolic BP.

Step 1	ACEi or ARB Consider ARB in preference to an ACEi in adults of Black African or African–Caribbean family origin
Step 2	ACEi or ARB + CCB or thiazide-like diuretic
Step 3	ACEi or ARB + CCB + Thiazide-like diuretic
Step 4	Confirm resistant hypertension: confirm elevated BP with ABPM or HBPM, check for postural hypertension and discuss adherence. Consider seeking expert advice or adding low-dose spironolactone if blood potassium level is ≤4.5 mmol/L, or an alpha-blocker or beta-blocker if blood potassium level is >4.5 mmol/L. **Seek expert advice if BP is uncontrolled on optimal tolerated doses of four drugs.**

Hypertension prescribing tips

- Do not offer a combination of ACEi and ARB.
- Indapamide should be used in preference to a conventional thiazide diuretic, such as bendroflumethiazide or hydrochlorothiazide.
- During intercurrent illness, especially where there is risk of dehydration, consider pausing ACEi/ARBs and diuretics until recovered.
- Measure serum potassium concentrations and estimate the GFR before starting RAS antagonists.
- Repeat these measurements between 1 and 2 weeks after starting RAS antagonists, and after each dose increase.
- Do not routinely offer an ACEi or ARB if pre-treatment serum potassium concentration is >5.0 mmol/L and **STOP** if it rises to ≥6.0 mmol/L.
- Following the introduction or dose increase of RAS antagonists, do not modify the dose unless either the GFR decrease from pre-treatment baseline is >25% or serum creatinine increase from baseline is >30%.

Useful resources

- British and Irish Hypertension Society (BIHS) educational resources and list of approved home BP monitors: **https://bihsoc.org**
- BIHS healthy eating diet sheet: **bit.ly/2ZoZWyX**
- DASH (Dietary Approaches to Stop Hypertension): **www.dashdiet.org**
- Diabetes UK Information Prescription on diabetes and blood pressure: **bit.ly/2JtPH23**
- QRISK3 cardiovascular risk calculator: **https://qrisk.org**
- How to help people with diabetes stop smoking: **bit.ly/3j2hSsk**

Abbreviations

ABPM=ambulatory blood pressure monitoring; ACEi=angiotensin-converting enzyme inhibitor; ACR=albumin-to-creatinine ratio; ARB=angiotensin receptor blocker; BP=blood pressure; CCB=calcium channel blocker; CKD=chronic kidney disease; CVD=cardiovascular disease; ECG=electrocardiogram; eGFR=estimated glomerular filtration rate; HBPM=home blood pressure monitoring; LFT=liver function tests; LVF=left ventricular hypertrophy; QOF=Quality and Outcomes Framework; RAS=renin–angiotensin system; TSH=thyroid-stimulating hormone; U&E=urea and electrolytes.

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Citation

Diggle J (2024) How to diagnose and treat hypertension in adults with type 2 diabetes. *Diabetes & Primary Care* **26**: 47–9