NHS Ayrshire & Arran Hypertension Guidelines (non-pregnant adults)

Definitions

- **Stage 1 Hypertension**: Clinic blood pressure is 140/90 mmHg or higher **and** subsequent ambulatory blood pressure monitoring (ABPM) or home blood pressure monitoring (HBPM) average blood pressure is 135/85 mmHg or higher.
- **Stage 2 Hypertension**: Clinic blood pressure is 160/100 mmHg or higher **and** subsequent ABPM daytime average or HBPM average blood pressure is 150/95 mmHg or higher.
- **Severe Hypertension**: Clinic systolic blood pressure is 180 mmHg or higher **or** clinic diastolic blood pressure is 120 mmHg or higher.

- When considering a diagnosis of hypertension, measure blood pressure in both arms.
- If the difference in readings between arms is more than 15mmHg, repeat the measurements.
- If the difference in readings between arms remains more than 15mmHg, measure subsequent blood pressures in the arm with the **higher** reading.

Investigations and Assessment of Risk

All adults ≥ 40 years of age should have their blood pressure recorded every 5 years (measure blood pressure at least annually in an adult with type 2 diabetes without previously diagnosed hypertension or renal disease).

High risk patients are those with one or more:

1. Target Organ Damage (TOD) (damage to organs such as heart, brain, kidneys or eyes)
2. Established cardiovascular disease
3. Previous stroke or Transient Ischaemic Attack (TIA)
4. Renal disease
5. Diabetes Mellitus
6. A 10 year cardiovascular risk* ≥ 20% [1] (www.assign-score.com) [2] or (www.qrisk.org) [3]
   *use clinic BP to calculate cardiovascular risk

Assess for Target Organ Damage in all hypertensive patients with:

1. Albumin Creatinine Ratio (ACR)
2. Dipstick urine for haematuria
3. Bloods: Glucose, HbA1c, Urea & Electrolytes, Creatinine (Cr), estimated Glomerular Filtration Rate (eGFR), Total Cholesterol & HDL Cholesterol
4. Fundoscopy for hypertensive retinopathy
5. 12-lead ECG

Management of Hypertension in NHS Ayrshire & Arran

Clinic SBP **<140** mmHg
OR
DBP **<90** mmHg

Recheck BP at least every 5 years
More frequently if close to
140/90 mmHg

Clinic SBP **140-179** (130 high risk) mmHg
OR
DBP **90-119** mmHg

Repeat during consultation, if 2nd reading substantially different from 1st , take a 3rd reading
Record the lower of the last 2 readings

Lower of last 2 readings is <140/90 mmHg

Lower of last 2 readings is ≥140/90 mmHg

Offer Ambulatory or Home BP monitoring (ABPM/HBPM)
While waiting for results:
1. Assess CV risk
2. Investigate for Target Organ Damage (TOD)

ABPM/HBPM
<135/85 mmHg

NOT HYPERTENSIVE

ABPM/HBPM
≥135/85 mmHg
but
<150/95 mmHg
STAGE 1 HYPERTENSION

ABPM/HBPM
≥150/95 mmHg

STAGE 2 HYPERTENSION

Clinic SBP **≥180** mmHg
OR
DBP **≥120** mmHg

SEVERE HYPERTENSION
Papillodema or retinal exudates / haemorrhages OR suspected phaeochromocytoma OR life threatening symptoms (confusion, chest pain or signs of heart failure or AKI)

NO

YES

Refer URGENTLY

Notes on ABPM
- Use a device that measures at least 2 measurements/hour during waking hours
- At least 14 readings are required to average the results

Notes on HBPM
- Take readings morning & evening for four to seven days
- On each occasion take 2 readings one minute apart (seated)
- Discard measurements on the first day and average remaining measurements.

Treatment Targets (use clinic BP to monitor response to any intervention)
Patients <80yrs (with or without Type 2 DM) – aim for BP <140/90 (HBPM 135/85)
- With Type 1 DM or CKD plus ACR <70mg/mmol – aim for BP <140/90
- With Type 1 DM or CKD plus ACR ≥70mg/mmol – aim for BP <130/80

Patients ≥ 80yrs (with or without Type 1 or 2 DM) – aim for BP <150/90 (HBPM 145/85)
- With CKD plus ACR <70mg/mmol – aim for <140/90
- With CKD plus ACR ≥70mg/mmol – aim for <130/80

For patients with stroke/TIA – see specific targets in A&A guidelines ADTC 404/ADTC 119

Offer Lifestyle advice

Age ≥80 with clinic BP > 150/90 mmHg:
Consider Drug Treatment

Age<80 with TOD, CVD, Renal Disease, diabetes or 10yr CVD risk ≥ 20%:
Discuss starting Drug Treatment

Age<60 with 10-year CVD risk <20%:
Consider Drug Treatment

Age<40:
Consider specialist evaluation of secondary causes and assess long-term benefits and risks of treatment

Offer drug treatment and lifestyle interventions with annual monitoring and review

Age<40:
Consider specialist evaluation of secondary causes and assess long-term benefits and risks of treatment

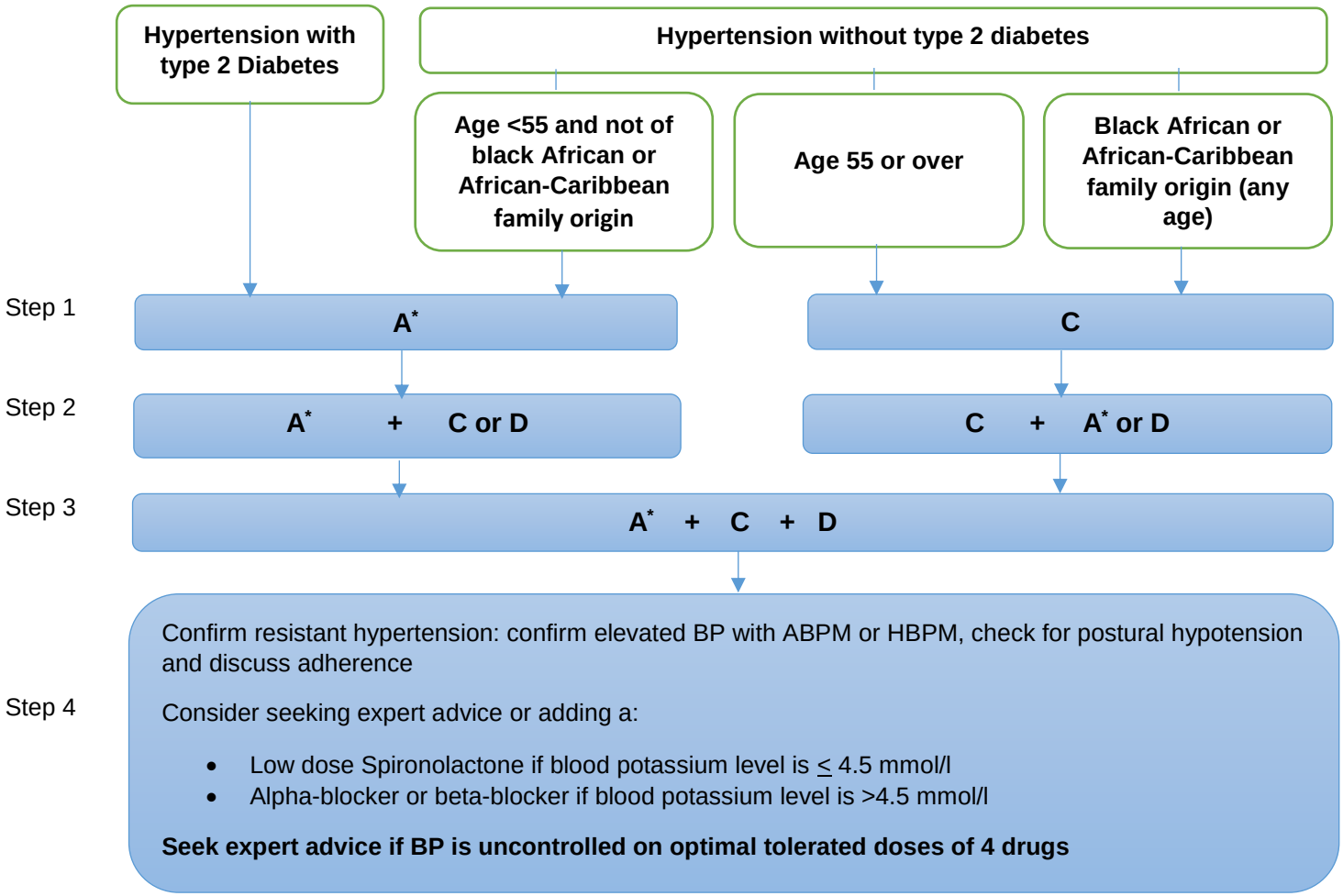
Indications for referral
1. Urgent – severe hypertension or likely phaeochromocytoma or life threatening symptoms*
2. BP >160/100 mmHg despite four maximally tolerated drugs**
3. MSSU negative proteinuria or haematuria***
4. eGFR <30ml/min***
5. <40 years. Investigate for secondary causes. Referral for TOD (Target Organ Damage) assessment***

* Admit to hospital for investigation
** Refer URGENTLY to OP clinic
*** Refer to OP clinic

Treatment of Hypertension

- Do not change drugs in patients who are well controlled and the drugs are well tolerated.
- Take into account co-morbidities when choosing an anti-hypertensive drug e.g. Beta-blockers with angina or ACE inhibitors with heart failure. Otherwise follow flow chart below.
- Note – Beta Blockers are no longer considered first line in treatment of Hypertension and are used mainly if co-morbidities indicate use.
- Consider compelling **contraindications**: Pregnancy (ACE Inhibitor, Angiotensin Receptor Blocker (ARB)); Bilateral renovascular disease (ACE Inhibitor, ARB); Gout (Thiazides); Asthma (Beta-blockers); Heart Block (Beta-blockers).
- For post-natal management of hypertension and/or patients who are breast-feeding please see specific guideline **ADTC 454**
- Use clinical judgement for people with frailty or multi-morbidity

Choice of Drug Treatment [2]



A = ACE Inhibitor or ARB (Angiotensin Receptor Blocker)

C = Calcium Channel Blocker

D = Thiazide Diuretic

*Consider an ARB, in preference to an ACE inhibitor, in adults of African and Caribbean family origin or if an ACE inhibitor is not tolerated due to cough

Do not combine an ACE + ARB

If a Calcium channel blocker is not tolerated, or there are signs of heart failure, offer a thiazide like diuretic

Drug treatment options

ACE INHIBITORS *	Oral Dosing	Comments
Lisinopril	Initially 10mg Once Daily Usual Maintenance 20mg Once Daily Maximum 80mg Once Daily	Compelling Indication: Heart Failure or Previous Myocardial Infarction
Ramipril	Initially 1.25mg – 2.5mg Once Daily Increased if necessary up to 10mg Once Daily	Compelling Indication: Heart Failure or Previous Myocardial Infarction
ANGIOTENSIN RECEPTOR BLOCKER (ARB) *		
Candesartan	Initially 8mg Once Daily Increased gradually at 4 weekly intervals to 32mg Once Daily if necessary	
Irbesartan	Initially 150mg Once Daily Increased if necessary to 300mg Once Daily Elderly (>75years) or CKD: initially 75-150mg Once Daily	First Choice ARB for prevention of renal disease in hypertensive diabetics
Losartan	Initially 50mg Once Daily Increased if necessary to 100mg Once Daily Elderly (>75years): initially 25mg Once Daily	
CALCIUM CHANNEL BLOCKERS		
Amlodipine	Initially 5mg Once Daily Maximum 10mg Once Daily	
THIAZIDE DIURETICS		
Bendroflumethiazide	Usual dose 2.5mg Once Daily Higher doses rarely necessary	For patients who are currently on Bendroflumethiazide and whose blood pressure is stable and well controlled, they should not be switched to Indapamide
Indapamide (immediate release preparation)	Usual dose 2.5mg Once Daily	
ALPHA BLOCKERS		
Doxazosin (immediate release preparation)	Initially 1mg Once Daily for 1-2 weeks, increased to 2mg Once Daily, then increased if necessary to 4mg Once Daily. Maximum 16mg per day	
BETA BLOCKERS		
Atenolol	Usual dose 25-50mg Daily Higher doses rarely necessary	Compelling indication: symptomatic Coronary Heart Disease
Bisoprolol	Usual dose 5-10mg Daily (can start at low dose of 2.5mg daily and titrate according to response) Maximum 20mg per day	Compelling indication: symptomatic Coronary Heart Disease

*For all ACE Inhibitors and Angiotensin receptor blockers (ARBs): check Urea & Electrolytes (U&Es) one or two weeks after initiation or after every dose titration. A change in eGFR after initiation up to 15% is acceptable providing the change is not progressive.

References

1. Risk estimation and prevention of cardiovascular disease. SIGN guideline 149. June 2017. Accessed via: Risk estimation and the prevention of cardiovascular disease (sign.ac.uk)
2. ASSIGN Score. Prioritising prevention of cardiovascular disease. Accessed via: www.assign-score.com
3. QRISK®3-2018 risk calculator. Accessed via: www.qrisk.org
4. Hypertension in adults: diagnosis and management. NICE Guidelines. 28th August 2019. Last updated 21st November 2023. Accessed via: www.nice.org.uk/guidance/ng136

List of Abbreviations

ABPM	Ambulatory blood pressure monitoring	**ECG**	Electrocardiogram
ACR	Albumin/creatinine ratio	**eGFR**	Estimated glomerular filtration rate
AKI	Acute kidney injury	**HBPM**	Home blood pressure monitoring
BP	Blood pressure	**HbA1c**	Glycated haemoglobin
CKD	Chronic kidney disease	**MSSU**	Midstream sample urine
CVD	Cardiovascular disease	**OP Clinic**	Outpatient clinic
CV risk	Cardiovascular risk	**SBP**	Systolic blood pressure
DBP	Diastolic blood pressure	**TIA**	Transient ischaemic attack
DM	Diabetes Mellitus		