



## 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

"Home Blood Pressure measurement, using validated device is highly Recommended"

## 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/SHMScp18>.

## 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 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, Enalarpil-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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