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Medical Guidelines

Hypertension Clinical Practice Guidelines (ISH, 2020)

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This is a quick summary of the guidelines slightly amended for local use. The detailed article which was published simultaneously in the 'Journal of Hypertension' and "Circulation' in June 2020 and is available free online. Readers are strongly urged to read the complete article for better understanding. A link is given at the end of this document.

These guidelines apply to adults aged 18 or above. ISH has given two types of goals; Optimal for best outcome according to the current evidence.

Essential which must be achieved to reduced morbidity and mortality to an acceptable level even in resource deprived countries like ours.

As we have mixed population, consisting of rich and poor, and a vast majority of patients must pay from their own pockets as they do not have any insurance, we need to tailor these recommendations according to the individual patient. We should aim for 'optimal care' for everyone but should feel contended if we can achieve 'essential' due to limited resources.

Definitions: (based on blood pressured measured in the clinic or hospital by a health care professional)

Normal BP: <130 and <85 mmHg (both criteria need to be met)

High-normal: 130-139 and/or 85-89

Grade 1 hypertension: 140-159 and/or 90-99 mmHg

Grade 2 hypertension: ≥160 and/or ≥100

Note: If there is disparity between systolic BP and diastolic BP, the higher value will determine the grade of hypertension.

Home Blood Pressure Monitoring (HBPM): ≥135 and/or ≥85 is also to be considered hypertension.

Ambulatory Blood Pressure Monitoring (ABPM) values are omitted here as that is not widely available in our country.

Blood Pressure Measurement

Blood pressure should be measured after patient has rested for 3-5 minutes. A mercury, aneroid or digital BP apparatus are all acceptable provided they are properly calibrated and are in good condition. BP should be measured in both arms at the first evaluation visit. In case of consistent disparity between the arms, the one with higher reading should be considered for the purpose of categorizing the patient. The same arm should be used for future reference. If coarctation of aorta is suspected, BP measurement in lower limb with bigger cuff is essential.

Laboratory evaluation and imaging

Whereas diagnosis of hypertension is made simply on careful measurement of BP, most patients should undergo following investigations depending upon the facilities available. All these investigations are not necessarily to be completed before initiating the treatment. The objective of these investigations is!

To determine if hypertension is secondary to another condition (only 5-10%)

To determine if there is already some hypertension mediated organ damage (HMOD). Presence of such a condition will confirm that hypertension actually exists and has been there for some time. Treatment and follow-up of these patients should be on a relatively faster pace and should target these HOMDs also.

To determine the presence of another co-existing condition which may affect the choice of antihypertensive agents.

Although above investigations may be very helpful for 'optimal' control but in many situations in our country, it may be appropriate to start medication with limited or even without these tests to provide 'essential' care.

Laboratory, electrocardiography (ECG), and imaging

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Laboratory, electrocardiography (ECG), and imaging

Here is the list of investigation and their rationale. Some treatment can be started before completing these investigations.

Serum creatinine and eGFR (to rule out kid- ney disease as a cause or as effect of hypertension mediated organ damage-HMOD).

Serum electrolytes (to rule out secondary hypertension such as primary hyperald-osteronism).

Fasting blood sugar (the choice of antihy-pertensive agent and target goal is different in diabetics).

Lipid profile (to determine the presence of dyslipidaemia which can undermine the benefits of antihypertensive therapy).

ECG (to rule out left ventricular hypertrophy that indicates HMOD and is considered a risk factor for cardiovascular disease independent of hypertension).

Urinalysis (to rule out presence of proteinuria which indicates glomerular disease)

Abdominal ultrasonography (to determine renal parenchymal disease, kidney size disparity or adrenal mass)

Limited echocardiography (to rule out left ventricular hypertrophy or diastolic dysfunction, both indicate HMOD).· Other tests as per need.

Treatment

For all patients diagnosed with hypertension, including the ones with upper normal blood pressure, lifestyle modification should be started immediately. BP goal achieved through lifestyle modifications is not only acceptable but is actually superior. Patients should be counselled about the importance of continuing these habits to maintain their benefits. In reality, most such patients will ultimately need to start pharmacotherapy. The details of lifestyle modifications are given below.

Lifestyle modifications for control of hypertension

Salt: Salt intake must be reduced to minimum compatible with good quality of life. It is neither possible nor necessary to eliminate salt from one's diet. It may be a good idea that entire family cuts down their salt intake, not only as a moral support but also to prevent hypertension. It is also possible to reduce the salt intake by reducing the portion size.

Food: Total amount of food must be reduced especially the one coming from animal source. It will also reduce the intake of saturated fats which are harmful. Vegetable and fruits should constitute the major portion of one's food as it is rich in potassium and calcium, both have favourable effect on blood pressure.

Exercise: Regular exercise has modest beneficial action on BP and also contributes to weight loss. Even 5% weight loss can have significant blood pressure lowering effect. Minimum 150 minutes of weekly aerobic exercise will have meaningful effect on BP.

Smoking: Smoking has undoubted harmful effects on cardiovascular health and can contribute to the same complications that are caused by uncontrolled hypertension. Smoking may also cause some rise in BP. Patients must be encouraged to quit all types of smoking. Some individuals might need behavioural therapy to achieve this goal.

Individualized Treatment Plans

Grade-1 hypertension (140-159/90-99 mmHg)

Start lifestyle interventions (smoking cessation, exercise, weight loss, salt and alcohol reduction, healthy diet).

Initiate pharmacotherapy in those with persistent high BP after 3-6 months of lifestyle intervention.
Initiate pharmacotherapy straightaway in high-risk patients (cardiovascular disease,
chronic kidney disease, diabetes, or organ damage).

Grade-2 hypertension (≥160/100 mmHg)
Immediately initiate pharmacotherapy along with risk patients (cardiovascular disease, 1234567890-hronic kidney disease, diabetes, or organ damage)
Grade-2 hypertension (≥160/100 mmHg)
Immediately initiate pharmacotherapy along with lifestyle interventions.

BP control targets

Aim for BP control within 3 months.
Aim for at least a 20/10 mmHg BP reduction, ideally to <140/90 mmHg.
In individuals <65 years, target BP to <130/80 mmHg if tolerated.
In individuals ≥65 years, target BP to <140/90 mmHg if tolerated; (Lowering the BP <120/70 mmHg may be harmful in patients with co-existing coronary artery disease).
Individualizing target BPs may be considered in those who are frail, dependent, and unlikely to tolerate drug therapy.

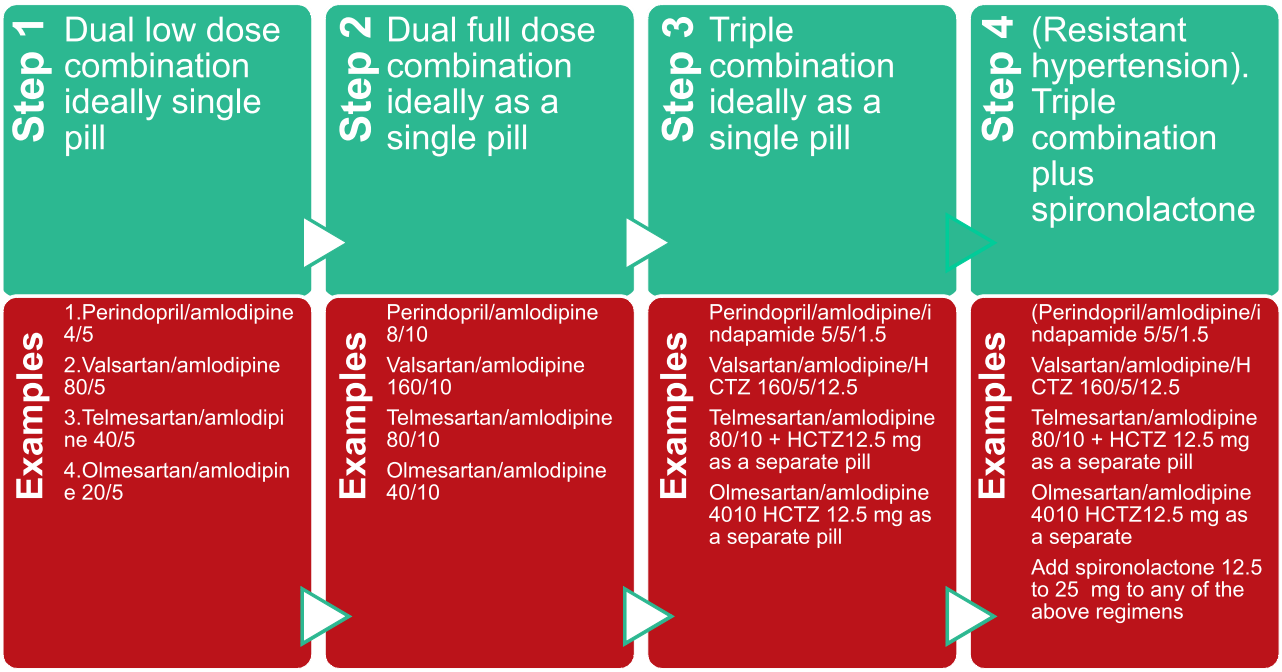
Pharmacotherapy algorithm ***(See Fig-1)***.
Consider monotherapy in low-risk grade-1 hypertension and elderly (>80 years) or frail patients. Most others will require 2 or three drugs to control their BP. A simplified regimen with once-daily dosing and single pill combinations is ideal.

Step 1: Use a dual low-dose drug combination (angiotensin-converting enzyme inhibitor or angiotensin-receptor blocker + amlodipine). Please note that angiotensin-converting enzyme inhibitors and angiotensin-receptor blockers are equally effective but later have better tolerability.

Step 2: Increase the regimen to the dual full-dose combination.

Step 3 (triple combination): Add a thiazide-like diuretic. Indapamide is preferred as it is metabolically neutral. Out of the following two, chlorthalidone is preferred over hydrochl-orothiazide but in Pakistan most fixed drug combinations contain later. The former is available only as fixed drug combination with atenolol.

Step 4 Resistant hypertension. Rule out adherence problem before labeling somebody as



1. Consider monotherapy in low risk grade 1 hypertension or in very old (>80) or frail patients
2. Consider amlodipine and hydrochlorothiazide combination in post- stroke patients
3. Caution with HCTZ and or spironolactone when added to RAAS blocker especially in patients with chronic kidney disease

a case of resistant hypertension. Triple combination plus spironolactone.Beta blockers are generally not considered first line antihypertensive agents but they may be useful as adjunct therapy in compelling indications such as ischaemic heart disease, heart failure or migraine. Beta blockers are quite popular in Pakistan in view of their low cost.

Many other agents that are not included in this algorithm, like amiloride, doxazosin, eplerenone, clonidine, hydralazine or methyldopa may be used when considered appropriate by the physician. Note: Consider monotherapy in low-risk grade 1 hypertension or in very old (>80) or frail patients.

Consider amlodipine and hydrochlorothiazide combination in post-stroke patients.

Caution with HCTZ and or spironolactone when added to RAAS blocker especially in patients with chronic kidney disease.

Abbreviations: HMOD: hypertension mediated organ damage; HCTZ hydrochlorothiazide; RAAS: Renin angiotensin aldosterone system; eGFR: estimated glomerular filtration rate; HBPM: home blood pressure monitoring; ABPM: ambulatory blood pressure monitoring

For detailed information, please visit www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.120.15026