Memoranda
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Memoranda are statements concerning the conclusions or recommendations of certain WHO scientific meetings; they are signed by the participants in the meeting.

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1986 Guidelines for the treatment of mild hypertension: Memorandum from a WHO/ISH meeting*

The present guidelines were endorsed by the participants at the Fourth Mild Hypertension Conference, held at Königstein, Federal Republic of Germany, on 4-7 December 1985. They include the definition of mild hypertension, and describe blood pressure measurement, factors influencing the decision to begin treatment, methods of treatment, and follow-up. These guidelines are a revision of those produced in 1982; they are based on the best available scientific evidence, and will be updated in the future to keep abreast of further developments in this field.

While there is no uncertainty concerning the need for drug treatment of established moderate or severe hypertension, mild blood pressure elevations often present a therapeutic problem calling for sound judgement in individual cases. Recent studies have shown that patients with mild hypertension who were treated with antihypertensive drugs had a lower cardiovascular morbidity and mortality than similar patients who did not receive such treatment. As many as 10–20% of the adult population are found to have mild elevations of blood pressure at one time or another, but not in all cases is the pressure persistently raised and by no means should all of them be treated with antihypertensive drugs. On the other hand, patients with a mild elevation of blood pressure are at increased risk of cardiovascular disease; after symptoms have developed, morbidity and mortality are higher than before, even despite effective antihypertensive drug treatment, which should therefore be started before symptoms appear.

The aim of this paper is to provide guidelines for the management of persons found to have mild elevations of blood pressure; it includes recommendations on treatment, both by dietary and other non-pharmacological methods and by drugs.

DEFINITION OF MILD HYPERTENSION

Blood pressure measurement

Measurements of blood pressure are generally carried out by the indirect method, using a mercury sphygmomanometer. The patient should be seated comfortably in a quiet room for several minutes before measurement commences. The arm muscles should be relaxed and the forearm supported with the cubital fossa at heart level (4th intercostal space). A cuff of suitable size is applied evenly and firmly to the exposed upper arm. Care should be taken to avoid tight sleeves. The standard cuff available in many countries is too small. A suitable cuff for adults should be 13–15 cm wide and 30–35 cm long so as to encircle the arm. Larger cuffs are needed for fat arms and smaller ones for children. The cuff should be inflated while the radial or brachial pulse is felt, until the pulse disappears. This point is noted and gives the approximate systolic pressure. The cuff is

* This Memorandum was prepared by the participants at the Fourth Mild Hypertension Conference, organized jointly by the World Health Organization and the International Society of Hypertension (ISH) at Königstein, Federal Republic of Germany, on 4–7 December 1985. The names of participants are listed on pages 34–35. Requests for reprints should be sent to Chief, Cardiovascular Diseases, World Health Organization, 1211 Geneva 27, Switzerland. A French translation of this Memorandum will appear in a later issue of the *Bulletin*.

then deflated rapidly.

After a 30-second pause, the cuff is reinflated till the reading is about 30 mmHg above the pulse-disappearance level and then slowly deflated at approximately 2 mmHg per second, during which time the Korotkoff sounds are heard through a stethoscope placed over the brachial artery. The pressure at which the sounds are first heard is the systolic pressure. The diastolic pressure (phase V) is the pressure at which the sound disappears. Most of the major studies have used the latter point, which may be significantly lower than the phase IV pressure (when muffling of sounds occurs). Because most of the data concerning treatment have been related to phase V diastolic pressure, this should be used when deciding on the need for treatment. The systolic and diastolic pressures should be measured at least twice over a period of at least 3 minutes; both should be recorded and the mean value should be used.

Mild hypertension

Elevated blood pressures present a continuum of cardiovascular risk and the lowering of such pressures has clearly been demonstrated to reduce cardiovascular morbidity and mortality, even in patients with mildly to moderately elevated pressures.

Mild hypertension in adults is defined as a diastolic pressure (phase V) persistently between 90 and 104 mmHg (12–14 kPa) without obvious signs of left ventricular hypertrophy or damage to the heart or other organs. In practice this implies that when the initial diastolic pressures average 90 mmHg (12 kPa) or above, measurements should be repeated on at least two further occasions during the next 4 weeks. With repeated measurements both systolic and diastolic pressures often fall substantially. It is therefore necessary to identify those patients with sustained high or increasing blood pressures.

Patients in whom diastolic blood pressures fall below 90 mmHg within 4 weeks should have further measurements at 3-month intervals for a year. Practical guidelines for patients with pressures persisting in the 90–104 mmHg range during the initial 4 weeks are as follows:

(1) If the blood pressure remains on average below 100 mmHg, advise against smoking and institute appropriate non-drug treatment for all patients (see below); monitor the blood pressure on several occasions during the following 3 months.

(2) Start drug therapy if diastolic pressures are on the average 100 mmHg and above during these 3 months.

(3) Reinforce non-drug measures and continue long-term observation of patients whose diastolic pressures are clearly falling below 100 mmHg during the three months.

(4) Consider drug treatment when diastolic pressures are 95 mmHg or above after a second 3-month observation period.

(5) Patients whose diastolic pressures remain below 95 mmHg also have an increased risk of cardiovascular disease. This is more marked in smokers, diabetics and those with increased plasma cholesterol. If not treated with drugs, they should be further assessed at about 3-month intervals and appropriate non-drug measures should be reinforced in these patients. Drug treatment is also to be considered for such patients, especially those at high risk.

FACTORS INFLUENCING DRUG TREATMENT

Factors other than diastolic blood pressure, which influence the decision to begin drug treatment, including the following:

(*a*) *Systolic pressure*. For any given level of diastolic pressure a high systolic pressure carries an additional risk.

(*b*) *Age*. There is as yet no evidence that antihypertensive treatment is of benefit in persons aged 80 years and over. Although old age is no bar to drug treatment, caution is needed since side-effects may be severe. In elderly patients, however, blood pressure elevation can often be controlled by low-dose medication. Patients aged 70 and over who are in good general health should probably be treated in the same way as younger patients. Patients of this age who are frail or who have evidence of advanced cardiovascular disease, dementia or other debilitating illnesses should not be given antihypertensive drug therapy unless the diastolic pressure consistently exceeds 110 mmHg (14.7 kPa). However, elderly hypertensive patients with cardiac failure benefit significantly from antihypertensive drug treatment, even if given over a short period of time.

(*c*) *Cardiac signs*. Clinical, electrocardiographic, echocardiographic or radiological evidence of left ventricular hypertrophy, in the absence of causes other than hypertension, is a clear indication to begin drug treatment.

(*d*) If there are signs of *renal disease*, drug treatment should be started.

(*e*) Unassociated *potentially fatal disease* may influence the decision on whether to begin treatment.

(*f*) A strong *family history* of stroke or heart disease should influence the decision towards early drug treatment.

INVESTIGATIONS

A full history and complete physical examination for identifying the underlying pathological causes of the hypertension or for evidence of organic disease are essential. In addition, the following are recommended: microscopic examination of the urine and analysis for protein and glucose, electrocardiogram, and plasma potassium, creatinine, cholesterol, uric acid and blood glucose estimations. In selected cases, further investigations should be carried out to exclude curable causes of hypertension.

METHODS OF TREATMENT

The goal is to lower the blood pressure to normotensive levels, or at least the diastolic to below 90 mmHg (12 kPa).

Non-pharmacological methods

Data indicate that weight reduction in obese hypertensive patients, cessation of heavy alcohol consumption, and possibly dietary sodium restriction are effective in lowering the blood pressure.

Added risks. Since the serum cholesterol level and clinical diabetes also influence the long-term prognosis of hypertensive persons unfavourably, nutritional counselling is indicated to control these risk factors. If dietary measures are to be successful, a careful programme of motivation and dietary instruction and follow-up should be instituted. Since increased physical activity is also likely to reduce the risk of cardiovascular disease, it is appropriate in mildly hypertensive patients.

All the large-scale trials of treatment of mild hypertension have confirmed that there is an increased risk of both stroke and coronary heart disease in patients who smoke tobacco, whether they are given antihypertensive drugs or not. Repeated advice to discontinue smoking is therefore of major importance.

Alternative methods of contraception should be recommended to women in place of oral contraceptives.

Antihypertensive drugs

There are no specific drugs for treating mild hypertension. It is suggested that treatment may be started with one of the following categories of drugs.

Diuretic drugs. Diuretics have traditionally been used as the initial step in treatment. Because the frequency of biochemically manifest side-effects increases sharply as the dose increases, without a corresponding increase in antihypertensive effect, the lowest dose of a diuretic drug to achieve target pressure should be sought; combination with a potassium-sparing drug may help prevent hypokalaemia. However, under certain conditions (e.g., impaired renal function) potassium-sparing drugs may lead to hyperkalaemia.

Beta-adrenoceptor blocking drugs. An alternative means of initiating drug treatment is the use of beta-adrenoceptor blocking agents. These are effective when used alone in about the same percentage of patients as the diuretics and can, in some patients, also induce unwanted effects different from those induced by diuretics. Of the large number of available beta-blockers, the physician should choose the one with which he is most familiar. The dose should not exceed that recommended for the treatment of hypertension.

Combination of drugs. It is acceptable to combine a beta-blocker and a diuretic; this combination achieves satisfactory control of blood pressure in about 75–80% of patients. For reasons of convenience, cost and increased patient compliance, preparations that combine diuretic drugs and beta-adrenoceptor blocking drugs in a single tablet or capsule are appropriate for many hypertensive patients, once the need for both drugs has been established. Combinations of small doses of a diuretic and a beta-blocker, or of a diuretic, a beta-blocker and a vasodilator have also been recommended to minimize the side-effects observed with the usual doses in monotherapy. Although the long-term tolerance and safety of newer compounds such as angiotensin-converting enzyme (ACE) inhibitors, calcium antagonists, and alpha-adrenoceptor blocking drugs have yet to be demonstrated, these agents may be used for initial drug treatment of mild hypertension, especially if contraindications or side-effects prohibit the use of diuretics and of beta-blockers. Clearly the risks associated with treatment should not exceed the risk of mild hypertension.

Other combinations can also be used such as diuretics together with centrally acting drugs, alpha-adrenoceptor blocking drugs, ACE-inhibitors or calcium antagonists. Beta-blocking agents can be used in combination with arteriolar vasodilators or some calcium-channel antagonists. Reserpine may be useful in some areas, preferably together with a diuretic.

The choice of treating mildly hypertensive patients with a single drug or a combination of drugs is the personal responsibility of each physician for each patient. In drug-treated patients non-drug measures

should be continued, in order to minimize the needed number and doses of drugs and to control other risk factors.

The cost of drug treatment is also an important consideration in the long-term management of mild hypertension. It is desirable to use less expensive drugs if their efficacy and safety are equal.

FOLLOW-UP

During the stabilization period of treatment, the patients need to be seen at intervals of about two weeks until the blood pressure levels are satisfactorily controlled. To ensure better compliance and optimal blood pressure control and to avoid overtreatment, self-measurement of blood pressures may be encouraged. Subsequently, follow-up visits at 3–4-month intervals are adequate. The importance of patient compliance and the major role of cooperation between the patient and physician need to be emphasized. The necessity to maintain therapy in the majority of treated hypertensive patients must be emphasized since, in most patients, withdrawal of therapy is accompanied by return of blood pressure to previous levels. Compliance is improved by sending reminders about appointments and by direct contacts, if a visit has been missed.

When diuretics are given, estimations of plasma potassium, uric acid, and creatinine, and urinary glucose should be made 3 months after beginning the treatment, and subsequently once every 1–2 years.

Sometimes telling a patient that he or she has hypertension ("labelling") may be followed by undesirable subjective and behavioural sequelae; additional support, e.g., reassurance about prognosis, stress on the ability to lead normal active lives, and explanation of any new symptoms that may appear, is therefore particularly important.

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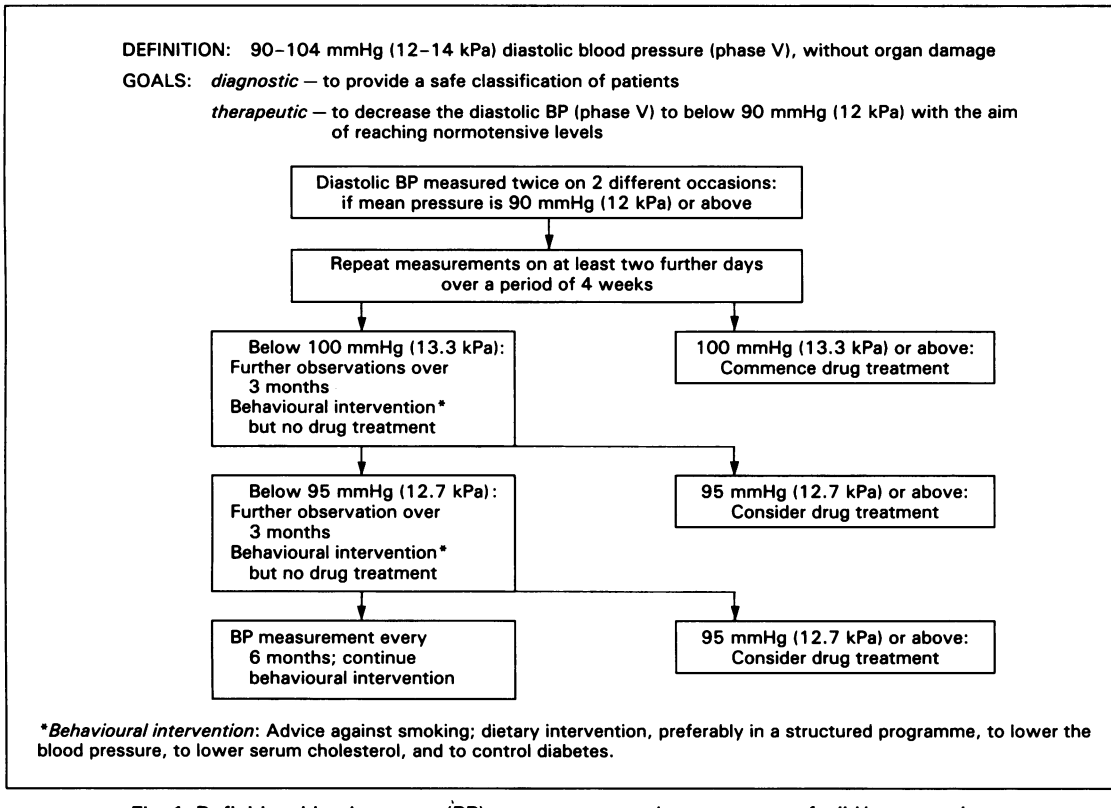

Fig. 1. Definition, blood pressure (BP) measurement and management of mild hypertension.

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