

Part I: DO YOU REALLY HAVE HYPERTENSION AND DO YOU NEED MEDICATION?

By Bill Sardi

Preface: Blood pressure is the amount of mercury (Hg) displaced in a column, measured in millimeters. There are two numbers for blood pressure. The first number (systolic) measures the pressure when the heart pumps, and the second number (diastolic) measures the pressure when the heart is momentarily at rest. Treatment for hypertension may begin if your blood pressure rises above 140/90. For simplicity, this report refers to blood pressure in "points" and refers to the "first" and "second" numbers so readers do not get confused.

Introduction

This disturbing report is likely to raise your blood pressure. It's meant to have the opposite effect.

Americans are living longer and that means 9 out of 10 will face the diagnosis of hypertension during their lifetime. [J American Medical Assn 287: 1002-1010, 2002] Every American family is likely to have a loved one treated for high blood pressure, or be diagnosed with hypertension themselves. At least this is what we are told by health authorities. But do millions of Americans really have hypertension? Do they need life-long medications? Do blood-pressure lowering medications really prevent strokes and heart attacks? .

When you go to the doctor you see the needle bounce on the blood pressure dial and you can see that your pressure is high. But was your blood pressure taken

properly? A slight shift in your arm position could produce false readings and you might be needlessly placed on medication.

You may be surprised to find that the aggregate care of hypertension provided by physicians and pharmaceutical companies is in a shocking state of disarray. Anti-hypertensive drugs don't work and may increase the risk of sudden death. Patients themselves are not compliant with dietary recommendations and are justifiably even less compliant with onerous drug regimens. After a careful review of the scientific literature it can only be concluded that the modern care of hypertension is itself a hazard to your health.

There is an urgent need for simpler, less problematic, less costly technologies to control hypertension. Some promising simple technologies exist, but are being overlooked by modern medicine.

Here are the details:

Arm position

Improper arm position when measuring blood pressure with a cuff is often likely to over-diagnose hypertension and cause inappropriate treatment. The arm should be held horizontally, and at the height of the heart, during blood pressure measurement. Failure to perform blood pressure measurements in the proper arm position can cause a pressure of 155/85 to increase by 25/11, or read as

"Measure of blood pressure is probably the most frequently performed medical act, and the least reliable."

[Rev Med Liege 57: 250-52, 2002]

180/96. According to one study, less than 8 percent of nurses and doctors measure blood pressure utilizing the proper arm position.

“A relatively small downward arm movement in a patient’s with high normal blood pressure could influence the diagnosis and treatment of hypertension.” **Errors in blood pressure measurement are so widespread that this casts doubt upon estimates of the prevalence of hypertension in the population at large and uncertainty regarding the effectiveness of many medicines used to treat hypertension.** [Internal Medicine Journal 34: 290-91, 2004]

In another study, blood pressure was measured in the proper horizontal position and then the arm was dropped to the side and another measure was obtained. For adults with normal blood pressure, their numbers rose by 8/7. Among hypertensive patients the number rose by 23/10. [J Human Hypertension 17: 389-95, 2003] Another study showed that the difference in arm position results in a 11/12 point difference among hypertensive patients. [Br Med J 288: 1574-75, 1984] Whenever blood pressure is measured the arm position should be documented. [J Clin Hypertension 3: 624-30, 1987]



Proper arm position for measurement of blood pressure

There are many other reasons why blood pressure measurement may be inaccurate.

- Doctors and nurses may be using the wrong size blood pressure cuff on your arm, which would raise the blood pressure reading. The size of the cuff needs to match your arm size.

- One of the problems with blood pressure measurement in the doctor’s office is that pressure may be charted during a sick visit. Blood pressure may be elevated when you are ill. A “well visit” to the doctor’s office may give you a more accurate reading.

- Another discrete factor may artificially raise your blood pressure. Doctors often utilize a bright-light ophthalmoscope to examine the back of the eyes during a physical examination. Bright light has been shown to raise blood pressure in normally health adults. [Archives Environmental Health 42: 37-43, 1987]

- Another problem in monitoring blood pressure is that in an attempt to remove mercury-filled blood pressure gauges from hospitals and doctor’s offices for environmental reasons, news devices are not as accurate. Accurate blood pressure measurement may not be possible using non-mercury instruments. [New York Times June 16, 2002]

For all of these reasons, some authorities believe one third to one half of the blood pressure readings performed in clinics and doctor’s offices are wrong. [New York Times August 1, 2000]

White coat hypertension

Many patients experience anxiety in a doctor’s office. It’s enough to raise blood pressure. Just the sight of the doctor’s white coat can trigger a rise in blood pressure. This has been termed “white coat” hypertension.

In one study 20 percent of males and 54 percent of females had a “white coat” response when their blood pressure was measured. [Canadian Medical Assn Journal 161: 265-69, 1999]

Patients see the doctor’s white coat, and their blood pressure rises above normal

[Blood Pressure Monitoring 7: 293-300, 2002]

Many patients diagnosed with drug resistant hypertension really have white coat hypertension. Their blood pressure is elevated in the doctor’s office or clinic, over-riding the pressure control of medication. When a doctor records blood pressure one study showed this raised blood pressure by 16 to 26 points and when a nurse took the blood pressure it raised the numbers by 9 to 17 points (systolic pressure).

[Reuters Health Dec. 21, 2001; American Journal Hypertension 14: 1263-69, 2001]

Researchers estimate that 25 percent of hypertensive patients can postpone drug treatment and 15 percent can avoid multiple-drug therapy by monitoring their blood pressure away from doctors and nurses. [J Am Medical Assn 278: 1065-72, 1997; 279: 197-98, 1998]

Home blood pressure monitoring appears to be a better alternative, away from the stress-inducing rise in

At least a third of patients who exhibit a high blood pressure reading in the doctor's office do not exhibit the same problem when their blood pressure is taken by a nurse.

[Am J Hypertension 14: 1263-69, 2001; BMC Cardiovascular Disorders 4: 2, 2004]

blood pressure at the doctor's office (white coat hypertension). A recent study of home blood pressure monitoring reveals more of these patients are likely to abandon their medications (25.6%) than patients being monitored at the doctor's office (11.3%) and that their blood pressure was more likely to be out of control. [February 291: 955-64, 2004]

DOES HOME BLOOD PRESSURE MONITORING IMPROVE COMPLIANCE?	
Survey of 1452 patients Hypertension Research 23: 21-24, 2000	
Frequency of use of home monitoring of blood pressure	Occasionally missed taking their medications
Every day	6.5%
Several times a week	10.1%
Several times a month	11.0%
Never checked their blood pressure	14.5%

Millions are/aren't hypertensive

More than \$16 billion of antihypertensive drugs were sold in 2000. More than half of the patients on these medications have borderline or mild hypertension. If small declines in blood pressure could be achieved,

millions of people may not even need these medications.

About 50 million Americans have high blood pressure and about half are being treated. Only about 27 million have their blood pressure under control.

According to the prevailing criteria, one third of American adults are hypertensive and don't know it. [Reuters Health May 19, 2000] **While 140/90 is the long-standing point where treatment is started, now investigators say the desired point for blood pressure is now 115/75.** The once-healthy 120/80 is now considered to be "pre-hypertension." That means another 45 million Americans are in for a surprise on their next doctor's visit. [The Lancet Dec.14, 2002]

120/80 used to be considered normal blood pressure. Now it is considered pre-hypertension.

But do you really have high blood pressure? Are you really at an increased risk for stroke or a heart attack? According to a shocking study conducted by University of California at Los Angeles researchers, **millions of people are taking blood pressure-lowering drugs for no good reason.** Flawed statistics have been used to decades to prescribe these drugs. Physicians now consider the first blood pressure number (systolic pressure) as the important indicator of a future mortal event like a stroke or heart attack. Usually pressure-lowering drugs are prescribed when the first pressure number rises above 140, but revised figures which take age into consideration indicate an increased risk of dying does not start till pressure reaches 148 for males and 158 for females age 55-64 years. For adults age 65-74, the figures rise to 159 for males and 167 for females. [Lancet 355: 175-80, 2000] This re-analysis of blood pressure risks has been suppressed. Health authorities are in denial that their long-standing numbers used to determine when treatment should be prescribed are flatly wrong.

The diastolic blood pressure (second number), which has been the main criterion used by most physicians to determine effective drug control of hypertension, appears to be of little value in predicting future adverse health events such as

REVISED TOP BLOOD PRESSURE NUMBER WHICH INDICATES NEED FOR TREATMENT			
	Age 45-54	Age 55-64	Age 65-74
Top blood pressure number that indicates increased risk of dying and need for medication	Males 141 Females 142	Males 148 Females 158	Males 159 Females 167
Source: Los Angeles Times January 14, 2000			

stroke or heart attack. The systolic blood pressure (first number) is a good predictor of these events. [Archives Internal Medicine 162: 577-81, 2002] The National Heart, Lung and Blood Institute now says the first blood pressure number is more important than the second and that it should be kept below 140, regardless of age. [CNN May 4, 2000] **For decades physicians had been gauging the severity of blood pressure by the wrong number.**

Pharmacotherapy 51: 208-12, 1997] The problem is that these are **relative, not hard numbers.**

Statistics tell doctors whether blood pressure therapy works, but it doesn't tell them who will benefit. Research shows that to prevent 1 death, 11 patients with hypertension have to lower their blood pressure by about 12 points over a 10-year period. [Drug Topics Jan. 26, 2004] In other words, 10 of 11 patients taking anti-hypertensive drugs will not experience a health benefit. The anti-hypertensive drugs are proven to be more effective than not in large populations, but many millions take these drugs with no health benefit so a few will be spared of a mortal health event.

Medical treatment of hypertension may reduce strokes but have no effect upon lowering the rate of heart attacks. [J Hypertension 18: S3-7, 2000]

In France, a study showed that drug therapy did not control elevated blood pressure among 85 percent of 4714 men. [Archives Internal Medicine 162: 577-81, 2002]

Other studies show as little as 6 in 100 hypertensive patients are able to control their blood pressure to below the target number of 140/90. [J Hypertension 16: 747-52, 1998]

A study in Germany found that on an average day over 700,000 patients are seen by physicians with high blood pressure and only 132,000 of these patients have well-controlled pressure. Better than 8 out of 10 of these patients were taking blood pressure medications. [J Hypertension 22: 479-86, 2004]

ARE YOUNG ADULTS REALLY AT RISK FOR HYPERTENSION?

High blood pressure may often be misdiagnosed in young adults. In a study of more than 13,000 individuals whose blood pressure had been measured annually for three years, of 36 men age 16 to 34 to who had been classified as needing treatment, only 11 really needed treatment. Only 5 of 19 women actually needed treatment. [BBC News April 15, 2004; British Medical Journal, April, 2004] The numbers used to determine the point when treatment should be prescribed may not apply to young adults. **The absolute risk of experiencing a major cardiovascular event over a 10-year period amounts to only 1% for hypertensive young adults, age 25-34 years.** But this figure is said to rise to 30 percent among older adults, age 65-74 years. [Biomed & Pharmacotherapy 51: 208-12, 1997]

Does drug therapy work?

The quoted figures are that drug therapy may reduce mortality rates by 12 percent, coronary heart disease by 20 percent and stroke by 36 percent. [Biomed &

Single anti-hypertensive drugs generally are not effective. Most of the time more than one drug is required to bring pressure under control.

1 drug: 50-60% under control

2 drugs 80% under control

3 drugs: better than =80% under control

Two or three anti-hypertensive medications are by no means the end of the drug list prescribed by physicians. Low-dose aspirin therapy to prevent blood clots and statin drugs for cholesterol are often prescribed in addition to the pressure-lowering drugs. An anti-diabetic medication may also be needed for individuals with blood sugar issues. [J Human Hypertension 18: 139-85, 2004] Now you have polypharmacy – a patient being overwhelmed by too many medications and facing drugs that don't work well with each other, and that induce nutrient deficiencies as well. Various reports admit to the problem of juggling so many drugs while still attempting to avoid side effects. [Cardiovascular Drugs & Therapy 12: 186-98, 1998]

A recent study attempted to determine if simpler dosage regimens, such as one pill a day, would increase adherence to treatment. Reduction in the number of daily doses appears to increase compliance in some studies. [Cochrane Database System Review CD004804: 2004]

People who take acetaminophen (Tylenol) or ibuprofen (Motrin) may double their risk for hypertension. These drugs may raise blood pressure by blocking the production of hormone-like substances that widen blood vessels and can also increase sodium retention.

[Curhan G, Archives Internal Medicine, October 2002; New York Times Oct. 28, 2002]

Despite the fact there are four major classes of blood pressure lowering drugs and over 100 varieties of these drugs available, **less than 50% of patients who begin treatment continue taking any of these drugs six months after initial use.** [Canadian J Cardiology 15: 39-41F, 1999]

Side effects with drug therapy

Far more side effects occur from anti-hypertensive medications than are reported. Sometimes it is

difficult for patients to connect a side effect with a drug. In one study conducted in Norway with 2,586 patients taking blood pressure-lowering drugs, the spontaneous reported side effects were only 16%. But upon general inquiry 24% reported side effects and when specific questions regarding common side effects were asked 62% reported drug-induced symptoms. [Blood Pressure 8: 94-101, 1999]

A survey published in 1999 revealed that about 3 in 10 patients taking blood pressure medications report side effects that altered their lives. The most common side effects are fatigue, potassium loss and dizziness. Nearly 4 of every 10 patients had considered ending their medication treatments due to adverse side effects. The survey participants were taking 3 anti-hypertensive drugs, on average. [Medical Tribune, November 12, 1999]

MOST COMMON SIDE EFFECTS OF BLOOD PRESSURE DRUGS	
Source: Doctor's Guide Nov. 10, 1999	
Beta blockers	Fatigue 34%
Diuretics (water pills)	Mineral imbalance 30%
Calcium channel blockers	Swelling (edema) 26%
ACE inhibitors	Cough 21%
Alpha blockers	Cramping 7%

While physicians and pharmaceutical companies continue to claim the drawbacks of their drugs are far outweighed by their benefits, the Agency for Health Care Policy and Research states that the potential benefits of **these drugs “may not outweigh their negative effects on quality of life.”** Stomach aches, fatigue, nausea, impotence, headaches, urinary tract problems, and many other side effects are common. [J Clinical Epidemiology 49:1239-45, 1996; Agency for Health Care Policy Research report No. 201, 1997]

Anti-hypertensive drugs are intended to reduce the risk for cardiovascular disease, but ACE inhibitors, a common type of drug used to control blood pressure, may raise homocysteine levels by as much as 16 percent. [Metabolism 52: 261-63, 2003] Homocysteine is an undesirable blood protein linked with blood vessel disease. **The reduced risk for cardiovascular disease**

via blood pressure control is offset by elevated homocysteine which raises the risk of hypertension and cardiovascular disease.

It's no wonder males do not take a liking to anti-hypertensive drugs. One study shows that 4 out of 10 males link the onset of their use of blood pressure lowering drugs with impotence. [Am J Hypertension 12: 271-75, 1999]

There is also such a thing as too low blood pressure. When the second number (diastolic) goes below 65 there is actually an increased risk of stroke, the very adverse health event drugs are intended to prevent. [Hypertension 34: 1179-85, 1999] Some hypertensive patients experience an abnormally low blood pressure during sleep and awaken to find the vision in one eye is gone because of a lack of oxygen supply.

For a long time physicians prescribed calcium blockers for hypertension without knowing the drug increased the risk of a heart attack. In 1995 the pharmaceutical companies had to perform a U-turn and convert patients to slower-acting calcium channel blockers after it was found that the fast-acting versions of this drug actually increased the risk of heart attacks by 60 percent. Six million Americans were taking these calcium blockers at the time. [Associated Press, March 11, 1995] How many patients died prematurely before these drugs were removed from use is unknown.

Beta blockers are another class of antihypertensive drugs. **Since beta blockers increase insulin resistance, they have been shown to increase the risk of diabetes.** [New England J Med 342: 905-12, 2000] Diabetes then hastens the onset of hypertension. It's a self-perpetuating disease.

Lifestyle and health habits

Physicians appear to give lip service to dietary and lifestyle measures to control blood pressure. Here is what a report in one journal said: *“Non-drug therapeutic options should be implemented in all patients. However, since there is overwhelming evidence to suggest that antihypertensive drugs offer protection against complications of hypertension, a vast majority will require pharmacological treatment to achieve goal*

blood pressure levels.” [Am J Cardiovascular Drugs 2: 77-89, 2002] In other words, the drugs work, so why bother with dietary approaches to hypertension?

The British Antihypertensive Society says advice on life-style modifications should be provided people with high blood pressure. But their guidelines also state that every patient with a sustained systolic blood pressure above 160 should be started on drug therapy outright. Furthermore, diabetics with hypertension are at increased risk should be started on medications if their sustained blood pressure exceeds 140/90. Among people whose systolic blood pressure is 140-159 and diastolic pressure 90-99, physicians should make an assessment of cardiovascular disease risk, say British guidelines. A disease risk greater than 20 percent over a 10-year period is considered reason to prescribe medications. The British guidelines concede that most patients will require at least two blood-pressure lowering drugs. It's easy to see how diet and lifestyle changes get pushed aside for the drugs.

How do drugs overcome hypertension in a patient who continually consumes excessive sugar, salt and alcohol and smokes?

But can the drugs overcome a poor diet? Inside the “stroke belt,” the southeastern U.S., anti-hypertensive drugs are far less effective than in other parts of the country. [Archives Internal Medicine 160: 825-31, 2000] Surveys reveal people living in the southern stroke belt consume the most salt and lower amounts of potassium, magnesium and other nutrients. [Journal Nutrition 133: 211-14, 2003] The lesson here is that drugs can't always overcome the deleterious effects of a poor diet. But doctors keep prescribing the drugs.

Elderly patients tend to have more fatty tissue and this dulls the effect of fat-soluble drugs such as the beta blockers. This is an admission the beta blockers are far less effective against a primary group that is at risk for stroke and hypertension, the obese.

There is strong evidence that a number of small alterations in diet and lifestyle can prevent hypertension or lower existing high pressure. Researchers at the

WHY YOU WILL NEVER GET WELL TAKING BLOOD PRESSURE DRUGS

Source: Drug Safety: 14: 355-64, 1996

	Increases insulin resistance	Raises total cholesterol	Raises LDL cholesterol	Raises triglycerides
Diuretics	X	X	X	X
Beta blockers	X	X	X	X

National Cardiovascular Centre in Osaka, Japan, using home blood pressure monitoring, report the following factors reduce blood pressure:

According to public health authorities, a reduction as small as 2 points in the average American's first blood pressure number could save more than 70,000 lives a year.

Health practice	Pressure reduction (mm mercury) Top pressure number (systolic)/ bottom pressure number (diastolic)
Weight reduction	
Low calorie diet	10/4
Daily walking	2-3/1-2
Low-salt diet	9/4
Potassium supplementation	3-4/1-2
Calcium supplementation	1-2/1
Alcohol restriction	3/2
[Blood Pressure Monitoring 7: 51-54, 2002]	

Poor patient compliance is often blamed for the failure to successfully treat high blood pressure in the population as a whole. It can be said that it may be difficult to change simple dietary habits among hypertensive patients. But half of the patients on drug therapy abandon their medications as well. As much as 16 to 50 percent of patients stop taking their blood pressure drugs within the first year of treatment. Since blood pressure is a silent killer, and the drugs often cause fatigue, dizziness and other side effects, the patients often feel better when not taking the drugs. [Drug Topics Jan. 26, 2004] Physicians concede drugs

need to be more amenable to the patients so they won't stop taking them due to side effects.

Blood pressure lowering drugs

The first effective blood pressure lowering drug became available in the 1950s. There are four major classes of anti-hypertensive drugs.

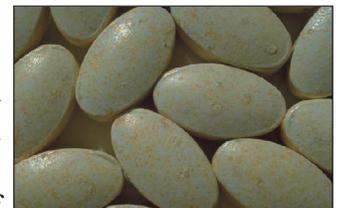
THE FOUR CLASSES OF ANTI-HYPERTENSIVE PILLS	
Diuretics	Move water and salt out of the body
Beta blockers	Slow the heart rate and thus reduce blood pressure
ACE inhibitors	Reduces the production of a chemical (angiotensin II) that narrows the arteries
Calcium channel blockers	Block the influx of calcium into cells; reduces force of contraction in heart muscle

Every anti-hypertensive drug depletes the body of nutrients. Because of this, there is no way hypertensive patients will ever get well. They will suffer nutrient-related side effects from the various drugs (see chart on following page).

Which pill should be used first?

The conflicting reports

Doctors are involved in a long-standing debate on which drug to use first to treat hypertension. See if you can make sense of these conflicting reports:



DRUG CLASS	GENERIC (BRAND) NAME	NUTRIENT DEPLETED
Calcium blocker	Atenolol (Tenormin)	Coenzyme Q10
Beta blocker	Diltiazem (Cardizem)	None reported Lowers melatonin, a brain hormone that induces sleep; drug may cause sleep disturbance (Eur J Clin Pharm 55: 111-15, 1999) Beta blockers raise cholesterol; chromium supplements should be taken to counter this problem [Ann Internal Med 115: 917-24, 1991] Up to 25% of beta blocker users will develop a need for antidepressants
ACE inhibitor	Captopril (Capoten), Benazepril (Lotensin) Enalapril (Vasotec), Lisinopril (Prinivil) Quinipril (Accupril)	Zinc
Diuretic	Hydrochlorothiazide	Coenzyme Q10, magnesium*, phosphorus, sodium, zinc, folic acid
VasodilatorHydralazine (Apresoline)	Coenzyme Q10, magnesium, potassium, vitamin B6, zinc,	
COMPANION DRUGS OFTEN PRESCRIBED TO HYPERTENSIVE PATIENTS		
Acetylsalicylic acid	Aspirin	Folic acid, potassium, sodium, vitamin C, iron
Anti-diabetic	Glyburide (Micronase) Metformin (Glucophage)	Coenzyme Q10 Folic acid, vitamin B12
		* Magnesium shortage may result in sudden-death heart attack

- “ACE inhibitors should be preferred to diuretics in elderly patients.” [Expert Opinion Pharmacotherapy 4: 825-88, 2003]

- Diuretics are considered the first line of treatment for elevated blood pressure. [Expert Review Cardiovascular Therapy 1: 35-41, 2003] “An old fashioned diuretic is as good, if not better, than some newer more expensive medicines for treating high blood pressure, according to a government sponsored study.” [Associated Press, Dec. 17, 2002; J Am Med Assn 288: Dec. 18, 2002]

- “The lack of benefit and potential side effects of beta blockers are overstated. Some investigators recommend these agents not be used in the management of hypertension in the elderly. There are numerous reasons why these recommendations should not be followed. There is abundant evidence that beta blockers are effective therapy.” [J Clinical Hypertension 10/08/2002]

Most hypertensive patients are placed on more than one medication but unless the drug regimen includes a diuretic, patients will be at increased risk for stroke. [Archives Internal Medicine 161: 37-43, 2001]

At one time the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure erroneously recommended beta blockers as first-line treatment in the elderly, but beta blockers are inappropriate “and should no longer be used as initial antihypertensive therapy.” This means that more than 7 million elderly patients with high blood pressure are exposed to the cost, inconvenience and side effects of beta blockers without any potential for health benefits whatsoever. [Archives Internal Medicine, July 26, 1999]

Despite the myriad of side effects, lack of patient acceptance and ineffectiveness of the drugs, Dr. Donald Lloyd-Jones at Northwestern University says elderly patients with high blood pressure need to be treated more aggressively, with more drugs. The majority of patients are being treated with just one drug, he claims. [American Society Hypertension 19th Annual Meeting, New York, May, 2004] Dr. Lloyd-Jones says they need more medications.

Does weight influence high blood pressure?

The literature regarding weight and blood pressure is conflicting.

A study of overweight individuals over a period of 8 years did not show that weight reduction lowers elevated blood pressure. [Hypertension 36: 20, 2000]

However, another study showed that exercise drops blood pressure by 2 to 3.5 points, and exercise plus weight reduction drops blood pressure by about 6 to 8 points. [Hypertension, August 2000]

Another report claims an overweight person may reduce pressure by about 1 point for every 2 pounds of weight loss. [Hypertension 42: 878-84, 2003]

Oddly enough, overweight individuals with high blood pressure are less likely to die prematurely or have heart attacks or strokes than thinner people. Fat dulls the heart muscle excitability from adrenal stress hormones like adrenaline. In thin people these stress hormones can increase the size of the heart and cause stiff arteries. [J Am Medical Assn 285: February 28, 2001]

So which drug is the drug physicians should prescribe first? Beta blockers or diuretics? Both of these drugs increase the risk of sudden death.

Going off drugs cold turkey

Can hypertensive patients go off their drugs cold turkey? In a British study, 22 percent of patients who stopped taking their drugs neither suffered a relapse or related problems after three years. One in three men and one in six women succeeded at stopping their medication. [British Journal General Practice 49: 977-80, 1999, BBC News, January 31, 2000]

The root causes of hypertension

There are four main root causes of hypertension that never seem to be properly addressed. These are calcification, sugar, salt and nitric oxide.

Calcification

When arteries become stiff and inflexible due to calcification, hypertension may develop. [Hypertension Research 27: 47-52, 2004] Women develop hypertension at an alarming rate after menopause. The release of calcium from bones in the post-menopausal period then accumulates in arteries which can result in hypertension. [Biol Trace Element Research 63: 105-11, 1998] Calcification of arteries in the breast of females, visible in mammograms, is also a marker for hypertension. It is interesting to note that arteries in the breast don't begin to calcify in women until age 40 and rises with advancing age. [Clinical Radiology 59: 92-95, 2004] But another study indicates age or gender do not influence calcification. [Radiology 224: 235-42, 2002]

In one study, coronary artery calcification was found among 62% of men with normal blood pressure and 84% of men with high blood pressure. Coronary artery calcification is more often associated with hypertension in women than men. This is likely due to the loss of calcium from bones in post-menopause, with the calcium being deposited in arteries. In the same study cited above, 23% of women with coronary artery calcification had normal blood pressure while 62% of the hypertensive women had calcified coronary arteries. [Med Sci Monitoring 2002; 8: CR775-81, 2002]

Calcium-blocking drugs stop the influx of calcium into cells, but they don't stop arterial calcifications per se. Hormones such as estrogen, which sends a signal for bones to retain rather than release their calcium, and vitamin K and magnesium help to retard calcifications.

Nitric oxide

Nitric oxide is a transient gas that widens (dilates) arteries and controls blood pressure. It is produced from the amino acid arginine. At low concentrations nitric oxide can improve circulation, but at high

concentrations it can cause circulatory shock and induce cell death.

A recent report indicates the decline in production of nitric oxide is a major cause of high blood pressure. Blood pressure lowering drugs have only shown limited ability to restore nitric oxide. [Current Pharmacological Des 10: 1695-98, 2004]

Because nitric oxide is the agent that dilates blood vessels and improves circulation as well as blood pressure, the lack of nitric oxide is associated with erectile dysfunction in males. About 4 in 10 males with erectile dysfunction also have high blood pressure. [Journal Urology 171: 2341-45, 2004]

In a laboratory researchers demonstrated that magnesium enhances the production of nitric oxide in the cells that line the inside of arteries. Thus magnesium plays a role in widening blood vessels, preventing hypertension and blood clots. [Biochim Biophys Acta 1689: 6-12, 2004]

Estrogen is believed to play a role in controlling hypertension. In animals whose ovaries have been removed, supplemental estrogen has been shown to increase blood serum levels of nitric oxide. [Clin Chim Acta 344: 53-57, 2004]

The provision of phytoestrogens (plant estrogens) may counter this problem. In an animal study, female mice whose ovaries had been surgically removed to stop production of estrogen, a high sodium diet raised their arterial pressure but a normal sodium diet did not. This means the loss of estrogen may make females more salt sensitive. The provision of plant estrogens to these animals on a high sodium diet reduced their arterial pressure. [Am J Physiol Regul Integr Comp Physiol 281: R1934-39, 2001] An excellent source of plant estrogens are lignans found in flaxseed meal.

Natural molecules called polyphenols, found in grapes, berries, tea leaves and wine can induce nitric oxide formation. [Clin Chim Acta 344: 53-57, 2004]

Red wine molecules have been shown to enhance the blood-pressure lowering effects of both acetylcholine

and nitric oxide. [Clinical Experimental Pharmacology Physiology 30: 605-15, 2003]

It is obvious that antihypertensive drugs don't adequately address the issue of nitric oxide but natural molecules do. These natural molecules are overlooked.

Sugar

While excessive salt consumption is widely known to elevate blood pressure, high sugar levels go overlooked as a major cause of hypertension. Elevated sugar levels increase the presence of aldehyde, a chemical that raises blood pressure. Not one of the current anti-hypertensive drugs adequately addresses this problem, though anti-diabetic drugs do.

Numerous natural molecules available as dietary supplements counter the rise in aldehyde/sugar-related hypertension.

- N-acetyl cysteine, a sulfur-based dietary supplement, binds to aldehydes preventing their damaging effects upon proteins. [Artery 23: 10-36, 1998]
- Another sulfur-based dietary supplement, alpha lipoic acid, has also been shown to reduce blood pressure caused by elevated sugar levels. [Nutrition Metabolism Cardiovascular Diseases 10: 339-46, 2000; J Hypertension 18: 567-73, 2000; Hypertension 39: 303-07, 2002]
- High-dose Vitamin B6 has been shown to have powerful effects at countering a sugar-induced rise in blood pressure.
- Vitamin C also lowers aldehyde levels and may help control sugar-induced blood pressure.

Alcohol

A subclass of the sugar problem is alcohol. Alcohol is a sugar. Sugar raises blood pressure, at least temporarily by its ability to raise aldehyde levels. Upon cessation of alcohol consumption, elevated blood pressure drops into the normal range within days. [Circulation 73: 628-36, 1986]

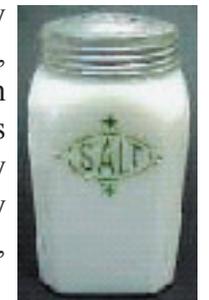
Even occasional drinkers are at a mildly elevated risk to develop hypertension. [J Studies Alcohol 65: 184-90, 2004] The risk for hypertension rises with the amount of alcohol consumed. [Alcohol Clin Exp res 26: 1010-16, 2002]

A paradoxical effect is produced by wine separate from beer or alcoholic spirits. Consumption of red wine with a meal actually lowers blood pressure among obese hypertensive patients and the effect is lasting (for hours). [J Alcohol Studies 63: 247-51, 2002] The consumption of flavonoids, molecules found in wine, grapes, berries, cherries, cocoa and citrus rind, is low among hypertensive individuals. [Med Hypotheses 55: 306-09, 2000] In an animal study, oral administration of grape skin extract significantly reduces blood pressure. [J Pharm Pharmacology 54: 1515-20, 2002] It is interesting to note that Europeans have a high incidence of hypertension (1 in 2 people) than in the USA (1 in 4 people). The highest frequency of hypertension in Europe is 55 percent in beer-drinking Germany, and the lowest is 38 percent in red-wine drinking Italy. [Journal American Medical Assn. 289: 2363-69, 2003]



Sodium

High levels of salt consumption may double the risk for stroke. [Stroke, May 13, 2004] A study published in 1995 among 3000 hypertensive adults showed that reduced intake of dietary sodium lowers mortality and morbidity rates. [Hypertension 29: 1144-52, 1995]



One tablespoon of salt contains 2300 mgs of sodium. Americans consume about 2-3 tablespoons of sodium per day, most of it laced into processed foods. There has been a cry for food producers to reduce sodium content in their foods, but they are competing for the taste buds of consumers and find it difficult to reduce salt content.

Not only are our foods laced with excessive salt, but hypertensive individuals have been found to have a

diminished sense of taste for salt. [Niger Postgraduate Medical Journal 10: 96-98, 2003] They can eat lots of salt without sensing they are consuming too much.

More than half of the patients with diagnosed hypertension are salt sensitive. Salt sensitive means a given amount of sodium in the diet may raise blood pressure, but not among all individuals, only the salt-sensitive.

A study in France estimates 5 to 16 percent of healthy adults exhibit a “salt dependent blood pressure.” [Journal Hypertension 21: 289-94, 2003]

Older adults can reduce their need for medications to control blood pressure by 30 percent by either losing 8 pounds or reducing salt consumption by about 920 milligrams per day. [Hospital Medicine, October 1998]

One study estimates salt reduction would reduce stroke deaths by 14 percent and mortal heart attacks by 9 percent among hypertensive individuals and strokes by 6 percent and mortal heart attacks by 4 percent among adults with normal blood pressure. [Journal Human Hypertension 16: 761-70, 2002]

A study conducted in Israel showed a low sodium diet only reduced blood pressure by 4 points (first number) among adults with mild hypertension. [J Human Hypertension 11: 765-66, 1997]

Surprisingly, when government health researchers reviewed all of the studies on dietary sodium and health, they could only find evidence for a moderate reduction in salt intake, certainly less than the current 4000 to 6000 mg per day consumed by many US adults, and probably about 2400 mg daily intake. [J Am College Nutrition 16: 192-203, 1997]

Lead

At levels of intake below current US occupational exposure guidelines, 40 micrograms per day, lead is associated with elevation of blood pressure and this is pronounced among postmenopausal women. [J Am Med Assn 289: 1523-32, 2003].

Peter Sleight MD, Professor Emeritus of Cardiovascular Medicine at the University of Oxford says “*relatively small drops (2 to 5 points) in blood pressure in the whole population—achieved by modest salt reduction—will do more good than larger changes produced by drugs in the smaller group of adults with hypertension.*” [Medical Tribune August 14, 1997]

Iron

Iron load (ferritin) is considered a risk factor for elevated blood pressure. [Am J Clinical Nutrition 76: 1256-60, 2002] Elevated iron storage is also associated with high blood sugar levels which in turn raises blood pressure. [Endocrine Research 29: 299-306, 2003] Middle-age males have about twice the iron load as menstruating females and have a higher prevalence for hypertension. [J Hypertension 20: 1513-18, 2002]

Many health practices that help to control blood pressure, such as a vegetarian diet, juicing, teas, etc. For example, a water-only fast for 14 days has been shown to reduce blood pressure to at least 120/80 in 82 percent of 68 patients who had mild hypertension. The fast produced a drop of about 20/7 points. [J Alternative Medicine 8: 643-50, 2002] Fasting reduces iron consumption.

Copyright 2004 Bill Sardi, Knowledge of Health, Inc.