

CURRENT CONCEPTS IN THE MANAGEMENT OF HYPERTENSION

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In the management of hypertension, the following points need to be considered:

1. Evaluation
 - (a) Criteria
 - (b) Objectives
2. Treatment
 - (a) Selection of patients
 - (b) Objectives
 - (c) Treatment programme
 - (d) Choice of drugs
 - (e) Follow-up

This discussion deals only with the outpatient management of hypertension, and treatment of hypertensive emergencies is not considered here.

EVALUATION

(a) Criteria

The most important criterion in deciding whether a patient should be evaluated for hypertension is of course the blood pressure level. While recognising that all definitions of hypertension are arbitrary, such criteria are obviously necessary for clinical decisions. The resting supine or sitting BP is used, but the standing BP should also be recorded, particularly when on treatment, to detect postural drops in pressure. It is not necessary, as was at one time recommended, to lie the patient down for extended periods of time or to sedate him, for "casual" readings are probably nearly as significant as so-called "basal" readings. Recent exertion or emotional stress should of course be excluded.

The other essential criterion is age, since for the same elevated blood pressure level, the younger the patient, the greater is the average reduction in life expectancy.

Irrespective of age, all patients with a diastolic BP above 120 mm Hg require prompt evaluation and treatment. Below this level, BP readings above 160/95 should be confirmed within a month.

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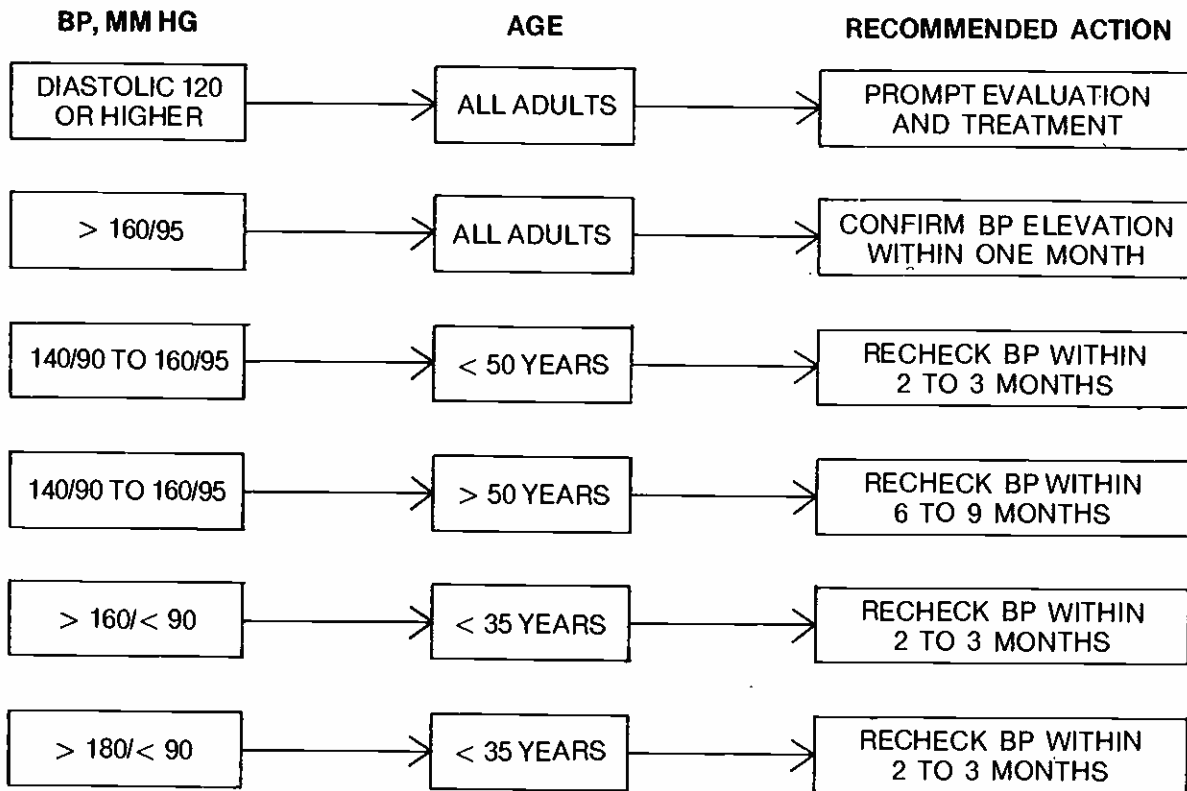


Fig. 1 Criteria for Evaluation *

* Modified from Recommendations of The Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, USA, 1977¹

For BP readings between 140/90 to 160/95, age needs to be considered. Individuals below 50 should be rechecked within 2 to 3 months, and those above 50 in 6 to 9 months.

All individuals with BP readings below 140/90 need only be checked annually. An elevated systolic BP with a diastolic BP below 90 may be a problem. Although epidemiological data indicate that the systolic BP is at least as important as the diastolic BP, as a risk factor for atherosclerosis, the benefits of treatment of "isolated" systolic hypertension are less clear. Nevertheless, a systolic BP above 160 in an individual below 35, and above 180 in older persons, should also be rechecked in 3 months.

(b) Objectives

The objectives of evaluation are to

- (a) Determine severity of hypertension
- (b) Assess "target organ" damage
- (c) Determine whether there is an underlying cause
- (d) Look for factors which may improve treatment
- (e) Look for other atherosclerotic risk factors.

The evaluation should include a detailed history of the hypertension and its previous treatment, adequate physical examination, and a "routine" laboratory work-up which includes blood counts, urinalysis,

serum urea or creatinine, electrolytes, cholesterol and uric acid, ECG and plain X-rays of the chest and abdomen.

The tendency to extensive and costly laboratory investigation should be resisted, as many studies have demonstrated that specific causes of hypertension are rare, and more than 90% of patients have essential hypertension.

The more complex diagnostic procedures should be carried out only in subjects

- (a) in whom the clinical data and routine laboratory tests suggest a specific cause of hypertension e.g. renovascular disease, Conn's syndrome, phaeochromocytoma
- (b) who are younger than 30 years of age, where secondary hypertension is commoner
- (c) in whom control of blood pressure is difficult

TREATMENT

(a) Selection of Patients

Although the systolic is prognostically as important as the diastolic BP, decisions on therapy are best based on the diastolic BP, as using both would complicate recommendations, and both are elevated in most instances anyway.

All patients with a diastolic BP above 120 require

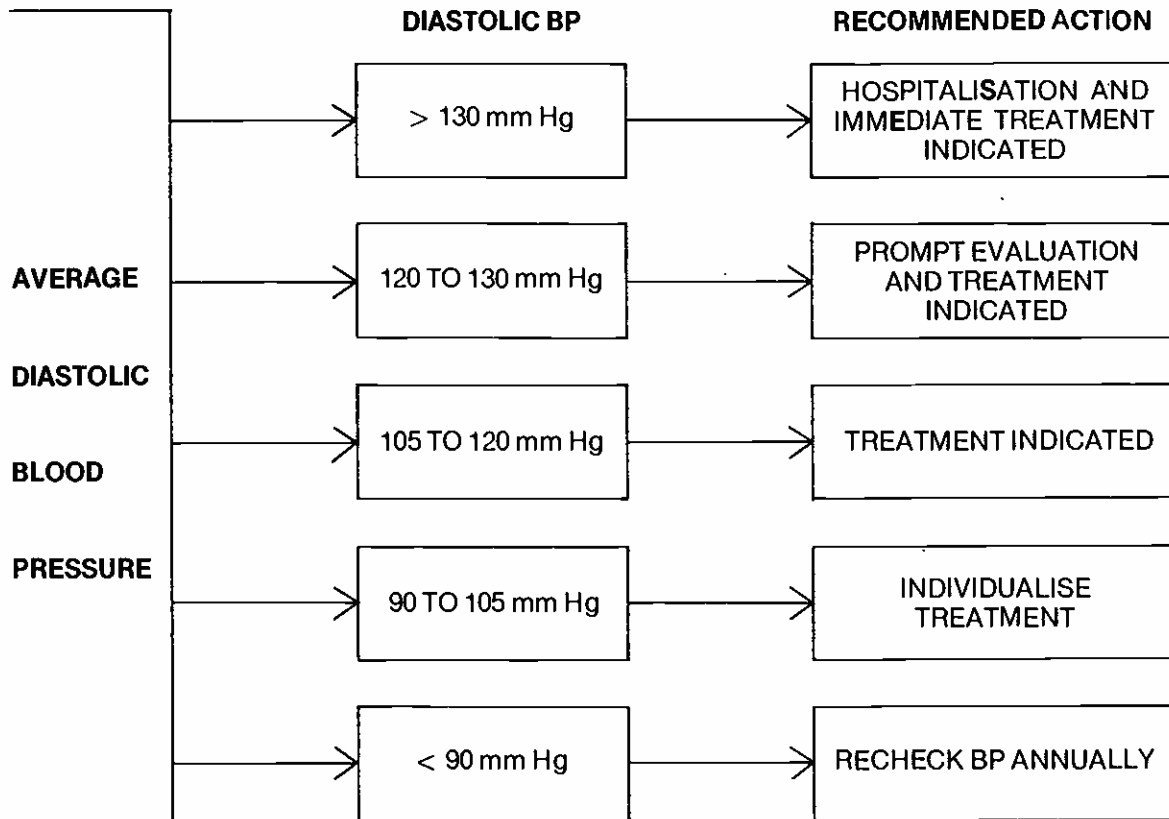


Fig. 2 Criteria for Treatment *

* Modified from Recommendations of The Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, USA, 1977

prompt evaluation and treatment, while those with readings above 130 should be treated in hospital.

There is general agreement that patients with diastolic BP's above 105 benefit from, and should receive treatment.

Between 90 and 105, the benefits of treatment are less well established. Other factors which should then be considered and favour treatment include:

- Age (< 50 years)
- Systolic BP level (> 160)
- Presence of target organ damage
- Male sex, since the prognosis in untreated hypertension in males is worse
- Presence of other cardiovascular risk factors e.g. hypercholesterolaemia, cigarette smoking, diabetes mellitus.
- Strong family history of hypertension and other atherosclerotic manifestations.

For pregnant women a BP above 140/85 should also be treated as the risks of pre-eclamptic toxemia are high even with mild BP elevations.

(b) Objectives

The primary objectives is to reduce the BP to normal, or as near normal as possible, using an arbitrary crite-

riion of 90 diastolic. The systolic BP should in practice, fall with the diastolic BP, but this is not always so, and it should be reduced to less than 160 in those under 50 and less than 180 in older patients.

A secondary objective is to slow, stop or even reverse the progression of vascular disease and organ damage. Success will depend on the stage of disease and the effectiveness of BP control.

(c) Treatment Programme

The therapeutic programme should include not only drug treatment but also weight reduction for obesity, advice on salt intake and physical activity, discouragement of cigarette smoking and treatment of other risk factors and patients education.

There is no doubt that severe salt restriction will reduce BP in most patients, but such diets are highly unpalatable so that patient compliance is very low. In fact, sodium restriction with diuretic therapy may aggravate potassium loss. Nevertheless, excessive salt intake should be discouraged, especially in those with cardiomegaly or renal impairment.

Strenuous exertion should be avoided with severe hypertension, but with adequate BP control, there is little reason to discourage exercise which may aid weight control.

(d) Choice of Drugs

There is a wide variety of antihypertensive agents, but the ones in common clinical use currently may be classified into:

1. Diuretics
 - (a) Thiazide type e.g. chlorothiazide, chlorthalidone
 - (b) "Loop" diuretics — frusemide, ethacrynic acid
 - (c) Potassium-sparing agents — spironolactone, amiloride, triamterene
2. Sympathetic Inhibitors
 - (a) Central action — clonidine
 - (b) Combined central and peripheral (?) action — methyl dopa
 - (c) Ganglion blocking agents — trimetaphan, pentolinium, pempidine
 - (d) Blockade of neuroeffector transmission — guanethidine, bethanidine, debrisoquine, reserpine
 - (e) Adrenoreceptor blocking agents
 - i &-blockade — phentolamine, phenoxybenzamine
 - ii B-blockade e.g. propranolol
 - iii combined & and B-blockade — labetalol
3. Direct Acting Vasodilators
 - (a) Arterial — hydralazine, diazoxide, minoxidil, prazosin (also &-blockade)
 - (b) Arterial and venous — Sodium Nitroprusside
4. Angiotensin II Analogues and Converting Enzyme Inhibitors — "Saralasin"; Compound SQ20881

The fourth group are essentially experimental, and used in elucidating the influence of the renin-angiotensin system.

Ideally the choice of drugs should be related to the mechanism or aetiology of hypertension. In practice, since the pathogenesis of essential hypertension remains uncertain, drug therapy is empirical, and the choice of drugs is influenced largely by efficacy, safety and cost.

Drug therapy should be individualised in all patients, but one useful principle is to use single drug or "mono-therapy" in mild hypertension, and drug combinations in more severe hypertension, to minimise side effects and sometimes take advantage of complementary actions.

A currently popular regimen is the "Stepped-Care Approach", which calls for initiating therapy with one drug, increasing its dose to an optimum level, then

adding other drugs, one after another, as needed.

In Step 1, a thiazide-type diuretic is usually recommended. Potassium supplements are usually not necessary, unless the serum potassium is consistently below 3.0 mmol/L, or symptoms of hypokalaemia are present, or digitalis is concurrently prescribed. Alternatively a potassium-sparing diuretic may be substituted for or combined with a thiazide, but should not be used with potassium supplements.

Frusemide may be preferred if azotaemia is present.

In Step 2, one of the several alternative drugs may be added, viz. a beta-adrenergic blocker, e.g. propranolol, methyl dopa, clonidine or reserpine. Beta blocking agents have gained wide popularity because of a number of advantages, including effectiveness in controlling both supine and standing BP, absence of tolerance, high efficacy in combination with vasodilators, relatively few side effects and an apparent "Cardioprotective effect". The latter refers to an ability to reduce coronary morbidity and mortality. There are even advocates of the use of beta blockers in Step 1, since mild or moderate hypertension will in fact often respond well to a beta blocker alone.

In Step 3, a vasodilator viz. hydralazine, prazosin or minoxidil, is added. A combination of a vasodilator with a beta blocker is especially appropriate since the reflex tachycardia which would otherwise limit the usefulness of the former, is prevented by the latter.

If the first 3 steps are still not effective, guanethidine, or related drugs like debrisoquine or bethanidine, may be added in Step 4.

Before additional drugs are prescribed, possible reasons for treatment failure should be reviewed. These include poor patient adherence, excessive sodium intake, "pseudotolerance" due to volume expansion, side-effects, secondary forms of hypertension and the use of competing drugs (e.g. cold remedies containing adrenergic stimulants). The physician may need to ask specifically for side-effects. Poor patient compliance may, for example, be due to sexual dysfunction in male patients on guanethidine.

At each step various drug combinations and dosage levels may be tried, for optimum effect and minimum side-effects, before another drug is added.

The presence of complications may influence the choice of drugs. Thus, with heart failure beta blockers are contraindicated, while drugs prone to cause orthostatic hypotension like guanethidine should be avoided in cerebrovascular insufficiency

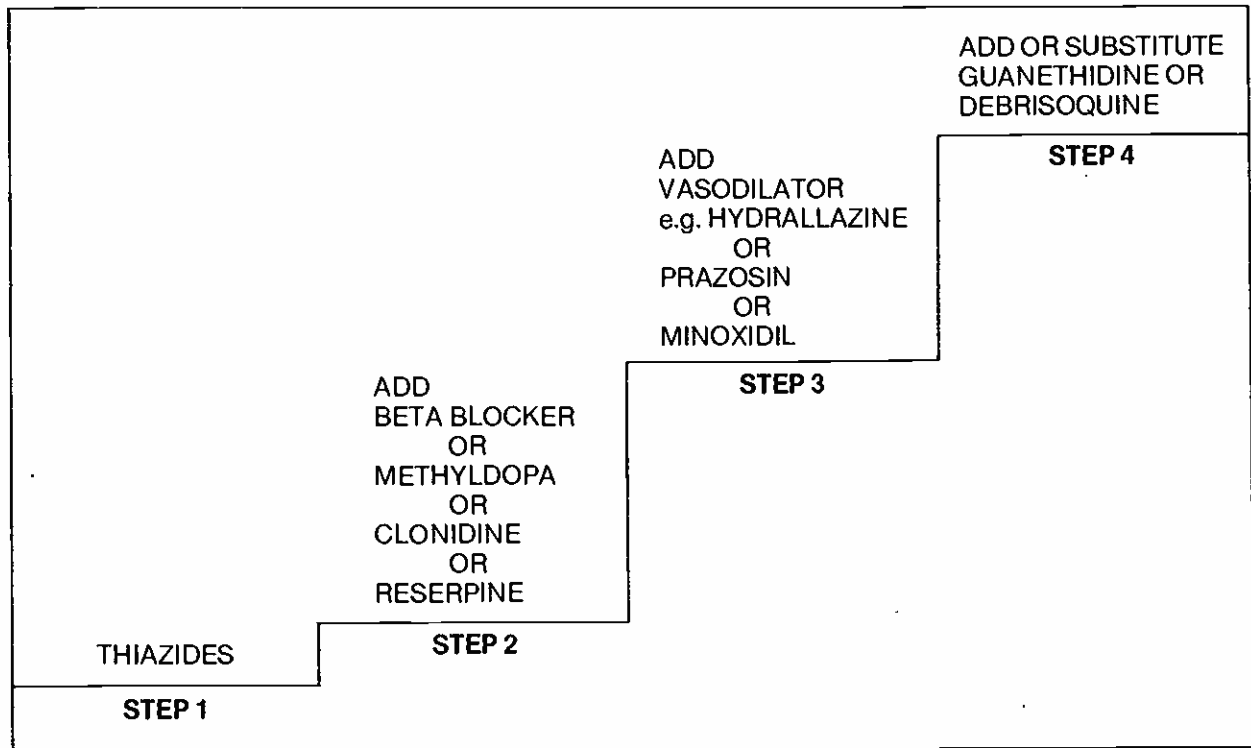


Fig. 3 Stepped-care Approach *

* Modified from Recommendations of The Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, USA, 1977

and azotaemia. Vasodilators may aggravate angina, while beta blockers would be indicated.

(e) Follow-Up

One of the major problems of the long-term treatment of hypertension is poor patient compliance. There are many reasons for this, but failure to educate the patient probably underlies most of them. Among the points in patient education, the physician should emphasize the major role of hypertension as an atherosclerotic risk factor, the "silent" nature of

hypertension, the "life-time" condition" of hypertension, the importance of adherence to therapy and the significance of other risk factors.

Success in the long-term management hypertension ultimately depends on a lasting confident relationship between patient and doctor.

REFERENCES

1. Moser M et al : Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. A Cooperative Study. Journal of Amer. Med. Assoc. 237: 255, 1977.