

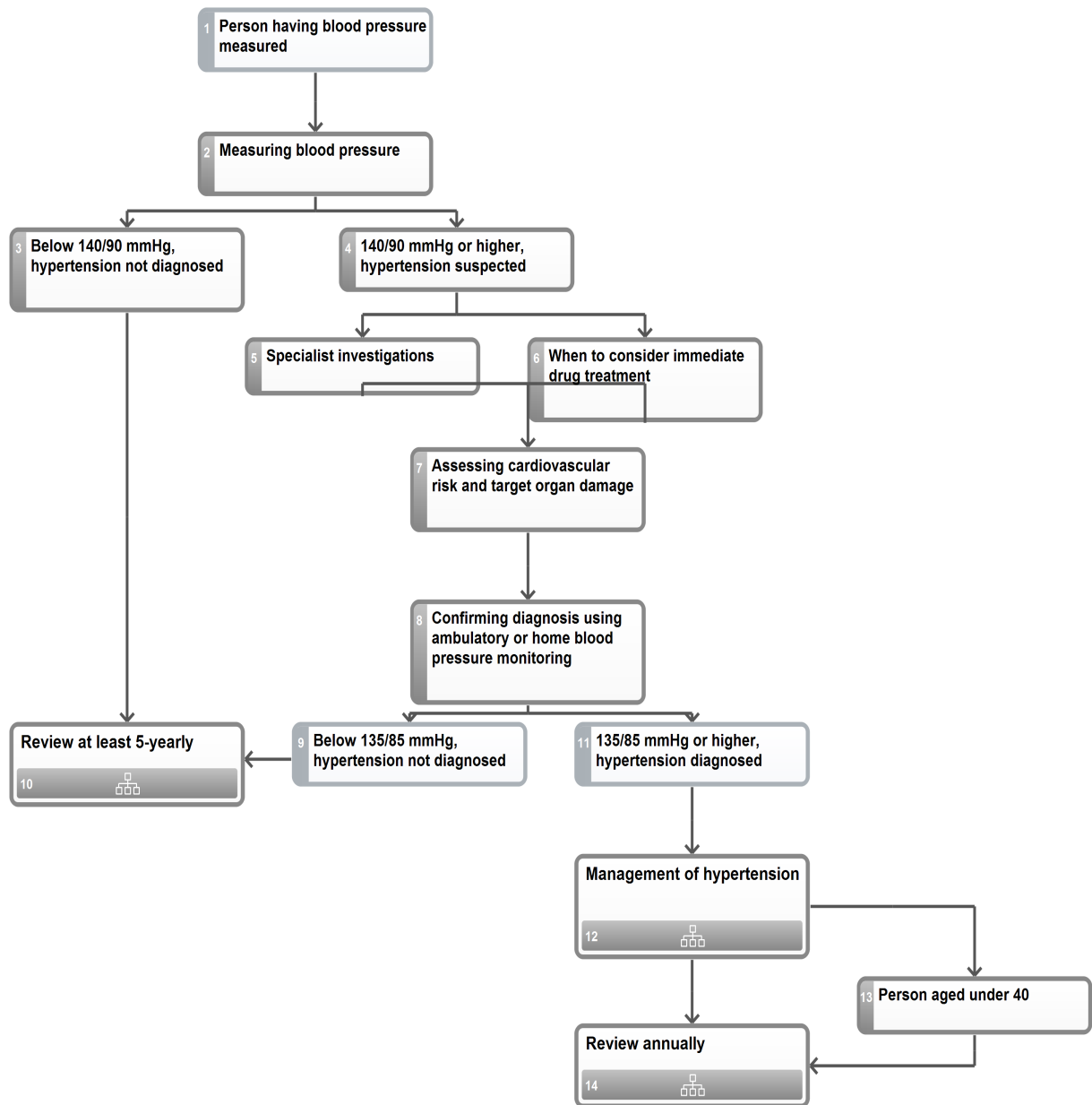
Diagnosis and assessment of hypertension

A NICE pathway brings together all NICE guidance, quality standards and materials to support implementation on a specific topic area. The pathways are interactive and designed to be used online. This pdf version gives you a single pathway diagram and uses numbering to link the boxes in the diagram to the associated recommendations.

To view the online version of this pathway visit:

<http://pathways.nice.org.uk/pathways/hypertension>

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1 Person having blood pressure measured

No additional information

2 Measuring blood pressure

Healthcare professionals taking blood pressure measurements need adequate initial training and should have their performance reviewed periodically.

Devices for measuring blood pressure must be properly validated, maintained and regularly recalibrated according to manufacturers' instructions.

If using an automated blood pressure monitoring device, ensure that the device is validated¹ and an appropriate cuff size for the person's arm is used.

When measuring blood pressure in the clinic or in the home, standardise the environment and provide a relaxed, temperate setting, with the person quiet and seated, and their arm outstretched and supported.

Palpate the radial or brachial pulse before measuring blood pressure, since automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation). If pulse irregularity is present, measure blood pressure manually, using direct auscultation over the brachial artery.

Postural hypotension

In people with symptoms of postural hypotension (falls or postural dizziness):

- measure blood pressure with the person either supine or seated
- measure blood pressure again with the person standing for at least 1 minute prior to measurement.

If the systolic blood pressure falls by 20 mmHg or more when the person is standing:

- review medication
- measure subsequent blood pressures with the person standing
- consider referral to specialist care if symptoms of postural hypotension persist.

¹ A list of validated blood pressure monitoring devices is available from the [British Hypertension Society](#). The British Hypertension Society is an independent reviewer of published work. This does not imply any endorsement by NICE.

Measuring the clinic blood pressure

Measure blood pressure in both arms.

- If the difference in readings between arms is more than 20 mmHg, repeat the measurements.
- If the difference in readings between arms remains more than 20 mmHg on the second measurement, measure subsequent blood pressures in the arm with the higher reading.

If blood pressure measured in the clinic is 140/90 mmHg or higher:

- Take a second measurement during the consultation.
- If the second measurement is substantially different from the first, take a third measurement.

Record the lower of the last two measurements as the clinic blood pressure.

NICE medical technologies guidance

NICE medical technologies guidance addresses specific technologies notified to NICE by manufacturers. The 'case for adoption' is based on the claimed advantages of introducing the specific technology compared with current management of the condition. This case is reviewed against the evidence submitted and expert advice. If the case for adopting the technology is supported then the technology has been found to offer advantages to patients and the NHS. The specific recommendations on individual technologies are not intended to limit use of other relevant technologies which may offer similar advantages. The following medical technology guidance is relevant to this part of the pathway.

WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension

The case for adopting WatchBP Home A in the NHS, for opportunistically detecting asymptomatic atrial fibrillation during the measurement of blood pressure by primary care professionals, is supported by the evidence. The available evidence suggests that the device reliably detects atrial fibrillation and may increase the rate of detection when used in primary care. This would allow prophylactic treatment to be given to reduce the incidence of atrial fibrillation-related stroke. WatchBP Home A should be considered for use in people with suspected hypertension and those being screened or monitored for hypertension, in primary care.

People suspected of having atrial fibrillation after use of WatchBP Home A should have an electrocardiogram (ECG) in line with NICE clinical guideline 36, [Atrial fibrillation](#).

Use of WatchBP Home A in primary care is associated with estimated overall cost savings per person measured, ranging from £2.98 for those aged between 65 and 74 years to £4.26 for those aged 75 years and over. There is uncertainty about the costs and benefits for people younger than 65, however it is plausible that using the device in this group will benefit patients and the healthcare system. Cost analyses did not support the use of the device by patients in their homes.

These recommendations are from [WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension](#) (NICE medical technology guidance 13).

NICE has written information for the public explaining the guidance on [WatchBP Home A](#).

Implementation tools

The following implementation tools are relevant to this part of the pathway.

[WatchBP Home A for diagnosing and monitoring hypertension and detecting atrial fibrillation: costing template and report](#)

[Implementation of the WatchBP Home A device in the North Hull Locality](#)

3 Below 140/90 mmHg, hypertension not diagnosed

If hypertension is not diagnosed and there is evidence of target organ damage such as left ventricular hypertrophy, albuminuria or proteinuria, consider carrying out investigations for alternative causes of target organ damage.

4 140/90 mmHg or higher, hypertension suspected

If the clinic blood pressure is 140/90 mmHg or higher, offer ABPM to confirm the diagnosis of hypertension.

If a person is unable to tolerate ABPM, HBPM is a suitable alternative to confirm the diagnosis of hypertension.

While waiting to confirm the diagnosis, carry out investigations for target organ damage and a formal assessment of cardiovascular risk.

Quality standards

The following quality statements are relevant to this part of the pathway.

1. Diagnosis – ambulatory blood pressure monitoring
2. Investigations for target organ damage

Implementation tools

The following implementation tool is relevant to this part of the pathway.

[Hypertension \(diagnosing hypertension\): audit support](#)

[Hypertension \(ambulatory blood pressure monitoring\): implementation advice](#)

5 Specialist investigations

Refer people to specialist care the same day if they have:

- accelerated hypertension (blood pressure usually higher than 180/110 mmHg with signs of papilloedema and/or retinal haemorrhage) **or**
- suspected pheochromocytoma (labile or postural hypotension, headache, palpitations, pallor and diaphoresis).

Consider the need for specialist investigations in people with signs and symptoms suggesting a secondary cause of hypertension.

6 When to consider immediate drug treatment

Consider starting antihypertensive drug treatment immediately, without waiting for the results of ABPM or HBPM, for people with severe hypertension.

7 Assessing cardiovascular risk and target organ damage

Cardiovascular risk assessment

Use a formal estimation of cardiovascular risk to discuss prognosis and healthcare options with people with hypertension, both for raised blood pressure and other modifiable risk factors.

Clinic blood pressure measurements must be used in the calculation of cardiovascular risk.

Estimate cardiovascular risk in line with the recommendations on Identification and assessment of CVD risk in the NICE clinical guideline on [lipid modification](#).

Tests to assess target organ damage

For NICE guidance on the early identification and management of chronic kidney disease see the [chronic kidney disease pathway](#)

For all people with hypertension offer to:

- Test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip.
- Take a blood sample to measure plasma glucose, electrolytes, creatinine, eGFR, serum total cholesterol and HDL cholesterol.
- Examine the fundi for the presence of hypertensive retinopathy.
- Arrange for a 12-lead electrocardiograph to be performed.

Quality standards

The following quality statements are relevant to this part of the pathway.

2. Investigations for target organ damage
3. Statin therapy

8 Confirming diagnosis using ambulatory or home blood pressure monitoring

Ambulatory blood pressure monitoring

Ensure that at least two measurements per hour are taken during the person's usual waking hours (for example, between 08:00 and 22:00).

Use the average value of at least 14 measurements taken during the person's usual waking hours to confirm the diagnosis.

Home blood pressure monitoring

Ensure that:

- for each blood pressure recording, two consecutive measurements are taken, at least 1 minute apart and with the person seated **and**
- blood pressure is recorded twice daily, ideally in the morning and evening **and**
- blood pressure recording continues for at least 4 days, ideally for 7 days.

Discard the measurements taken on the first day and use the average value of all the remaining measurements to confirm the diagnosis.

Implementation tools

The following implementation tools are relevant to this part of the pathway.

[Hypertension \(diagnosing hypertension\): audit support](#)

[Hypertension \(ambulatory blood pressure monitoring\): implementation advice](#)

9 Below 135/85 mmHg, hypertension not diagnosed

No additional information

10 Review at least 5-yearly

[See Hypertension / Hypertension overview / Review at least 5 yearly](#)

11 135/85 mmHg or higher, hypertension diagnosed

No additional information

12 Management of hypertension

[See Hypertension / Management of hypertension](#)

13 Person aged under 40

In people aged under 40 years with stage 1 hypertension, 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events.

Consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of target organ damage.

14 Review annually

[See Hypertension / Hypertension overview / Review annually](#)

Glossary

Source guidance

Hypertension. NICE clinical guideline 127 (2011)

WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension. NICE medical technology guidance 13 (2013)

Your responsibility

The guidance in this pathway represents the view of NICE, which was arrived at after careful consideration of the evidence available. Those working in the NHS, local authorities, the wider public, voluntary and community sectors and the private sector should take it into account when carrying out their professional, managerial or voluntary duties. Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way which would be inconsistent with compliance with those duties.

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