

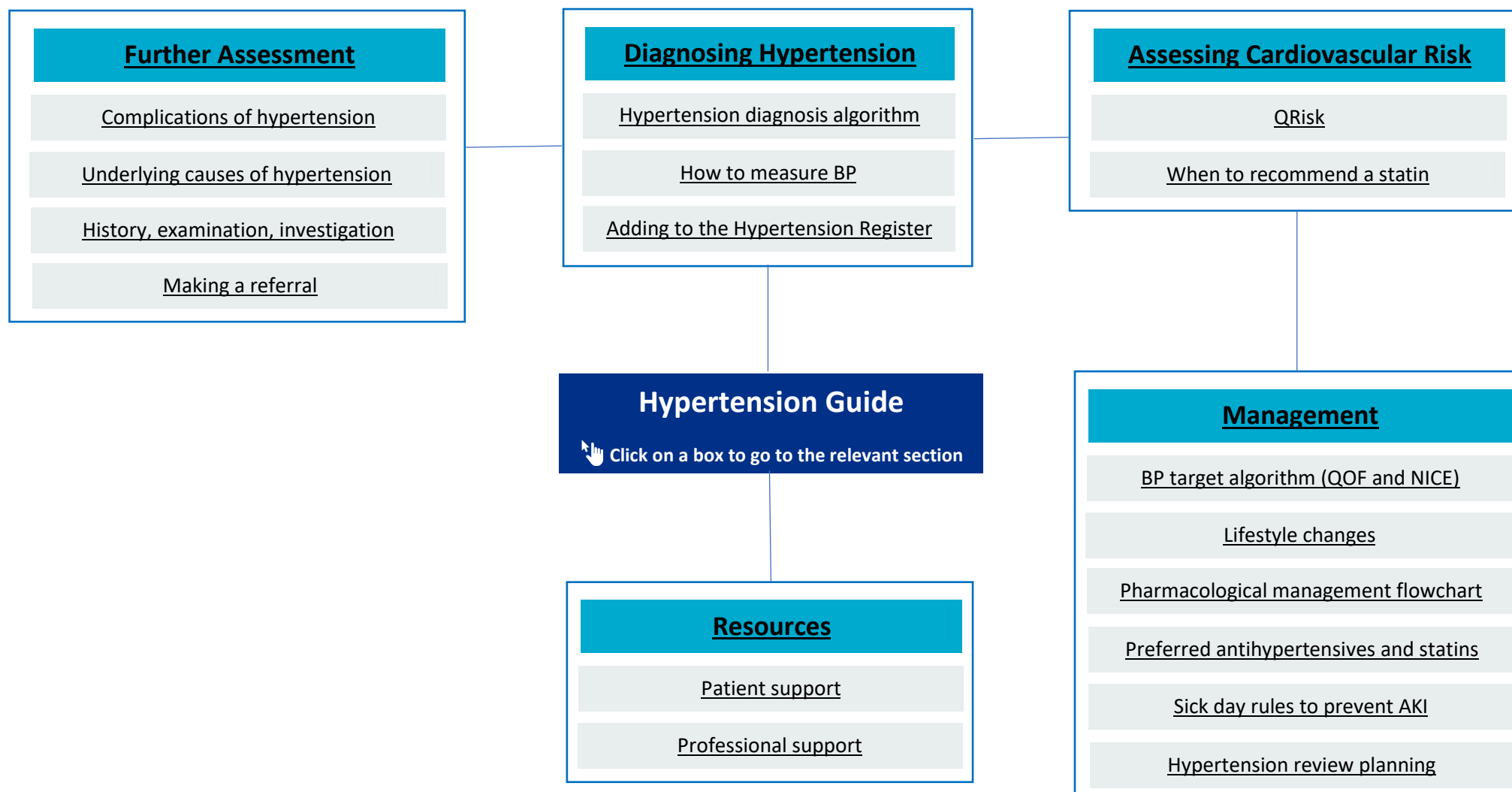
Hypertension

A GUIDE FOR BROMLEY GENERAL PRACTICE

Key Messages

1. Check blood pressure at every opportunity (and do a pulse check)
2. Lifestyle changes are key to reducing CV risk and lowering blood pressure
3. Check for complications and calculate a QRISK2 or 3
4. Optimise BP management (lifestyle + medication) and aim for NICE BP targets
5. Encourage adherence to lifestyle and medication, review at least annually

June 2023, review date June 2024



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1.1 Why focus on blood pressure in Bromley?

Treatment of hypertension significantly reduces risk of stroke, IHD, heart failure and all-cause mortality.¹

Hypertension is a risk factor for worse COVID-19 outcomes.

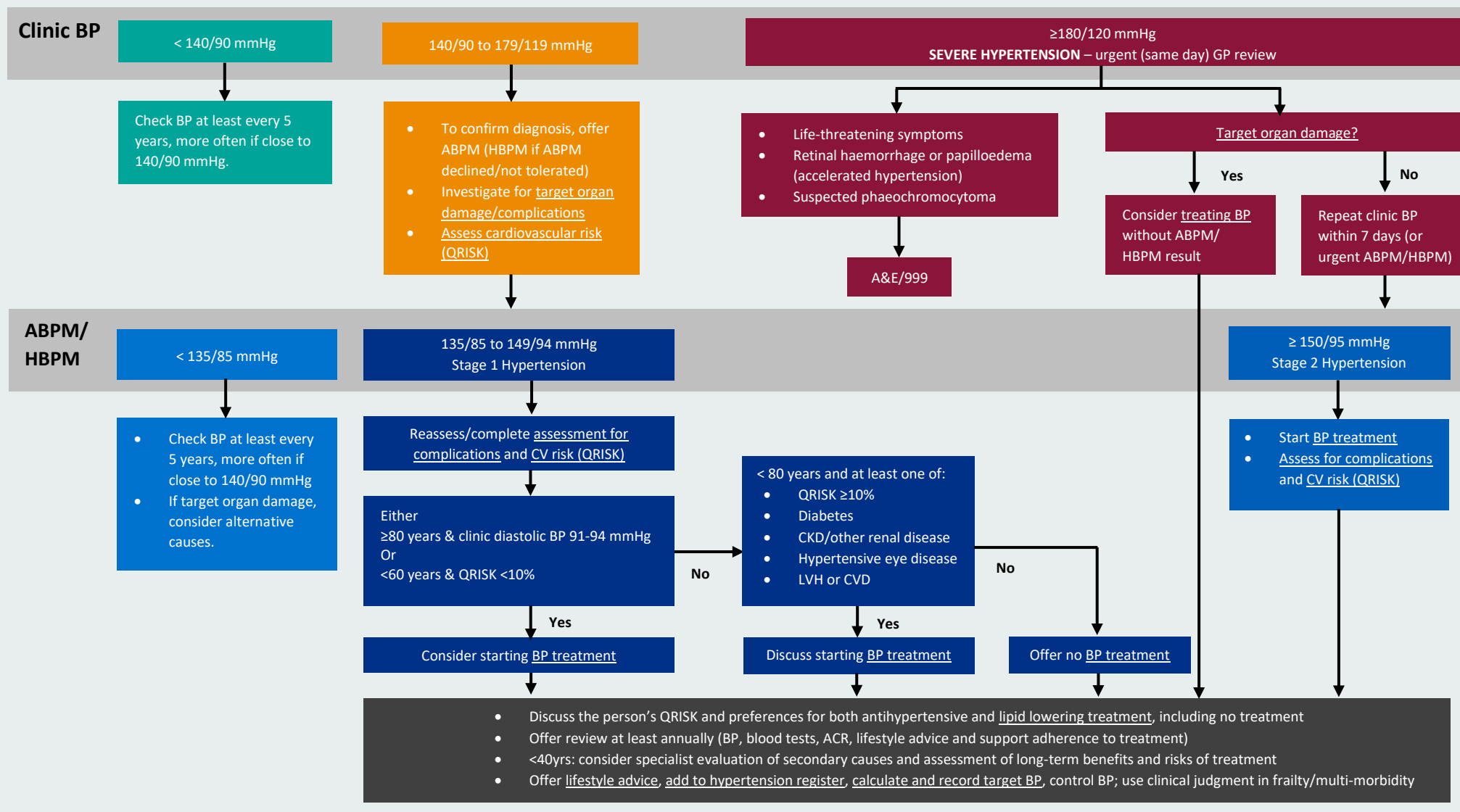
- **Risk reduction:** Every 10mmHg reduction in systolic BP reduces risk of major CV events by 20%¹
- **Under-treated:** 57.3% of Bromley patients <80 years with hypertension have a BP >140/90mmHg²
- **Under-diagnosed:** An estimated 33,300 people remain undiagnosed in Bromley (prevalence = 13.5% vs expected = 26.2%)²

In Bromley, in a single year, reducing the average systolic BP in people with hypertension by 10mmHg could prevent:

- **95** people from having a stroke
- **83** people from developing heart failure
- **123** people from developing IHD
- **335** deaths

1.2 Hypertension diagnosis and assessment

1.2.1 Hypertension Diagnosis Algorithm^{3,4,5}



1.2.2 Measuring Blood Pressure

How to measure BP

- Initially measure blood pressure in both arms. If difference >15 mmHg, repeat measurements.
- If difference remains >15 mmHg on the second measurement, measure subsequent blood pressures in the arm with the higher reading (note this on EMIS).
- Consider the possibility of coarctation of the aorta if there is a difference in both arms.

When and how to measure standing and sitting BP

- Consider performing in patients with diabetes, symptoms of postural hypotension or age ≥80yrs.
- Measure sitting BP and then ask patient to stand, wait at least one minute and then measure standing BP.
- If postural hypotension is diagnosed (≥20 mmHg systolic drop from sitting to standing) or patient has symptoms of postural hypotension, review medication and treat to BP target **based on standing BP**.

Ambulatory BP monitoring (ABPM)

- Ensure sufficient readings - minimum 14 readings during waking hours.
- Use daytime average BP for diagnosis.

Home BP monitoring (HBPM)

- Ensure a validated (and calibrated) BP machine is being used.
- Advise to record two BP readings each morning and evening for at least 4 days (ideally 7).
- Disregard the first day's readings and calculate the average of the remaining readings.

1.2.3 Adding to the Hypertension Register

To add to the hypertension register

- Code most cases as 'Essential Hypertension'.
- Where appropriate, e.g. if the patient has hypertension in pregnancy, use an alternative specific code, ensuring that it is recognised for QOF purposes as indicated by the icon **QOF** when selecting the code in EMIS Web.

1.2.4 Assessment of Cardiovascular Risk - QRISK^{7,8}

QRISK

QRISK is a risk calculator for predicting the risk of cardiovascular disease (CVD) over the next 10 years and is used to guide the need for both antihypertensive and lipid modification therapy (statin use).

- For use in ages 25 - 84 years (may underestimate risk in under 40s).
- Not applicable if already high risk of CVD (should be considered for statin therapy anyway):
 - Type 1 DM
 - ≥ 85 years
 - Familial hypercholesterolaemia
 - History of CVD including stroke/TIA
 - CKD 3-5 for QRISK2 (*QRISK3 does include CKD*)
- The CVD risk is an estimate. Clinical judgement is required to adjust for factors that the risk calculator does not take account of.
- QRISK also provides a 'heart-age' calculation which can help inform discussions about risk reduction.

QRISK2 vs QRISK3

QRISK3 is the latest QRISK iteration. It includes more factors than QRISK2 to identify those most at risk of heart disease and stroke, as follows:

- Chronic kidney disease (including stage 3 CKD)
- Migraine
- Corticosteroids
- Systemic lupus erythematosus (SLE)
- Atypical antipsychotics
- Severe mental illness
- Erectile dysfunction
- A measure of systolic blood pressure variability

QRISK2 will underestimate risk for the above conditions.

Recommending a statin for primary prevention:



Offer a statin to people with an estimated 10-year CVD risk (QRISK) of **≥ 10%**, if lifestyle interventions have proved to be ineffective.
See [SEL IMOC Lipid Management Medicines Optimisation Pathway](#).



QRISK2 On EMIS Web: 'QRisk2 Data Entry Template'
QRISK3 Not on EMIS yet: find online [here](#)

1.2.5 Further assessment: complications, underlying causes and investigations^{4,6}

Hypertension increases the risk of a number of conditions including:

Cardiovascular

Heart failure
Coronary artery disease
Stroke
Peripheral arterial disease
Vascular dementia
Hypertensive retinopathy

Renal

Chronic kidney disease
Acute kidney injury

Ophthalmological

Hypertensive retinopathy (retinal haemorrhage & papilloedema)

Underlying conditions/drugs may cause secondary hypertension (refer if an underlying condition is suspected):

Cardiovascular

Coarctation of the aorta
Aortic dissection (to A&E)

Renal

Chronic pyelonephritis
Diabetic nephropathy
Glomerulonephritis
Polycystic kidney disease
Obstructive uropathy
Renal cell carcinoma
Renal artery stenosis

Endocrine

Phaeochromocytoma (to A&E)
Thyroid disease
Primary hyperaldosteronism (i.e. Conn's syndrome)
Cushing's syndrome
Acromegaly

Other conditions

Connective tissue disorders (SLE, scleroderma, polyarteritis nodosa)
Retroperitoneal fibrosis
Obstructive sleep apnoea

Drugs

Alcohol, ciclosporin, cocaine, COCP, corticosteroids, erythropoietin, leflunomide, liquorice, NSAIDs, sympathomimetics, venlafaxine

Targeted history, examination and investigation should be undertaken to check for complications/target organ damage/underlying causes. Consider the following:

Risk Factors: Record family history of CVD, smoking status, obesity (BMI, waist circumference), physical activity level, alcohol intake, family history of renal disease. Calculate QRISK. Use the Ardens BP data entry template.

Signs of coarctation of the aorta

Different BP in both arms
Radiofemoral delay
Absent/weak femoral pulses
Palpable collateral vessels in back muscles
Suprasternal murmur radiating to back

Renal Symptoms/Signs

Abdominal/flank/loin mass
(? polycystic kidney disease/obstructive uropathy/renal cell carcinoma)
Abdominal bruit (? renal artery stenosis)

Worrying Symptom/Signs

Life-threatening symptoms - **Refer to Emergency Department**

- new onset confusion, chest pain, acute heart failure, suspected TIA

Accelerated hypertension - **Refer same day to Medical Ambulatory Unit**

- Retinal haemorrhage, papilloedema (hypertensive retinopathy)

Phaeochromocytoma - **Refer to Emergency Department**

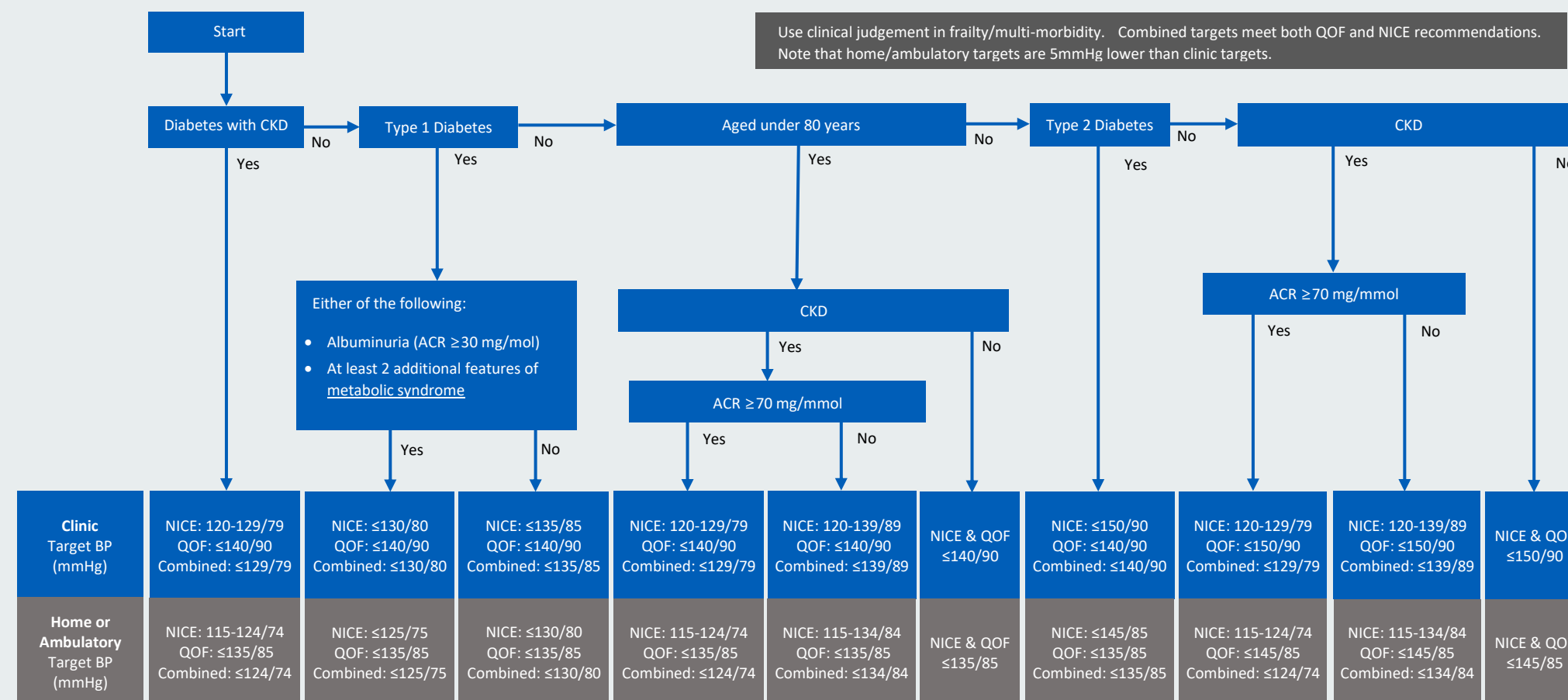
- Labile BP, postural hypotension, headache, palpitations, pallor, abdominal pain, excessive sweating

Investigations: 12 lead ECG, lipid profile, FBC, renal function*, TFT, HbA1c, urine dip for haematuria, urine ACR, consider renal US if suspected renal cause

* Latest NICE CKD guidance (August 2021) advises glomerular filtration rate (eGFR) adjustment should no longer be performed in people of African-Caribbean or African family background.⁹

1.3 Hypertension Management

1.3.1 Blood Pressure Target Algorithm (NICE and QOF targets) ^{3,10,19,20,21,22}



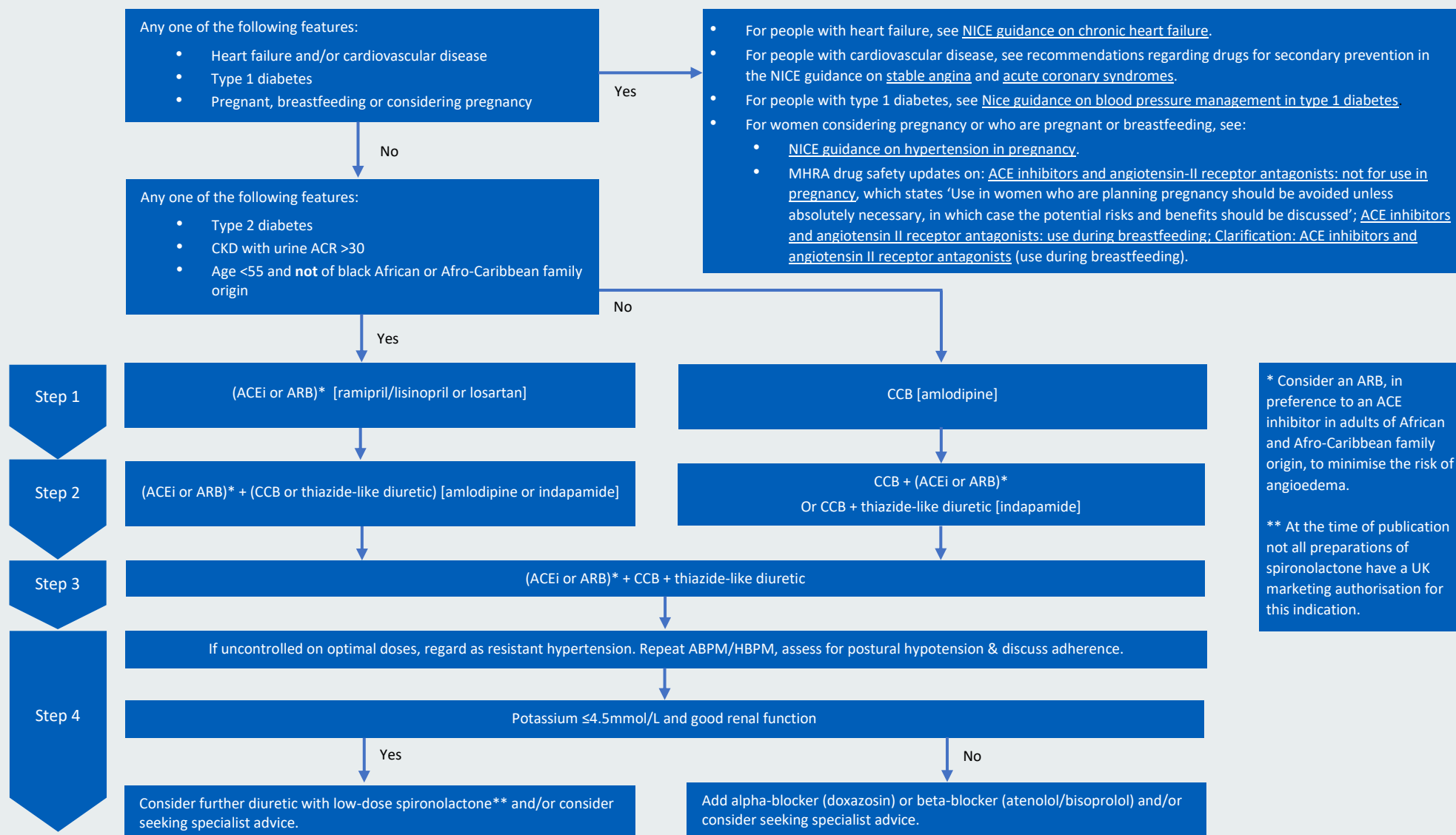
Use the SNOMED CT codes “Target systolic blood pressure” & “Target diastolic blood pressure” to record the *clinic* target blood pressure in the patient record. These may be entered manually or via the Arden’s Hypertension Data Entry Template. Recording of these targets may help non-clinicians to triage *adjusted* home and waiting room readings.

1.3.2 Impact of lifestyle changes on BP¹¹

Action	Recommendation	Approximate systolic BP reduction
Reduced weight	Maintain healthy body weight	5-20mmHg/10kg loss
DASH diet	Consume a diet rich in fruits, vegetables, low-fat dairy with reduced saturated and total fat	8-14mmHg
Reduced salt intake	Reduced dietary sodium intake (<u><1 teaspoon/day</u>)	2-8mmHg
Increased exercise	Regular aerobic physical activity (at least 30 min/day, most days of the week)	4-9mmHg
Reduced alcohol intake	Below or equal to 14 units/week	2-4mmHg

Note: In addition to the above, discourage consumption of excessive caffeine or caffeine-rich products.³ Average BP reduction (systolic) from one anti-hypertensive drug= 12.5-15.5mmHg.¹² The effects of implementing lifestyle modifications are dose and time dependent, and could be greater for some individuals.

1.3.3 Pharmacological Management^{3,5,13,14}



1.3.4 Preferred Anti-Hypertensive and Statin Medications^{5,3,15,16,17}

Class	Drug	Starting Dose	Daily Range	Notes (these are not extensive, please refer to the latest BNF for further information especially titration increments/cautions/contra-indications)
ACEIs	1st Line: Ramipril	2.5mg OD (1.25mg OD in frail/elderly patients)	2.5-10mg OD	- For people of Black African or African-Caribbean family origin, use ARB instead of ACEI (as increased risk of angioedema with ACEI) - Check baseline renal profile (Na/K/Cr/eGFR). Hyperkalaemia may occur, therefore close monitoring of serum potassium is required - Re-check renal profile within 2 weeks of initiation, or dose increase and then at least annually - Titrate ACEI/ARB up at 2-4 weekly intervals to achieve optimal BP control - Initiation/Dose titrations: If serum creatinine increases by >20% (or eGFR falls by >15%) – 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, and potassium <5.5mmol/l - ACEI/ARB dose should be optimised before the addition of a second agent - Side-effects: Symptomatic hypotension can occur on first dosing – suggest to take at night. Dry cough with ACEI, consider switch to ARB - Caution: Do not combine an ACEI and an ARB to treat hypertension - For diabetic nephropathy ARB of choice: losartan and irbesartan⁵
	2nd line: Lisinopril	10mg OD	10-80mg OD (usual maintenance dose 20mg OD for hypertension)	
ARBs	Losartan	50mg OD (25mg OD if >75yrs old)	50-100mg OD	
	Candesartan	8mg OD	8mg-32mg OD	
CCBs	Amlodipine	5mg OD	5-10mg OD	- Increase after 2-4 weeks to maximum dose of 10mg OD - Caution: Interacts with simvastatin – consider switching to atorvastatin - Step 1: If amlodipine causes ankle oedema, consider using a thiazide-like diuretic instead of a CCB - CI: Unstable angina, aortic stenosis - Side effects include flushing and headaches at initiation; swollen ankles especially at higher doses
Thiazide-like diuretics	Indapamide (IR)	2.5mg OD	2.5mg OD	Check baseline renal profile, then after 2 weeks, then at least annually. If potassium <3.5mmol/l or eGFR <25ml/min, stop indapamide and seek specialist advice
Aldosterone antagonist	Spironolactone	25mg OD	25mg OD	- Step 4: Spironolactone is the preferred diuretic at step 4 (NICE), but is an unlicensed indication in resistant hypertension (BNF) - Consider only if potassium ≤4.5mmol/l (caution in reduced eGFR<30ml/min, as increased risk of hyperkalaemia). Monitor Na/K/renal function within 1 month and repeat 6 monthly thereafter⁵ - If K>4.5mmol/l should be stopped.
Alpha blocker	Doxazosin (IR)	1mg OD	2-16mg OD (or BD dosing when dose >8mg/day)	- Consider at Step 4 if potassium ≥4.5mmol/l. Initial dose of 1mg usually increased after 1-2 weeks to 2mg OD - At doses above 8mg/day, consider split dosing from OD to BD to reduce BP variation - Caution: Initial dose postural hypotension, avoid in elderly as orthostatic hypotension risk⁵
Beta blocker	Atenolol	25mg OD	25-50mg OD	- Consider at Step 4 if potassium ≥ 4.5mmol/l. - Beta blockers may be considered in younger people and in those with an intolerance/CI to ACEI or ARBs, women of childbearing potential, co-existent anxiety/tachycardia/heart failure - Particular caution in T2DM: symptoms of hypoglycaemia may be masked - Caution: Increased risk of diabetes when beta-blocker is prescribed with a thiazide diuretic. Beta-blockers can cause bradycardia if combined with certain CCBs e.g., verapamil/diltiazem - CI: Asthma, 2nd/3rd degree AV block, severe PAD
	Bisoprolol	5-10mg OD	5-20mg OD	
Statin	Atorvastatin	20mg OD	20-80mg OD	See SEL IMOC guideline on lipid management: medicine optimisation pathways (Sept 2021) - Primary prevention 20mg, secondary prevention 40-80mg (alternative is rosuvastatin)
This guidance is aligned to SEL IMOC Hypertension 2021 guidance for Primary Care				

1.3.6 AKI Sick Day Rules¹⁸

When patients have any of the following: vomiting, diarrhoea, or general dehydration due to intercurrent illness. Advise to STOP taking the medications listed below (restart after feeling well/after 24-48hrs of eating and drinking normally).

- Sulfonylureas, ACE inhibitors, Diuretics, Metformin, ARBs, NSAIDs, SGLT2 inhibitors (e.g. empagliflozin) – ‘SADMANS’ rules

1.3.7 Referrals^{3,4}

Refer patients with worrying symptoms/signs for same day specialist review. Suspected cases of uncomplicated accelerated hypertension should be referred to the Medical Ambulatory Unit at Princess Royal University Hospital. Cases of suspected pheochromocytoma or severe hypertension with life threatening features should be referred to the Emergency Department.



EMERGENCY REFERRALS

ROP – Acute / Referrals / Acute Referral Form

Refer the following for outpatient specialist advice:

- Patients of any age where a secondary cause for hypertension is suspected.
- All patients <40 years with BP $\geq 140/90$ mmHg, even with no evidence of CVD, renal/hypertensive eye disease or diabetes.
 - The 10-year CV risk can underestimate the lifetime risk of CV events in this cohort.
 - Patients of African or Caribbean family origin can present with primary hypertension at an earlier age.
 - If in doubt, consider using eRS Advice and Guidance to discuss need for referral.
- Patients with resistant hypertension: blood pressure uncontrolled on three or four antihypertensive medications. NICE recommends referral once taking four medications but local clinics will accept referral for patients taking three.

Both nephrology and cardiology specialties manage hypertension. The Referrals Optimisation Protocol automatically detects if the patient has renal disease (if correctly coded) and will suggest referral to the nephrology clinic regardless of the original specialty selected.



ROUTINE REFERRALS

ROP – Cardiology / Referrals / Hypertension
Or ROP – Nephrology / Referrals / Hypertension

1.4 Resources

1.4.1 Patient Support

Patient resources

- [Bromley Well: Hypertension Fact Sheet and Lifestyle Support Information](#)
- [Blood pressure information for patients \(translated\) and 'Loving your heart: a South Asian guide to controlling your BP'](#)
- [British Heart Foundation: Preventing Heart Disease](#) (resources for patients)
- [British Heart Foundation: How to reduce your blood pressure 6 top tips](#) (see page 8 for more)
- [British Heart Foundation: Our online community](#)
- [Get help to stop smoking \(London Borough of Bromley\)](#)
- [Stop Smoking London](#)
- [Better Health - NHS \(www.nhs.uk\)](#)

1.4.2 Professional Support

- **Urgent telephone advice** - Consultant connect: Cardiology (using dedicated practice telephone number)
- **Non-urgent** – use eRS 'Advice & Guidance' - Nephrology, Cardiology or Obstetric medicine

1.5 Abbreviations

ABPM – Ambulatory blood pressure monitoring	CV - Cardiovascular	IHD – Ischaemic heart disease
ACEI– Angiotensin converting enzyme inhibitor	CVD – Cardiovascular disease	IR – Immediate release
ACR – Albumin-creatinine ratio	DASH diet – Dietary approaches to stop hypertension diet	LVH – Left ventricular hypertrophy
A&G – Advice & Guidance	DXS – Point-of-care tool for EMIS Web	Na – Serum sodium
AKI – Acute kidney injury	ECG – Electrocardiogram (12-lead)	NSAID – Non-steroidal anti- inflammatory drug
ARB- Angiotensin II receptor blocker	eGFR – Estimated glomerular filtration rate	OD – Once daily (dosing)
BD – Twice daily dosing	eRS – Electronic referral system	PAD – Peripheral arterial disease
BMI – Body mass index	FBC – Full blood count	QOF – Quality and outcomes framework (contract)
BP – Blood pressure	GSTT – Guy’s & St Thomas’ NHS Trust	QRISK2 or 3- an algorithm that predicts 10-year CVD risk.
CCB – Calcium channel blocker	HF – Heart failure	Renal profile – this includes serum sodium/potassium/creatinine/eGFR
CI - Contraindication	K – Serum potassium	SELAPC – South East London Area Prescribing Committee
CKD – Chronic kidney disease	KCH – King’s College Hospital NHS Trust	TFT – Thyroid function blood tests
Cr – Serum creatinine	HbA1c – Haemoglobin A1c	TIA-Transient ischaemic attack
	HBPM – Home blood pressure monitoring	T2DM – Type-2 diabetes

1.6 References

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- 3 [NICE Guideline NG136 Hypertension in adults: Diagnosis and Management, published Aug 2019 & updated March 2022 \(accessed April 2022\)](#)
- 4 [Hypertension in adults: diagnosis and management, \[I\] Evidence review for same-day specialist review. NICE guideline NG136, Prognostic evidence review underpinning recommendations 1.5.1 to 1.5.3 in the guideline. August 2019](#)
- 5 [South East London Integrated Medicines Optimisation Committee \(SEL IMOC\) Hypertension guidance for primary care \(April 2021 & updated March 2022\)](#)
- 6 [NICE CKS, Hypertension: What investigations should I arrange? Last revised in March 2022](#)
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- 21 [Chronic kidney disease: assessment and management NICE guideline \[NG203\] Published: 25 August 2021 Last updated: 24 November 2021](#)
- 22 [Hypertension in adults \(update\) \[J\] Evidence review for blood pressure targets, NICE guideline NG136, Evidence review underpinning recommendation 1.4.23, March 2022](#)

1.7 Acknowledgements & Approval

CESEL guides are co-developed by SEL primary care clinicians and local SEL experts (see below) and are localised to include borough specific pathways and resources. This guide has been through a formal approval process, including by SEL Medicine Optimisation Committee (SEL MOC) for the medicines content and the CESEL Steering Group, with representation from SEL CCG, PCNs and borough-based Medicines Management Teams (MMTs).

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Contact CESEL with any feedback at selccg.clinicaleffectiveness@nhs.net

**Making the right thing to do,
the easy thing to do.**