

MANAGEMENT OF HYPERTENSION



by
Norman M. Kaplan, M.D.

Fourth Edition

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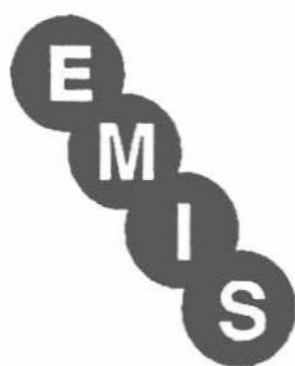
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by

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Foreword

This book, hopefully, will prove useful to those who want a ready up-to-date reference to practical issues in the treatment of hypertensive patients. My larger book, *Clinical Hypertension*, now in its 5th edition, should provide additional background, detail and references for those who need them.

I thank all of my co-workers, both in Dallas and elsewhere, who have provided me with the data and the insights needed to write this book.

#1 Measurement of Blood Pressure

General Principles

The first and most important step in the management of hypertension is a careful assessment of the level of the blood pressure. It must be taken frequently and carefully. The blood pressure naturally varies a great deal so it is important to avoid all controllable causes of variation. During 24 hour ambulatory monitoring, pressures while awake may vary by more than 30 mm Hg, with highest levels usually noted in the early morning and lower readings in the afternoon. Much lower levels are usual during sleep, with the important exception of higher readings during periods of sleep apnea.

Establishing the Diagnosis

At least three sets of three readings should be taken with intervals of two weeks or more between each set unless the initial level is so high (above 180/110) or target organ damage is so ominous as to demand immediate intervention. Even more readings may be obtained, preferably at various times and under various circumstances with inexpensive, semiautomatic, home devices.

Levels of blood pressure tend to fall after the first reading with most of the fall noted during the first few weeks. Most home readings are 5 to 10 mm Hg lower than those obtained in the office.

Even though the initial higher office readings may indicate higher risks for the subsequent development of cardiovascular disease, the average of multiple readings taken over one to two months should be taken to establish the diagnosis of hypertension and to decide upon the need for therapy.

Monitoring Progress

For many, only occasional follow-up readings are needed, initially more frequently than later. If changes in therapy are made, readings should be taken after two to

four weeks unless side effects occur. Once the goal of therapy is reached and the patient is asymptomatic, readings need only be obtained every four to six months.

For others, more frequent readings taken out of the office will be useful. These include patients with:

- Poor control based on office blood pressure despite increasing medication
- Advancing target organ damage despite apparent good control based on office readings
- Symptoms that could reflect hypotension

In addition, home readings are needed to ensure 24 hour control of hypertension with a particular need to document that the early morning surge in pressure is moderated in hopes of avoiding the high incidence of cardiovascular catastrophes between 6:00 and 10:00 a.m.

Basic Technique

The basic technique in the measurement of the blood pressure includes:

- At least two readings at each visit; if they differ by more than 5 mm Hg, additional readings should be taken
- On initial visit supine and standing readings may be indicated, particularly in elderly and diabetics
- Measure blood pressure in both arms; if there is a persistent difference, use arm with higher pressure
- The patient should sit in a chair for at least five minutes with the arm unconstricted and supported at the level of the heart on a platform or table
- Avoid extraneous factors which may alter pressure or, if unavoidable, make note of:
 - Smoking or eating within the prior 30 minutes
 - Anxiety
 - Talking
 - Exertion
 - Cold
 - Bladder distention

- Medications, which include:
 - Estrogens
 - Adrenal steroids
 - Adrenergic drugs such as nose drops or 10 percent phenylephrine used to dilate pupils for funduscopic exam
- Note the time of day
- Use proper sized cuff, ie, the largest that will fit the upper arm is appropriate
- Inflate bladder to above systolic level by palpating the disappearance of the radial pulse. If radial artery remains palpable after pulse disappears, consider "pseudo-hypertension" from calcified vessels which cannot be collapsed beneath bladder
- Deflate cuff at rate of 2 to 3 mm Hg per heart beat
- Use disappearance of sound (Korotkoff V) as diastolic level
- In patients below age 20 or if femoral pulse is weak, take pressure in one leg

(From Kaplan, NM: *Clinical Hypertension*, 5th ed., 1990.)

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#2 Definition of Hypertension

2.

General Definition

The long-term risks for the development of cardiovascular disease increase with every increment of blood pressure. The degree of risk for coronary and cerebral vascular disease is some two-fold higher in adults with diastolic blood pressure (DBP) above 90 mm Hg compared to those with DBP below 80. The definition of hypertension is usually based on DBP but the presence of isolated elevations of systolic blood pressure (SBP) above 160 mm Hg, usually seen in people over age 65, is associated with a significantly higher risk, particularly for stroke.

Based on the relative increase in risks, hypertension may be defined as sustained average levels of blood pressure above 140/90 mm Hg in adult patients. Those with DBP below 90 but SBP above 160 may be defined as having isolated systolic hypertension. These levels have been proposed as the upper limit of normal for children:

Age/Years	Blood Pressure
13 to 15	136/86
10 to 12	126/82
6 to 9	122/78
3 to 5	116/76

Classification by Degree

The 1988 Joint National Committee report proposed this classification of the degree of hypertension:

Range of Blood Pressure	Category of Hypertension
<i>Diastolic</i>	
90 to 104	Mild hypertension
105 to 114	Moderate hypertension
115 and above	Severe hypertension
<i>Systolic (DBP < 90)</i>	
140 to 159	Borderline isolated systolic hypertension
160 and above	Isolated systolic hypertension

The relative frequency of various categories of diastolic hypertension in a large population of people screened at home by the Hypertension Detection and Follow-up Program was about 80 percent mild, 15 percent moderate and 5 percent severe (Figure 2.1).

Those patients with DBP from 85 to 89 mm Hg may be classified as "high-normal." They should be more frequently rechecked and counseled more vigorously to follow the non-drug modalities (see Sections #9 and #10) which may decrease the likelihood for the progression of hypertension. Even if they do not, they should improve overall cardiovascular status at no financial cost and little interference with current life-style. Cessation of smoking, although it will not lower blood pressure, is the single most beneficial move to improve cardiovascular health.

Operational Definition

More than the risks of various levels of blood pressure should be considered before labeling a person as hypertensive. Logically, the label should be affixed only if active therapy is indicated. People labeled as hypertensive may suffer from increased psychoneurotic and other complaints, resulting in an increase in absenteeism from work. In addition, the label may be responsible for added economic burdens, eg, higher life insurance premiums and loss of job opportunities.

There is, then, a need to balance the risks of not diagnosing and treating a level of blood pressure against the costs and risk of doing so. In addition to the costs of labeling, there are risks from all currently used antihypertensive drugs. On the basis of current knowledge, most authorities agree that drug therapy be given to those with average DBP above 95 mm Hg, although some advocate that the level should be as low as 90 and others as high as 100 or even 105 (see Section #11).

From an operational viewpoint, many who are at increased risk need not be diagnosed as "hypertensive." However, they should be more carefully moni-