

Black Country and West Birmingham STP Hypertension Pathway

Scope of Document

This pathway will cover screening, diagnosis, treatment and referral options for people with or suspected of having hypertension, the document links to other programmes such as the NHS Health Checks programme and to the Quality and Outcomes Framework.

Please note: This document does not cover gestational hypertension, pre-eclampsia, pregnancy or breastfeeding. This guidance does not cover management of hypertension for Type 2 Diabetes (See [NICE guideline CG87](#)) or Chronic kidney disease (CKD) (See [NICE guideline CG182](#)).

Individual CCGs are requested to add their own hyperlinks for local guidelines which are alluded to throughout this document which are yet to be agreed at STP level e.g. hyperlipidaemia guidelines, diabetes guidelines

*Acknowledgement: South West London Medicines Optimisation Group
NHS Dudley CCG Hypertension guidelines
NHS Dudley Lifestyle best practice guidelines
NHS Dudley Health checks guidelines
NHS Dudley Lipid management guidelines*

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Overview - Black Country and West Birmingham STP Footprint

As a sustainability and transformation partnership (STP), data from the NHS England footprint indicates that of the Black Country and West Birmingham STP including Dudley, Sandwell and West Birmingham, Wolverhampton and Walsall, all four CCGs are statistically higher than the national average according to data from 2015/2016 in hypertension prevalence.¹

25% of the adult population have hypertension and 50% of those over 60 have hypertension. With reference to percentage of patients with hypertension whose BP < 150/90, Dudley, Sandwell and West Birmingham and Wolverhampton have areas for improvement identified from data provided by NHS England 2015/16 STP footprint.

Using a population segmentation approach and collaborative working across the Dudley Health Economy over the last decade has seen the Standardised Mortality Rate from hypertension related diseases move from twice the England average to be in line with the England average. Continued work to reduce the hypertension prevalence gap is required. It is anticipated that for every additional 1,000 patients' Blood Pressure (BP) controlled, there are £469k of savings for the NHS over 5 years, or £469 per patient. This would mean a total potential cost saving of £13m over 5 years for the 27,800 patients missing from hypertension registers in Dudley. In addition to this we know that by reducing BP from 150/90mmHg to 140/90mmHg, the risk of CHD is reduced by 22% and the risk of stroke is reduced by 41%.²

NHS Health Check: Dudley Pathway Vascular Risk Assessment and Management supports the information contained within this document.

<http://www.dudleyformulary.nhs.uk/download/449/nhs-health-check-pathway>³

Reference: <https://www.england.nhs.uk/rightcare/products/stp-footprints/>¹

	CCG is statistically significantly HIGHER
	CCG is statistically significantly LOWER
	CCG HIGHER but not statistically significant
	CCG LOWER but not statistically significant
	CCG is equal to benchmark
	CCG WORSE/HIGHER but not statistically significant
	CCG WORSE/LOWER but not statistically significant
	CCG BETTER/HIGHER but not statistically significant
	CCG BETTER/LOWER but not statistically significant
	CCG is equal to benchmark
	CCG is statistically significantly WORSE
	CCG is statistically significantly BETTER
	CCG has no published data for this indicator or value is suppressed due to small numbers

	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2013/14	2015/16	2015/16	2015/16	2015/16	2012-14	2012-14
	CHD prevalence	Hypertension prevalence, 18+	Reported to estimated prevalence of CHD	Reported to estimated prevalence of hypertension	Smoking prevalence, 18+	Obesity prevalence, 18+	% CHD patients whose BP < 150/90	% CHD patients cholesterol < 5 mmol/l	% hypertension patients whose BP < 150/90	Primary care prescribing spend	Elective spend	Non-elective spend	<75 Mortality from CHD	<75 Mortality from acute MI
STP opportunity (to Best 5)			6,956 Ppl.	2,881 Ppl.			1,110 Pats.	1,215 Pats.	4,154 Pats.			£883K	124 Lives	131 Lives
Wolverhampton														
Walsall														
Dudley														
Sandwell and West Birmingham														

Definition of Hypertension

Definition of Hypertension

“When blood pressure remains higher than normal over time (at least several months) it is called variously, high blood pressure, raised blood pressure or hypertension. Hypertension occurs when the heart has to use more energy to pump against the greater resistance of the vascular system” [Hypertension in adults: diagnosis and management](#) (2011 updated 2016) NICE guideline CG127⁴

$$\text{Blood Pressure} = \text{Cardiac Output} \times \text{Peripheral Resistance}$$

Hypertension screening is included in the NHS Health Checks Programme (in ages 40-74 year old) which seeks to invite people without a vascular condition or hypertension for a health check. If blood pressure is found to be raised at the time of the check, this is highlighted to GP practices who then follow-up these patients following the hypertension diagnostic pathway. NHS Health Check: [Clinical Pathway for the Management of Cardiovascular Risk](#)⁵

Signs and Symptoms

Hypertension is usually asymptomatic, but there are some indicators which should prompt a blood pressure check. These include:

- Headaches
- Dizziness
- Blurred vision
- Epistaxis
- Tinnitus
- Palpitations
- Nocturia

Other symptoms may indicate blood pressure has risen to a dangerously high level. These include:

- Chest pain
- Sweating
- Shortness of breath
- Wheeze
- Transient vision loss
- Loss of consciousness
- Fits

Investigations

- CVD Risk assessment
- Full lipid Profile
- Manual Pulse
- ECG
- Renal
- eGFR
- Proteinuria
- Haematuria
- HbA1c
- Fasting glucose
- Lifestyle
- Eye
- Thyroid function
- Pheochromocytoma
- Hyperaldosteronism
- Cushing’s syndrome
- Obstructive sleep apnoea
- Coarctation of the aorta
- Acromegaly

Other Determinants

Hypertension is more common in BME groups. African-Caribbean groups have a higher risk of hypertension and subsequent stroke or renal failure, but not higher levels of coronary heart disease, whilst South Asians also have a higher risk of hypertension, but tend to have higher levels of coronary heart disease and Type 2 diabetes. [Ethnic differences in hypertension and blood pressure control in the UK](#)⁶

Black people (as they are referred to in NICE guidance),⁴ i.e. those people of African or African-Caribbean origin have a much higher prevalence of hypertension. For this reason, many studies have been conducted looking at their response to anti-hypertensive medication. Differences were found in response to drug treatment for black people, indicating treatment with specific anti-hypertensive drugs and combinations.

People in lower socioeconomic groups also have a higher risk of hypertension and an increased risk of cardiovascular mortality compared to more affluent groups. [Risks of socioeconomic deprivation on mortality in hypertensive patients](#)⁷

Factors affecting Blood Pressure Readings

High Risk Groups

Some co-morbid conditions are more commonly associated with hypertension, these are:

Cardiovascular

- Atrial Fibrillation
- Coronary heart disease
- Hyperlipidaemia
- Stroke and TIA

Renal

- Chronic kidney disease
- Renal artery stenosis

Endocrine

- Diabetes
- Hyperaldosteronism
- Cushing's syndrome
- Hyperthyroidism
- Acromegaly
- Pheochromocytoma

Pulmonary

- Chronic obstructive pulmonary disease
- Obstructive sleep apnoea

Certain lifestyle behaviours will increase the risk of developing hypertension. These include:

- Smoking
- Alcohol consumption (where this is over recommended limits)
- Obesity
- Physical inactivity
- High salt intake

Certain drugs may also affect blood pressure control. These include:

- Combined oral contraceptives
- Immunosuppressant therapy
- NSAIDS
- COX-2 inhibitors e.g. Etoricoxib
- Stimulants (including caffeine products such as coffee, cola)
- Mineralocorticoids
- Glucocorticoids
- Anti-parkinsonian drugs
- Monoamine oxidase inhibitors
- Anabolic steroids
- Sympathomimetics
- Illicit drugs use

Soluble analgesia and some indigestion remedies have a high salt content and should also be avoided where possible. For further information see the Dudley guideline, [Salt Content of Soluble Analgesics and Indigestions Remedies](#)

Diagnosing Hypertension

Devices (note: wrist measurements are not recommended)

Mercury Sphygmomanometers continue to provide the reference standard for measurement of blood pressure although, due to their bulk and the fact that they contain mercury their use is currently being phased out. If using a mercury device, then a mercury spillage kit should be available at all times and it should not be taken out of the building. Mercury devices are not available to buy.

Hybrid devices are available which resemble the mercury sphygmomanometer but use an LED display in place of a mercury column. They are used in the same way as the mercury devices by auscultation of the brachial artery.

Aneroid Sphygmomanometers measure pressure using a bellows system. They can be less accurate than alternatives, especially over time. For this reason it is recommended that they are calibrated every 6 months.

Automated devices are recommended for ease of use in clinic and by patients for HBPM. However, as the devices work on oscillometry which needs to be in a regular flow, any irregular pulse will cause an error message on the machine. If error messages are observed, then a manual pulse should be taken to rule out an irregular pulse before attempting to measure blood pressure with the automated device again or with another device.

Postural Hypotension

Where postural hypotension is suspected, i.e. in those with dizziness on standing, falls, people with diabetes or the elderly, according to NICE Clinical Guideline 127: Hypertension⁴

- Measure the BP with the person seated or lying.
- Ask the person to stand and then measure BP after 1 minute.
- If there is a drop of 20mmHg systolic pressure or more on standing then postural hypotension is present.

The [recommendations for confirming postural hypotension](#)

(Consensus Statement on the Definition of Orthostatic Hypotension, Consensus Committee of the American Autonomic Society)⁸ is:

- To lie the patient flat for 10 minutes
- Measure BP
- Stand the patient
- Measure BP again 1-3 minutes after standing.

White Coat Hypertension

White coat hypertension is defined as those with persistently elevated clinic BP measurements but normal daytime average BP readings. In patients experiencing white coat hypertension a difference of at least 10/5 mmHg is observed between home and clinic measurements. This can be much greater in those with a higher baseline blood pressure and tends to increase with age. Where white coat hypertension is suspected, a request for Ambulatory Blood Pressure monitoring (ABPM) or Home Blood Pressure monitoring (HBPM) should be made when considering a hypertension diagnosis.

Diagnosing Hypertension

1. If the BP recorded after following the procedure above is ⁴ 140/90, check this reading on 2 more consultations 2 – 4 weeks apart.
 - Exclude the possibility of confounding factors such as white coat hypertension following the guidance above.

If hypertension is not diagnosed, BP should be checked every 5 years . Where BP is borderline, follow-up should be arranged more frequently.

Urgent Referral indications

Arrange urgent referral for:

Accelerated hypertension -BP ⁴ 180/120mmHg and papilloedema/retinal haemorrhage present, arrange urgent referral to cardiology.
Phaeochromatocytoma - BP ⁴ 180/120mmHg, postural hypertension, headache, palpitation, sweating.

In the absence of co-morbidities – check every 5 years.

Stages of hypertension

Definition	Stage 1	Stage 2	Stage 3
a) Clinic	140/90mmHg to 159/99mmHg	160/100 to <180/120mmHg	180/120mmHg or above
b) ABPM/HBPM	135/85mmHg to 149/94 mmHg	150/95mmHg	Need clinic review

Reference NICE NICE Clinical Guideline 136. Hypertension: The Clinical Management of Primary Hypertension in Adults. <https://www.nice.org.uk/guidance/NG136>

Investigations on Diagnosis

A diagnosis of hypertension should prompt investigation of possible target organ damage, vascular assessment and investigation of conditions which may cause or contribute to the progression of the condition.

For people aged under 40 with stage 1 hypertension and no evidence of target organ damage, consider specialist referral for more detailed assessment. CVD risk calculators may underestimate the lifetime risk of CVD events in these people.

Monitoring

Use clinic blood pressure measurements to monitor the response to lifestyle modification and anti-hypertensive drug treatment

Clinic blood pressure targets – NOTE: Different targets apply for HBPM, ABPM, diabetic patients and those with CKD

o **Patients aged under 80 years: lower than 140/90mmHg**

o **Patients aged over 80 years: lower than 150/90mmHg**

Although the BP targets differ for older patients, the same drug treatment algorithm should be followed (see later slide)

Provide an annual review to monitor BP, including discussion of lifestyle issues, and support with medications

Investigations and Diagnosis of Hypertension

Manual Pulse Palpation

•A manual pulse should be palpated each time blood pressure is measured, especially in any patient over 50 years of age or experiencing symptoms of atrial fibrillation.

•If an irregular pulse is detected, then an ECG should be performed to detect abnormality. See [NICE](#) guidance on the management of Atrial Fibrillation.⁹

Electrocardiogram (ECG)

•A 12-lead ECG should be performed on diagnosis of hypertension to provide a baseline. NICE CG 136 2019

Renal

Chronic Kidney Disease (CKD) is the most common identifiable cause of hypertension. Also see Pheochromocytoma and Primary Aldosteronism.⁴

Estimated Glomerular Filtration Rate

•Blood specimens should also include a request for estimated glomerular filtration rate (eGFR), serum creatinine and urea. Any eGFR result of <90 ml/min should be followed up appropriately using the NICE CG136⁴

Proteinuria

•Proteinuria should be measured by sending early morning urine samples to the biochemistry laboratory requesting the albumin/creatinine ratio (ACR). Positive proteinuria is defined by ACR of 30mmol/l or more.⁴

Haematuria

•A dipstick test should be performed for the presence of blood in the urine. The presence of blood may indicate a urological or a renal origin and should prompt further investigation. For all positive haematuria and proteinuria tests follow the NICE CG136.⁴

CVD Risk Assessment

An estimation of CVD risk should be calculated using QRISK2 <https://qrisk.org/2017/>

A.The lipid value used to calculate CVD risk is TC:HDL ratio, i.e. TC /HDL

B.If the risk score is calculated as high risk, i.e.10% risk of CVD in the next 10 years or more then the patient should be added to the practice high risk of CVD register. To do this, add the read code: 14O70 – High risk of heart disease

C.Lipid lowering medication should be considered for all those at high risk following local [Dudley Hyperlipidaemia Guidelines](#).¹⁰ or those for the local STP for other health economies in the STP . National guidelines available at <https://www.nice.org.uk/guidance/cg181> .

Lipid Profile

Fasting blood samples should be sent requesting a full lipid profile, i.e. total cholesterol (TC), high density lipoprotein (HDL), low density lipoprotein (LDL) and triglycerides (TG). Target values for primary prevention are given below:

If the lipid values are out of normal range, advise a low cholesterol diet and modification of lifestyle behaviours for at least 3 months and re-check. If lipids remain out of range, consider further lifestyle modification and initiation of lipid lowering medication according to [Dudley Hyperlipidaemia Guidelines](#)¹⁰

Familial Hyperlipidaemia (FH)

Familial Hyperlipidaemia should be considered in any patient with:

- TC - 7.5 mmol/l or more, and/or
- LDL – 4.9 mmol/l or more
- In the presence of tendon xanthoma and/or
 - Premature CVD (CVD diagnosis in males aged <55, females aged <65)
 - Premature familial CVD (1st degree relative with CVD diagnosis in male aged <55 or female <65)

Follow local [Dudley Hyperlipidaemia Guidelines](#) ¹⁰where FH is suspected or NICE guidelines for other STPs <https://www.nice.org.uk/guidance/cg181> .

Lipid	Target value (mmol/l)
Total Cholesterol	4.0 - 5.0 or less
HDL	1.0 or more (≥1.2 in women and people with diabetes)
Ratio (TC/HDL)	4.0 – 5.0 or less
LDL	2.0 - 3.0 or less
Triglycerides	1.7 or less

- Blood pressure (BP) should be measured by a health care professional who has undergone training, the correct cuff size should be used. BP should be taken using a machine which is regularly serviced and calibrated. The patient should be seated comfortably and relaxed and the room should be quiet.
- Before commencing the blood pressure measurement, manually palpate the radial or brachial artery and note the pulse rhythm. If there is an irregular pulse present, then automated devices will not work (they will display an error message) or if readings are given they will be unreliable. If an irregular pulse is present, blood pressure should be recorded by direct auscultation of the brachial artery.
- To measure blood pressure the patients arm should be supported at chest level. An appropriate size cuff should be used for which the inner bladder fits to at least 80% of the upper arm circumference but not more than 100%, i.e. there is no overlap. Under cuffing will overestimate blood pressure while over cuffing will underestimate blood pressure.
- BP should be measured in both arms. If there is a discrepancy of more than 15mmHg, repeat the measurements to confirm. If the discrepancy persists, then the arm with the higher reading should be used. This arm can then be noted and should be used for each subsequent visit. (N.B. the arm with the lower pressure indicates vascular compromise and so examination and appropriate referral is indicated)

•NICE recommends if clinic BP 140/90 to 180/120mmHg offer ABPM

•If the BP is above 140/90, (either systolic, diastolic, or both) check the BP again to confirm. If there is a substantial difference between the first 2 readings take a third measurement at the end of the consultation or after a short interval of 5 – 10 minutes, where patient remains seated comfortably.

•The blood pressure should be recorded as the lower of the last 2 readings taken

•N.B. If the BP is ≥180/120 (and there is evidence of papilloedema and/or retinal haemorrhage), urgent (same day) referral /management is needed to identify other co-morbid conditions and the possibility of accelerated hypertension.

Blood Pressure Targets

	Stage 1	Stage 2	Stage 3
Over 80 years	BP 150/95mmHg	Any age and persistent stage 2	Any Age and Target organ damage REFER – if papilloedema, retinal haemorrhage, chest pain, heart failure, renal failure
<80 years old	Persistent stage 1 and <ul style="list-style-type: none"> - Target organ damage - CVD - Renal Disease - Diabetes - 10 years CVD risk of >10% 	Any age and persistent stage 2	Any Age and Target organ damage REFER – if papilloedema, retinal haemorrhage, chest pain, heart failure, renal failure
Under 60 years	Stage I and CVD Risk <10%	Any age and persistent stage 2	Any Age and Target organ damage REFER – if papilloedema, retinal haemorrhage, chest pain, heart failure, renal failure
Under 40 years	Consider specialist evaluation	Consider specialist evaluation	Consider specialist evaluation

Reference NICE Clinical Guideline 136. Hypertension: The Clinical Management of Primary Hypertension in Adults (August 2019). <https://www.nice.org.uk/guidance/NG136>

Non-Pharmacological Management

Alcohol Consumption

- Assess alcohol consumption and record as number of units consumed per week. The recommended limits are: 14 units/week - males and females
- Alcohol should also be assessed with regards to daily consumption. For those with a diagnosis of hypertension the daily limit is: 1-2 units/day and **to include at least 2 alcohol free days a week**
- The AUDIT questionnaire should be completed using the EMIS template or online [AUDIT PC-Alcohol use disorders identification test; primary care](#)
- For further information see [Best Practice Guidelines for Lifestyle Assessment](#)¹¹

Lifestyle

Smoking

- Smoking status should be recorded. This should be repeated annually except for those who have never smoked.
- For smokers and those who have quit within the last 5 years, calculate lifetime tobacco exposure as pack years, <http://smokingpackyears.com>¹² or use the link on the LTC template in EMIS.
- Assess motivation to quit smoking and offer referral to local smoking cessation services, either in practice or STP Stop Smoking Services. For information on assessing motivation and referral see [Best Practice Guidelines for Lifestyle Assessment](#).¹¹

Healthy Diet

- Assess diet objectively as described in [Best Practice Guidelines for Lifestyle Assessment](#).¹¹ This will indicate a dietary assessment of good, average or poor diet. Record the result in the patient medical record.
- Give healthy diet advice for all those with an average or poor score
- Offer DASH Diet which has good evidence
- Further assessment for progress to improve diet can be made by repeating the score after a period of time when changes have been made successfully.
- In particular, in addition to healthy diet advice:
 - Salt consumption – this should be no more than 6g a day (~1 level teaspoon). If expressed as sodium the maximum daily consumption should be 2.5g. (Do not advise the use of branded salt substitute products as these contain potassium chloride).
 - Caffeine – limit consumption to 5 teacups (200mls each) a day. Advise particular caution with energy drinks and fizzy drinks containing caffeine.

Weight/Body Mass Index (BMI)

- Measure height and weight and calculate BMI (see table on the right)
- For those who are overweight or obese give advice on a reducing diet and consider referral. See [Best Practice Guidelines for Lifestyle Assessment](#)¹¹

Waist Measurement

- Body shape and fat distribution gives an indication of CVD risk. A large waist, especially where the waist measurement is larger than the hip measurement is associated with increased risk of CVD. It is also associated with the development of metabolic syndrome and diabetes.
- Waist measurements associated with increased risk are shown in the table on the right.
- All those with large waist i.e. central visceral fat distribution, should be advised to reduce weight and increase physical activity if they are inactive.
- For guidance on measuring waist circumference see [Best Practice Guidelines for Lifestyle Assessment](#)¹¹

Physical Activity

The recommendation for physical activity in ages 19-64 is either:

- 75 minutes of vigorous exercise a week
- 30 minutes of moderate intensity activity on at least 5 days of the week
- 150 minutes of moderate exercise per week
- Or a combination of all of the above

To assess physical activity status use an objective measurement, which is reproducible and can be used to track progress after changes are made.

Use either:

- The Physical Activity Self –Assessment graph
 - Anyone with a 'sedentary' or 'not enough' score should receive advice and brief intervention
- The GP Physical Activity Questionnaire –GPPAQ
 - Anyone with an inactive or moderately inactive score should be offered physical activity advice and brief intervention

See [Best Practice Guidelines for Lifestyle Assessment](#)¹¹ NHS live well website accessed at <https://www.nhs.uk/live-well/exercise/>

BMI (kg/m ²)	BMI Classification
< 18.5	Underweight
18.5 – 24.9 (south Asian 18.5 – 23)	Healthy weight
25 – 29.9 (south Asian 23 – 27.5)	Overweight
30 (south Asian 27.5)	Obese

Gender/Ethnicity	Increased Risk
Men	40 inches (102cm)
Women	35 inches (88cm)
Asian men	90cm
Asian women	80cm

Complications and Referral Criteria for Hypertension

Eyes

•Fundoscopy should be carried out to detect the presence of hypertensive retinopathy by an appropriately trained HCP.

Thyroid Function

Initial blood samples should also include a request for thyroid function.

- The presence of an overactive thyroid – hyperthyroidism, is associated with hypertension. Treatment should include regulation of the thyroid gland in conjunction with hypertension therapy. Consideration of referral to specialist management is indicated.
- The presence of an underactive thyroid – hypothyroidism, is associated with levels of hyperlipidaemia. The thyroid condition should be treated and fasting lipids repeated during a state of euthyroid.

Phaeochromocytoma

A phaeochromocytoma is a tumour which releases large amounts of adrenaline and noradrenaline. Patients with signs and symptoms suggestive of a phaeochromocytoma should be referred for immediate specialist treatment due to the seriousness of the condition and the risk it carries. Signs and symptoms include:

- Raised blood pressure $\geq 180/110$ mmHg
- Postural hypotension
- Palpitation and tachycardia
- Headache
- Raised glucose levels
- Facial flushing
- Nervousness
- Sweating
- Decreased gastrointestinal movement
- Oedema

Hyperaldosteronism (primary aldosteronism)

Aldosterone is a hormone which controls sodium and water balance. Typical signs and symptoms in addition to hypertension include:

- Sodium retention
- Low serum potassium
- Possible irregular pulse
- Muscle weakness

Where Hyperaldosteronism is suspected plasma aldosterone:renin ratio should be requested and referral to specialist considered.

Cushing's Syndrome

Cushing's syndrome is caused by excess production of glucocorticoids. Signs and symptoms in addition to hypertension include:

- Sudden weight gain
- Central obesity
- Striae, thinning and darkening of the skin
- Moon face
- Weakness, muscle atrophy and fatigue
- Osteoporosis
- Backache
- Headache
- Glucose intolerance
- Oligomenorrhoea/amenorrhoea
- Thirst
- Polyuria
- Impotence
- Depression and insomnia

Where Cushing's syndrome is suspected, referral for specialist treatment should be considered.

Obstructive sleep apnoea (OSA)

Obstructive sleep apnoea is caused by the upper airway becoming obstructed during sleep. It is more common in men, especially those with a large collar size (17+) or who are obese. Signs and symptoms including hypertension are:

- Daytime drowsiness
- Snoring
- Oedema to the lower extremities
- Nocturia
- Morning headache

Where OSA is suspected an OSA assessment should be requested and referral to respiratory specialist considered. For more information on OSA refer to [NICE TA 139](#)¹³

Coarctation of the aorta

Coarctation of the aorta is a congenital condition where a segment of the aorta is narrowed, reducing oxygenated blood flow around the body. Signs and symptoms in addition to hypertension include decreased or delayed femoral pulse and abnormal chest X-ray.

Where coarctation of the aorta is suspected, refer to cardiology for Doppler or CT imaging.

Acromegaly

Acromegaly is caused by excess production of growth hormone. Signs and symptoms in addition to hypertension are:

- Cardiomegaly
- Enlarged facial features
- Enlarged jaw
- Headache
- Joint pain
- Excessive hair growth
- Sweating
- Drowsiness, tiredness and weakness
- Impaired glucose tolerance

Pharmacological Management of Hypertension

Offer antihypertensive drug treatment to people aged under 80 years with stage 1 hypertension who have one or more of the following:

- Established cardiovascular disease
- Target organ damage
- Renal disease
- Diabetes
- 10-year QRISK2 score of 10% or greater

Clinic Blood pressure	Target
Under 80 years	<140/90mmHg
Over 80 years	<150/90 mmHg
ABPM/HBPM	Target
Under 80 years	<135/85mmHg
Over 80 years	<145/85mmHg

N.B treatment thresholds/targets will vary according to age but not the presence of co-morbidities

Blood Pressure Targets

Treatment to the targets above is essential in reducing the risk of complications and the development of other co-morbid conditions

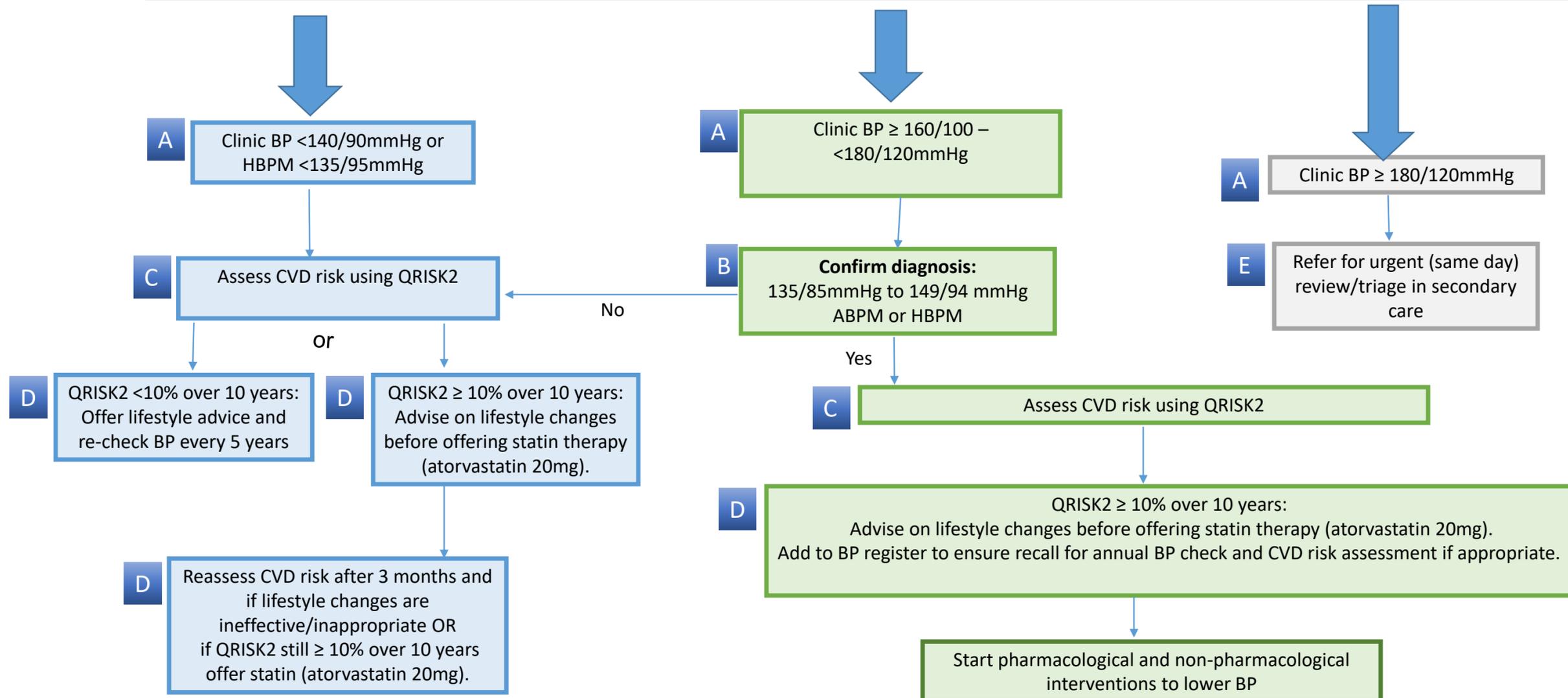
Key Points in the Management of Hypertensive Patients

- For blood pressure measurement guidance referring to treatment thresholds and target ranges it is recommended that NICE guidance is followed. This is available locally in the [Clinical Pathway for the Management of Cardiovascular Risk](#).⁵ Where Chronic Kidney Disease is present follow the NICE [guidance](#).
- When titrating medications, it is imperative that BP readings are taken regularly and treatment is reviewed at each consultation.
- Where possible take blood pressure readings at the same time of day.
- Robust recall systems need to be in place along with a medication review programme in order to improve compliance and concordance.
- Patients who do not attend for blood pressure monitoring on 3 separate occasions, or make a decision that they do not wish to receive blood pressure monitoring, need to fully understand the decision they are making about their treatment and their health. Once they understand their decision they can then be recorded as giving informed dissent using the Read code 8I3Y (Blood Pressure Procedure Refused). They will then be removed from the denominator population for this indicator in the LTC framework for the current QoF year.
- Prior to initiating antihypertensive treatment, ensure that non-pharmacological options are considered and used first, referring to the [Clinical Pathway for the Management of Cardiovascular Risk](#)⁵ which includes lifestyle guidance.
- Guidance on the management and limitation of the [salt content of medicines](#) is available following the link. Hypertensive patients prescribed drugs with a high content of salt should have their treatment reviewed as this could limit the effectiveness of the antihypertensive.
- Allow at least 4 weeks at a dose for a full response.
- Treatment should be reviewed if BP falls below the optimal level.

Refer to the [Clinical Pathway for the Management of Cardiovascular Risk](#)⁵ for practical issues and those not covered by this guideline when managing hypertensive patients.

NOTE: Benefit from antihypertensive therapy is evident up to at least 80 years of age, but it is probably inappropriate to apply a strict age limit when deciding on drug therapy. Patients who reach 80 years of age while taking antihypertensive drugs should continue treatment, provided that it continues to be of benefit and does not cause significant side-effects. If patients are aged over 80 years when diagnosed with stage 1 hypertension, the decision to treat should be based on the presence of other comorbidities; patients with stage 2 hypertension should be treated as for patients over 55 years. A target clinic blood pressure below 150/90 mmHg is suggested for patients over 80 years (145/85mmHg for HBPM/ABPM); the suggested target for ambulatory or home blood pressure average (during the patient's waking hours) is below 145/85 mmHg. <https://bnf.nice.org.uk/treatment-summary/hypertension.html>

Monitoring of Blood Pressure in Primary Care



A Taking the blood pressure
 Seat the patient for at least 5 minutes, not talking or moving
 Support the arm at the level of the heart. Remove any restrictive clothing.
 Place the cuff with the centre of the bladder over the brachial artery – use correct cuff size
 Repeat BP reading twice and record the lower of the three readings
 (Initially, test the BP in both arms and use the arm with the highest readings for subsequent measurements)
 Take a manual BP if heart rate is irregular (e.g. AF)

B ABPM: Ambulatory Blood pressure monitoring.
 - Refer or organise at the practice
 - Ensure sufficient readings taken (minimum 14 readings during waking hours). Use **daytime** average BP for diagnosis

HBPM: Home blood pressure monitoring
 - Ensure patient is using an accurate BP machine and advise to record two BP readings every morning and evening every day for 7 days
 - In the practice, disregard the first days readings and take an average of all other readings

BP ≥ 135/85mmHg indicates hypertension

C Assessment
 Record smoking status, physical activity level, alcohol intake (FAST/AUDIT-C), weight / waist circumference, height, BMI, family history
 Bloods – renal profile, fasting lipids, HbA1c, urinalysis (proteinuria / haematuria) and ACR, TFT, FBC
 ECG
 Consider referral if signs and symptoms of secondary causes

D Lifestyle advice
 Smoking cessation
 Exercise – brief intervention / referral as appropriate
 Weight - brief intervention / referral as appropriate
 Alcohol - brief intervention / referral as appropriate
 Diet – reduce salt, reduce saturated fat to lower cholesterol, reduce calorie intake for weight loss

E Alert
 If accelerated hypertension (papilloedema or retinal haemorrhage) or suspected phaeochromocytoma (labile or postural hypotension, headache, palpitations, pallor and diaphoresis) – consider referral for same day specialist review

Black Country STP Hypertension Guidelines (Treatment Summary)

If BP remains uncontrolled with either optimal or maximum tolerated doses of four drugs, check adherence and seek expert advice if not already obtained

In patients with poor blood pressure control despite treatment with a combination of three drugs ('resistant hypertension'), addition of the diuretic spironolactone was significantly more effective than adding other blood pressure lowering drugs, according to results of the PATHWAY-2 trial.

Monitoring

ACEi / ARB:

If eGFR falls by 25% or more or plasma creatinine increases by 30% or more from baseline, stop the ACEi/ARB or reduce to a previously tolerated dose once potential alternative causes of renal impairment have been ruled out.

Check baseline renal profile; recheck within 2 weeks of initiation or dose increase and then at least annually.

If serum creatinine increases by >20% (or eGFR falls by < 15%) after initiation – stop ACEi and seek specialist advice.

ACEi dose should only be increased if serum creatinine increases by less than 20% (or eGFR falls by less than 15%) after each dose titration, potassium < 5.5mmol.

Common side effects: Dry cough (consider switching to ARB such as candesartan), rash.

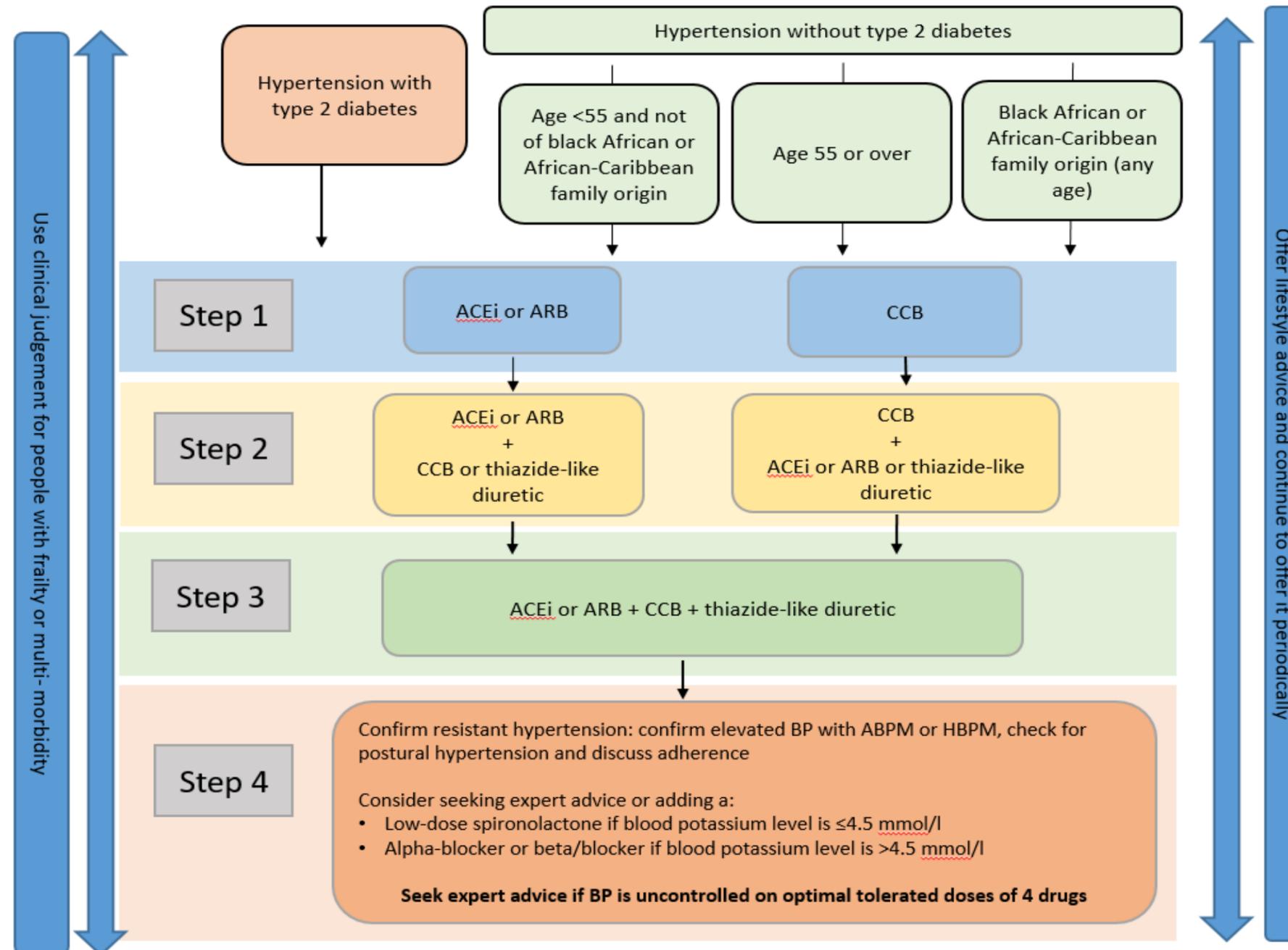
Calcium channel blocker:

Common side effects: Flushing and headaches at initiation, and swollen ankles especially at higher dose. Amlodipine interacts with simvastatin – where statin indicated use maximum simvastatin 20mg daily in combination or consider atorvastatin.

Thiazide-type diuretic:

Check baseline renal profile; recheck within 2 weeks of initiation and then at least annually. If serum potassium falls below 3.5mmol/L or eGFR to <25 refer to GP for advice.

Warn the patient that it is likely to increase urine output.



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- 13) Smoking Pack years website accessed at <http://smokingpackyears.com>
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- 16) NHS live well website accessed at: <https://www.nhs.uk/live-well/exercise/> (2nd October 2019)
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Other References

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Abbreviations

Abbreviations (main pathway and clinic guide)

ACEI	Angiotensin Converting Enzyme Inhibitor	JBS2	Joint British Societies 2
ABPM	Ambulatory Blood Pressure Monitoring	K+	Potassium
ACE	Angiotensin Converting Enzyme	LDL	Low Density Lipoprotein
ACEI	Angiotensin Converting Enzyme Inhibitor	LV	Left Ventricular
ACR	Albumin:Creatinine Ratio	MI	Myocardial Infarction
ARB	Angiotensin Receptor Blocker	mmHg	Milli-moles of Mercury
B	Beta Blocker	mmol/l	Milli-moles per Litre
BB	Beta Blocker	NHS	National Health Service
BMI	Body Mass Index	NICE	National Institute for Clinical Excellence
BP	Blood Pressure	NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
C	Calcium Channel Blocker	QOF	Quality and Outcomes Framework
CCB	Calcium Channel Blocker	QRISK2	QResearch CVD Risk Calculator
CHD	Coronary Heart Disease	TC	Total Cholesterol
CKD	Chronic Kidney Disease	TG	Triglycerides
COX2	Cyclooxygenase 2	TIA	Transient Ischaemic Attack
CVD	Cardiovascular Disease	UE	Urea and Electrolytes
COPD	Chronic Obstructive Pulmonary Disease		
CT	Computerised Tomography		
D	Diuretic		
DAQ	Dudley Assessment Questionnaire		
DES	Designated Enhanced Service		
ECG	Electrocardiogram		
Echo	Echocardiogram		
eGFR	Estimated Glomerular Filtration Rate		
GP	General Practitioner		
GPPAQ	General Practice Physical Activity Questionnaire		
HBPM	Home Blood Pressure Monitoring		
HDL	High Density Lipoprotein		
ISH	Isolated Systolic Hypotension		