Hypertension
A guide for Southwark General Practice

Key messages
1. Check blood pressure more (and do a pulse check)
2. Life-style changes can prevent/reduce need for medication
3. Check for complications and assess cardiovascular risk
4. Aim for NICE BP targets

Always work within your knowledge and competency

May 2018 (review May 2020, or earlier if indicated)
Why focus on BP in Southwark?

Treatment of high BP significantly reduces risk of stroke, IHD, heart failure and all cause mortality\(^1\)

- **Risk reduction**: Every 10 mmHg reduction in systolic BP reduces risk of major CV events by 20\(^1\)

- **Under-treated**: 37\% of Southwark patients ≤79 years, with hypertension, have a BP >140/90 mmHg\(^2\)

- **Under-diagnosed**: 27650 people remain undiagnosed (prevalence = 10.6\% vs. expected = 19.2\%)\(^1\)

In Southwark, if we reduce the average BP in people with hypertension by 10 mmHg, in one year, we could prevent\(^1\):

- **67** people from having a stroke
- **47** people from developing heart failure
- **49** people from developing IHD
- **178** deaths
Hypertension: diagnosis, assessing for complications and CV risk

Confirm hypertension diagnosis and stratify risk

- Clinic BP < 140/90 mmHg (Stage 1 Hypertension)
- Clinic BP ≥ 140/90 mmHg
- Clinic BP ≥ 160/100 mmHg (Stage 2 Hypertension)
- Clinic BP Systolic ≥ 180 mmHg or Diastolic ≥ 110 mmHg (Severe Hypertension)

Lifestyle Advice

- Confirm diagnosis, check bloods + check for complications
- ABPM/HBPM ≥ 135/85 mmHg
- ABPM/HBPM ≥ 150/95 mmHg

Assess complications + do a QRISK2 (to assess 10 year CV risk)

- Only hypertension
- If < 80 yrs and ≥ 10y: diabetes/renal disease/hypertensive eye disease/CVD/LVH or CVD

Treat BP* if QRISK2 ≥ 20%

Treat BP* (regardless of QRISK2)

QRISK2

- <10% → No statin
- >10% → Consider statin*
- <10% → No statin
- ≥10% → Consider statin*

*Shared decision making with our patients

If < 40 years and BP ≥ 140/90 mmHg and no evidence of CVD, renal/hypertensive eye disease or diabetes, consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. As the 10 year CVD risk can underestimate the lifetime risk of CV events in these people. Note in patients of African or Caribbean family origin, primary hypertension can present earlier, if in doubt, consider A&G to discuss need for referral

ABPM: Ambulatory BP monitoring
- Ensure sufficient readings taken (minimum 14 readings during waking hours). Use daytime average BP for diagnosis

HBPM: Home BP monitoring
- Ensure patient is using a calibrated BP machine**, and advise to record two BP readings every morning and evening every day, for 7 days
- In the practice, disregard the first day’s readings and take an average of all other readings
- **Approved home BP machines: https://bhs.org.uk/bp-monitors-for-home-use/ BP ≥ 135/85 mmHg indicates hypertension

Check for complications and assess CV risk
- Tests: renal profile, lipids, FBC, HbA1c, TFT, ACR, urinalysis for haematuria + ECG
- Correct eGFR for black person of African or Caribbean family origin, multiply their eGFR by 1.21
- Record smoking status, physical activity level, alcohol intake, BMI (waist circumference), family history, [fundoscopy]
- Signs/symptoms of secondary causes – consider referral

In T2DM, diagnostic thresholds for hypertension are ≥ 140/80 mmHg (no complications), and ≥ 130/80 mmHg (with cerebrovascular/kidney/diabetic eye disease)
### Impact of lifestyle changes on BP\(^6\)

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

Note: Average BP reduction (systolic) from one anti-hypertensive drug = 12.5-15.5mmHg\(^7\)

### Which BP target\(^4, 5, 8, 9\)

<table>
<thead>
<tr>
<th>Hypertension ≥80yrs</th>
<th>≤150/90mmHg</th>
<th>History of IHD/PAD</th>
<th>≤140/90mmHg</th>
<th>Diabetes (uncomplicated)</th>
<th>≤140/80mmHg</th>
<th>CKD + ACR &lt;70mmol/L</th>
<th>≤140/90 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension &lt;80yrs</td>
<td>≤140/90mmHg</td>
<td>History of stroke/TIA (if with severe bilateral carotid stenosis: systolic BP 140-150mmHg)</td>
<td>≤130/80mmHg</td>
<td>Diabetes (complicated i.e. cerebrovascular/kidney/diabetic eye disease)</td>
<td>≤130/80mmHg</td>
<td>CKD + ACR ≥70mmol/L</td>
<td>≤130/80 mmHg</td>
</tr>
</tbody>
</table>
# Hypertension treatment

(excludes hypertension in pregnancy – please see NICE guideline CG107)

## Uncomplicated Hypertension in Adults algorithm

### Step 1
- **Aged under 55 years**
  - **A**: ACEI (1st choice) or ARB (2nd choice)
    - Ramipril/lisinopril/enalapril
  - **C**: CCB* [or thiazide]
    - Amlodipine

### Step 2
- **A+C (or D)**: ACEI/ARB** + CCB [or thiazide]

### Step 3
- **A+C+D**: ACEI/ARB + CCB + thiazide-type Diuretic
  - Indapamide

### Step 4
- Add further diuretic (spironolactone) or use a high-dose thiazide-type diuretic (chlorthalidone, instead of indapamide). If diuretic not tolerated, contraindicated, or ineffective, consider options below:
  - Alpha-blocker (doxazosin) or beta-blocker (atenolol/bisoprolol) and/or consider seeking specialist advice

### Hypertension in Type-2 Diabetes (T2DM)

- **Black person of African or Caribbean family origin**
  - 1st line: ACEI and CCB/thiazide-type diuretic, then follow BP algorithm but see adjacent note for step 4 in T2DM
  - Monitor BP every 1-2 months, and intensify therapy if the person is already on antihypertensive drug treatment, until BP target met.

- **Women with possibility of becoming pregnant**
  - 1st line: CCB (avoid ACEI/ARB)
  - If contemplating pregnancy, refer to pre-conception clinic
  - At step 4, hypertension management in T2DM: High-dose thiazides are not recommended at all. Add an alpha-blocker, a beta-blocker, or a potassium-sparing diuretic (the last with caution if the person is already taking an ACEI/ARB).

- **Neither of above categories**
  - 1st line: ACEI (rather than ARB), then follow BP algorithm, but see adjacent note for step 4 in T2DM
  - (ARB can be used if intolerant to ACEI)

### Hypertension in Chronic Kidney Disease (CKD stages 3-5 i.e. eGFR < 60ml/min)

<table>
<thead>
<tr>
<th>ACR &lt;30 mg/mmol</th>
<th>1st line: ACEI or ARB, then follow BP algorithm</th>
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<tbody>
<tr>
<td>ACR ≥30 mg/mmol</td>
<td>Follow BP algorithm</td>
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</tbody>
</table>

### Women with pre-existing hypertension, contemplating pregnancy

- Refer for specialist pre-conception counselling (see page 9)
- Aim is to NOT be on ACEI/ARB/chlorthalidone and fall pregnant (increased risk of congenital abnormalities)
- NICE guidelines: Stop antihypertensive treatment in women taking ACEI/ARBs if they become pregnant (preferably within 2 working days of notification of pregnancy) and offer alternatives - switch to labetolol if no CI (e.g. asthma). Other alternatives are nifedipine or methyldopa. [Can also remain on amlodipine – GSST Obstetric Medicine advice]
- Prompt referral to Hypertension in Pregnancy clinic (GSTT) as soon as pregnancy is confirmed

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* At step 1: If CCB causes oedema/intolerance, offer thiazide-type diuretic instead of CCB
**At step 2: For black people of African or Caribbean family origin, use ARB rather than ACEI (as they have an increased risk of angioedema on an ACEI)
<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting dose</th>
<th>Daily Range</th>
<th>Notes (These are not extensive, please refer to the latest BNF for further information, especially titration increments, cautions and contraindications)</th>
</tr>
</thead>
</table>
| ACEs         |               |             | **1st Line:** Ramipril 2.5mg OD (1.25mg OD in frail/elderly patients) 1.25-10mg OD **2nd line:** Lisinopril 10mg OD 10-80mg OD (usual maintenance dose 20mg OD for hypertension) **Notes:**  
- 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 4 weekly intervals to achieve optimal BP control  
- Initiation/Dosetitration: 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  
- 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 |
| ARBs         |               |             | Losartan 50mg OD (25mg OD if >75yrs old) 50-100mg OD  
- Increase after 2-4 weeks to maximum dose of 10mg OD  
- Caution: Interacts with simvastatin - consider switching to atorvastatin  
- Step 1: If amlopidine causes ankle oedema, consider alternative CCB e.g. lacidipine (but not nifedipine). If CCB intolerance, or evidence of HF at step 1, consider using a thiazide-type diuretic instead of a CCB  
- Cl: Unstable angina, aortic stenosis |
| CCBs         |               |             | Amlodipine 5mg OD 5-10mg 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 |
| Thiazide-type 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 chlortalidone and seek specialist advice  
- Step 3: Chlortalidone is an alternative to indapamide at step 3, but tablets need to be halved/quartered for appropriate dosing. Morning dosing. Note: BNF states 25mg OD starting dose, while NICE suggests 12.5mg starting dose  
- Step 4: Only offer chlortalidone if spironolactone not suitable (see cautions below), and stop indapamide (ie do not prescribe two thiazide type diuretics concurrently to treat hypertension), Step 4 dose is 50mg OD, but only if potassium >4.5mmol/L |
| K-sparing diuretic |              |             | Chlortalidone 12.5mg OD 12.5-50mg OD  
- Step 4 dose = 50mg OD  
- Step 4: Spironolactone is the preferred diuretic at step 4. Consider only if potassium ≤4.5mmol/L (caution in reduced eGFR <60ml/min, as increased risk of hyperkalaemia)  
- High dose at step 4 = 50mg OD, but only if potassium ≤4.5mmol/L. Monitor Na/K/renal function within 1 month and repeat as required thereafter |
| α-B          |               |             | Doxazosin (IR) 1mg OD 2-16mg OD (or BD dosing when dose >8mg/day)  
- Consider at Step 4. 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 |
| β-B          |               |             | Atenolol 25mg OD 25-50mg OD  
- Consider at Step 4  
- Beta blockers may be considered in younger people and in those with an intolerance/Cl to ACEI or ARBs, women of childbearing potential, co-existant 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  
- Cl: Asthma, 2nd/3rd degree AV block, severe PAD |
| Bisoprolol   | 5-10mg OD    | 5-20mg OD   | Related Drugs  
- Please see SELAPC guideline on lipid management for primary and secondary prevention of CVD  
- Primary prevention 20mg, secondary prevention 80mg |
| Atorvastatin| 20mg OD      | 20-80mg OD  |
Additional resources and tips

**Patient resources**

**Southwark free gym and swim:**

**Southwark weight management programme:**

**Southwark 'Exercise on Referral' Scheme**
(see DXS)

**British Heart Foundation: Preventing Heart Disease (resources for patients):**
https://www.bhf.org.uk/heart-health/preventing-heart-disease

**DASH diet:**

**Shared resources**

NICE has produced a document on shared decision making in the context of hypertension and it can be found at:

http://arms.evidence.nhs.uk/resources/hub/1057551/attachment

**Prescribing tips from community clinics/secondary care**

- Check patient’s understanding - affects drug compliance
- Life-style advice - promote at every contact
- Check drug compliance and for side-effects
- Check for drugs/other substances that can cause hypertension, including:
  - Alcohol
  - Cocaine and other substances of abuse
  - Combined oral contraceptives
  - Cyclosporine
  - Corticosteroids
  - Liquorice (present in some herbal medicines)
  - NSAIDs
  - Sympathomimetics
  - Venlafaxine

- Other conditions which can cause hypertension include: Connective tissue disorders, scleroderma, systemic lupus erythematosus, polyarteritis nodosa, retroperitoneal fibrosis, obstructive sleep apnoea

- Specific drug dilemma: Amlodipine and ankle oedema – If at step 1, amlodipine 10 mg is causing ankle oedema, choices are (a) switch to laclidipine (less chance of oedema) or consider a thiazide-type diuretic, or (b) reduce amlodipine dose to 5mg, and add in low dose ACEI/ARB, and then titrate up ACEI/ARB to optimise BP
Notes

Impact of lifestyle changes on BP
- The effects of implementing lifestyle modifications are dose and time dependent, and could be greater for some individuals.6
- In the study used, stress management’s impact on BP was variable.
- For more information on the DASH diet, please see link under ‘Patient resources’ (page 8)

BP targets: NICE vs. QOF
BP targets should be individualised to patient circumstances
- NICE vs. QOF BP targets: NICE targets are usually lower than QOF targets
- CKD: NICE targets exist, but there are currently no QOF BP targets
- PAD: NICE guidelines on PAD link back to NICE Hypertension guidelines (i.e. BP targets are as quoted on page 5)
- For people >80 years with hypertension and T2DM, CKD, PAD, CVD or TIA/Stroke:
  - Individual NICE guidance on these topics does not offer any age-specific BP targets for this cohort
  - However, NICE Hypertension guidelines (as mentioned previously) do suggest a target of ≤150/90 mmHg for those >80 years with hypertension

Corrected eGFR
This refers to an eGFR that is corrected for ethnicity. For black people of African or Caribbean family origin, multiply their eGFR by 1.21 (Viapath, 2018)

Hypertension in Pregnancy
From 12 weeks, women should be on aspirin 75mg OD until birth as chronic hypertension is a risk factor for pre-eclampsia

Need more help?

Urgent telephone advice- Consultant connect: Cardiology (your practice will have been given its own specific telephone number)

Non-urgent ‘Advice & Guidance’- Depending on the context: Hypertension clinic (GSTT), CKD clinic (GSTT), Diabetic medicine (GSTT/KCH), Obstetric medicine (GSTT), Pregnancy in Hypertension clinic (GSTT)

Virtual hypertension clinics- These are available for practices to organise via the community hypertension clinics (see below)

Community hypertension clinic- Referral criteria on form (see DXS). Can also provide hypertension drug related advice via email: gst-tr.KHPCommunityCVD@nhs.net

Specialist clinics- Refer via eRS to: Hypertension clinic (GSTT/KCH), Pre-conception counselling clinic (GSTT), Pregnancy in Hypertension clinic (GSTT), Obstetric Medicine clinic (GSTT) – for pregnant women with multiple co-morbidities, [CKD clinic (GSTT), Diabetic medicine (GSTT/KCH)]
References
1 British Heart Foundation: How can we do better? NHS Southwark CCG (updated 2018, source data QOF 2016/17)
2 QOF Data 2016/7
5 NICE Guideline NG28 Type 2 Diabetes in adults: Management, published Dec 2015, updated May 2017
8 Stroke and TIA, Clinical Knowledge Summaries (NICE), last updated March 2017, (accessed May 2018); https://cks.nice.org.uk/stroke-and-tia#scenario:0
10 NICE Clinical guideline CG107 Hypertension in pregnancy: diagnosis and management, published date: August 2010 last updated: January 2011
11 British National Formulary, last updated Feb 2018
12 SE London Area Prescribing Committee and SW London Medicines Commissioning Group (SELAPC): Lipid management for the Primary and Secondary Prevention of Cardiovascular Disease (CVD) in Adults, published Oct 2016, review date Sept 2018
13 Consultation correspondence – Southwark CCG’s Medicines Optimisation Team, CVD community clinic Pharmacists, GSSS Cardiology Team, GSSS Obstetric Medicine Team

Acknowledgements
CLES would like to thank all our colleagues who participated and fed-back during the consultation process, and we would also like to thank King’s Health Partners and the Health Innovation Network, who helped produce this guide.

Approval:CLES Programme Board, April 2018

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Abbreviations
• ABPM—Ambulatory blood pressure monitoring
• ACEI—Angiotensin converting enzyme inhibitor
• ACR—Albumin:creatinine ratio
• ARB—Angiotensin II receptor blocker
• β-B—Beta-blocker
• BD—Twicedaily dosing
• BMI—Body mass index
• BP—Blood pressure
• CCB—Calcium channel blocker
• CI—Contraindication
• CVD—Cardiovascular disease
• DASH diet—Dietary approaches to stop hypertension diet
• DXS—Point-of-care tool for EMIS Web
• ECG—Electrocardiogram (12-lead)
• eGFR—Estimated glomerular filtration rate
• eRS—Electronic referral system
• FBC—Full blood count
• GSTT—Guy’s & St Thomas’ NHS Trust
• HF—Heart failure
• K—Serum potassium
• KCH—King’s College Hospital NHS Trust
• HbA1c—Haemoglobin A1c
• HBPM—Home blood pressure monitoring
• IHD—Ischaemic heart disease
• IR—Immediate release
• LVH—Left ventricular hypertrophy
• Na—Serum sodium
• NSAID—Non-steroidal anti-inflammatory drug
• OD—Once daily (dosing)
• PAD—Peripheral arterial disease
• QOF—Quality and outcomes framework (contract)
• QRISK2—an algorithm that predicts 10-year CVD risk. EMIS is currently using QRISK2 (although QRISK3 was released in 2017)
• Renal profile—this includes serum sodium/potassium/creatinine/eGFR
• S—Statin
• SELAPC—South East London Area Prescribing Committee
• TFT—Thyroid function blood tests
• TIA—Transient ischaemic attack
• T2DM—Type 2 diabetes
Making the right thing to do the easy thing to do.

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