

Hypertension

Case Definition

Hypertension, or high blood pressure, is a common and modifiable risk factor for cardiovascular disease.

It is defined as an elevated blood pressure (BP) reading on two or more occasions. Generally, a value over 140/90mmHg is consistent with hypertension.

BP measurement tips

The BP Cuff must be the right size for the patient. This means a bladder circumference >80% and covering >40% of the upper arm. A cuff that is too small will give artificially high BP readings.

Initially measure both arms, use the arm with the higher reading for all subsequent measures.

Measure the BP in a quiet environment. The patient should be seated (legs not crossed) and relaxed several minutes before measurement. Patients ideally should refrain from caffeine and smoking for 2 hours prior to measurement.

Automated devices do not measure BP accurately in patients with an irregular pulse eg atrial fibrillation. If suspected, measure manually.

Patients with a BP greater than 180/110 are high risk for acute complications. These patients warrant immediate review with a local medical officer and/or input from the local physician team.

Screening

Screening for hypertension should be performed on all asymptomatic patients over the age of 18 years annually.

⚠ Any patients that record an initial BP over 140/90, three measurements should be performed, separated by 5 minutes of rest.

Assessment

If a patient is found to have an elevated blood pressure, the following assessment should be performed by a medical officer:

History

- Document cardiovascular risk factors
- Ask and assess comorbidities such as chronic kidney disease, proteinuria, sleep apnoea and diabetes
- Ask about caffeine, energy drink and salt intake
- Ask about alcohol and recreational drug use

Physical Exam

- Blood pressure: 3 measurements at rest
- Weight, height, waist circumference and BMI
- Cardiovascular examination (heart, carotids, peripheral pulses)
- Abdominal examination (looking for signs of abdominal aortic aneurysm)

Baseline Investigations

- ECG
- U&E, HbA1c, lipids (non fasting)
- Urine dipstick and urine ACR
- Consider 24 hour ambulatory BP monitoring in patients suspected to have white coat or masked hypertension, if available.

Calculate

CVD risk in eligible patients (ATSI >35yrs, non ATSI >45yrs)
www.cvdcheck.org.au*

*It is accepted that this calculator underestimates the cardiovascular risk in Aboriginal and Torres Strait Islander patients. Consider this the minimum risk for the patient and consider other risk factors not used in the calculator, such as family history and obesity.

⚠ Clinically high risk patients

The following patients are considered to be clinically HIGH RISK for cardiovascular disease, regardless of their CVD risk calculation:

- ATSI patients with diabetes
- Diabetes with microalbuminuria (urine ACR >2.5 25mg/mmol for males; >3.5-35mg/mmol for females)
- Moderate or severe chronic kidney disease:
 - macroalbuminuria (urine ACR >25mg/mmol for males; >35mg/mmol for females) OR
 - eGFR <45
- Familial hypercholesterolemia
- Systolic BP >180mmHg or diastolic BP >110mmHg
- Serum total cholesterol >7.5mmol/L
- ATSI adult >74yrs of age
- Management

LIFESTYLE ADVICE

⚠ A trial of lifestyle interventions alone for 2-3 months can be considered in patients in the low to moderate risk group where blood pressure is mildly elevated.

🔗 See *HEALTHY LIVING* protocol

- Encourage physical activity. Aim for at least 30 minutes of moderate intensity exercise (needing to breathe harder) on most days
- Recommend smoking cessation
- Target waist measurement <94cm for men and <80cm for women, with a BMI <25kg/m²
- Minimise salt intake by not adding salt and avoiding processed foods eg take away and foods in packets, boxes or cans
- No alcohol is best
- Offer advice and support regards to caffeine, energy drinks and amphetamine use

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Table 1 Decision to initiate treatment in patients with hypertension

Patient Category	Initial Management
Low Risk <10% CVD risk	Lifestyle advice if systolic BP 140-159mmHg BP 160/100mmHg or over offer pharmacotherapy
Medium Risk 10-15% CVD risk	Lifestyle advice Systolic BP 130-139mmHg OR Diastolic BP 85-89mmHg, review after 3 months to monitor BP over 140/90, offer pharmacotherapy
High Risk >15% CVD risk Including: Clinically high risk patients Patients with pre-existing ischaemic heart disease, stroke/TIA or peripheral vascular disease	Lifestyle advice Commence pharmacotherapy if not at target (see table 3) Consider statin therapy (see DYSLIPIDAEMIA protocol)

⚠️ Thiazide Use in the Kimberley

The Kimberley region is a hot environment, predisposing to dehydration. This can exacerbate any electrolyte disturbances created by thiazides and increase the risk of acute kidney injury.

Use with caution in patients with CKD, diabetes, elderly, gout, pseudogout, existing electrolyte disturbances and those at increased risk of dehydration eg manual labourers.

If commencing this medication start at a low dose and monitor carefully. Check U&Es at 4 weeks and 3 months at minimum.

PHARMACOLOGICAL MANAGEMENT

The decision to treat should take into account a patient's risk factors, comorbidities and degree of hypertension. A stepwise approach should be followed and medication choice should be tailored to the particular patient.

An example of stepwise management is shown below:

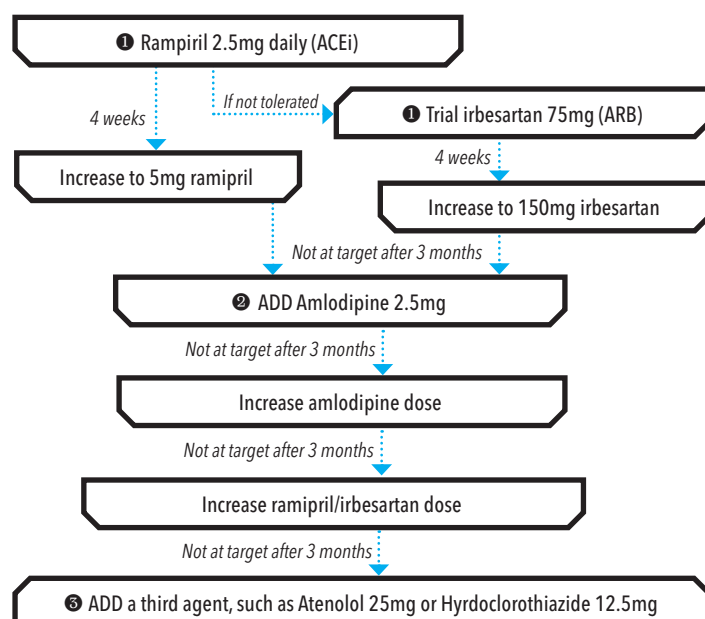


Table 2 Commonly used antihypertensives on Kimberley Standard Drug List (KSDL)

Antihypertensive	Practice Points	Some Adverse Effects
ACE inhibitors (ACEi) Ramipril 2.5-10mg daily Quinapril 5-40mg daily		Cough, hyperkalaemia, renal impairment (risk increased by NSAIDs or hypovolemia), angioedema (infrequent, sporadic)
Angiotensin Receptor Blockers (ARBs) Irbesartan 150-300mg daily	-Use with caution in patients with angioedema with ACEi	Hyperkalaemia (risk increased by renal impairment), renal impairment (risk increased by NSAIDs or hypovolemia).
Calcium Channel Blockers (CCB) Dihydropyridine Amlodipine 2.5-10mg daily	-Minimal effect on cardiac contractility and cardiac conduction -Do not treat CCB induced peripheral oedema with diuretics	Peripheral vasodilation (peripheral oedema, flushing, headache, dizziness), postural hypotension, tachycardia, palpitations
Beta Blockers Atenolol 25-100mg daily	-Atenolol not recommended as monotherapy -Stop slowly over >2weeks	Bradycardia, postural hypotension, worsening of heart failure (transient)
Thiazide Diuretics Hydrochlorothiazide (HCT) 12.5-50mg daily ⚠️ Use with caution in patients with CKD	-Effects on electrolytes, lipids and glucose are dose dependent, start low and increase slowly -Potassium supplements can be used to correct hypokalemia	Postural hypotension, dizziness, hypokalemia, hyponatremia, hyperuricaemia, hyperglycaemia

BLOOD PRESSURE TARGETS

Table 3 Target blood pressure for patients on pharmacotherapy

Patient Risk Category	Target (mmHg)
Low Risk	<140/90
Medium Risk	<140/90
High Risk Peripheral Artery Disease	<130/80, or SBP <120* <140/90 (lower target is not advised)

* A lower blood pressure target can be considered in high risk patients who tolerate a lower blood pressure (meaning an absence of hypotensive episodes, syncope, acute kidney injury and electrolyte abnormalities) and are amenable to close follow up to monitor symptoms, blood pressure and creatinine/electrolytes.

Hypertension

SPECIFIC PATIENT GROUPS

CKD/proteinuria

- Target BP in this group <130/80 (See CKD protocol)
- ACEi first line therapy
- Use thiazide diuretics with caution due to risk of AKI and hyperkalemia

Ischaemic Heart Disease

- ACEi and beta-blockers are advised for treatment for secondary prevention (see ISCHAEMIC HEART DISEASE protocol)
- Beta blockers OR calcium channel blockers are recommended for symptomatic patients with angina

Heart Failure

- ACEi and selected B-blockers (notably bisoprolol) are recommended (see HEART FAILURE protocol)

SECONDARY HYPERTENSION

Investigation for secondary hypertension is not required in all patients with hypertension. Investigation should be carried out with input from the local physician team. Clues further investigation is warranted includes:

- Severe or resistant hypertension (unable to reach target despite adequate doses of three antihypertensives)
- Acute rise in blood pressure
- Age <30yrs with no other risk factors for hypertension eg obesity
- Accelerated hypertension eg severe hypertension with signs of end organ damage such as acute kidney injury
- Onset prior to puberty

The most common causes of secondary hypertension include renovascular disease, primary kidney disease, primary aldosteronism and sleep apnoea syndrome. Less common causes include oral contraceptives, pheochromocytoma, cushings syndrome, coarctation of aorta, other endocrine disorders eg hypothyroidism and chemotherapeutic agents.

Follow Up

Blood pressure should be measured and recorded in patients with hypertension at every visit.

For those with lifestyle management only:

- Review at 3 months

For those on pharmacological therapy:

Until treatment target reached:

- 2-4 weekly clinical review: check BP, side effects and compliance
- Check U&E's 2 weeks after starting/increasing the dose of an ACEi, ARB OR 4 weeks after starting/increasing the dose of HCT
- Discuss lifestyle interventions at every visit

Once stable:

- Measure BP every visit
- Review every 3-6 months (repeat U&E's if on HCT)
- Ensure annual health check

Women of childbearing age

- Strongly encourage contraception. Combined oral contraceptives are contraindicated in patients with diagnosed hypertension and long acting reversible contraception (LARC) such as Implanon® and Mirena® are ideal
- If planning pregnancy seek advice from physician and/or obstetrician. This will involve medication review and may include cessation of ACEi, ARB, HCT and selective beta blockers. Methyldopa and labetalol are alternatives that are safe in pregnancy, however follow local advice
- Pregnant women who have pre-existing hypertension warrant early medical review before 10 weeks gestation. Aspirin 100mg daily is recommended to reduce risk of pre-eclampsia
- Pregnant women who have new onset hypertension should be assessed for pre-eclampsia and early specialist advice should be sought

Refer/Discuss

Physician:

- Poorly controlled hypertension, despite three antihypertensive agents
- Secondary hypertension is suspected
- Intolerance or contraindications to several medications
- Patients with several co-morbidities

Renal GP/Nephrologist:

- Poorly controlled hypertension in patients with CKD or proteinuria (*urine ACR >70mg/mmol or PCR >100mg/mmol*)

Obstetrician:

- Hypertension in pregnancy
- Pregnancy planning in women who have pre-existing hypertension