

Management guidelines in essential hypertension: report of the second working party of the British Hypertension Society

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Several important new issues have arisen in the management of patients with hypertension. A working party of the British Hypertension Society has therefore reviewed available intervention studies on anti-hypertensive treatment and made recommendations on blood pressure thresholds for intervention, on non-pharmacological and pharmacological treatments, and on treatment goals. This report also provides guidelines on blood pressure measurement, essential investigations, referrals for specialist advice, follow up, and stopping treatment.

In 1989 a British Hypertension Society working party produced recommendations on the drug treatment of hypertension¹ based on an analysis of the available intervention trials. In several aspects different recommendations have been made by the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure in the United States² and in the joint guidelines of the World Health Organisation and International Society of Hypertension.³ All these groups are revising their advice and the British Hypertension Society established a second working party to consider issues relating to the current management of hypertension—particularly those arising from recent trials in elderly hypertensive patients⁴⁻⁶—and the emerging evidence that drug treatment may reduce coronary events in addition to preventing strokes.

There are two main issues on which lack of evidence leads to uncertainty. These are the blood pressure below which hypertension does not warrant treatment and the type of drugs to be used initially when treatment is justified. Thus until better evidence is available arbitrary and interim recommendations are needed. These issues and other management recommendations are dealt with below.

Blood pressure measurement

British Hypertension Society guidelines on measuring blood pressure should be followed.⁷ In assessing thresholds several recordings should be obtained—for example, two or more in the sitting position on each visit on up to four separate occasions. In mild hypertension and in older patients with isolated systolic hypertension but no target organ damage measurements should be repeated over three to six months.

Blood pressure measurement

- Follow British Hypertension Society guidelines relating to instruments, cuff sizes, and technique
- Record two or more blood pressures at each visit
- Record blood pressure on several occasions before assessing thresholds

With more severe hypertension the delay is necessarily shorter. Standing pressures must also be measured in elderly people and patients with diabetes because of the potential problem of orthostatic hypertension.

Non-pharmacological treatment

Non-pharmacological measures play an important part in any blood pressure control programme and should be offered to all hypertensive patients whether taking drugs or not. This advice should also be offered to people with a strong family history of hypertension. In mild hypertension non-pharmacological measures may obviate the need for drugs. In the treatment of mild hypertension study a combination of non-pharmacological measures reduced blood pressure by 10.5/8.2 mm Hg and drug regimens produced falls of 18.2/12.8 mm Hg.⁸ In patients with higher blood pressures non-pharmacological measures may facilitate blood pressure reduction with lower doses of drugs or, in some patients, reduce the need for multiple drug regimens. Advice should include measures to reduce coexisting risk factors for cardiovascular disease, which occur commonly in hypertensive subjects. Lifestyle modifications may be listed as follows.

For *blood pressure lowering* lifestyle modifications should include (a) a reduction in total energy intake to achieve ideal body weight; (b) avoidance of excessive alcohol intake (recommend <21 units per week in males and 14 units per week in females), with some alcohol free days each week (see below); (c) a reduction in salt intake by eliminating the use of table salt, reducing the use of salt when preparing food, and avoiding excessively salt foods; and (d) regular physical exercise and improving the overall level of fitness—for example, in younger subjects by three training sessions a week or jogging for 30 minutes three times a week, and in elderly people by increasing distances walked. (With respect to alcohol intake epidemiological data show that high blood pressures are associated with higher alcohol intake—that is >20 units per week. However, the recommendation for a lower intake is based on national guidelines that take into account additional non-cardiovascular risks associated with alcohol ingestion.)

For *cardiovascular disease prevention* lifestyle modifications should include (a) stopping smoking; (b) a reduction in total energy intake to achieve ideal body weight; (c) avoidance of foods with high animal (saturated) fat and cholesterol content to be replaced by fish, fruit, and vegetables and polyunsaturated and monounsaturated fatty acids; and (d) regular physical exercise (see above).

The successful introduction of non-pharmacological measures to lower blood pressure and reduce cardiovascular risk demands time and effort put in by the doctor and by the practice nurse. When the facilities of a dietician are available this is a distinct advantage. Great emphasis should be placed on encouraging patients to stop smoking as the coexistence of smoking as an additional risk factor in hypertensive patients confers a much increased risk of subsequent cardiovascular events. In the Medical Research Council trial of treatment in mild hypertension the benefits of never having smoked far outweighed the benefits of blood pressure lowering.⁹ In the context of providing dietary advice to patients it is important to include other

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Non-pharmacological treatment

- Reduce energy intake
- Avoid excessive alcohol
- Reduce salt intake
- Stop smoking
- Avoid high saturated fat intake
- Take regular exercise

members of the family in the discussion of modified dietary measures when these include reducing salt and total energy.

Thresholds for intervention with drugs

In men and women of any age with malignant phase hypertension the benefit of antihypertensive drugs is unequivocal and these should be initiated without delay.¹⁰ In severe hypertension (diastolic blood pressure ≥ 110 mm Hg) repeated measurements should be performed over a short period (one to two weeks) to confirm a sustained increase in pressure and drug treatment begun (fig 1).^{11,12} Drug treatment

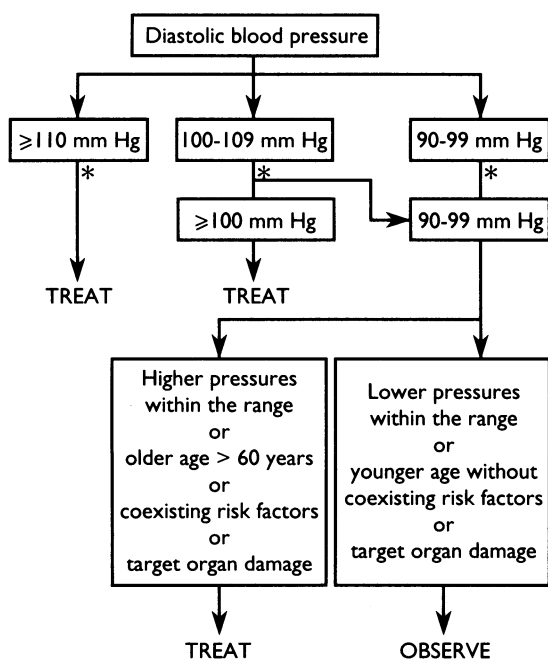


FIG 1—Thresholds for drug treatment of hypertension with reference to diastolic blood pressure. (All patients given non-pharmacological advice.) *Repeated measurements

should also be started in patients whose diastolic pressure is recorded as 100-109 mm Hg on three or more occasions over days or weeks and who have evidence of target organ damage—for example, left ventricular hypertrophy, transient ischaemic attacks, previous stroke, angina or previous myocardial infarction, renal impairment, or peripheral vascular disease. Patients who have diastolic pressures of 100-109 mm Hg but no evidence of target organ damage should be observed initially weekly and thereafter monthly. When there is a downward trend in blood pressure (diastolic pressure < 100 mm Hg) observation should be continued together with non-pharmacological treatment. If raised blood pressure is sustained (≥ 100 mm Hg) during this period drug treatment should be started.

The management of patients whose diastolic blood pressures remain between 90 and 99 mm Hg on repeated measurement over three to six months is controversial. Although the risk of heart attack and stroke is increased in this blood pressure range,^{13,14} the

risks and hence potential benefit of drug treatment to individual patients may be relatively small. The evidence of benefit from therapeutic intervention in all classes of patients is not universally accepted.¹ For example, in those with target organ damage such as left ventricular hypertrophy, renal impairment, or diabetes drug treatment is indicated. In those without target organ damage or diabetes but with a diastolic blood pressure within the range 90-99 mm Hg the decision to treat is influenced by the following risk factors, whose presence defines a higher risk group of patients who merit antihypertensive treatment. The risk factors are higher pressures within the range, advanced age, male sex, smoking, raised serum lipid concentrations (dyslipidaemia; see below), or a strong family history of cardiovascular disease. However, even when a decision is made not to treat with drugs monitoring of blood pressure with long term non-pharmacological treatment is recommended.

Prolonged observation is important in these circumstances because blood pressure after follow up in the untreated state more precisely predicts risk than does blood pressure measured at the outset. When blood pressure does not fall during continuous observation the case for treatment is stronger.

(Dyslipidaemia is defined as an abnormal serum lipid profile which confers increased risk of atherosclerotic cardiovascular disease. The risk of coronary heart disease conferred by a high serum cholesterol concentration varies with age and sex. A raised cholesterol value carries a relatively greater risk in men than in women and in youth than in old age. When relative risk of coronary heart disease is taken as the criterion values of serum cholesterol¹⁵ are regarded as *desirable* when below 5.2 mmol/l, *borderline* when between 5.2 and 6.4 mmol/l, *abnormal* when between 6.5 and 7.8 mmol/l, and *high risk* when above 7.8 mmol/l. Higher total cholesterol concentrations, however, should be considered in conjunction with measurements of high density lipoprotein cholesterol and triglyceride values.)

Thus the threshold for therapeutic intervention with drugs is influenced by an assessment of several factors, not simply the level of blood pressure. As stated above, all patients should receive non-pharmacological advice with respect to blood pressure lowering and the prevention of atheroma. The risk of smoking and the benefit in those who stop outweigh the benefit of treating mild hypertension. Thus hypertensive patients who smoke should be strongly urged to stop smoking. When dyslipidaemia coexists with hypertension attention should be paid to lowering lipid values by diet initially. If this fails, particularly in patients with multiple risk factors for coronary heart disease, cholesterol lowering drugs should be considered. Guidelines on the management of dyslipidaemia by these means have been published by British¹⁶ and European¹⁷ societies.

Thresholds of diastolic blood pressure for intervention with drugs in younger patients

- ≥ 100 mm Hg—treat
- 90-99 mm Hg—dependent on additional factors

Elderly hypertensive patients

Recent trials have consistently confirmed the benefits of lowering the blood pressure in a population aged over 60.^{4,6} Both the SHEP⁴ and MRC trials⁶ provided evidence that coronary events, in addition to strokes, were reduced by drug treatment. Subgroup analysis of the MRC trial suggested that low dose diuretic treatment is preferred to β blockers, at least in the over 60s

age group. Convincing evidence of the benefits of treating very old people (over 80 years) is lacking. Therefore, no definitive recommendations can be made for this subgroup of patients. It may be unwise to stop drug treatment in very old people unless blood pressure is normal and close monitoring determines the effects of stopping treatment. From these trials the blood pressure readings above which therapeutic intervention is indicated are a sustained systolic pressure of greater than 160 mm Hg or a sustained diastolic pressure of greater than 90 mm Hg.

Elderly patients

- Benefit from drug treatment
- Threshold ≥ 160 mm Hg systolic blood pressure or ≥ 90 mm Hg diastolic blood pressure, or both

Isolated systolic hypertension in over 60s and systolic thresholds in younger patients

The results of the SHEP trial and in a subgroup of elderly patients in the MRC trial suggest that treating isolated systolic hypertension (systolic pressure greater than 160 mm Hg, diastolic pressure less than 90 mm Hg) is also beneficial in elderly patients. Further trials are in progress to test this. In making an interim recommendation the British Hypertension Society working party was aware that the SHEP study included a highly selected group of fit elderly hypertensive patients. Doctors should be cautious in widening the recommendation for intervention at these levels of systolic pressure in the elderly population at large, particularly when there is coexistent disease. Patients with severe postural hypotension should not receive blood pressure lowering drugs.

Isolated systolic hypertension in younger patients is uncommon and there are no trial data on the potential benefits of treatment in such cases. By extrapolation, however, it seems reasonable to recommend that a

threshold pressure of 160 mm Hg systolic should be considered an indication for treatment in younger patients, irrespective of the diastolic pressure (fig 2).

Treatment goals

It remains an issue of much concern that around half of treated hypertensive patients do not achieve acceptable blood pressure control. In trials reported to date the benefits of treatment refer to the blood pressures achieved in those trials.¹ Diastolic pressure should be reduced to less than 90 mm Hg but there is no hard information to provide guidelines on target levels for systolic pressure. In the absence of such data a pressure of less than 160 mm Hg seems prudent. Some workers have suggested lower target pressures, such as less than 85 mm Hg diastolic and less than 125 mm Hg systolic,¹⁸ but there is concern that overaggressive reduction in diastolic pressure may lead to an increase in coronary events in patients with established ischaemic heart disease.¹⁹⁻²¹ We believe that the evidence is insufficient to recommend a limit on blood pressure reduction. Nevertheless, in patients whose diastolic pressure has been lowered to less than 80 mm Hg it seems sensible to consider reducing treatment and in some cases withdrawing it completely—so long as systolic pressure is also well controlled and blood pressure is reviewed regularly for at least one year and treatment is reintroduced should blood pressure rise.

Drug treatment

Two classes of drugs have been adequately and extensively tested in long term prospective outcome trials: diuretics (particularly the thiazides) and β blockers. Some trials in elderly hypertensive patients report beneficial results with thiazide-potassium sparing diuretic combinations. Newer classes of drugs may be equally or even more effective in lowering blood pressure but have not been evaluated in long term outcome trials. They include angiotensin converting enzyme inhibitors, calcium channel blockers, and α blockers. The Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure in the United States and the World Health Organisation and International Society of Hypertension accept the inclusion of these new agents as alternative first line drugs.^{2,3}

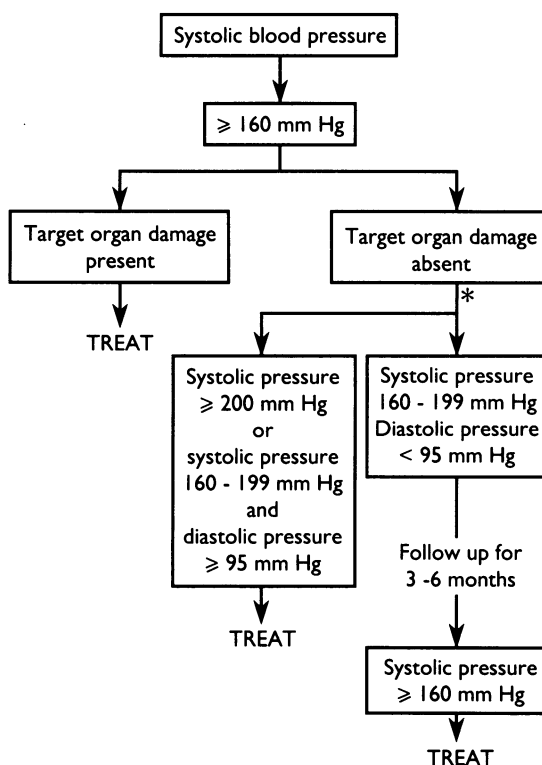


FIG 2—Thresholds for drug treatment of hypertension with reference to systolic blood pressure ≥ 160 mm Hg. *Repeated measurements

Drug treatment

- Diuretics
- β blockers
- Calcium entry blockers
- Converting enzyme inhibitors
- α_1 blockers

The first British Hypertension Society working party recommended that the newer classes of drugs should be considered as "alternative" first line agents when diuretics and β blockers are contraindicated or ineffective or when side effects occur. The second working party reaffirmed this view. The committee was, however, divided on the question of prescribing newer drugs instead of diuretics and β blockers as first line treatment when these were not contraindicated. This difference of opinion was also recorded in a recent survey of the membership of the British Hypertension Society. Few doubt the hypotensive efficacy of these new drugs and all recognise their role in selected conditions such as diabetes, asthma, heart failure, and gout or when the traditional first line drugs are poorly tolerated and there is impaired quality of life. The

choice of diuretics and β blockers as preferred drugs in patients with dyslipidaemia is controversial.²²

The main concern expressed by the second working party was the absence of long term data on morbidity and mortality with the newer agents. The working party recommended that a definitive outcome trial should be undertaken, and one is currently being planned. Meanwhile, doctors will probably continue to differ in their views and practice.

Recommendations for the selection of drugs in particular patients are listed in table I. Table II summarises the more common side effects. Quality of life during treatment of hypertension has been assessed in various studies and is well maintained with many of the drugs currently in common use.^{23 24}

When all clinical factors are equal individual drug costs should be taken into consideration, particularly in view of the substantially lower cost of diuretics. For elderly hypertensive patients evidence from the MRC trial suggests that thiazide diuretics combined with a potassium sparing drug may be the preferred first line treatment,⁶ although broadly similar benefits were seen in the SHEP study when chlorthalidone was used alone.⁴

Factors affecting selection of drugs

- Presence or absence of contraindications
- Side effects
- Coexisting disease

Dosage

Whichever agents are chosen as first line drugs treatment should begin at the lowest recommended dose. If the first drug is ineffective but well tolerated the dose may be increased. In mild hypertension it is usually better to change to another agent rather than add an additional drug. If the first drug is only partially effective, then adding a second drug from another pharmacological class is indicated. Drug combinations

may be required in up to half of the cases. Combinations should be selected rationally and choice based on three principles: drugs acting on different physiological systems have complementary action; reflex responses to a single agent may be counteracted by a second drug; and suboptimal doses of two agents may avoid side effects of higher doses of a single drug. Examples of logical combinations are diuretics and β blocker; angiotensin converting enzyme inhibitor and diuretic; dihydropyridine calcium entry blocker and β blocker; angiotensin converting enzyme inhibitor and calcium entry blocker; α blocker and β blocker.

Patient investigation

Essential tests needed on all patients with hypertension are urine analysis (Dipstix) and measurement of serum electrolyte and urea or creatinine concentrations. It is highly desirable to obtain an electrocardiogram (for evidence of myocardial ischaemia or left ventricular hypertrophy) and measure blood glucose and serum lipid values. A full blood count is useful as a raised haemoglobin concentration is a risk factor for stroke and its measurement will detect patients with polycythaemia. A raised mean corpuscular volume suggests a high alcohol intake. In patients with borderline hypertension and abnormal electrocardiogram the question of possible target organ damage may be answered by echocardiography, which is a more sensitive determinant of left ventricular hypertrophy. A chest radiograph may help in older patients (large heart, heart failure) or when clinically indicated.

Referrals for specialist advice

Any patient found to have malignant or accelerated phase hypertension should be referred to hospital as an emergency case. Patients suspected as having secondary hypertension—for example, those with hypokalaemia or proteinuria and those with renal impairment—should also be referred for specialist advice. Other groups who should be referred are patients with refractory hypertension or hypertension that is difficult to treat—for example, when two or more drugs have failed to control blood pressure; patients whose hypertension shows wide fluctuations, is of recent or sudden onset, or which is worsening despite treatment; and hypertensive patients aged under 35 or who have multiple cardiovascular risk factors—for example, hypertension, diabetes, and hyperlipidaemia.

TABLE I—Checklist of limitations on use of hypotensive drugs in patients with second condition. (Drugs not listed in ranking order)

Coexisting disease	Diuretic	β blocker	Angiotensin converting enzyme inhibitor	Calcium antagonist	α_1 blocker
Diabetes	Care needed*	Care needed†	Yes	Yes	Yes
Gout	No	Yes	Yes	Yes	Yes
Dyslipidaemia	Controversial‡	Controversial‡	Yes	Yes	Yes
Ischaemic heart disease	Yes	Yes	Yes	Yes	Yes
Heart failure	Yes	No	Yes	Care needed‡	Yes
Asthma	Yes	No	Yes	Yes	Yes
Peripheral vascular disease	Yes	Care needed‡	Care needed‡	Yes	Yes
Renal artery stenosis	Yes	Yes	No	Yes	Yes

*Diuretics may exacerbate diabetes.

† β blockers should be used with care in diabetes because awareness of insulin hypoglycaemia may be dulled. In non-insulin dependent disease β blockers may worsen glucose tolerance and exacerbate the deranged lipid profile.

‡Care needed when using calcium antagonists, particularly verapamil and diltiazem, in heart failure and when using angiotensin converting enzymes inhibitors and β blockers in peripheral vascular disease because of an association with renal artery stenosis, a condition in which extreme care should be taken.

§Choice of β blockers and diuretics in patients with dyslipidaemia is controversial.²²

TABLE II—Checklist of known and common or important side effects with different classes of drug. (Side effects not listed in ranking order for different classes of drugs)

Common side effects	Diuretic	β blocker	Angiotensin converting enzyme inhibitor	Calcium antagonist	α_1 blocker
Headache	—	—	—	+	—
Flushing	—	—	—	+	—
Dyspnoea	—	+	—	—	—
Lethargy	—	+	—	—	—
Impotence	+	+	—	—	—
Cough	—	—	+	—	—
Gout	+	—	—	—	—
Oedema	—	—	—	+	—
Postural hypotension	+	—	—	—	+
Cold hands and feet	—	+	—	—	—

Additional issues

- Consider referral for specialist advice
- Drug withdrawal possible in some cases
- Regular follow up necessary

Follow up

Frequency of follow up depends on the severity of the hypertension, the stability and degree of blood pressure control, patient compliance with drug treatment, and the need for non-pharmacological advice. Initially, frequent visits may be required to assess baseline blood pressure. When treatment is initiated and blood pressure stabilised three monthly measurements of blood pressure should be sufficient in most cases. In primary health care and in hospital blood pressure clinics nurses have a particularly important role, not only for careful measurement of blood pressure and the possible reduction of the "white coat" effect but also in counselling the patients, providing

non-pharmacological advice, and assessing the side effects of drugs.

Ambulatory blood pressure monitoring

The role of 24 hour ambulatory blood pressure monitoring is being evaluated.²⁵ At present it has little place in routine management, largely because of costs and the absence of long term prognostic data. It is used in specialist centres in the assessment of borderline hypertension and "white coat" hypertension.^{26 27}

Stopping treatment

Patients (usually with mild hypertension) whose blood pressure is consistently within the target range and in whom there is no evidence of target organ damage may have their doses of antihypertensive drugs reduced with careful monitoring. In some patients drug treatment may be withdrawn. Non-pharmacological measures should be continued indefinitely. Subsequent regular long term blood pressure monitoring is mandatory.

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Is the money following the clients with learning disabilities?

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For the past decade patients with learning disabilities living in long stay mental handicap hospitals have been resettled in the community. Local authorities have also taken on the care of new patients who would once have been long stay residents. The imperfect data that are available suggest that in England about half the residents in mental handicap hospitals in 1981 are now the responsibility of local authorities; the figures for Wales and Northern Ireland are 38% and 33%. Data on revenue suggest that the savings to the health service are much less—perhaps 9% in Northern Ireland and 3.6% in England, although there have also been capital gains through the sale of hospitals. Existing methods of transferring money from health to local authorities—joint finance and "dowries" for individual patients—do not seem adequately to have compensated local authorities. Moreover, as patients still to be transferred are more severely disabled local authorities will require larger sums—about £26 000 per patient per year plus £39 200 in capital. If the government chooses not to transfer these resources from health authorities it will be switching funds away from learning disabled people to other care groups.

Department of Health figures show that over the past decade the number of residents of hospitals for people

with learning disabilities has substantially declined. This reflects a progressive transfer of responsibility for the care of these people from health authorities to local authority social services departments. This transfer has been government policy since 1959.¹ Desirable as such a transfer might be, if it is to work the money for the care of these clients needs to follow them. We look here at some new information about how much of the burden of care has shifted in the past decade and how much of the funding has followed.

Two new sources of information have become available. Detailed evidence about the City of Westminster and the Royal Borough of Kensington and Chelsea has been collated by the academic department of public health and epidemiology at Charing Cross and Westminster Medical School, where two of us (RDTF and JR) have recently studied the register of the learning disabled people of the two boroughs covering the past eight years. National data come from responses to a series of written questions to the four secretaries of state with responsibility for the British health service, put down in the last weeks of the old parliament by the then Liberal democrat health spokesperson, Charles Kennedy MP.²

The information is incomplete and comes in an imperfect format, and we have had to make several assumptions in analysing it. Nevertheless, in view of

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