

HYPERTENSION (HT)

Screening

Check blood pressure (BP) **annually** in everyone 15 years and over. **TIP: the BP cuff must be the right size for the arm.**

A cuff which is too small (doesn't wrap around the arm easily) will result in artificially high BP readings, while a cuff which is too large may slip off.

SO:

- Have large BP cuffs available in all clinics – these will be suitable for most adults.
- Use a standard adult cuff for smaller arms.

Case Definition

BP > 140/90

- x 3 separate readings over at least 2 weeks.

N.B. If BP > 180/110, with retinal haemorrhages, exudates and / or papilloedema, this is Malignant Hypertension and requires urgent intervention (see 'Refer/Discuss').

Assign CVD Risk Category

Need to calculate probability of Cardiovascular event as **LOW, MODERATE, HIGH** or **VERY HIGH** for each patient to decide appropriate management plan:

STEP 1) ASSESS GRADE OF HYPERTENSION

	SYSTOLIC	and / or	DIASTOLIC
High normal	130 - 139 mmHg		80 - 90 mmHg
Grade 1	140 - 159 mmHg		90 - 99 mmHg
Grade 2	160 - 179 mmHg		100 - 109 mmHg
Grade 3	> 180 mmHg		> 110 mmHg

STEP 2) RECORD NUMBER OF OTHER RISK FACTORS

- Male > 55 years or female > 65 years.
- Smoking.
- Dyslipidaemia.
- History of premature heart disease in 1st degree relative i.e. men < 55 yrs, women < 65 yrs.
- Obesity i.e. waist circumference > 100cm.
- Aboriginal or TSI.
- Unsafe alcohol consumption.

STEP 3) AUTOMATICALLY ASSIGN VERY HIGH CVD RISK CATEGORY IF ANY OF THE FOLLOWING ARE PRESENT

- BP > 180/110 (Grade 3 Hypertension).
- Isolated systolic hypertension with widened pulse pressure (SBP > 160 and DBP < 70).
- Patients aged 75 years or older.
- Diabetes Mellitus.
- Heart disease including MI, angina, CCF or LVH on ECG.
- Chronic kidney disease / proteinuria.
- Cerebrovascular/ Carotid artery disease.
- Peripheral vascular disease.
- Advanced retinopathy i.e. haemorrhages or exudates, papilloedema.
- Obstructive sleep apnoea.

STEP 4) FOR ALL OTHERS, USE THE TABLE BELOW TO CALCULATE CVD RISK CATEGORY

Number of Other Risk Factors → BP ↓	None	1 - 2	≥ 3
Normal	low	moderate	high
High normal	low	moderate	very high
Grade 1	moderate	high	very high
Grade 2	high	high	very high
Grade 3	very high	very high	very high

Principles of Management

- Everyone with hypertension needs **lifestyle review** and appropriate lifestyle change advice (see **HEALTHY LIVING**).
- Encourage smoking cessation.
- Identify and address **other CV risk factors**.
- Encourage alcohol intake < 2 standard drinks (20g) / day.
- Consider aspirin 100mg daily (see **CAD** Protocol).

THERAPEUTIC GOALS:

Isolated HT BP < 130/80.

HT with DM, CAD or kidney disease BP < 125/80.

Aim to achieve control with one agent (though note that > 50% people will need two or more agents).

HYPERTENSION (HT)

Principles of Management

BASELINE ASSESSMENT:

To identify common causes of secondary HT, assess end organ damage and recognize other CV risk factors.

- BMI and waist circumference.
- ECG.
- CV examination (heart, carotids, peripheral pulses).
- Fundoscopy.
- Electrolytes, creatinine, eGFR, lipids, urine dipstick and ACR.
- **Screen for diabetes if not already known to be diabetic.**
- If BP target not met on maximum doses of 2 agents, check morning cortisol, ESR, urinary catecholamines, consider renal artery Doppler ultrasound and consider the possibility of sleep apnoea.

Therapeutic Protocols

Decide **when to start drug therapy** according to **CVD RISK** category:

LOW - repeat BP screen 1 year.

MODERATE - address risk factors (see relevant protocol/s), if **BP > 140/90** watch BP for 6 months, and treat if remains > 140/90.

HIGH - address risk factors (see relevant protocol/s), if **BP > 140/90** watch BP for 3 months, and treat if remains > 140/90.

VERY HIGH - start medication immediately.

MEDICATIONS

1. If High or Very High CVD Risk Category and no contraindications, start aspirin 100mg daily.

2. Antihypertensives: Add medications sequentially until target BP achieved.

Before increasing medication carefully review adherence to existing therapy.

Trial each regimen for 4 weeks minimum before changing: a stable response to a particular dose takes 3 - 4 weeks.

FIRST **ramipril** 2.5mg daily doubling dose every 4 weeks to maximum 10mg daily.

THEN ADD **amlodipine** 5mg daily doubling after 4 weeks to maximum 10mg daily. If ankle oedema develops, reduce dose.

THEN ADD **atenolol** 50mg daily and increase to 100mg daily.

THEN ADD **irbesartan** 75mg daily, doubling dose every 4 weeks to maximum 300mg daily.

NOTE: Avoid thiazide diuretics, including combination preparations, as there is high risk and incidence of diabetes in the region.

EXCEPTIONS

Diabetes / CKD / Proteinuria - use **ramipril** (as above), then **irbesartan** 75mg daily doubling dose every 2 weeks to maximum 300mg daily. Avoid thiazide diuretics.

CAD - early use of **atenolol** 50 - 100mg daily.

Stable HF (LVEF < 35%) - Replace atenolol with **carvedilol** 6.25mg - 25mg bd.

Follow-up

Until treatment target reached:

- Check BP, side effects and compliance every 2 weeks.
- Check creatinine and electrolytes 2 weeks after starting or increasing dose of ramipril or irbesartan.

Once stable:

- BP every 3 months.
- Annually check ACR, eGFR, creatinine, electrolytes, glucose and lipids.
- Annually review lifestyle factors (see [HEALTHY LIVING Protocol](#)).
- ECG every 2 years.

Women of Child Bearing Age

- Encourage presentation **early in pregnancy**.
- If **pregnant**, or planning pregnancy, stop all antihypertensive drugs. Commence **methyldopa** 250mg bd and discuss with Obstetrician.
- If **breastfeeding** and requiring ACE-i use **enalapril** 5mg daily doubling every 2 weeks to maximum dose 40mg daily.

Refer / Discuss

TO PHYSICIAN:

- Hypertension **uncontrolled** on 4 agents.
- Suspected secondary hypertension.
- Malignant Hypertension. SBP > 220 and/or DBP > 130.
- **Intolerance or contraindications** to several medications.