



**BOX 1 : cardiovascular Risk factors**

- Age (men >55 years; women >65 years), smoking, obesity, dyslipidemia, diabetes, prediabetes, family history of premature CVD(men aged <55 years; women aged <65 years)
- Target Organ damage: LVH, Atherosclerosis, CKD, (CKD stage1-3, ACR 30-300mg/g),,
- Associated clinical conditions: CVA, IHD, HF, (CKD4-5 or ACR>300mg/g), PVD, Advanced hypertensive retinopathy.

**BOX 2 : Key Elements of Office Blood Pressure Assessment**

- ❖ Avoid caffeine, exercise, smoking at least 30 minutes before the visit
- ❖ Relax, feet on floor with back supported for at least five minutes
- ❖ Empty bladder
- ❖ Refrain from talking during the rest period and measurement
- ❖ Remove all clothing covering the area where the cuff will be placed
- ❖ Use the correct cuff size and Support the patient's arm Box2
- ❖ Position the middle of the cuff at the level of the heart
- ❖ Repeated measurements by one to two minutes
- ❖ Average of at least two measurements

**BOX3 : cuff sizes**

Arm Circumference	Usual Cuff Size
22–26 cm	Small adult
27–34 cm	Adult
35–44 cm	Large adult
45–52 cm	Adult thigh

**BOX 4**  
**when to refer to secondary care**

- ❖ Resistant HTN
- ❖ Suspicion of secondary HTN
- ❖ Sudden onset of HTN
- ❖ HTN diagnosed at young age (30 years old)
- ❖ Worsening of HTN
- ❖ Malignant HTN

References and further details, refer to SHMS Clinical practice Guidelines <https://bit.ly/SHMScpg18>.

**“ Home Blood Pressure measurement, using validated device is highly Recommended”**

Comprehensive lifestyle changes Box4

## Box 5 : common blood pressure medications pharmacological intervention

### Thiazide diuretics

**Common Agents:** Hydrochlorothiazide, bendroflumethiazide, chlorthalidone

**Dose :** Hydrochlorothiazide- 12.5-25mg daily, indapamide 1.5mg

**Monitoring :** check electrolytes regularly

**Contraindications:** Hypercalcemia, Hyponatremia, symptomatic hyperuricemia

**Side Effects:** Constipation, Diarrhea, Dizziness, Nausea, Postural Hypotension, electrolyte imbalance, urticarial

**Cautions:** Hypokalemia, Elderly, Hepatic Failure

**Hepatic Impairment:** Avoid if severe

**Renal Impairment:** Avoid if eGFR is <30.

**Pregnancy:** Contraindicated

**Sick day rule:** stop if vomiting and diarrhea until no risk of dehydration

### Centrally acting antihypertensive

**Common Agents:** clonidine, methyldopa

**Dose :** Clonidine 50-100 Micrograms 3 times a day , increase every second or third day . Maximum dose 1.2 mg daily. methyldopa 250mg three times a day increase to maximum of 3 g per day every 2 -3 days.

**Contraindications :** 2<sup>nd</sup> or 3<sup>rd</sup> degree heart block , sick sinus syndrome.

**Caution:** CVA, constipation, heart failure, depression, Raynaud's syndrome, PVD.

**Side Effects:** **clonidine:** depression, GI upset, dry mouth , fatigue, headache, sedation, sexual disorders, sleep disorders, postural hypotension. **Methyldopa:** amenorrhea, angioedema, bone marrow failure, breast enlargement, cognitive impairment, facial paralysis, hepatic disorders, lupus- like syndrome, parkinsonism, psychosis.

**Treatment cessation:** clonidine must be withdrawn gradually to avoid severe rebound hypertension.

**Monitoring:** Methyldopa – CBS & LFT before treatment and at intervals during first 6-12 weeks of if unexplained fever occurs.

**Renal Impairment:** can be used, start with smaller dose.

**Pregnancy:** use methyldopa

### Calcium channel blockers

**Common Agents:** Amlodipine, nifedipine, felodipine

**Dose :** Amlodipine- 5-10mg daily.

**Contraindications:** Significant Aortic Stenosis.

Nifedipine avoid within one month of MI

**Caution:** Avoid Nifedipine in elderly and longstanding Diabetes (can cause reflex tachycardia)

**Side Effects:** Headache, peripheral edema, dizziness, flushing, nausea and vomiting and vomiting, tachycardia, rashes, palpitations, rarely gingival hyperplasia

**Hepatic Impairment:** start at lower dose.

**Renal Impairment:** can be used.

**Pregnancy:** Avoid in general , Nifedipine can be used.

**Breast Feeding:** Avoid. Nifedipine can be used.

### ACE inhibitors/ARBs

**Common Agents:** ACEi Ramipril, Lisinopril, Enalapril, ARB: losartan, valsartan, perindopril, Irbersartan, Telmisartan

**Dose :** losartan-50-100mg daily, Enalapril-10-20mg daily

**Monitoring :** check electrolytes regularly

**Contraindications:** angioedema, bilateral renal artery stenosis, allergic or adverse reaction to the drug.

**Side Effects:** Cough, hyperkalemia Dizziness, Nausea, Hypotension, electrolyte imbalance, urticarial rashes, rarely pancreatitis

**Cautions:** Hyperkalemia, eGfr < 30mg/dl, symptomatic hypotension

**Renal Impairment:** Avoid if eGFR is <30.

**Pregnancy:** Contraindicated

**Sick day rule:** if risk of dehydration and AKI then stop them and restart once stable.

### Aldosterone Antagonist

**Common Agents:** spironolactone

**Dose :** 25mg-100mg daily

**Contraindications :** hyperkalemia, renal failure

**Side Effects:** Diarrhea, stomach cramps, Gynecomastia, headaches, rashes irregular hair growth, impotence, low platelets, liver dysfunction

**Hepatic impairment:** contraindicated

**Renal Impairment:** contraindicated

**Pregnancy:** Contraindicated

### Alpha-adrenoceptor blockers

**Common Agents:** doxazosin , prazosin

**Dose :** 1 mg once daily for 1 week then increase to 2 mg up to 4 mg once daily.

**Contraindications :** history of micturition syncope, postural hypotension.

**Cautions:** postural hypotension with initial dose, cataract surgery ( risk of floppy iris syndrome)

**Side Effects:** arrhythmias, chest pain, cough, cystitis, dizziness, dyspnea, GI discomfort, headache, flu like illness, muscle complaint, palpitations, vertigo

**Hepatic impairment:** avoid in severe impairment

**Renal Impairment:** can be used

### Beta blockers

**Common Agents:** Atenolol, bisoprolol, carvedilol.

**Dose :** Bisoprolol 5-10mg daily, Atenolol 25-100mg daily

**Contraindications :** Severe Asthma and COPD.

**Caution:** Peripheral vascular disease

**Side Effects:** Diarrhea, stomach cramps, blurring of vision, headaches, insomnia, hair loss, dizziness.

**Renal Impairment:** can be used.

**Pregnancy:** Contraindicated except labetalol.

### Box6: Life style modifications:

Intervention	Effect on BP
Weight loss/ Healthy diet ,alcohol restriction	1 mm Hg for every 1-kg reduction in body weight
Low sodium intake (<1500 mg/d)	-5/6 mm Hg
More potassium (3500–5000 mg/d)	-4/5 mm Hg
Physical activity ( 150 min/week of moderate to high intensity ) (Avoid if BP very High)	-5/8 mm Hg

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