GM Adult Hypertension Medication Overview Table V3 01/09/23 For any feedback please visit tiny.one/gmcvdfeedback

Drug	Licensed indications (depending on individual drug chosen)[a]	Place in HTN management	Special considerations	Preferred drug choice (starting dose)[b]	Adverse effects (common/very common)	Monitoring[c]
ACE inhibitors (ACEi)	☐ **Hypertension** ☐ Heart Failure ☐ Renal complications of Diabetes Mellitus ☐ Prophylaxis of cardiovascular events	**HTN with T2DM** 1st step in treatment pathway **HTN without T2DM** 1st step in treatment pathway* ***unless ≥55 years and/or Black African or African-Caribbean origin (any age)**	✗ Do NOT use in pregnancy ✓ Recommended in CKD (renin-angiotensin blockade reduces proteinuria)	**Lisinopril 10mg OD** Or ***Perindopril erbumine 4mg OD** [Longer duration of action than ramipril][e] ***DNP Perindopril arginine (Coversyl®)** **Note: If patient is stable on ACEi or ARB and HTN at target, do not switch drugs within the class**	Alopecia Angina Angioedema (more common in black patients) Arrythmias Dry cough Electrolyte imbalance Renal impairment hypotension	**Baseline** BP eGFR or CrCl U+Es **After started/dose change** All as above [Within 2 weeks OR 7 days with other risk factors [f]] Re-check BP within 1 month **Once stable** Re-check all above 6 months to 1 year *
Angiotensin receptor blocker (ARB)	☐ **Hypertension** ☐ Heart Failure ☐ Renal complications of Diabetes Mellitus ☐ Prophylaxis of cardiovascular events [a]	**HTN +/- T2DM** 1st step in treatment as alternative to ACEi for Black African or African-Caribbean patients or any patient with troublesome dry cough from ACEi-i	✗ Do NOT use in pregnancy ✓ Consider losartan in patients with gout (reduce serum uric acid) [d] ✓ Recommended in CKD (renin-angiotensin blockade reduces proteinuria)	**Candesartan 8mg OD** [improved safety profile than losartan][g] **Note: If patient is stable on ACEi or ARB and HTN at target, do not switch drugs within the class**	Cough Dizziness Hyperkalaemia Hypotension Renal impairment	**As for ACEi above**
Calcium Channel Blockers (CCB)	☐ **Hypertension** ☐ Angina	**HTN with T2DM** 2nd step in treatment pathway ACEi/ARB + CCB **HTN without T2DM** 1st step in treatment pathway for patients ≥55 years and/or Black African or African-	✓ Consider rate-limiting CCB e.g. diltiazem for rate control in patients with AF ✓ Consider CCB in patients with gout (reduce serum uric acid)[d]	**Amlodipine 5mg OD** *if ankle oedema switch to **Lercanidipine 10mg OD** **Be aware of common drug-drug interactions e.g.** **Simvastatin (max 20mg) + amlodipine**	Dizziness Flushing Headache Peripheral oedema	**Baseline** BP **After started/dose change** Re-check BP within 1 month **Once stable** Re-check all above 6 months to 1 year*

		Caribbean origin (any age)				
Thiazide-like diuretics	☐ **Hypertension** ☐ **Oedema**	**HTN +/- T2DM** 3rd step ACEi/ARB + CCB + thiazide-like diuretic	✗ Do NOT use in pregnancy ✓ Consider 1st line in patients with chronic HF (seek specialist advice)[h]	**Indapamide 2.5mg OM** *Ensure Na+ remains >130mmol/L, otherwise STOP, recheck and if Na+ improved consider[i] **Bendroflumethiazide 2.5mg OM**	Alkalosis hypochloraemic Dizziness Electrolyte imbalance Erectile dysfunction Hyperglycaemia Hyperuricaemia Postural hypotension	**Baseline** BP U+Es LFTs **After started/dose change** All as above Monitor U+Es at regular intervals depending on clinical judgment[i] **Once stable*** Re-check all above 6 months 1 year
Spironolactone	☐ Heart Failure ☐ Oedema ☐ Ascites ☐ Nephrotic syndrome	**Resistant HTN** If patient on ACEi/ARB + CCB + thiazide-like diuretic + K+ < 4.6mmol/L ***Seek specialist input if BP is uncontrolled on 4 agents at optimal doses**	Consider the possibility of primary aldosteronism in resistant HTN[j]	**Spironolactone 12.5mg OM** *Use of spironolactone for resistant HTN as an adjunct is an unlicensed indication. Note: BNF starting dose is 25mg OD however 12.5mg OD is aligned to GM hypertension pathway and clinical consensus	Acidosis hyperchloraemic AKI Hyperkalaemia Electrolyte imbalance Dizziness Gynaecomastia	**Baseline** BP eGFR or CrCl U+Es **After started/dose change** All as above [After 1 week; then monthly for first 3 months] **Once stable** Re-check all above 3 to 6 months
Alpha blockers	☐ **Hypertension** ☐ Benign prostatic hyperplasia (BPH)	**Resistant HTN** If patient on ACEi/ARB + CCB + thiazide-like diuretic and K+ >4.5mmol/L **Seek specialist input if BP is uncontrolled on 4 agents at optimal doses**	Consider the possibility of primary aldosteronism in resistant HTN[j]	**Doxazosin 2-4mg OD*** *Use immediate release formulations	Arrhythmias Dizziness Cystitis Drowsiness Dry mouth Hypotension	**Baseline** BP **After started/dose change** Re-check BP within 1 month – monitor for postural effects **Once stable** Re-check all above 6 months 1 year*
Beta blockers (BB)	☐ **Hypertension** ☐ Angina ☐ MI secondary prevention	**Resistant HTN** If patient on ACEi/ARB + CCB + thiazide-like	✗ Avoid in asthma ✓ Consider cardioselective BB	**Bisoprolol 2.5mg OD**	Bradycardia Dizziness Dyspnoea	**Baseline** BP Heart rate

	□ Arrythmias □ Heart Failure	diuretic + K+ >4.5mmol/L **Seek specialist input if BP is uncontrolled on 4 agents at optimal doses**	✓ e.g. bisoprolol, carvedilol in patients with COPD ✓ Consider BB for rate control in patients with AF	Note: BNF starting dose is 5mg OD however 12.5mg aligned to GM hypertension pathway and clinical consensus	Erectile dysfunction Dry eye Confusion	**After started/dose change** All as above [Within 2 weeks]

***Annual recommended in reference (SPS) but 6 monthly may be appropriate in higher risk patients e.g. renal impairment, elderly. 6 to 12 months monitoring in line with GM pathway i.e. re-check BP 6-12 months once stable.**

Note: for specific recommendations on BP control in people with other conditions or who are pregnant refer to specific clinical guidelines

Abbreviations: **ACEi** – Angiotensin Converting Enzyme inhibitor; **ACR** – Albumin Creatinine Ratio; **ARB** – Angiotensin Receptor Blocker; **AKI** – Acute Kidney Injury; **BB** – Beta Blocker; **BP** - Blood Pressure; **CCB** – Calcium Channel Blocker; CKD – Chronic Kidney Disease; **CrCl** – Creatinine Clearance; **eGFR – estimated** Glomerular Filtration Rate; **HTN** – Hypertension; **HF** – Heart Failure; **K+ -** serum potassium**; Na+ -** serum sodium **OM** – morning; **OD –** once daily**; T2DM** – Type 2 Diabetes Mellitus; **U+Es –** Urea and Electrolytes

References:

a. Check individual drug SmPC for licensed indications as there can be variation in the licensing of different drugs within each class. E.g. Prevention of cardiovascular events in patients with established atherosclerotic cardiovascular disease, or type 2 diabetes mellitus with target-organ damage license only exists for the ARB *telmisartan* .
b. Lower starting doses are required for people who are more prone to the adverse effects of ACE inhibitors (such as elderly, frail, or renally impaired people, or people on low-dose diuretics).
c. Refer to Home - electronic medicines compendium (emc) and Medicines Monitoring – SPS - Specialist Pharmacy Service – The first stop for professional medicines advice
d. Antihypertensive drugs and risk of incident gout among patients with hypertension: population based case-control study
e. Not All Angiotensin-Converting Enzyme Inhibitors Are Equal: Focus on Ramipril and Perindopril: Postgraduate Medicine: Vol 125, No 4 (tandfonline.com)
f. In people with hyperkalaemia or deteriorating renal function (e.g. with peripheral vascular disease, diabetes mellitus, or pre-existing renal impairment or older people)
g. A systematic review and meta-analysis of candesartan and losartan in the management of essential hypertension - Zhenfeng Zheng, Huilan Shi, Junya Jia, Dong Li, Shan Lin, 2011 (sagepub.com)
h. NICE NG136 Hypertension in adults: diagnosis and management
i. Indapamide BNF
j. NICE CKS Hypertension: Secondary Causes of Hypertension