

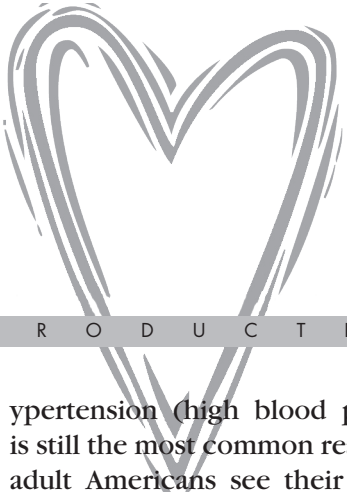
HIGH BLOOD PRESSURE



LOWER IT
AND
LIVE LONGER

Marvin Moser, MD, FACP

Introduction	1
Blood Pressure—What is it? How Do We Measure it?	3
Myths and Facts About High Blood Pressure	9
What Causes Hypertension?	11
Determining the Cause of Hypertension	15
Effects of High Blood Pressure	16
Other Risk Factors For Heart Disease	19
Nondrug Treatments For High Blood Pressure	19
Treatment of High Blood Pressure With Medication	27
What You and Your Doctor Can Do to Keep Your Blood Pressure as Low as Possible	38
Home Blood Pressure Monitoring	39
To Sum Up	40
Facts to Remember	41
Glossary	44

I
N
T
R
O
D
U
C
T
I
O
N

Hypertension (high blood pressure) is still the most common reason that adult Americans see their doctors. Approximately one in four adults have this condition. It is estimated that about 5-10 million people may have high blood pressure but are unaware of their illness.

This booklet, “High Blood Pressure—What You Should Know About It and What You Can Do To Help Your Doctor Treat It,” will provide information about what high blood pressure is and how it can be treated. Importantly, it will tell you what you can do to make your treatment more successful and prevent the kinds of complications, like strokes or heart attacks, that used to occur much more frequently in people with high blood pressure years ago, *before* we had effective treatment.

Hypertension is just the medical term for high blood pressure. Hypertension does NOT suggest too much tension or nervousness. Throughout this book we will be using the words hypertension and high blood pressure interchangeably.

Making the diagnosis of hypertension is fairly simple and does not require a lot of medical tests. Although treating this condition

usually requires a change in lifestyle or the use of medication, it can be successfully managed in most people. If you have been told that you have high blood pressure, you should not be frightened; it is something that you and your doctor can control.

What Used To Happen To People With High Blood Pressure?

At the age of 57, Franklin Delano Roosevelt (F.D.R.), the 32nd President of the U.S., was found to have an elevated blood pressure of 170/90 mm Hg. (A normal pressure varies between 120-130/ 75-85 mm Hg.) He had no symptoms of heart disease or blood vessel damage. Over the next few years, the President experienced a slow rise in blood pressure with levels in 1941 and 1942 of 180-190/105 mm Hg. In 1943 and 1944, his blood pressure rose to levels of 200/110 mm Hg. He began to feel short of breath and had other symptoms of heart failure. Examination revealed that his heart had enlarged, that he had begun to have some problems with kidney function, and that he might have had several small strokes. His symptoms became much worse and, as everyone knows, the President died of a massive brain hemorrhage (stroke) on April 12, 1945, at the young age of 63 years.

His treatment was to rest as much as possible, to stay on a low fat, low salt diet, and to take mild sedatives, such as phenobarbitol. In the 1930s, 1940s, and early 1950s, there were no effective treatments available. Since that time, many medications have been introduced and have been used successfully. Had the President lived 15-20 years later, he most certainly would have lived longer. His story would have ended differently.

In the 1940s and 1950s many people were retired at relatively young ages or placed on disability and refused insurance because their blood pressures were too high. Their lives were shortened. Treatment has changed all that. This book will help you learn about high blood pressure and other risk factors for heart disease. It will tell you what you can do to change these risk factors and prolong your life. Finally, it will tell you how you can work with your doctor to treat your high blood pressure successfully.

B L O O D P R E S S U R E — W H A T I S I T ?
H O W D O W E M E A S U R E I T ?

A Serious National Problem

High blood pressure—hypertension—is one of the most serious diseases in the U.S. It contributes directly or indirectly to almost 900,000 deaths a year. It costs you and the government many billions of dollars a year.

High blood pressure is treatable. Many deaths can be prevented if hypertension is found early and managed properly. High blood pressure is a major reason why people have strokes or heart attacks. The good news is that stroke deaths have decreased by about 60% and deaths caused by heart disease have decreased by more than 50% over the past 20–25 years; much, but obviously not all, of this increase in life span can be attributed to earlier and better treatment of high blood pressure.

How Do We Recognize Hypertension?

Unlike a toothache or backache, high blood pressure may not produce any symptoms. Some people can tell when their blood pressure is

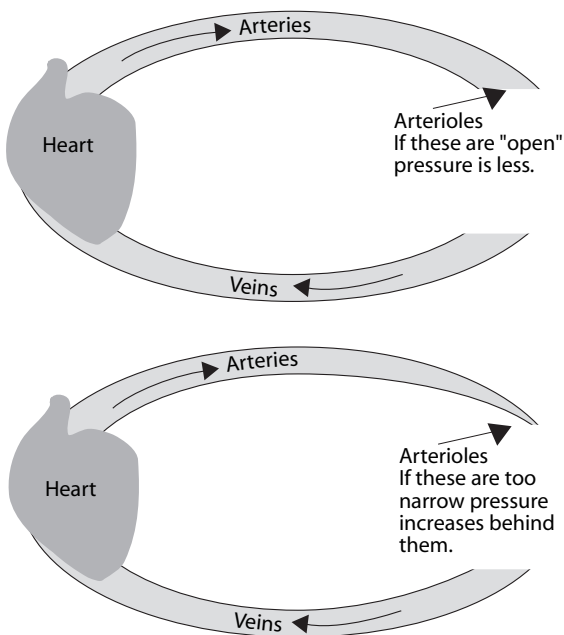
elevated, but the only sure way to tell is to have it measured. People may not know they have high blood pressure until it begins to cause trouble with the heart, brain, or kidney—as in the case of F.D.R. To keep a check on your blood pressure, there is a simple, painless test that only takes about 1 minute. This test has become so routine that almost everyone has had their blood pressure taken at least once or twice, usually during regular checkups.

What Is Blood Pressure?

Blood pressure is the force exerted by the bloodstream against the walls of arteries. Everyone has to have some blood pressure. It is absolutely necessary to get blood to our vital organs and muscles.

Normally, each time our heart beats (about 60–80 times a minute at rest), it pushes blood out into the larger arteries, which are the tubes or vessels that carry blood from the heart. The blood then flows into smaller arteries to various parts of the body, such as the liver, the kidney, or the brain, and then returns to the heart through the veins. The smaller arteries, called arterioles, can open wide (dilate) or close (constrict) (Figure).

The beating action of the heart may be compared to a pump. The arteries may be compared to the tubing of a hose. The small blood vessels or the arterioles are like a nozzle. If the nozzle is kept open, water will flow freely through the hose, and little pressure is built up on the walls of the hose. If, however, the nozzle is clamped down, increased pressure is built up on the sides of the hose and the pump must work harder. In the same way, if the arterioles or small blood vessels remain open as the heart beats, blood pressure in the arteries remains fairly low or normal. If they narrow, higher blood pressure results. Of course, the circulation is a closed



system, and blood is not leaking out anywhere but is being pushed through in surges every time the heart muscle contracts or “pumps.”

Blood pressure can vary widely. It can rise when you are excited or nervous or while you exercise, or it may become low when you sleep. Most people do not know that blood pressure is high just before they wake up in the morning (6–8 a.m.). It remains at these levels during the day and decreases during sleep. Blood pressure may vary within the course of a day by as much as 20–30 points in someone with “normal” blood pressure and even more in someone with untreated hypertension. Therefore, a single reading should not be used to make a diagnosis of high blood pressure.

Measuring Blood Pressure—

The Blood Pressure Test

The amount of pressure in the artery is measured by the level of air or mercury in

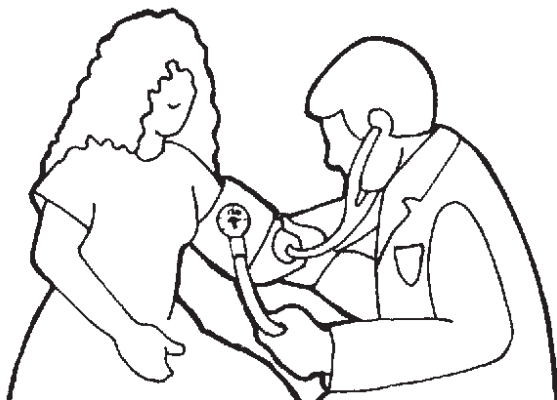
a tube, which is part of a blood pressure instrument called a sphygmomanometer (sfig-mo-mah-nom-eter). A blood pressure cuff is placed around the upper arm and inflated with air until the circulation in the artery is temporarily cut off. A valve in this instrument is opened and air is gradually released from the cuff. The person who is measuring the blood pressure places a stethoscope over the artery on the inner side of the elbow to listen for the first sound of blood rushing through the artery as the pressure in the cuff is lowered. The number on the gauge at the moment that this occurs represents the pumping or systolic (sis-tal-ik) pressure. This is the pressure produced in the artery when the blood is pushed forcibly from the heart into the large blood vessels. Additional air is gradually released from the cuff. When all beating sounds stop, the number on the pressure gauge represents the resting or diastolic (di-ah-stal-ik) pressure. This is the pressure that remains in the arteries when the heart is relaxing between beats.

Thus, blood pressure is recorded in two numbers as millimeters of mercury (mm Hg). For example:

120 mm Hg systolic (pumping pressure)

80 mm Hg diastolic (resting pressure)

The measurement above would be spoken of as “120 over 80,” with the systolic (higher) number always given first, followed by the diastolic number. Some blood pressure cuffs that employ electronic devices or digital readout technology do not require the use of a stethoscope to listen for sounds. Blood pressure is taken automatically and displayed on a small screen or signaled by a beeping sound. There are some instruments that can



record blood pressure from a finger. However, the accuracy of these devices has not been proven and they are not recommended if you are planning to buy a blood pressure machine to take your pressures at home. Blood pressure should be taken when you are relaxed with your arm at the level of your mid chest area.

What Is Normal Blood Pressure?

So-called normal blood pressure may be as low as 70/50 mm Hg in infants, or as high as about 130/80 mm Hg in adults. “Normal” blood pressure for people under 18 is usually below 120/80 mm Hg. Over the age of 18, a reading up to about 130/80 mm Hg is considered within the normal range. An optimal or ideal BP in an adult is about 120/80. A diastolic (lower number) reading between 85–90 mm Hg is considered “high-normal” or prehypertension. A systolic (upper number) reading of 130–139 mm Hg is also considered “high-normal” or prehypertension. *If an adult’s blood pressure is consistently 140/90 mm Hg or higher, he or she has high blood pressure or hypertension.*

The risk of heart or blood vessel problems increases as blood pressure rises above

normal levels, *regardless of age*. The higher the pressure, the greater the risk. As you can see in the fourth “myth” on pages 9-11, older people do not need higher blood pressure levels to supply blood to the brain or kidney. Any reading above the “normal” level requires follow up and possible treatment. One or two elevated blood pressure readings, even just to levels of 140-145/90-95 mm Hg, may indicate something about the future. These numbers cannot be ignored. Untreated, even higher levels of blood pressure may develop, and the risk of kidney failure, a heart attack, or stroke is increased. If you are one of those people with a blood pressure that is even occasionally high, it is probably wise to have it rechecked periodically. If the measurements remain at or above 140/90 mm Hg, your doctor will probably suggest a change in diet or an exercise program; in many cases you will have to take medication. Of course, not everyone with high blood pressure on one or two occasions goes on to develop permanent high blood pressure.

What About Low Blood Pressure?

People used to believe that low blood pressure (e.g., about 110/70 mm Hg or below in an adult) was dangerous. Except in rare cases, this is not true. We know that the lower your blood pressure (both the upper and the lower reading), the less chance you have of getting a stroke or heart attack. In some cases, people with low blood pressure may tire easily or feel faint when standing in a hot room, or after a few alcoholic drinks, but in most cases they have no symptoms.

MYTH: Hypertension means that a person is tense or anxious. FALSE

FACT: Hypertension means high blood pressure. You do not have to be nervous, tense, or jumpy to develop high blood pressure. Many calm people suffer from hypertension. It is true that stressful situations may temporarily elevate blood pressure, and that over the years repeated prolonged stress may have a long term effect, but this is not always the case.

MYTH: Loss of excess weight is by itself enough to cure blood pressure. FALSE

FACT: Obesity (being fat) is associated with hypertension—more overweight people have high blood pressure than thinner people. Losing weight, however, does not guarantee that blood pressure will return to normal levels, but it will usually decrease to some degree. Too often an overweight person with hypertension is told to lose weight as their only treatment. Weight loss is important, but in many cases additional treatment is necessary. Of course, thin people also can have high blood pressure.

MYTH: Hypertension is a disease of old age. FALSE

FACT: Most people develop high blood pressure between 35–50 years of age. Some of the more serious cases may actually begin at younger ages.

MYTH: Older people need higher blood pressure to get blood to vital organs. FALSE

FACT: A 70 year old with a reading of 140/90 mm Hg has a better future than one with a pressure of 170/90 mm Hg. The higher the blood pressure, the greater the chance of having a stroke, a heart attack, or kidney failure, *at any age*.

MYTH: The diastolic blood pressure (lower reading) is more important than the systolic (upper reading). FALSE

FACT: Not so—an elevated systolic blood pressure by itself is more predictive of problems.

MYTH: Once you have high blood pressure, and it affects your brain or heart, there is nothing you can do about it. FALSE

FACT: Just the opposite—you can do a great deal about it. Lowering your blood pressure by proper treatment will often prevent further brain and heart problems. Frequently, an enlarged heart becomes smaller, and therefore, healthier as blood pressure levels are lowered (see “Treatment of High Blood Pressure With Medication” on page 27).

MYTH: Hypertension significantly restricts a person’s life. DEFINITELY FALSE

FACT: A person with high blood pressure can and should lead a normal life—if they are treated.

MYTH: Medicines that lower blood pressure make people feel bad and cause sexual problems. FALSE

FACT: Fewer than 10% of people experience annoying side effects which may include sexual

problems. Changing medication or doses of medication usually can minimize or eliminate these effects. *Lowering blood pressure may actually make you feel better.*

MYTH: Herbal substances and plants, such as garlic, are effective in lowering blood pressure. FALSE

FACT: Careful studies have not proven this to be true.

WHAT CAUSES HYPERTENSION?

In more than 90% of the cases, we do not really know what causes hypertension! However, we do have some theories. For some reason, in certain people the small blood vessels at the end of the arteries seem to contract more forcefully than in other people. This causes an increase in pressure within the arteries. This may be due to an increase in certain nerve impulses with a release of too many adrenaline-like substances; high blood pressure results. In some other people, the kidneys are unable to wash out enough salt (sodium). As sodium and fluid builds up in the body, the heart must pump an increasing amount of blood with each beat. This also increases the blood pressure.

We do not know why these things begin to happen—why the small blood vessels constrict or narrow more than they are supposed to, or why the kidney is unable to get rid of the amount of salt some people take in. But we understand what is happening, and therefore, we can treat hypertension even if we do not always know exactly what causes it.

In a very small number of people, definite causes can be found. For instance: 1) In less than one-half of 1% of people with high blood pressure, one or both adrenal glands, which are located above the kidneys, will secrete large amounts of adrenaline into the bloodstream. This can cause “attacks” that may be similar to anxiety attacks, i.e., headaches, sweating, and a rapid heartbeat. 2) In 2%–3%, a longstanding or chronic kidney inflammation (infection, e.g., pyelonephritis or nephritis) may cause hypertension. 3) In about 2% of cases, one of the arteries to a kidney narrows, decreasing the amount of blood that flows to the kidney. The kidney then emits into the bloodstream a chemical called renin, which causes the blood pressure to rise. Although hypertension is relatively uncommon in children, this may be a cause of high blood pressure in about 15%–20% of the cases in children 10 years or younger. 4) Other problems, such as an excess of a hormone that causes an increase in salt and water, may cause high blood pressure in some cases. 5) The use of birth control pills will raise the blood pressure slightly in many women; in a small number, long term use may result in continuing high blood pressure. 6) Hypertension may develop in a small number of pregnant women during the last few months of pregnancy as part of “toxemia of pregnancy.”

Does Heredity Affect Blood Pressure?

Studies have shown that children with one parent with high blood pressure have a greater chance of developing the disease than those with no high blood pressure in the family. Certain genes have been identified that probably contribute to this problem. When both parents have high blood pressure, the odds are greater still. *This does not mean, however, that all*

children of parents with high blood pressure will develop it, but it suggests that they are more likely to become hypertensive.

Dietary and Environmental Factors That May Affect Blood Pressure

The effect of environment has also been studied. Environment may be less important than heredity in determining who will or will not develop elevated blood pressure. There are, however, certain factors, such as a high salt intake, that probably play an important role.

In the U.S., blood pressure often rises with age, but this is not so for the entire world. In some countries (e.g., parts of Brazil) where there is little salt (sodium) in the diet, adults have the same blood pressure levels as children. On the other hand, black populations, both in industrialized countries such as the U.S. and in the Bahamas or the West Indies, generally have higher rates of hypertension than whites. The reason for this is not known. Suggested causes are a high salt (sodium) intake, changes in the way the kidneys handle salt, too much stress, or too little potassium or calcium in the diet.

Salt. Eating extra amounts of salt may cause trouble but not for everyone. There are people who are "Salt Sensitive" and others who can eat lots of salt and not notice a change in blood pressure. In some people with a family history of hypertension, a high salt diet starting at infancy may increase the risk of developing high blood pressure at a later age. Infants and young children from these families should be encouraged to go on a low salt diet at as early an age as possible.

Human beings, even those who do heavy work in hot climates, need very little salt to survive. Most of us eat about two teaspoonfuls

(10–12 grams) per day. We really only need less than half a teaspoonful a day regardless of our occupation or daily activities. Unfortunately, once hypertension develops, moderate lowering of salt in the diet, without other treatments, usually will not decrease blood pressure to normal levels except in some less severe cases. Eating foods, such as fruit or fruit juices, which have a high potassium content or nonfat dairy products, like skim milk, which are good sources of calcium, may help to keep blood pressure normal.

Fatty foods—Cholesterol. People in the U.S. still consume a great deal of meat and dairy products, but the amount is considerably less than 10–15 years ago. Animal fats tend to raise blood cholesterol levels. (An elevated cholesterol level is, in addition to high blood pressure, a major risk factor for heart disease.) People with hypertension should be particularly careful to keep their cholesterol levels under control. Heart attacks do not necessarily result from the American “rat race,” or a sedentary lifestyle alone; diet plays an important role. It may surprise you to know that *very active* people in Finland and Holland, where diets are high in fat, have about as many heart attacks as Americans.

What to do about diet? If you have high blood pressure, your doctor, in addition to treating this, may also recommend that you reduce the amount of fat, saturated fat, and cholesterol in your diet to limit or reduce another major “risk factor” for heart and blood vessel disease. This would include eating more white meat chicken (without the skin) and fish, rather than beef. Your physician may also suggest drinking skim or 1% milk instead of whole milk, and cutting

down on the amount of whole milk cheese, butter, and eggs that you eat. You do not, however, have to turn your household into a diet kitchen to stay on a low fat diet. It can be done by keeping a few basic rules in mind.

Fatty foods, such as processed pork and bacon, also contain large amounts of salt. These foods should certainly be avoided. So-called “fast foods” usually contain lots of salt and fat, especially saturated fat, which raises your blood cholesterol level more than anything else in the diet. Food manufacturers must now list the amount of sodium, fat, saturated fat, and cholesterol, as well as the number of calories, on each food package. This helps you select healthier choices. It is a good idea to avoid (or only eat occasionally) foods that have more than 150 mg of sodium in each portion (see page 22 for a list of high salt foods).

One important point—there is some evidence that staying at a desirable weight keeps your blood pressure from becoming high. You should try as hard as possible to keep your children from becoming heavy. An overweight adolescent usually becomes an overweight adult with a greater chance of having high blood pressure.

DETERMINING THE CAUSE OF HYPERTENSION

How does your doctor decide whether you have “essential” (“primary”) high blood pressure (from no apparent cause) or whether you are one of the people with a rare specific cause for hypertension?

A careful medical history, a physical examination, and a few simple tests will usually tell. It is reassuring to know that:

1. People with high blood pressure usually do not have to be in the hospital for studies;
2. Expensive, complicated, or painful tests usually are not necessary;
3. One or two visits to a doctor's office or clinic will complete the "workup."

A urine and blood test will rule out the presence of significant kidney disease as a cause of high blood pressure. A blood test for potassium levels usually (but not always) rules out the presence of too much of a certain hormone from the adrenal gland. A patient's history might suggest the need for some special tests on the kidneys or a 24-hour urine sample. Usually, however, after several blood pressure checks and some simple tests, the doctor is ready to advise specific treatment for hypertension, or to suggest when you need follow-up.

What Are The Effects Of High Blood Pressure?

Enlarged heart. Just as a person's biceps or arm muscles get bigger after weightlifting over a period of time, the heart muscle enlarges if it has to work harder than usual to push blood out into the vital organs of the body. This is what happens to the heart of a person with "untreated" high blood pressure. Increased pressure can be tolerated for many years, but sooner or later, as the heart muscle stretches too much or gets too thick, the heart is no longer able to function properly. Blood is not pumped forward into the rest of the body. Some of it backs up in the lungs. The heart fails. This is what happened to F.D.R.

Just as you can reduce pressure in a hose by opening up the nozzle and letting water flow freely through it, a person's blood

pressure can be lowered by dilating (opening) the small arteries. Then the heart does not have to pump as hard each time it beats. After blood pressure has been returned to normal and has remained normal for several months or a year or two, there is a good chance that the heart muscle will return toward its normal size. *Heart failure is rare in people whose blood pressure has been controlled.*

If high blood pressure is not found or is poorly treated, there is also increasing pressure on the walls of the small blood vessels of the brain, the kidney, and the rest of the body. Several things can happen.

Stroke. In the brain, as pressure increases, damage occurs to the lining of the blood vessels, and little blisters may form. These are called aneurysms (an-u-rizms). These aneurysms are very small, but occasionally may break suddenly. This causes a "stroke," with hemorrhaging (bleeding) into the brain and weakness on one side of the body or a loss of speech. In addition, a stroke may be caused by progressive narrowing of one of the vessels in the brain, a process which is made worse by hypertension. This also happened to F.D.R.

Uremia. (Failure of the kidneys to function properly). In the kidney, continued high blood pressure may cause increasing damage, with narrowing and thickening of the arteries. This reduces the amount of fluid that the kidney can filter out into the urine. Since the kidney eliminates waste products from our body, these products now build up. The result can be kidney failure with "uremia." Some uremic patients may have to get a special kidney treatment (dialysis) or undergo kidney

transplants. It is estimated that about 20%–25% of patients who are now on dialysis programs started out with “slightly elevated blood pressure” which was not treated effectively. *Early treatment of hypertension can usually prevent this serious complication.* Treatment, even after some blood vessel damage has occurred, will often delay further damage to the kidney. This is especially true with some of the newer medications.

Atherosclerosis. (Hardening of the arteries). Finally, and most important, if blood pressure is not controlled, some of the fat that normally circulates in our body is pushed more rapidly into the walls of the damaged arteries. Plaques (collections of fatty material) build up in the arteries, like rust on the inside of a pipe. This condition is called atherosclerosis, and is commonly referred to as “hardening of the arteries.” It can happen to some degree in all the arteries in the body. The higher the blood pressure and the more fat (cholesterol) in the bloodstream, the faster the process.

All of us develop some hardening of the arteries as we get older, even if our blood pressure is normal. People with untreated or undetected high blood pressure get atherosclerosis and its complications at an earlier age.

Heart Attack. If the arteries that supply blood to the heart itself, the “coronary arteries,” become clogged with fatty material, the blood flow to portions of the heart is reduced. When one of the vessels is completely closed off, there is a temporary stoppage of all blood flow to that part of the heart. Portions of the heart muscle are damaged. We say that a “heart attack” has occurred.

To recap, high blood pressure may cause:

- The heart to get larger
- Little blisters (aneurysms) in the blood vessels in the brain
- Progressive narrowing of the kidney blood vessels
- Increased rate of hardening of the arteries all over the body, especially in the heart, brain, and kidneys

MANY OF THESE EFFECTS CAN BE PREVENTED BY TREATMENT

Other Risk Factors For Cardiovascular Disease

In addition to high blood pressure, the risk of heart and blood vessel (cardiovascular) complications is greatly increased by smoking, a high blood cholesterol level, diabetes, and being overweight. For example, a study of the population in Framingham, MA, determined that a person with even slightly elevated blood pressure runs a greater risk of having a stroke than a person with normal blood pressure and an even greater risk if they are a diabetic or a smoker or have a high blood cholesterol level. These other risk factors for heart disease should therefore be corrected if possible, in addition to lowering the blood pressure.

What You Can Do To Reduce The Risk Of Heart Disease And Stroke?

Lose weight if you are overweight. Even small amounts of weight loss may lower blood pressure in some people. However, weight loss does not always result in a continued lowering of blood pressure. Staying at a desirable weight reduces your chances of having a heart attack.

How To Figure Out Ideal Or Desirable Weight In Adults

Men

106 lbs for
the 1st 5 ft
6 lbs for each
additional inch

Example:

a 5 ft 10 in man
should ideally
weigh 166 lbs
 $106 + (10 \times 6 = 60)$

Women

100 lbs for
the 1st 5 ft
5 lbs for each
additional inch

a 5 ft 5 in woman
should ideally
weigh 125 lbs
 $100 + (5 \times 5 = 25)$

These weights are approximate.

A variation of 5-10 lbs is acceptable.

The chart on page 22 shows you how to estimate your ideal or desirable weight.

Remember, “fad” or “miracle” diets do not work over a long period of time. While you may lose weight on a low-carb or high-fat diet, these are not recommended—too little is known about their long-term effects. Losing weight depends on taking in fewer calories than you burn up. A gain in weight results if energy (calories) intake is greater than energy (calories) used up. If you use up 3500 calories more than you take in over a period of time, you lose 1 lb. That is, if you take in 2000 calories a day and “burn up” 2500 calories a day, you will lose 1 lb a week ($500 \text{ calories/day} \times 7 \text{ days} = 3500 \text{ calories} = \text{loss of 1 lb}$). Another way to burn up calories is to increase your activity level. There is nothing magical about this; but to maintain weight loss, these changed habits of eating and exercise need to become a permanent part of your lifestyle. *Losing weight, if appropriate, is probably the single most important nondrug treatment for high*

How To Estimate The Number Of Daily Calories You Need To Maintain Your Weight*

Ideal weight ×

13 if you are sedentary

15 if you are moderately active

17 if you are very active

Example: Wt. 166 (5'10" man) × 15

(moderately active) = 2490

calories/day

Wt. 125 (5'5" woman) × 13

(sedentary) = 1625 calories/day

(These are approximate numbers.)

*Remember, if you take in 500 calories/day less than you need, you will lose 1 lb/wk—people over 60 years of age require fewer calories to maintain body weight.

blood pressure. The chart on this page shows how to estimate the number of daily calories you need to maintain your weight.

Watch your salt and fat intake. Reduce your intake of salty, high fat foods. Eat balanced meals, with fruits, vegetables, grains and, as noted, more skinless chicken, fish, and lean meat rather than heavily marbled meat. Eat fewer eggs and less bacon. Use skim or 1% milk instead of whole milk. In general, it is a good idea to use little or no salt at the table or in preparation of food; use paprika, pepper, oregano, cloves, cinnamon, or lemon juice instead. Eat fewer foods that are obviously salty or preserved in salt or brine.

Weight reduction and/or salt restriction may decrease blood pressure to normal levels and eliminate the need for specific medication in about 15-20% of individuals with less severe degrees of hypertension, especially in the

Some Foods With A High Salt Or Sodium Content—These Should Be Limited Or Avoided If You Have High Blood Pressure

“Fast foods”	Olives
Potato chips	Commercially prepared soups
Pretzels	Bouillon
Salted crackers	Ham
Biscuits	Sausages
Pancakes	Frankfurters
Most commercial pastries or cakes	Smoked meats or fish
Pickles	Sardines
Sauerkraut	Tomato juice
Soy Sauce	Many canned vegetables
Catsup	
Many kinds of cheese	

*Note: Look at labels!

elderly. The list above indicates some foods that contain a high salt or sodium content that should be limited or avoided if you have high blood pressure.

Here Are Some Other Clues To Help Reduce Your Salt Intake

- Cut down on the amount of salt used at the table.
- Reduce salt used in cooking a little bit each day until you no longer use any.
- Read food labels to find the amount of sodium in foods. Avoid or limit foods with more than 150 mg in each serving.
- *Choose foods which do not list salt as one of the first three ingredients.*
- Look for foods with the words “sodium

free,” “low sodium,” “very low sodium,” or “unsalted” on the label.

- Use fresh or frozen fruits and vegetables whenever possible. (Many contain large amounts of potassium, a mineral that may be beneficial to some people with high blood pressure.)
- Limit choices of smoked, cured, or processed meats.
- Rinse canned foods to remove some of the salt.
- If you crave the taste of salt, try one of the lower salt substitutes, especially ones with added potassium.
- Unfortunately, more than 50% of the salt we eat comes from processed food. It is difficult to limit sodium intake if eating out or eating a lot of processed foods is part of your lifestyle. *Remember, if you are being treated for heart failure, try to keep your sodium intake below 2000 mg (<2 gm)/day.*
- Blood pressure responses to limiting sodium intake vary. In some “salt sensitive” people, pressures will decrease; in those who are not “salt sensitive” they may not change. There is no easy way to prove whether or not you are “salt sensitive.” But, in general there is no down-side to limiting salt intake.

Stop Smoking

Until recent years, most publicity about the problems of smoking warned about lung disease, such as bronchitis, emphysema, and lung cancer. But you should be aware that smoking also injures blood vessel walls and speeds up hardening of the arteries. Smoking is a major risk factor for a heart attack. The smoke itself (carbon monoxide) probably

causes much of the damage to blood vessels. The immediate effect of a few cigarettes on blood pressure may not be great, but chain smoking may cause chemical changes that tend to raise blood pressure over time. People just should not smoke cigarettes.

In order to avoid a possible weight gain when you stop smoking, it is a good idea to cut down on food intake at the same time.

It is interesting to note that *the risk of a heart attack in a person who once smoked but who has stopped is almost the same as it is for a person who has never smoked*. You will reduce the risk of a heart attack by about 50% in 1 year and eliminate it by a considerable degree within 1-3 years after you stop smoking, no matter how long you were a smoker.

During the past 20 years, the American public has responded to the message about risk factors. Total tobacco consumption has been reduced by more than 25%, salt intake by more than 25%, and the use of saturated fats by more than 30%; deaths from heart disease have decreased by more than 50%.

Exercise Is Good For You

Go ahead! Do whatever you like to do, but do it at least 3 or 4 times a week for at least 30-40 minutes each time, if possible. If you like to jog, then jog, but do not try to “prove anything.” If you prefer to take long walks, or swim, or play tennis, handball, or basketball, or if you just want to ride a bicycle, even a stationary one in your bedroom or basement, go ahead and do it. Regular exercise is helpful but there is no definite proof that the benefits of a *vigorous* exercise program are any greater in reducing blood pressure or heart attack risks than those of a more moderate one, which may only involve taking a brisk

walk for 30 minutes 3 or 4 times a week. Regular exercise also makes you feel better, helps to burn some calories, and may help to reduce the levels of fat in the bloodstream. Exercise alone may help lower blood pressure in some people with hypertension. Dynamic or motion exercises are much better for you than exercises such as weight lifting. These may help you develop bigger muscles, but they may not help you live longer.

People whose blood pressure has been controlled at normal levels should be able to exercise without difficulty or fear, but check with your physician if you decide to start any kind of vigorous program.

Lessening Of Tension

Reducing tension may not represent effective treatment for lowering blood pressure, but it can't hurt. Whenever possible, do things that might relax you (other than taking a tranquilizer). Read. Take up a hobby. Take long walks. Such activities frequently help to decrease the amount of adrenaline (which constricts or narrows blood vessels) and allow the blood vessels to open up. Blood pressure will be lowered temporarily. *Do not depend on relaxation techniques, vacations, or "getting away from it all" to lower your blood pressure permanently.*

For example, "biofeedback" and "TM" (transcendental meditation) are still being recommended to treat high blood pressure. Although the blood pressure of most of us might be lowered for a short period of time if we relaxed, sat still, and looked out the window, or concentrated on a pleasant subject for a part of the day, these techniques do not result in a reduction of elevated blood pressure over time except perhaps in some less severe cases. You must not depend on them alone.

Drinking And High Blood Pressure

We all know about the effects of overuse of alcohol on the liver, the brain, and the heart. There is also some evidence that heavy use of alcohol—more than 3–4 oz of 100 proof whiskey, 18 oz of wine, or 36–48 oz of beer each day—can also raise blood pressure. However, an occasional alcoholic beverage is not a bad thing for people with high blood pressure, and there is even some evidence that people who have one drink a day may have fewer heart attacks than those who do not drink at all. Remember, however, that alcohol has a lot of calories. If you are trying to lose weight, you should keep this in mind. Limit daily alcohol intake to about one and a half or at most 2 drinks of 80 proof liquor. You should also set a limit of about 1–2 glasses of beer and 2 glasses of wine a day. Because women tend to be smaller than men, about one half of the above amount may be more appropriate. Pregnant women should not drink alcohol. *Remember, if you have a family history of alcoholism, or have a sensitivity to alcohol, you should not drink at all.*

Medical Treatment

All these lifestyle modifications may help, but specific medical treatment is vital if blood pressure remains higher than 140/90 mm Hg. Cutting out smoking, losing weight, exercising, relaxing more, and, most especially, reducing your salt and fatty food intake are all very good for you. But, except in some less severe cases, these may not by themselves lower elevated blood pressure over time. In most cases, you must use medications and usually continue to take them indefinitely.

Many people with high blood pressure are obese, have abnormal levels of certain fatty or cholesterol-like substances in the blood (lipid levels), and have a tendency toward diabetes (metabolic syndrome); therefore, efforts

should be made to normalize blood sugar and lipid levels with diet and medication, if necessary. In addition, after blood pressure has been controlled, a small dose (81 mg/day) of aspirin should be taken in an effort to possibly prevent a heart attack.

TREATMENT OF HIGH BLOOD PRESSURE WITH MEDICATION

Specific Medications For High Blood Pressure

Do not feel that you have “failed” if you end up taking medication. *One of the mistakes in treatment is to depend totally on lifestyle changes to control blood pressure.*

If you have been unsuccessful in reducing your blood pressure to goal levels (below 140/90 mm Hg) or even lower if you have diabetes, kidney, or heart disease after 2–3 months of attempting to change your habits (if they needed to be changed), your physician will probably decide to give you medication. If your blood pressure is initially very high—for example, more than about 160/100 mm Hg—or if you have other risk factors, such as diabetes, or are a smoker, your doctor may decide to begin medication after just one visit or after only a short (2–4 weeks) trial of nondrug treatment. There are more than 100 blood pressure lowering drugs available on the market in the U.S. Some of them, like diuretics, have been in use for 50 years; others have been introduced more recently. *Studies have demonstrated that the reduction of blood pressure will prevent progression from less severe to more severe hypertension, will prevent enlargement of the heart and heart failure, and will dramatically reduce strokes, stroke deaths, and heart attack deaths.* Benefit has been noted in both young and old persons,

even in people over 80 years of age—getting blood pressure down to below 140/90 mm Hg, or as noted below 130/80 mm Hg if you have diabetes or kidney disease, if at all possible is a good idea at all ages.

Many different drugs have been carefully tested and shown to reduce strokes and heart attacks. In 2003, the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure recommended diuretics as initial treatment unless there are specific indications for the use of other drugs. Therapy with other agents such as the ACE inhibitors, angiotensin receptor blockers, calcium channel blockers, and beta blockers has also been found to reduce the complications of high blood pressure. In a majority of cases, 2 of these different medications may have to be used in combination.

Diuretics, or so-called water pills, wash out extra salt or sodium from the body and from blood vessel walls and allow the blood vessels to dilate, thereby reducing blood pressure. There are many different brands of diuretic drugs. Some commonly used diuretics include chlorthalidone and hydrochlorothiazide. Physicians may prescribe various kinds for different people. For example, some diuretics will only be effective for 4–6 hours, while others will keep blood pressure low for as long as 48 hours.

Diuretics are well tolerated and most people are able to continue their use for many years without difficulty. Their use has resulted in a reduction in cardiovascular events both in the young and elderly. Some of the side effects of these agents are listed in the chart on pages 36–37. Diuretics are also available in combination with medications that prevent potassium loss which may occur when these

drugs are used. In addition, they are also used in combination with almost all of the other blood pressure lowering drugs.

Recent recommendations of the National Committee suggest that combinations of a diuretic and other medications may be acceptable as initial therapy in patients with diabetes or blood pressure higher than 160/100 mm Hg (see chart on page 30). Your doctor may elect to immediately start you on such a combination.

ACE inhibitors are a class of drugs that is widely used. Some of these are listed in the chart on pages 36–37 and include Aceon,[®] Altace[®], Capoten[™], Lotensin[®], Mavik[®], Prinivil[®], Vasotec[®], and Zestril[®]. The use of these drugs prevents the production of a chemical that causes blood vessels to constrict. The vessels open up and blood pressure is lowered. These drugs are especially effective in people with heart failure when they are used along with a diuretic, a beta blocker, and digitalis. Recurrence of heart failure and mortality are reduced. They are also especially useful in patients with diabetes and kidney disease; a combination of an ACE inhibitor and a diuretic may be the preferred treatment in such a situation.

Medications related to the ACE inhibitors, the **angiotensin II receptor blockers (ARBs)**, include Atacand[®], Avapro[®], Cozaar[®], Diovan[®], Micardis[®], and Benicar[®]. These medications act on the same chemicals as the ACE inhibitors but at a different location. Blood pressure is reduced. These are also effective in treating heart failure or in slowing down the progression of kidney disease, especially in diabetics. While a cough may occur in about 15%–20% of patients who are taking an ACE inhibitor, cough is rare with the ARBs.

Some Available Combination Medications*

- | | |
|-----------------------------------|-------------------------|
| 1) <i>Beta Blocker/Diuretic</i> | 4) <i>ARB/Diuretic</i> |
| Inderide LA | Atacand HCT |
| Lopressor HCT | Avalide |
| Tenoretic | Benicar HCT |
| Ziac | Diovan HCT |
| | Hyzaar |
| | Micardis HCT |
| | Teveten HCT |
| 2) <i>ACE Inhibitor/Diuretic</i> | 5) <i>Calcium</i> |
| Capozide | <i>Channel Blocker/</i> |
| Lotensin HCT | <i>ACE Inhibitor</i> |
| Prinzide, Zestoretic | Lexxel |
| Vaseretic | Lotrel |
| 3) <i>Two Different Diuretics</i> | Tarka |
| Aldactazide | 6) <i>ARB-CCB</i> |
| Dyazide, Maxzide | Exforge |
| Moduretic | Azor |

*Not all available combinations are listed.

A recently introduced medication, Tekturna[®] (aliskiren), a renin inhibitor, inhibits an enzyme that stimulates chemicals that constrict blood vessel—blood vessels dilate. This medication will probably be used in combination with other agents.

Combinations of an ACE inhibitor with a diuretic (Capozide[®], Lotensin HCT[®], Prinzide[®], Vaseretic[®], or Zestoretic[®]) or an ARB with a diuretic (Atacand HCT[®], Avalide[®], Benicar HCT[®], Diovan HCT[®], or Hyzaar[®]) have been shown to increase the number of people who respond to goal blood pressure levels of below 140/90 mm Hg from about 40%–50% when only one drug is given to about 75%–80%. These medications may also be considered for initial treatment.

Calcium channel blockers have been in use for more than 20 years. They act by preventing calcium from entering blood vessel walls or heart muscle. There are several different types of these agents; some will mostly block the effects of calcium on blood vessels. Others will also affect the heart rate. Drugs such as DynaCirc CR[®], Norvasc[®], Plendil[®], Procardia XL[®], or Sular[®] are effective in dilating blood vessels, whereas Calan[®] SR, Cardizem[®] CD, or Isoptin[®] SR may dilate blood vessels but also slow down the heart rate. Calcium channel blockers are also available in combination with ACE inhibitors. Examples include Lexxel[®], Lotrel[®], and Tarka[®] and ARBs. These include Exforge[®] and Azor[™].

Beta-blockers have been in use for more than 35 years. Examples of beta-blockers include Lopressor[®] and Tenormin[®]. These drugs reduce the effect of adrenaline on various parts of the body. They slow down the heart rate and reduce its force when it contracts, which reduces the work of the heart; blood pressure is lowered. The use of these agents, usually with a diuretic, has resulted in a reduction of strokes, heart failure, and, in some instances, heart attacks. In people who have already had a heart attack, beta-blockers will help prevent further heart problems.

Recent studies suggest that the use of beta-blockers does not reduce stroke as much as other medications and may not be a preferred medication in hypertensive patients without heart disease.

Other medications. There are many other effective drugs available, such as alpha/beta-blockers—Coreg[®] or Normodyne[®]/Trandate[®]. The alpha-blockers—Cardura[®], Hytrin[®], or Minipress[®] may be useful in

combination with other medications and will often help to relieve the symptoms of an enlarged prostate in men. Apresoline[®] and Loniten[®] dilate blood vessels directly. Drugs that are no longer used very much include: Aldomet[®], Catapres[®], and Serpasi[®]. These drugs may cause side effects, such as depression, drowsiness, or fainting, especially in large doses. They have mostly been replaced by the other medications listed above.

In most cases, taking 1–2 pills a day will control less severe high blood pressure, but *only about 40%–50% of people will have their pressures decreased to normal levels with any one of the medications when given alone, regardless of the drug chosen for initial treatment.* Black and elderly patients tend to get better results with a diuretic or a calcium channel blocker. Caucasians and younger patients generally respond better to an ACE inhibitor, an ARB, or a beta-blocker. In more severe cases, 3–4 different pills may be prescribed. This is not commonly necessary and can be a nuisance and quite expensive. It is well worth it; however, if it is necessary to bring blood pressure down to normal levels and prevent future illnesses and disability. The use of any one of the available combinations may help to limit the number of pills that you might have to take.

Possible Side Effects From Medications That Lower Blood Pressure

Side effects may occur when any drug is taken. In some instances, even simple aspirin may cause stomach trouble. Some people are allergic to drugs like penicillin, and the same is true for medications that lower blood pressure. For example, a few people taking diuretics may experience weakness and muscle cramps because, in addition to salt (sodium), another important mineral, potassium, may be

washed out of the body. This is not common when low doses are used. (Some combination medications, like Dyazide[®], Maxzide[®], or Aldactazide[®] prevent this from happening.) A chronic cough may result from the use of an ACE inhibitor. Some other possible side effects of blood pressure lowering drugs are listed. Importantly, most people taking medication for high blood pressure do not experience side reactions. (See Possible Side Effects chart, pages 36-37.) *If you have high blood pressure and you experience any of these side effects, do not stop the medication; this could lead to trouble. Instead, call your doctor to see what can be done about them, or ask if the dosage of the drug should be reduced or the prescription changed to another drug.* Your physician knows about these possible effects. He or she should be able to correct them in most instances. It is actually not uncommon for people to feel better on medications when their blood pressure is lowered.

Treatment Results Can Be Dramatic

Charles R., a 43 year old lawyer, was examined for insurance coverage in 1955. He was an active, vigorous man. His blood pressure was 230/140 mm Hg. He had no headaches, no sign of kidney or heart trouble, no symptoms, and was quite upset by the findings.

Charles R. is typical of thousands of people with high blood pressure who may have no symptoms. Thanks to medication, his blood pressure was lowered to normal levels in a period of several months. It remained within a normal range for more than 40 years. In the 1940s, this vigorous, active man would almost certainly have died of a stroke, heart attack, or kidney failure in 5-7 years. He did die, in 1996, but at the age of 84. He is a good

**Some Possible Side Effects Or Reactions To Commonly Used Blood Pressure Lowering Drugs—
These May Occur In About 10%–15% Of Patients**

Trade Names	Possible Side Effects	Trade Names	Possible Side Effects
<p>Thiazide Diuretics:</p> <p>Esidrix[®] Hydrodiuril[®] Hygroton[®] Lasix[®] Lozol[®] Zaroxolyn[®]</p> <p>Beta-Blockers:</p> <p>Corgard[®] Inderal[®] Lopressor[®] Sectral[®] Tenormin[®] Zebeta[®]</p>	<p>Increased urination, weakness, muscle cramps, joint pains (gout-rare), impotence</p> <p>Insomnia, nightmares, slow pulse, weakness, asthmatic attacks, cold hands and feet, impotence (varies with different drugs)</p>	<p>Calcium Blockers:</p> <p>Adalat CC[®] Cardene[®] DynaCirc CR[®] Norvasc[®] Procardia-XL[®] Plendil[®] Sular[®] Cardizem[®] SR or CD, Dilacor XR[®] Verelan[®], Calan[®] SR, Covera-HS[™], Isoptin[®] SR</p> <p>Alpha-Blockers:</p> <p>Cardura[®] Hytrin[®] Minipress[®]</p>	<p>Swelling of legs, dizziness, palpitations, headaches, flushes</p> <p>May slow heart rate</p> <p>Constipation</p> <p>Dizziness, headaches, fatigue, palpitations</p>

Trade Names	Possible Side Effects	Less Commonly Used Drugs
<p>Beta-Blockers With Other Actions: Coreg[®] Normodyne[®] or Trandate[®]</p>	<p>Other Actions: Dizziness</p>	<p>Centrally Acting Drugs:</p>
<p>ACE Inhibitors:</p>	<p>Accupril[®] Aceon[®] Altace[®] Capoten[®] Lotensin[®] Mavik[®] Monopril[®] Vasotec[®] Zestril[®] or Prinivil[®]</p> <p>Cough, skin rash, loss of taste, weakness, kidney problems Rare: swelling of lips, tongue, etc.</p>	<p>Catapres[®] Wytensin[®]</p> <p>Dry mouth, drowsiness, fatigue, sexual dysfunction</p> <p>Aldomet[®]</p> <p>Drowsiness, depression, impotence, fever</p> <p>Vasodilators: Apresoline[®]</p> <p>Loniten[®]</p> <p>Headaches, rapid heart beat, joint pains Headaches, rapid heart beat, excessive hair growth, joint pains</p>
<p>Angiotensin Receptor Blockers:</p>	<p>Dizziness</p>	<p>Other Medications:</p>
<p>Atacand[®] Avapro[®] Benicar[®] Cozaar[®] Diovan[®] Micardis[®] Teveten[®]¹⁴</p>		<p>Raudixin[™] Serpasil[®] Ismelin[®]</p> <p>Stuffy nose, nightmares, depression A form of impotence, dizziness, diarrhea</p>

example of the many people who have been treated successfully and whose lives have been prolonged without the fear of a serious illness such as a stroke or heart failure at a young age.

Staying on Medication: A Major Problem—“If It Only Hurt A Little”

People with low back pain, bursitis, or pneumonia go to a physician looking for relief. They accept anything their doctor suggests to gain relief from pain or other symptoms. On the other hand, people with high blood pressure, because they may have few or no symptoms, are often annoyed at being told that they will have to take medication for something that does not appear to be bothering them. “If it only hurt a little,” it would be easier to get people under treatment. None of us likes to be labeled as sick, and none of us likes to take medication when we are feeling well. *Getting people to comply with treatment is one of the main problems in dealing with hypertension.*

In some instances, symptoms resulting from hypertension—such as an early morning headache which disappears during the day—do cause a patient to go to a doctor. More commonly, the patient feels fine, and it is only on a routine examination that high blood pressure is discovered. To find out what your blood pressure is, you must have it checked.

Sometimes Treatment Can Be Simple

A married 20-year-old patient of mine discovered at a routine examination that her blood pressure was 155/105 mm Hg. There was no family history of hypertension. She had not been under any tension and was perfectly healthy. She was, however, taking birth control pills. (Oral contraceptives are a known cause of high blood pressure in a few women.) She stopped the birth

control pill and, within 3 months, her blood pressure returned to normal. As she continued to use another method of contraception, her blood pressure remained normal.

Only a small percentage of women who use birth control pills develop high blood pressure. If your blood pressure is found to be elevated and you are taking birth control pills, they should be stopped if possible before other methods of treating the high blood pressure are employed. Make sure to tell your doctor about this or any other medications you may be taking. The use of some “cold remedies,” pills to treat arthritis, herbal remedies, or drugs like cocaine may also increase blood pressure.

Treatment Or Cure?

Modern drug treatment does not cure hyper-tension. It keeps blood pressure at normal levels, but usually only as long as it is continued. If treatment is stopped, the blood pressure usually goes back to where it was before, although in some instances this may not happen for several to as long as 6-9 months. If doctors do not explain this or patients fail to realize how important continued treatment or follow up is, complications may occur. An example of this was a patient, a 53-year-old school teacher, who stopped her treatment because a friend had asked her: “Why are you taking so much medication?” Her pressure rose from a normal level (during treatment) of 130/80 mm Hg to 210-220/115-120 mm Hg and within 4 months, she had a stroke. It should never have happened, and it would not have, if she had continued her medication. Fortunately, she did recover almost all of the function she lost and her blood pressure was again brought under control with medication.

Recent national statistics show that the number of people with high blood pressure who are being treated has increased from less than 20%, 20 years ago, to as high as 70%-80% in some communities. However, only about 35%-45% of people with high blood pressure are being controlled at levels of below 140/90 mm Hg.

- 1) It is up to you to have your blood pressure checked.
- 2) If it is elevated, it is the responsibility of the physician to prescribe the right combination of medications and other treatment to bring your blood pressure back to normal levels.
- 3) In the final analysis, it is up to both you and your doctor to recognize how important treatment is and to follow a program that keeps your blood pressure under control. Often, a pharmacist or other health care professional will be able to help you get over the “rough spots” and stay on therapy. *If, despite medication, and a reasonable diet and exercise program, your blood pressure is still higher than 140/90 mm Hg, you should ask your doctor **why**—a change in your treatment may be indicated. If you have diabetes or kidney disease, efforts should be made to get your pressure to about as close to 130/80 mm Hg as possible.*

In some cases, after blood pressure has been normal for a year or more, it may be possible to reduce medication or, in rare cases (especially if a weight loss of more than 10-15 lbs has occurred), to eliminate it completely. Careful follow up is important in these instances.

Monitoring your blood pressure at home may be suggested by your doctor or you may be someone who just likes to “know the numbers.” Usually home monitoring is not complicated. Either a regular cuff with a stethoscope or one of the digital readout or electronic blood pressure monitors can be used. Obtaining several blood pressure readings in between doctor visits may be useful in situations where the diagnosis of high blood pressure is suspected but has not been clearly established. It is also helpful where pressures may only be intermittently high in the setting of a medical office or clinic (so-called “white coat” hypertension). In these instances, if readings at home are always below 130/80 mm Hg, your physician may elect to see you just every 6–12 months without suggesting specific treatment.

Home monitoring also may be useful in cases where blood pressure is difficult to control or where medications are being changed frequently. An example of this was Carl C., a 58-year-old man who complained of dizziness and whose initial office blood pressure readings had been about 200/110 mm Hg. Three different medications were required to control his office pressure but he continued to complain of episodes of dizziness. After he monitored his blood pressure at home, it was discovered that his symptoms had resulted from blood pressures that actually were now too low, not too high. Treatment was adjusted accordingly and the dizziness disappeared.

If you monitor your pressure at home, remember that the readings, especially the systolic pressure, can fluctuate by 20–30 mm Hg at various times of the day and can change following exercise, excitement, etc. Do not be

alarmed by these changes. Above all, do not become an anxious “blood pressure taker,” focusing too much of your attention on your blood pressure. There are far too many people who have become overly concerned or obsessed with their blood pressure or cholesterol numbers. Home blood pressure monitoring is useful for many people if it is not overdone. It is not recommended for everyone with high blood pressure. *24-hour blood pressure monitoring with special equipment is rarely indicated.*

T O S U M I T U P

Hypertension is a major health problem that results in much family tragedy, many thousands of lost work days, and a great deal of human grief. It costs the government and you billions of dollars a year. In some cases, it is a disease that might even be prevented if more people watched their salt intake and their weight. It is a disease that can be controlled; modern treatment can save lives.

Adequate treatment of high blood pressure has reduced the incidence of strokes and stroke deaths as well as heart attacks. It has practically eliminated heart failure resulting from hypertension and has prevented many cases from progressing from less severe to severe hypertension or kidney failure. Even in patients with less severe hypertension (blood pressures of 140–160/90–100 mm Hg), effective long-term treatment significantly reduces deaths from heart disease and strokes. Treatment appears to be worth the cost and the possible risk of side effects.

As noted, studies have also established the benefits of treating high blood pressure in older people even if just the upper reading

(systolic pressure) is elevated, e.g., a blood pressure of 160-170/80 mm Hg. Strokes, heart attacks, and heart failure are reduced if blood pressure is lowered (even in someone 80 years of age or older).

As noted, many people who have high blood pressure are also obese, have abnormal levels of various fatty substances in the blood as well as a tendency toward developing diabetes. These other possible problems should not be ignored.

F A C T S T O R E M E M B E R

- High blood pressure may not cause symptoms. Usually the only way to find out if you have it is to have your blood pressure measured.
- Tests to evaluate blood pressure are usually simple, and hospitalization is rarely necessary. When blood pressure is under control, doctor visits need not be frequent (2-4 times a year).
- The outlook for people with high blood pressure is excellent. In most cases, their habits need not be changed a great deal. They can look forward to a long life, free of many of the fears that used to accompany this diagnosis, as long as they continue treatment.
- Being heavy or obese may go along with having high blood pressure, but losing weight alone may not control blood pressure in many people. Losing weight if you are heavy is a good idea for many other reasons, even if it does not completely control your blood pressure.
- Smoking is bad for you, and you should stop it (or never start) to prevent heart

disease as well as lung damage. But stopping smoking by itself will not lower blood pressure.

- If you are very anxious, relaxing or taking tranquilizers or sedatives may help to lower blood pressure in some less severe cases, but these treatments will not work in the majority of patients.
- A low salt diet may help to lower blood pressure in some people with less severe hypertension, but most people cannot stay on a rigid enough salt restricted diet to lower blood pressure adequately without specific medication. A modified low-salt and high-potassium diet, however, should be followed in all cases. This may increase the effectiveness of medication.
- If modifying your eating habits and lifestyle does not lower your blood pressure, keep in mind that there are excellent medications to reduce blood pressure and control it in a large majority of patients.
- Although side effects or annoying symptoms may occur in a small number of people with some of the blood pressure lowering drugs, these usually can be controlled or eliminated by changing dosages or switching to another medication.
- Above all, remember that being *on treatment* does not mean that your blood pressure is controlled. If your blood pressure is not below 140/90 mm Hg, or below 130/80 mm Hg if you have diabetes or kidney disease, despite lifestyle changes and medication, ask your doctor *why*. Some aspect of your treatment may have to be changed. Normal blood pressure cannot be achieved in everyone,

but about 80%-85% of people with high blood pressure can be successfully treated regardless of the severity of their disease.

Aneurysms: Small blister-like expansions of blood vessels. They represent weak spots in the artery. They may rupture and cause bleeding or a hemorrhage.

Atherosclerosis: “Hardening” of the arteries. Fatty material is deposited in the walls of arteries, which are thereby narrowed.

Angiotensin or AII Receptor Blockers (ARBs): Medications that block the effects of substances that cause blood vessels to narrow.

Blood Pressure: Pressure exerted against the walls of the arteries.

Systolic (upper reading)—pressure recorded at the time when the heart is pumping.

Diastolic (lower reading)—pressure recorded when the heart is resting, in between beats.

Normal (over age 18)—up to 135/85 mm Hg. A blood pressure reading of 135–139/85–89 mm Hg is considered “high-normal.”

Isolated Systolic Hypertension (ISH): A systolic blood pressure above 140 mm Hg and a diastolic blood pressure below 90 mm Hg indicates ISH.

Calcium Channel Blockers: Medications that interfere with the movement of calcium in and out of the blood vessel walls. Dilation of blood vessels and a lowering of blood pressure result from their use.

Cardiovascular: Refers to heart and blood vessels, e.g., diseases of the cardiovascular system.

Cholesterol: A fatty substance in our bodies that is necessary for producing certain hormones, etc. It is found in many foods (milk, eggs, and meat, etc.). Vegetables, grains, and fruits do not contain any cholesterol. If too much cholesterol is present in the blood, the process of “hardening of the arteries” may be hastened.

Converting Enzyme Inhibitors (ACE Inhibitors): Medications that block the formation of a substance that constricts blood vessels.

Coronary: Refers to the heart, e.g., coronary arteries are those arteries that supply blood to the heart muscle.

Diuretics: “Water pills”—medications that wash out salt (sodium) from the body and help to reduce elevated levels of blood pressure.

Hypertension: High blood pressure. A consistent blood pressure recording of more than 140/90 mm Hg.

Lipids: Fatty substances in the blood—total cholesterol, high- and low-density cholesterol, and triglycerides. These are often abnormal in people with high blood pressure.

Metabolic Syndrome: People who are obese (waist measurement >38 inches in men and >34 inches in women), have high-normal or prehypertensive blood pressure levels, borderline blood sugar levels (110–125 mg/dL), and certain abnormalities in lipids in the blood have the metabolic syndrome. These abnormalities should be corrected, if possible, to avoid heart and kidney disease.

mm Hg: Millimeters of mercury. The blood pressure numbers in this booklet refer to the height to which your blood pressure would push a column of mercury.

Potassium: A mineral in the cells of the body that may be washed out by diuretics, especially in high doses. Can be found in foods such as bananas and orange juice. “Salt substitutes” usually contain potassium.

Salt: Common table salt is sodium chloride. Potassium chloride is a salt substitute.

Sodium: A component of salt (about 40% of salt is sodium). This is a mineral that may contribute to high blood pressure if taken in large amounts by certain people.

Sphygmomanometer: A device that measures blood pressure.

Stroke: Sudden loss of function of a part of the brain due to interference with its blood supply. May be caused by a clot (thrombosis) or rupture of a blood vessel (hemorrhage).

Sympathetic Nerves: Nerves that, when stimulated, constrict or narrow blood vessels and cause blood pressure to rise.

Uremia: The result of kidney failure. Waste products accumulate in the body when the kidney fails to excrete enough of them in the urine.

Vascular: Refers to blood vessels.

Marvin Moser, MD is a Clinical Professor of Medicine at the Yale University School of Medicine and was the Senior Medical Consultant to the National High Blood Pressure Education Program of the National Heart, Lung, and Blood Institute from 1974 to 2002. He was Chairman of the first Joint National Committee on the Detection, Evaluation and Treatment of High Blood Pressure, and a member of the six subsequent committees. He is a Fellow of the Council for High Blood Pressure Research of the American Heart Association and a Hypertension Specialist of the American Society of Hypertension. He is the author of 11 books, including *Lower Your Blood Pressure and Live Longer, Week by Week to a Strong Heart, Heart Healthy Cooking For All Seasons, and Clinical Management of Hypertension*. He was a Co-Editor and contributor to the *Yale University School of Medicine Heart Book* and has published more than 500 scientific papers in the field of hypertension and cardiology. He is Editor in Chief of *The Journal of Clinical Hypertension* and has received numerous awards for research and treatment of high blood pressure from the International Society of Hypertension, The National Heart, Lung, and Blood Institute, and the American Society of Hypertension. He is an honorable fellow of the Royal College of Physicians and Surgeons.



HYPERTENSION EDUCATION FOUNDATION
P.O. BOX 651
SCARSDALE, NY 10583

WWW.HYPERTENSIONFOUNDATION.ORG