Hypertension: Taking the Pressure Off.

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National Water Shortage

"My eighty-three year old mother called me last week, 'Brenda!' her voice sounded alarmed, 'I just took my blood pressure and I am worried, it is 160/100'"

Brenda, was worried too, but knew something about blood pressure. "Mom, just sit down, drink 3 big glasses of water, and I'll be over in about 45 minutes and we'll take your blood pressure again."

Arriving 45 minutes later, Brenda retook mom's blood pressure. It was now 130/70.

Americans are chronically dehydrated. People who drink plenty of water have lower blood pressures.[1] Many people suffer from high blood pressure; the cause of which is inadequate consumption of water. Constant dehydration forces the body to tighten the blood vessels and speed up the heart to maintain adequate blood flow to the brain and over time hypertension results.[2] Not all hypertension is the result of not drinking enough water, but more of it arises from this cause than is realized.

Contrast the impact of this "national water shortage" with the National Institute of Health's (NIH) guidelines for treatment of hypertension.[3] Let's say your water intake has been dismally inadequate and your brain is crying for better blood supply. The body responds with a faster heartbeat and tighter blood vessels to squeeze the blood more effectively up to the top of your head.[4] The doctor takes your blood pressure and (of course) discovers you have blood pressure that is higher than is considered safe. In line with practice guidelines the first line treatment is a diuretic; a "water pill". You go home, the dehydration is worse (compounded) and on a return trip to the doctor you are again discovered to be not only hypertensive, but your heart rate is up. Guidelines now recommend a beta-blocker. What does a beta-blocker do? Slows yours fast heart rate. With that you go home, your heart is now slow, but the brain is still crying out for blood so all the blood vessels in your body get even tighter to squeeze the remaining blood to the top of your head. Back to the doctor you go for follow up; low and behold the pressure is still up. The next recommended pill to fix the "resistant hypertension" is a calcium channel blocker. What does a calcium channel blocker do? It relaxes all the blood vessel in your body. You mean the ones that tightened up to get the blood to the top of my head? Yes. Now I must hand it to the NIH, the first line therapy is really supposed to be lifestyle modifications, but in my estimation the modifications listed and the extent to which they are applied or encouraged lacks enthusiasm. Okay, so, you can see that I am not "real big" on treating diseases you get from poor lifestyle practices with any other thing than correct lifestyle practices.

Save The Brain

People with normal blood pressure live longer,[5],[6],[7] and what's more, their thinking is clearer. Studying the brains of people with high blood pressure, also called hypertension, researchers have discovered an association between hypertension, brain white matter defects, and difficulty thinking and remembering.[8] People with high blood pressure develop white matter lesions in their brains at ten (10) times the rate of the normal population.[9] Controlling blood pressure with medications does not stop brain deterioration. Some blood pressure medications make the brain deteriorate even faster.[10] In order to stop brain deterioration, lifestyle habits responsible for both hypertension and dementia need to be addressed.

"Safe" Magic Potions?

Some people are quick to look to alternative medicine for a magic potion to fix their lifestyle related diseases, thinking they will find a safer cure in supplements, herbs, or vitamins. Some of these over-the-counter pills contain agents with pharmacological action just like medications, but does it make any sense to take magic potions to treat disease while continuing to practice the lifestyle habits that cause the illness in the first place? It's not that people have not found benefit from some of these pills. Agents with some evidence of benefit include coenzyme Q10, fish oil, garlic, vitamin C, L-arginine,[11] grape seed extract,[12] quercetin,[13],[14] rosemary,[15] cranberry,[16] fennel,[17] mistletoe,[18],[19] saffron,[20] hawthorn berry[21] and valerian.[22] But none of these supplements change the reasons or causes as to why your blood pressure went up in the first place.

No Substitution

I am not against pills just because they are pills, but some pills (and supplements) have serious drawbacks. For example, people already on blood pressure pills respond more poorly to lifestyle changes.[23] They are somewhat trapped. What's more, Parkinson's disease is a side effect of some blood pressure medications.[24] What about Alzheimer's? People with low to normal blood pressure are protected from brain diseases like Alzheimer's.[25] Artificial low blood pressure, with medications, does not always avert progression to dementia.[26] People whose good lifestyles give them a healthy blood pressure are much more likely to be mentally acute (sharp/bright) as they get older.[27] I recommend making a healthy lifestyle your defense against dementia, not medications.

While medications are generally prescribed to address some disease from which a patient suffers, hypertension is a side effect many medications. Oral contraceptives rise blood pressure 8 points on average.[28],[29] Antidepressant use doubles the risk for hypertension.[30] Anti-inflammatory drugs cause high blood pressure through kidney dysfunction.[31],[32],[33] Acetaminophen (aka Tylenol) increases blood pressure[34] especially in patients with coronary artery disease (most Americans).[35]

What is Hypertension?

What is Hypertension? The National Institute of Health is clear on the classification of blood pressure. Blood pressure is recorded as systolic pressure over diastolic pressure. Systolic is a measure of the highest pressure the heart develops during its beat and diastolic is the lowest pressure when the heart is refilling with blood for another beat. Normal blood pressure goes no higher than 120/80. To go over 120/80, but no higher than 139/89 is to have pre-hypertension. Blood pressures over 139/89 are classified in two stages. Stage 1 hypertension is from 140-159/90-99. Any pressure of 160/100 or more is considered stage 2 hypertension.[3] The higher your blood pressure the higher your chances of experiencing other life threatening complications of hypertension.

Global Impact

Hypertension affects approximately 50 million people in the United States and 1 billion worldwide.[3] Fully 29% of US adults have hypertension, around 68% are taking antihypertensive medication, but only 64% of those taking medication have their blood pressure controlled.[36] Nine out of ten 55 year olds, in the United States, with normal blood pressure will develop hypertension before they die.[3]

Types of Hypertension

There are two major types of high blood pressure, primary and secondary.[37] Primary blood pressure is generally considered to have an unknown cause, but as you continue to learn the facts about hypertension you will discover that most primary hypertension is lifestyle related—it is caused by our habits relating to eating, drinking and exercising. Secondary hypertension can be linked to other medical

diseases such as thyroid disease, kidney disease, parathyroid disease, metabolic syndrome (diabetes), etc.

The Silent Killer

High blood pressure is called "the silent killer" because the majority of people with hypertension are unaware of its presence. Nevertheless some people with hypertension do report symptoms, these can include: tiredness, sudden hot flashes, headaches, reduced energy, heart beat palpitations, sudden sweating, reduced physical performance, dizziness, shortness of breath, chest pain, sleepiness, blurred vision, tinnitus (ringing in the ears) and/or muscle tension.[38]

Be Alert For Signs Of Cardiovascular Danger

Hypertension might not be so bad if it were not for all the other diseases it causes. Of these heart disease tops the list. Achieving normal blood pressure reduces the risk of congestive heart failure by 36%,[39] of coronary heart disease by 72%, and of heart attack by 75%![40] Because hypertension is so hard on the heart, if you can reduce the blood pressure by just 20 points, you can cut the risk of heart disease in half.[3]

Researchers have determined that lowering the average blood pressure in the United States by just 5 points would reduce the number of stroke deaths by 23,000 per year.[41] Further, lowering your blood pressure from 140/90 to a more normal 120/75 reduces your risk of stroke by 74%.[42] Bleeds are a common cause of stroke and can occur when an aneurysm bursts in the brain. If blood pressure is kept within normal limits, brain aneurysms are much less likely to enlarge and rupture.[43]

Another study reported that normalizing blood pressure can reduce strokes by 35–40%, myocardial infarctions by 20–25% and heart failure by more than 50%.[44]

Controlling blood pressure also reduces the risk of peripheral vascular disease: injury to blood vessels in your arms and legs that can lead to and physical disability.[45]

Adding Insult To Injury

Hypertension can damage any part of your body because every part of your body is dependant upon blood for life. People with normal blood pressure save themselves much grief.

People with normal blood pressure can avoid the second leading cause (behind diabetes) of kidney failure.[46]

A surprising consequence of high blood pressure is high cancer risk! For example, normal blood pressure decreases the risk of endometrial cancer by 70%.[47]

Do you remember your last blood pressure numbers? Are you having difficulty thinking and remembering? People with hypertension are more apt to get Alzheimer's in their latter years, a disease of the brain that affects the ability to think and remember. People with normal blood pressure have superior blood flow to their brains improving thought and memory.[48],[49] Normal blood pressure protects you from brain deterioration especially in the frontal lobes.[50] People who do not have hypertension perform better on test of memory, attention and abstract reasoning.[51] Normal blood pressure can actually reduce the risk of Alzheimer's by 40%.[52]

Diabetes and hypertension are often closely related. When combined with low HDL cholesterol, high triglycerides and central obesity they are given a diagnosis of syndrome X.[53] Syndrome X is not a good diagnosis to have, but lifestyle interventions are most effective at treating this disease.

Osteoporosis is a thinning of the bones leading to an increased risk of fractures. People with normal blood pressure have 1/3 the risk of osteoporosis as those with hypertension.[54]

Retinopathy and Macular Degeneration are leading causes of blindness. Keeping blood pressure within normal limits cuts the risk of blindness from retinopathy and/or macular degeneration in half.[55]

Erectile dysfunction: the pressure in performance anxiety! Having trouble pleasing your wife? Thirty-two percent more men with normal blood pressure "get it up" than men with hypertension.[56]

Where Are We Headed: Outline

Lets talk about where we are headed with our hypertension discussion. Blood pressure is a product of the pumping of the heart, the blood vessel size, blood thickness and blood volume. If the heart beats faster, more blood is pumped and the pressure goes up. We call this tachycardia. If the blood vessels tighten up, making the space for the passage of blood narrower, it takes greater pressure to get the same amount of blood through to its destination. We refer to this tightening up effect as vasoconstriction. Blood vessels normally expand with each beat of the heart and then relax. If the blood vessels become hard, their stiffness inhibits the free flow of blood with each beat of the heart and the pressure goes up. Atherosclerosis is an example of this process. If the blood becomes thick and sludgy, more pressure is required to push it through the blood vessels and hypertension commences. When blood gets thick we say that the viscosity has increased too much. If the blood vessels are being choked by something pressing on them from their sides, the effect is like putting your thumb over the end of a garden hose; this results in increased blood pressure. We call this external compression. Finally, if the volume of blood increases, this increases the amount of blood entering the heart, this in turn increases the amount of blood the heart pumps with each beat increasing the overall blood pressure. We often refer to this phenomenon as fluid retention.

Volume Overload!

Lets start by talking about the problem of volume overload. Volume overload can be the result of obesity, where it takes more blood to feed an increased mass of fat tissue. Salt causes fluid retention effectively producing volume overload. Volume overload results when the kidneys fail because the kidneys are responsible for dispensing with excess fluid volume. Muscles have many large blood vessels and require lots of blood when exercised. Big muscles left unused become stiff and their blood vessels become stiff resisting blood flow and causing volume overload at the heart. Thus inactivity leads to hypertension. Blood does not like to be cold (you are not cold blooded) and if your legs or arms are cold, the blood vessels in these extremities tighten up sending all of the blood flooding to the heart thereby overloading it and causing hypertension.[57]

US Sodium Intake Exceeds Dietary Guidelines

It is a well-known fact that dietary salt plays a significant role in the evolution of hypertension. Salt causes your body to hold on to excess fluid; causing volume overload at the heart, and subsequent hypertension. It is estimated that reducing sodium intake in America to 1300mg (about ½ teaspoon of salt) per day would reduce the yearly death rate by 150,000.[58] Our recommends are that total salt consumption not exceed 1/4 to 1/8 teaspoon per day, or 600mg to 300mg of sodium total.

Salt is a popular ingredient in fast food restaurant menu items. Salt and hypertension are key ingredients for the occurrence of a brain stroke. A national statistic reveals that the more neighborhood fast food restaurants a community has, the higher will be the stroke rate in that given community.[59]

Okay, so test your salt savvy: which has more sodium Rice Chex cereal or potato chips per one ounce serving each? The Rice Chex cereal at 249 mg has nearly twice as much as potato chips at 147 mg. How did you do? Lets compare tortilla chips and canned tomato sauce: The tomato sauce tops the chips at 147 mg / oz, the chips contain 118mg of sodium per ounce. What about Kraft Valveeta processed cheese or a hot dog sandwich? Ounce for ounce the Valveeta has nearly twice as much sodium at 420 mg compared to the hot dog's 221 mg.[60] Read your labels! Don't get caught off guard. Or, better yet, buy food without labels, like corn on the cob, which has one-tenth the sodium as canned corn.[61] In Japan, soy sauce is a significant source of excess sodium. In

Japan, most (63%) dietary sodium comes from soy sauce and is a big cause of hypertension.[62]

Let's suppose your sodium intake is within safe limits but you still seem to be having salt related hypertension. It may be due to other things in your diet that cause you to retain sodium. Refined carbohydrates and saturated fats increase salt retention and lead to hypertension.[63],[64]

Psychosocial factors can also affect the body's propensity to hold on to excess sodium. People under stress retain sodium.[65] Thus, people who don't stress out, retain less salt and have lower blood pressures. We will be revisiting this factor in detail under the fast heart rate discussion section further on in this paper.

Blood pressure raising sodium is not unique (or limited) to table salt; it also appears in sea salt and in mono sodium glutamate (MSG). It should come as no surprise then that MSG consumption increases the likelihood that a person will get high blood pressure.[66]

Escalating Obesity Raises Pressure Concerns

Think twice before shopping for a larger dress: clothing size correlates directly with increases in blood pressure.[67] According to the World Health Organization, more than one billion people worldwide are overweight and more than 300 million people are obese resulting in high rates of hypertension, kidney disease and cardiovascular disease.[68] What we eat in America, the (S)tandard (A)merican (D)iet, makes the liver sick with "fatty liver disease" and triples the risk of hypertension.[69] A "pot belly" is a bad omen for hypertension. Thinner is better, tighten that belly for a drop in pressure! The more abdominal (visceral fat) you sport, the greater your risk of hypertension.[70] One serving of cheese per day can significantly increase a man's waist circumference, body mass index and blood pressure.[71] Indeed, each inch you can tighten your belt lowers your risk of hypertension by 15%.[72] To relate it to absolute weight gain in pounds, a 55 lb weight gain over your ideal body weight raises your risk of hypertension by 265%.[73] It is estimated that in up to 50% of the adults in the United States whose hypertension is being managed with pills, the need for drug therapy could be alleviated with modest reductions in body weight.[74]

Inequality Among The Protein Giants

While many see protein as essential, excessive intake has been linked to hypertension.[75] Specifically, animal protein especially decreases kidney function increasing the risk of hypertension.[76] On the other hand plant protein has been demonstrated to lower blood pressure. Increased intake of plant protein, fruits and vegetables significantly lowers the risk of hypertension.[77] As a practical example, two groups of people were compared. The first group used milk, a source of animal protein, and the second group was given soy milk, a source of vegetable protein. Those on the soy milk experienced 18 mmHg lower blood pressures than those on the cows milk.[78] What's more a switch to soy can improve kidney function and insulin sensitivity,[79] and lowered serum total cholesterol levels.[80]

Vasoconstriction

Let's now turn our attention to the impact of vasoconstriction on the development of high blood pressure. If the blood vessels tighten up, making the space for the passage of blood narrower, it takes greater pressure to get the same amount of blood through to its destination. What makes the blood vessels tighten up? Psychological stress!, cold; especially in the arms and/or legs; failing to maintain adequate water intake and then there are the substances which stimulate the blood vessels to constrict such as caffeine from tea, coffee, colas, etc, and tobacco.

Putting Pressure On: Substance Abuse

Caffeine makes the heart react as it would if you were in a real life-or-death, stressful, flight-or-fight situation.[81] What actually happens is that caffeine acutely raises blood pressure by raising circulating concentrations of the stress mediators epinephrine and norepinephrine. In addition caffeine increases arterial stiffness and inhibits the relaxation of blood vessels.[82] The impact of caffeine consumption on blood pressure is dose dependant; the more caffeine you consume, the higher your blood pressure increases.[83]

Chocolate contains caffeine as well as other similar vasoactive substances such as theobromine.[84] Some have crafted studies (which lack any disclaimer to industry involvement, funding or researcher bias) designed to give chocolate apparent positive effects on high blood pressure.[85] But in studies of real people eating chocolate available from stores it does not lower blood pressure, it only tends to encourage eating between meals and weight gain.[86]

The nicotine in tobacco is also a vasoconstrictor and pressor—a substance which raises blood pressure. Non-smokers have 12% lower risk of developing hypertension than smokers.[87]

Environmental Hazards

Remember the people who got sick from the FEMA trailers used to house victims of hurricane Katrina that hit Louisiana?[88] Environmental chemicals such as formaldehyde and acetaldehyde, which are found in building materials and cigarette smoke, increase hypertension tightening blood vessels and increase the amount of blood the heart pumps.[89]

Vasoconstriction can be the result of electro-magnetic bombardment. For example 40 minutes on the mobile phone can raise your blood pressure by 10 points.[90]

Weather and Clothing

When your arms or legs get cold the blood vessels in them tighten up to reduce the amount of blood coming to them so that you will not lose too much heat. Poorly clad, chilled extremities force blood back to the heart, doubling its work and raising blood pressure.[91] It is interesting to note that blood pressure increases in the winter, especially in the elderly,[92] but so does the consumption salt and fat.[93]

On the brighter side, don't underestimate the benefits of sunshine! Sunshine relaxes blood vessels lowering blood pressure[94],[95] and increases vitamin D of which also has been shown to lower blood pressure.[96]

Move Those Muscles!

Don't take life sitting down! Active people have lower blood pressures; sedentary ones get hypertension.[97] Inactivity leads to increased vascular resistance to blood flow,[98] decreased blood flow to large muscles,[99] and increased blood pressure.[100] Regular use of your muscles keeps them supple and well supplied with blood, this in turn lowers blood pressure.[101],[102]

The benefits of exercise in the treatment of hypertension are often overlooked. Exercise is important for all aspects of health. If you keep wiggling, they won't put you in a box! As a mode of exercise, walking is hard to beat. In fact, walking 10,000 steps or more per day can lower your blood pressure by 10 points.[103] That would be about 4 miles. Weight lifting or resistance training can provide additional benefit. Indeed, 20 minutes per day in the gym can lower you blood pressure by as much as 10-12 points.[104]

Relaxation

Feel the need of a massage? A back massage brings relaxation and lowers blood pressure.[105] A nice soothing warm bath is also beneficial.[106]

External Compression

External compression, the choking off of the blood flow by something pushing on the blood vessel from it's outside, causes hypertension. The effect is like putting your thumb over the end of a garden hose, the result is increased blood pressure. If some one grabs your neck and chokes off your air and carotid arteries, not only will your

eyes bulge, but also your blood pressure will probably go up. Physical things which produce an external compression of the blood vessels include swelling or edema, inflammation, sugar coating of the vessel walls called glycation, tight clothing and obesity.

Tight Clothing

Tight clothing, like belts and elastic, compress blood vessels and raise blood pressure. Clothing that hangs from your shoulders leaves your waist free of compression and aids in lowering blood pressure. Wearing loose clothes allow for more free blood flow and more normal blood pressure.[107] Instead of wearing a belt to hold up pants, suspenders are helpful to avoid the tightness.

Breathe Correctly

Deep abdominal breathing, in contrast to shallow chest/neck breathing, brings blood pressure down.[108],[109]

Blood Viscosity, Thick Blood

If the blood becomes thick and sludgy, more pressure is required to carry it through the blood vessels and hypertension commences.[110] When blood thickens we say that the viscosity has increased too much. What actually happens is that the red blood cells stick together in a series or chain. We call this phenomenon rouleaux.[111] Factors known to influence blood toward increased viscosity and rouleaux include stress, dehydration, consuming refined foods, high blood cholesterol, high fat diet, overeating, and the accumulation of waste products in the intestines.

Refined foods, such as oils and sugars, make red blood cells stick together in clusters or chains called rouleaux that can be seen under a microscope. Higher blood pressure is required to circulate this thickened blood.[112]

Fats

Because eating a high amount of fat causes rouleaux, food with saturated fat, (i.e. animal products, butter,[113] margarine, shortening, and/or coconut oil,[114] etc) significantly increases the risk of hypertension. In turn, consumption of these products also raise the blood cholesterol, thickening the blood further and raising blood pressure.[115] Even God has weighed in on the fat question, "Speak unto the children of Israel, saying, Ye shall eat no manner of fat,…"[116]

Compared to natural occurring vegetable fats, lard significantly increases blood pressure and risk of hypertension.[117] This problem is worse as one gets older.[118] These scientific facts help explain why God said, "And the swine, because it divideth the hoof, yet cheweth not the cud, it is unclean unto you: ye shall not eat of their flesh, nor touch their dead carcase."[119] One group of researchers wanted to see what would happen if people were place on a animal fat free diet for 10 days. It was discovered that ten days on an animal fat free diet significantly reduced blood pressure.[120] It is interesting to note that a similar experiment was entered upon around 600 B.C. in Babylon.[121] Daniel was a Jewish captive of Babylon. When offered a diet of meat he requested, "Prove thy servants, I beseech thee, ten days; and let them give us pulse (vegetables) to eat, and water to drink."[122] The outcome was that Daniel and 3 other colleagues who shared the intervention arm of the study did ten times better in school than all the other university students.

What about processed vegetable oils? These oils are not free from health risk just because they come from plants. Refined oils, especially canola oil,[123] increase hypertension[124] and the risk of stroke at a younger age.[125]

Another problem with oils is what happens to them when they are subjected to heat. For example, heating oils in a pan causes serious deterioration in their quality turning them toxic so that they contribute to the onset and severity of hypertension.[126]

Do you know how much fat is in the food you eat? Fat in the diet increases blood pressure because it thickens the blood, makes the blood vessels stiff[127] and causes endothelial dysfunction.[128] What is endothelial dysfunction? Nitric oxide is used in the body to relax blood vessels. When the blood vessels respond poorly to nitric oxide relaxation we say it is a result of the inner lining or endothelium of the blood vessel being sick or dysfunctional hence; endothelial dysfunction.[129] Foods that decrease vascular sensitivity to nitric oxide relaxation signals include: high fat,[130] salt,[131],[132] cholesterol[134] (especially dietary oxidized cholesterol[136]), overeating,[137],[138] sugar[140] (especially fructose[142]), and glycation of proteins as happens in diabetes.[143]

The Vaso-Relaxing Diet

On the other hand proper diet has a significant impact on the responsiveness of your blood vessels to nitric oxide relaxation. I call it the vaso-relaxing diet, meaning it makes your blood vessels more responsive to relaxation messages from your body. Dietary changes known to improve vascular responsiveness include: a vegetarian diet,[144] oats (oatmeal),[145] tomatoes,[146]diets rich in antioxidants[147] such as vitamin E,[148] and minerals like zinc[149] and copper.[150]

Omega-3 deficiency leads to hypertension.[151] Flaxseed and walnuts are good dietary sources of omega-3 fatty acids. Omega-3 fatty acids are very antithrombotic and anti-inflammatory. In contrast, omega-6 fatty acids, which are present in refined vegetable oils and meat, are prothrombotic (causing blood clots) and proinflammatory. Omega-3 fatty acids also aid in the treatment of hyperlipidemia, hypertension, and rheumatoid arthritis.[152]

The Deadly Mix: Fat and Sugar

When combined, fat and sugar form a deadly mix. The risk of hypertension from combining these two agents is not just additive, it is multiplicative[154]: meaning just small amounts of these two agents mixed together creates an enormous health hazard.

The American Sweet Tooth

Speaking of sugar, (and refined carbohydrates, like white flour, white pasta, white rice, and refined breakfast cereals, which turn immediately to sugar in your blood stream), twenty (20) teaspoons of sugar raises your blood pressure by 2 mmHg, forty (40) teaspoons raises it by 5 mmHg.[155] The average American consumes 47 tsp of sugar each day of their lives.[156] The danger of sugar in the diet is that it ends up in the blood stream. As the blood sugar rises so does the blood pressure.[157]

Not all carbohydrates are created equal. Sugar and complex carbohydrates may carry the same theoretical calories per gram, but the impact on the blood sugar, the risk of hypertension and diabetes complications are very different.[158] Complex carbohydrates from an unrefined plant based diet are much better tolerated, decrease the risk of hypertension and provide a nutrient dense diet that improves health.[159] So how do sugar and other refined carbohydrates cause hypertension? Refined carbohydrates cause hypertension by increased production of norepinephrine, dopamine and epinephrine, and by causing blood vessel wall thickening.[160] The secret is to quit consuming sugar. It works and blood pressure comes down.[161]

Sugar is an accumulative poison. Refined carbohydrates create a sticky coating of sugar all over your blood cells, blood vessels and other body tissues. The more refined processed foods you eat, the higher your blood sugar goes and the more this sticky sweet substance coats the tissues of your body. This coating is called glycation and accumulates over time, leading to vascular and heart muscle stiffness, atherosclerotic plaque and hypertension. The more refined food you eat in your lifetime the greater your chance of having high blood pressure as you age.[162] People on an unrefined plant based diet enjoy a cleaner cardiovascular system and may avoid high blood pressure all together as they get older.[163]

Eating refined carbohydrates has a downside of leading to a condition called insulin resistance, where the cells of the body no longer take sugar out of the blood stream in response to normal insulin levels.[164],[165] Examples of refined carbohydrates shown to increase insulin resistance include: white rice,[166] white flour (as found in pastries and white bread)[168] and processed sugar.[169],[170] Of particular concern among

refined carbohydrates is fructose, its ability to create insulin resistance and hypertension surpasses table sugar.[171],[172]

Additional causes of insulin resistance include a high fat diet,[173] eating between meals or snacking[174] and obesity.[175] The results of insulin resistance are high cholesterol values[176] and of course, hypertension.[177],[178],[179] People who never provoke their insulin to overproduction by eating refined carbohydrates also never experience insulin driven hypertension.[180] Eat only as much refined carbohydrates as you would like to see your blood pressure go high.

Speaking of fructose, drinking one fructose-sweetened soda per day can increase the risk of hypertension by 77%.[181] In case you were thinking artificial sweeteners were a good alternative, think again. Artificial sweeteners like aspartame give some people very high blood pressure.[182] Stopping these sweeteners can be the secret to lowering some people's blood pressure.[183] On the other hand there is a non-sugar sweetener, which has been shown to improve blood pressure and that is stevia.[184] It does this by acting as calcium channel blocker (the mechanism of action of some pharmaceutical blood pressure drugs).[185]

Hardening of The Arteries

Hardening of the arteries causes resistance to free flow of the blood. Blood vessels normally expand and relax with each beat of the heart. If the blood vessels become hard, their stiffness inhibits the free flow of blood with each beat of the heart and the pressure goes up.[186],[187] Atherosclerotic plaque is an example of this process.[188] If a plaque narrows the diameter of a blood vessel, more pressure is required to get the same amount of blood through the smaller opening.

Other conditions leading to this mechanism of blood pressure elevation include: increased body inflammation[189] (also known as oxidative stress), physical inactivity, and endothelial dysfunction. Endothelial dysfunction is a deadening of the blood vessel wall so that it no longer responds to the bodies relaxing signals. Endothelial dysfunction leads to unresponsive arteries and veins. Unresponsive arteries and veins resist free flow of blood to the tissues raising the blood pressure required to move the same volume of blood. Things that cause endothelial dysfunction include high blood sugars with sugar coating of the endothelium, uric acid with deadening of the endothelium, and high fat which also deadens the endothelium so that it will not relax and allow blood to pass freely.

Inflammation and Endothelial Dysfunction

The role of inflammation in the development of hypertension is multifaceted. Besides causing endothelial dysfunction, it thickens blood vessel walls making blood flow more difficult and raising the pressure required for normal circulation. As a consequence, blood pressure goes up with increasing inflammation.[190] People with more inflammation have a 40% higher risk of hypertension.[191] Many people realize that there is an association between salt intake and a rise in blood pressure. In fact, even though arterial hypertension is a major cause of disease-related morbidity and mortality worldwide, it is nearly absent in populations that consume natural foods containing little or no salt.[192] This is partly due to fluid retention,[193],[194] but it is also due to inflammation.[195] Excessive salt intake causes hypertension and kidney injury, in part, by oxidative stress that inflames the blood vessel walls and kidneys.[196]

Toxins in the Environment

Lead[197] and arsenic[198] are environmental poisons that raise whole body inflammation and have been shown to cause hypertension. Lead is a common contaminant in old paint, dust around old houses and can even be found in supplements such as calcium.[199] Arsenic often contaminates public drinking water[200] and bottled water.[201] Arsenic is used in chicken and hog feed as a growth promoter and is present in the meats of these animals. Arsenic is an approved feed supplement that farmers use to control intestinal parasites in chickens.[202] As a consequence, eggs[203] and chicken meat[204] prove to be dietary sources of arsenic. Seafood (because fish swim in polluted waters) has been found to be a significant source of arsenic in those that consume seafood.[205] Avoid arsenic and avoid hypertension.

How Much Antioxidant Do I Need?

The secret to inflammation management is having a good offense. Antioxidants and phytochemicals from plant foods provide this; they lower the inflammation in your body[206],[207] and normalize your blood pressure.[208] You may be asking how much antioxidant do I need? Can I get too much? You may be interested to find out that lifestyle measures are not easily overdosed, they have more marked results in more difficult cases and they do not cause dangerous side effects. Antioxidants only lower blood pressure in people with hypertension, not in normal healthy people.[209]

Diet is not the only way to have a positive impact on your antioxidant defense system. Exercise helps reduce the body's inflammation resulting in lower blood pressure.[210]

Since periodontal disease increases inflammation and hypertension, good oral hygiene can also be a key to good blood pressure control.[211]

Beauty Rest Prescription

One of your bodies' own defenses against elevated inflammation is the hormone produced by the pineal gland in your brain called melatonin. Melatonin is a natural antioxidant that reduces blood pressure.[212] Late evening artificial lighting impacts sleep, disrupts melatonin production, and raises blood pressure.[213],[214],[215] People who take regular hours for adequate sleep in total darkness have a healthier supply of melatonin and lower blood pressures.[216],[217] Consequently, people who subject themselves to the irregularities in schedule afforded by shift work are at higher risk of hypertension.[218],[219] That extra night's pay may not be worth the risk high blood pressure. Regular day jobs are friendlier to blood pressure. We recommend a 9:30 p.m. bedtime for adequate melatonin production and healthier blood pressure.

People who go to sleep easily and get plenty of rest experience less hypertension. People who breathe freely at night, without sleep apnea or snoring, have lower blood pressures.[220]

Meat and Endothelial Dysfunction

So what raises inflammation increasing blood vessel wall thickness and causes endothelial dysfunction? Animal product consumption. Three or more servings of meat, poultry, eggs, fish, and/or seafood per day increase the risk of hypertension by 67%.[221] Of particular concern are pork products. The American Heart Journal notes: "A complete elimination of pork in all forms is a good dietary therapeutic rule in the management of arterial hypertension in all patients." "The elimination of all forms of pork from the diet of all people may be a good practice for the prevention and the control of hypertension, one of the most common and important illnesses of man." "Salted pork is even more hazardous to the health of man."[222] Maybe this is why it was not considered a food item in God's book, for Leviticus notes, "And the swine…is unclean to you.".[223] Even eggs won't help you lower your blood pressure. Eggs play a significant role in people 40 years old and older in their risk of hypertension.[224] Animal products lack solution oriented antioxidants and if they're not a part of the solution then they are often a part of the problem. This is definitely the case in eating animal products.

Animal Products Face Acid Test

Acid is no friend of your body's sensitive tissues. Acid increases endothelial dysfunction leading to hypertension.[225] As a consequence, acid forming foods, particularly cheese and animal protein, significantly increase hypertension.[226] Studying acid in the urine to identify acid forming foods, fruit and vegetables actually lower the amount of acid that is formed in the digestion of food. Grains, fish and red meat increase acid formation, but cheese almost triples the amount of acid produced by comparison.[227] One of the offending acids produced is uric acid. Anything that raises uric acid in the blood raises the risk of hypertension.[228] Foods that raise uric acid include: meat (particularly

organ meats)[230], seafood,[231] fructose[233](often as high fructose corn syrup or agave sweetener), beer and alcoholic beverages.[234] As a consequence, the same diet helpful in lowering the risk of gout from uric acid elevations can simultaneously lower the risk of hypertension.

Foods known to help lower uric acid levels include fruits such as lemons[235] and other citrus, cherries,[236] strawberries,[237] grapes, apples, tomatoes, bananas, and pomegranates; vegetables such as celery, potatoes, beets, and endive; and most tree nuts, especially chestnuts.[238] For that matter, any food with diuretic properties has the potential to relieve high blood pressure that is being caused by high uric acid levels. Foods valued for there enhanced urine production properties (diuretic) include: artichoke, celery, eggplant, cauliflower, green beans, grape, apple, peach, pear, melon and watermelon.[238] When you increase the amount of urine you produce, you potentially increase the amount of uric acid lost in the urine, thus lowering the levels in your blood.

Strong Drink

The impact of alcohol on the rise in blood pressure is not limited to it's propensity to elevate blood uric acid levels. There is a linear relationship between the amount of alcohol consumed and the rise in blood pressure[239] (the more alcohol you drink the higher your blood pressure goes[240]). A two drink a day person can lower their risk of hypertension by one third simply by abstaining.[239] The wise man says "Wine is a mocker, strong drink is raging: and whosoever is deceived thereby is not wise."[242]

Choosing A Blood Pressure Sensitive Dietary Lifestyle

Diet plays a significant role in hypertension, after all you are what you eat! In a study comparing common diets, it was discovered that non-vegetarians (consumers of animal products like meat, eggs and dairy) eat 50% more fat, have 30% higher total cholesterols, have 32% higher blood sugars and are six (6) times more likely to develop hypertension.[243] Indeed, in rural populations still practicing their traditional largely vegetable based lifestyle, free from the effects of the western diet, hypertension is unheard of and there is no age related rise in blood pressure.[244] Their average blood pressure is around 110/60 mmHg, average cholesterol 129 mg/dl, blood sugars 55 mg/dl and body mass index is 20 (kg/cm2).[245]

Really, blood pressure is not supposed to go up with age! In choosing a dietary lifestyle you will be interested to know that people adopting total plant based nutrition only have a 5% incidence of hypertension, those vegetarians including dairy and eggs with their meals a 10% incidence, fish eating vegetarians a 12% incidence, and meat eaters a 21% incidence.[246] Studied from another angle, people on total plant based nutrition have one fourth the risk of developing hypertension as meat eaters.[247]

In considering adopting a health promoting lifestyle, the vegan (plant based nutrition) diet has many blood pressure lowering advantages. In one study hypertensive patients, on blood pressure medications for 8 years, were given a vegan diet for one year. Blood pressures came down and the majority were able to stop or drastically reduce their medications.[248] Just eating more fruits and vegetables is helpful, compared to those who do not eat many fruits or vegetables; those who eat largely of fruits and vegetables have a 77% lower risk of hypertension.[249] Vegetables lower blood pressure and keep it from creeping up over the years.[250]

Vegetables known to be helpful in lowering blood pressure include: green leafy because they are high in magnesium and potassium,[251] spinach[252]because it is rich in folate, celery[255] (eat it or drink it!), carrots,[256] ginger[257] and broccoli[258]because they relax blood vessels, beets,[259] basil,[260] garlic[262](supplement or whole), onions (eaten raw, but not cooked) significantly reduce hypertension.[263]

Not to be left out, fruit also lowers blood pressure.[264] Fruits especially shown to have a positive impact on blood pressure include eggplant[266], tomatoes,[267] pumpkin or squash[268] (which are high in potassium and low in sodium), cranberry (which has ACE inhibitory activity mimicking a popular blood pressure pill),[269] an apple a day,[270] pomegranates,[271] grapefruit[272] (which protect arteries, has diuretic activity and improves blood fluidity) and finally olives[273] (which have calcium channel blocking and nitric oxide mediated vasodilatation benefits).

Deficiency of certain minerals in the diet increases the risk of hypertension. Iron: people eating a nutritious vegetarian diet providing sufficient intake of iron enjoy lower blood pressures. Iron from meat, know as heme-iron, is not helpful in this regard.[274] Potassium: lowers blood pressure,[275] but the most common blood pressure pill, a diuretic, lowers potassium.[276] Calcium is needed to maintain normal blood pressure.[277] Copper deficiency, a common result of eating refined carbohydrates,[278] has been shown to cause high cholesterol (hypercholesterolemia), high triglycerides (hypertriglyceridemia), hypertension, and glucose intolerance (diabetes).[279] Magnesium deficiency precipitates hypertension.[280] Mineral levels are decreased by alcohol, salt, phosphoric acid (sodas), coffee intake, by profuse sweating, by intense prolonged stress, by excessive menstruation and vaginal flux, by diuretics and other drugs, by certain parasites (pinworms), by sugar (refined carbohydrates) and by use of tobacco.

What's For Breakfast?

Breakfast eaters experience lower blood pressures than breakfast skippers.[281] In planning breakfast be warned of the "cereal killer". Most processed breakfast cereals (dry or hot) have a hard time sustaining life and cause hypertension in laboratory animals.[282] Choose whole plant based unrefined foods for a healthy, blood pressure friendly breakfast. If you cannot, by looking at the breakfast food, determine its identity (such as "O"s or flakes which do not resemble their origin), don't put it in your mouth. It is much better to eat identifiable cereals such as granola, oatmeal, and other whole grain cereal foods.

The reason why refining foods causes so much hypertension is that fiber and minerals are removed in the process.[283] Fiber from grains has been shown to reduce the risk of hypertension by 40%.[284] Vegetable fiber, 65 gm/day, can reduce your blood pressure by 12-14 points.[285]

Beans help lower blood pressure because they are low in sodium, have healthy fiber and contain the blood pressure lowering minerals potassium, magnesium and calcium.[286]

Even nuts are beneficial. A daily serving of nuts can reduce the risk of hypertension by 18%.[287] The preferred variety is raw or dry roasted with little or no salt. Even "soy nuts", a roasted soybean product, have been shown to positively impact blood pressure.[288]

One important antioxidant vitamin for addressing blood pressure is vitamin C. When blood levels are maintained from natural dietary sources, blood pressure drops,[289] but not when blood levels are attempted through artificial (pill supplementation) sources.[290] Diets high in this and other naturally occurring vitamins from fruit and vegetables lower blood pressure.[291] One such diet is the Hawaiian diet. This diet is high in complex carbohydrate (77% of calories), low in fat (12% of calories), moderate in protein (11% of calories), and has been shown decreases in blood pressure as much as 10 points.[292]

One research group, wanting to maximize dietary impact on blood pressure management, put their patients on a six month 62% uncooked, fresh fruit and vegetable diet. The result was an 8 pound weight loss and a 18 mm Hg blood pressure decrease. In passing, the researchers noted that 80% of those in this study who smoked or drank alcohol abstained spontaneously. They reported increased sensitivity to alcohol, cigarette smoke, chemical odors, and medication. Several also had nausea, vomiting, and malaise after typical restaurant or banquet dinners.[293] What kind of diet are we talking about? This is the original diet! "And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat." "and thou shalt eat the herb of the field;"[294] "Grains, fruits, nuts, and vegetables constitute the diet chosen for us by our Creator. These foods, prepared in as simple and natural a manner as possible, are the most healthful and nourishing. They impart a strength, a power of endurance, and a vigor of intellect that are not afforded by a more complex and stimulating diet."[295]

Why Eat So Much?

"And put a knife to thy throat, if thou be a man given to appetite."[296] Hypertension increases with overeating.[297],[298] Don't overeat! "...eat in due season, for strength, and not for drunkenness!"[299] Eating less food (caloric restriction) reduces blood vessel stiffness, improves vascular relaxation and lowers blood pressure.[300],[301]

Taking it a step farther, fasting has been shown to be an effective modality is lowering blood pressure. You can jump start your blood pressure reduction with a water only fast.[302] Fasting effectively reduces stubborn hypertension.[303] Fasting one or two days a week may be more effective than pills.[304]

Have Some Lemon In Your Water!

With dehydration as one of the causes of hypertension,[305] what is the best way to get my water? Adding fresh squeezed lemon to water maximizes its impact on hypertension.[306] We recommend that you squeeze the juice of one lemon into your first quart of water for the day and drink it at least 30 minutes before breakfast to lower blood pressure. We recommend that the water be lukewarm; not hot or cold.

Tachycardia: Increased Heart Rate

If the heart beats faster, a higher volume of blood is pumped and the blood pressure rises.[307] We call this tachycardia. Anything that causes the resting heart rate to increase accelerates the risk of hypertension. In fact for every 10 beats/min increase in heart rate the risk of hypertension increases by 42%.[308] You see, athletes have very low heart rates. People who have not been exercising have a high heart rate, and a high risk of hypertension. Stress also raises the heart (pulse) rate.

Does Stress Run In Your Blood?

Are you easily startled? This is part of your response to stress and is an early sign you may be headed for hypertension.[309] Besides raising the heart rate and tightening the blood vessels, another way stress causes hypertension and blood clots is that it thickens the blood so that it requires more pressure to pump it through the blood vessels.[310] People who never get anxious have a significantly lower incidence of hypertension.[311] "Take therefore no thought for the morrow: for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof."[312]

Another way to look at it is that people who handle stressful life events more effectively have greater success maintaining healthy blood pressure.[313] This may have something to do with personality. The easy-going type B personalities go easier on blood pressure than their type A counterparts.[314] Easy-going, laid-back, calm, relaxed responses to life's challenges predict normal blood pressures.[315] People with cool tempers experience calmer blood pressures[316] and fewer heart attacks.[317] "He that is slow to anger is better than the mighty; and he that ruleth his spirit than he that taketh a city."[318] What's more, happier more cheerful people have lower blood pressure.[319]

Having trouble coping? Stress management training, including hostility reduction and anger management have been shown to be effective at lowering blood pressure.[320]

Of course, stress is how you perceive your risks, not the risks themselves. People who experience events as negative have a higher risk of hypertension.[321] The question then is; how can I steer clear of, or get over stress? How do I change my perceptions of risk away from the negative toward the positive? The first step is to be aware when stress is playing a role in your life. Does your pulse rise? Are you physically tense? Do you experience headaches or anxiety? Are you nervous? Does fatigue dog your steps? Do you have high blood pressure? Being in touch with your emotions is key because stress is an emotional experience.

When you discover that you have stress, your next step is to realize or remember what thoughts surround or accompany your stress. Evaluate the validity of those thoughts. Are they rational? Are they negative or are they positive? Once you have flushed out the thoughts underlying your stressful feelings the next step is to determine what these thoughts tell you about what you believe. Beliefs underlie thoughts, thoughts underlie feelings and feelings drive actions or behaviors like hypertension. Take a closer look at your secretly held beliefs, especially the ones underlying stressful feelings. Most often you will discover beliefs that set you up for unreasonable fear, worry or anger. You need to challenge these beliefs and replace them with rational ones. "And ye shall know the truth, and the truth shall make you free."[322]

Beliefs that you will find most helpful for achieving good health are ones to be obtained from the Bible where we learn that, "There is no fear in love; but perfect love casteth out fear: because fear hath torment. He that feareth is not made perfect in love."[323]

One common stress provoking fear is one of financial failure. But when we have turned our lives over to God we can expect His care. "And he said unto his disciples, Therefore I say unto you, Take no thought for your life, what ye shall eat; neither for the body, what ye shall put on. The life is more than meat, and the body is more than raiment. Consider the ravens: for they neither sow nor reap; which neither have storehouse nor barn; and God feedeth them: how much more are ye better than the fowls? And which of you with taking thought can add to his stature one cubit? If ye then be not able to do that thing which is least, why take ye thought for the rest? Consider the lilies how they grow: they toil not, they spin not; and yet I say unto you, that Solomon in all his glory was not arrayed like one of these. If then God so clothe the grass, which is today in the field, and tomorrow is cast into the oven; how much more will he clothe you, O ye of little faith? And seek not ye what ye shall eat, or what ye shall drink, neither be ye of doubtful mind. For all these things do the nations of the world seek after: and your Father knoweth that ye have need of these things. But rather seek ye the kingdom of God; and all these things shall be added unto you."[324]

People who put the past behind them, not ruminating about past anger-provoking events are at lower risk for hypertension and its complications.[325] "Brethren, I count not myself to have apprehended: but this one thing I do, forgetting those things which are behind, and reaching forth unto those things which are before, I press toward the mark for the prize of the high calling of God in Christ Jesus."[326]

Stressful Life Events

One way to increase your stress is to subject your mind to the impressions being made on television. Two (2) hours a day of television watching increases the risk of hypertension by 40%.[327] As I am sure you are well aware (if you think about it), the main character of the television show plot is either in trouble, getting into trouble or getting out of trouble: life just isn't that bad.

Difficulty paying medical expenses is associated with increased hypertension.[328] It is also the number one reason for bankruptcy in the United States.[329]

Work Pleasure

The rewards of gainful, meaningful employment bear mentioning. People happy with their jobs and their income are more likely to experience happy, healthy blood pressure.[330],[331] People who enjoy their jobs and are not overworked or depressed have lower blood pressures.[332] Having purpose in life helps moderate blood pressure.[333]

Social Pleasure

Looking at the social aspects of blood pressure control: people with close supportive friends have lower blood pressures.[334] Indeed, sharing a negative life experience with an ambivalent friend raises blood pressure and heart rate. Alternatively sharing the same event with a caring, supportive friend lowers blood pressure and heart rate. Similarly, blood pressure levels are lowest when people are with family and highest when amongst strangers.[335]

Pet Power

Does keeping an animal help blood pressure? Yes, loving pets have a blood pressure lowering effect for people with hypertension.[336]

Music Magic

Do you enjoy listening to music? Music can help blood pressure.[337] Blood pressures respond positively to classical music, but not jazz or pop.[338]

Emerging Urban Danger

Environment plays a significant role in stress. Moving to the city? Expect a 23-point rise in your systolic blood pressure and a 9-point rise in your diastolic blood pressure.[339] There are hazards in just commuting to a city. Traffic related air pollution and noise significantly increases the risk of hypertension.[340] People living in small rural towns have half the risk of hypertension as people living in large industrialized cities.[341]

Rural Relief

Quietness, solitude and silence sooth the nerves and lower your blood pressure.[342],[343] The stillness is remedial, "Be still, and know that I am God:".[344] People living where the din of busy roads never reaches their ears have a 37% lower risk of hypertension.[345] Outdoor walks, enjoying trees, flowers, and other wonders of God's great nature, lower blood pressure and stress.[346] Even bringing the outdoors into the home through houseplants has been shown to improve blood pressure.[347],[348]

Life's Pleasure: Helping Others

If you have some extra time and want to do something beneficial for your blood pressure, volunteering is a wonderful aid in keeping blood pressures normal.[349] Find someone else who could use your help and give of yourself to the needs of the world. "It is more blessed to give than to receive."[350]

Freedom From Guilt and Resentment

Guilt and resentment cause hypertension. Freedom from guilt[351] and resentment[352] lowers blood pressure. Okay, how do I do that? Easier said than done! Well, it's not really something you can do on your own. You're going to need help. Only God can accomplish this, with your cooperation. Are you ready?

Guilt comes from sin. "Sin is the transgression of the law."[354] Being out of harmony with the loving God of nature and the universe; of this you must first be conscious. You probably already have a sense that something isn't right, that you could use some more peace in your life?

How do I know if I have guilt? One of two ways: 1. Compare your life to the standard of God's holy law[355] and see if there is a disparity between what you are and what it enjoins, "for by the law is the knowledge of sin."[356] Go to the law, read the first commandment,[355] and ask God to reveal to you if you are in harmony with it. Then proceed to the following commandments and ask the same questions. 2. Compare your life with that of Jesus Christ, "Who did no sin.",[357] meaning that His life was an example of what it is like to be at complete peace with God and keep His law free of guilt. Read His biographies at the beginning of the new testament (Mathew, Mark, Luke, John) of the Bible and ask God to reveal to you the differences between what you are studying and what your life could have been like if you had been like Jesus. This is another way of comparing your life to what the law enjoins and discovering where you may have sinned.

If, after trying this, you find yourself believing that you are problem free, it may only indicate that you have undertaken this comparison too superficially and need to spend a little more time with it. A thorough investigation will reveal that, "all have sinned, and come short of the glory of God;".[358] And, "If we say that we have no sin, we deceive ourselves, and the truth is not in us."[359]

God's Holy Spirit will help you and your conscience will be awakened to see the evil of sin, its power and guilt. Sin separates you from God and peace, and brings you into bondage. It brings feelings of guilt that result in physical symptoms like hypertension. The more you struggle on your own to escape, "the more you realize your helplessness. Your motives are impure; your heart is unclean. You see that your life has been filled with selfishness and sin. You long to be forgiven, to be cleansed and to be set free. Harmony with God, likeness to Him, what can you do to obtain it?"[360]

"It is peace that you need: heaven's forgiveness, peace and love in the soul. Money cannot buy it, intellect cannot procure it, wisdom cannot attain to it; you can never hope by your own efforts to secure it. But God offers it to you as a gift, "without money and without price." Isaiah 55:1. It is yours if you will but reach out your hand and grasp it. The Lord says, "Though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool." Isaiah 1:18. "A new heart also will I give you, and a new spirit will I put within you. Ezekiel 36:26."[360]

Confess your sins, and in heart put them away. Say, "Dear God, I have sinned and have suffered the results of a sense of guilt and have the disease of high blood pressure. Please forgive me and give me a new heart to know you and live free from offence toward you and others." Resolve to give yourself to God. "Now go to Him, and ask that He will wash away your sins and give you a new heart. Then believe that He does this because He has promised. This is the lesson which Jesus taught while He was on earth, that the gift which God promises us, we must believe we do receive, and it is ours. Jesus healed the people of their diseases when they had faith in His power; He helped them in the things which they could see, thus inspiring them with confidence in Him concerning things which they could not see--leading them to believe in His power to forgive sins. This He plainly stated in the healing of the man sick with palsy: 'That ye may know that the Son of man hath power on earth to forgive sins, (then saith He to the sick of the palsy,) Arise, take up thy bed, and go unto thine house.' Matthew 9:6. So also John the evangelist says, speaking of the miracles of Christ, 'These are written, that ye might believe that Jesus is the Christ, the Son of God; and that believing ye might have life through His name.' John 20:31."[360]

To maintain peace; freedom from blood pressure raising guilt, "Fight the good fight of faith,"[361] believe that God has taken care of your past sin(s), read daily His word to learn new things that will help keep (blood pressure raising) guilt away and "press toward the mark for the prize of the high calling of God in Christ Jesus."[362] "To them who by patient continuance in well doing seek for glory and honor and immortality, eternal life:"[363] Rest in the assurance of eternal life and a good afterlife.

Resentment and Bitterness: Resentment and bitterness arises out of misunderstanding between people. It comes from not forgiving someone else. It is a form of anger. Resentment and bitterness grow if not checked. Do not allow the wound to fester and break out in poisoned words, which taint the minds of those who hear. Do not allow bitter thoughts to continue to fill your mind. "Thou shalt not avenge, nor bear any grudge against the children of thy people, but thou shalt love thy neighbour as thyself: I am the LORD."[364]

Go to your brother, and in humility and sincerity talk with him about the matter. "Moreover if thy brother shall trespass against thee, go and tell him his fault between thee and him alone: if he shall hear thee, thou hast gained thy brother. But if he will not hear thee, then take with thee one or two more, that in the mouth of two or three witnesses every word may be established. And if he shall neglect to hear them, tell it unto the church: but if he neglect to hear the church, let him be unto thee as an heathen man and a publican."[365] At this point you have done your part, no matter what the outcome, choose to let God have the feelings of resentment and bitterness and fill your mind with glad saying like from the Bible books of Psalms or Proverbs.

Patience and Forgiveness Lower Blood Pressure

People who cultivate the characteristic of patience enjoy much more normal blood pressures.[366] This reminds me of a very important passage

in the last book of the Bible, “Here is the patience of the saints: here are they that keep the commandments of God, and the faith of Jesus.”[367]

A spirit of forgiveness has been shown to bring blood pressure down.[368] “Forgiving one another, even as God for Christ's sake hath forgiven you.”[369]

Religion, Bible Study and Prayer Lower Blood Pressure

In stressful situations, prayer has been shown to lower blood pressure.[370] Further, people who attend religious services,[371] and pray or study the Bible frequently, have a 40% lower risk of hypertension.[372] People who substituted religious media (TV or Radio) for personal experience and social contact with other believers suffered elevated blood pressures.[372]

Most people find wars and natural disasters like hurricanes and earthquakes stressful. In the wake of earthquakes and other stress raising natural disasters more people come down with high blood pressure.[373] I would advise you to avoid this source of stress, but I would be misleading you if I asserted that these situations were going to become less frequent. “For nation shall rise against nation, and kingdom against kingdom: and there shall be earthquakes in divers places, and there shall be famines and troubles: these are the beginnings of sorrows.”[374] In other words, you have not seen anything yet. And as we get closer to the second coming of Jesus Christ these things will be come more and more common. Stress management needs to be God derived to meet such impending devastation.

Does Love Last Forever?

We have already discussed the impact of major stressful life events on the development of high blood pressure. One such major stressful life event is the loss of a loved one. A study out of the University of Michigan (Ann Arbor), revealed that older adults who lost a loved one to death, but who believe in a good afterlife were much less likely to develop hypertension.[375] This raises an important question; do we have reason to believe in a good afterlife? If not, we’re all headed for high blood pressure. If God is, as many religions teach, just waiting to roast sinners in the fires of hell for eternity, stage II hypertension here we come! But what is the truth about the afterlife?

Jesus was right up front in telling us, that after He left this earth, He would be preparing to have us join Him. “Let not your heart be troubled: ye believe in God, believe also in me. In my Father's house are many mansions: if it were not so, I would have told you. I go to prepare a place for you. And if I go and prepare a place for you, I will come again, and receive you unto myself; that where I am, there ye may be also.”[376] When are we going to join Him? When do we get this reward? “For the Son of man shall come in the glory of his Father with his angels; and then he shall reward every man according to his works.”[377] He will be rewarding everyone at His second coming.

How will He know who to give the good rewards to and who to exclude? “I charge thee therefore before God, and the Lord Jesus Christ, who shall judge the quick and the dead at his appearing and his kingdom;” “Henceforth there is laid up for me a crown of righteousness, which the Lord, the righteous judge, shall give me at that day: and not to me only, but unto all them also that love his appearing,”[378] God makes a decision on that in a court setting called the judgment.[379] Clearly no judgment has been made or reward given at this point in history; it does not occur until His second coming. Even Paul waits for that day to receive his “crown of righteousness”. So all, dead or alive, good or evil, are still awaiting for the judgment and their reward.

What about those who have already died? Jesus said, “Marvel not at this: for the hour is coming, in the which all that are in the graves shall hear his voice, And shall come forth; they that have done good, unto the resurrection of life; and they that have done evil, unto the resurrection of damnation.”[380] Jesus has yet to raise the dead so that they can receive their reward. No one is currently burning in hell or enjoying heaven.

What are the dead doing right now? Can I talk to one of them? Will any of them remember me? What says the Scriptures concerning these things? The beloved David declares that man is not conscious in death. "His breath goeth forth, he returneth to his earth; in that very day his thoughts perish."[381] "In death there is no remembrance of thee; in the grave who shall give thee thanks?" "The dead praise not the Lord, neither any that go down into silence."[382] Solomon bears the same testimony: "The living know that they shall die; but the dead know not anything." "Their love, and their hatred, and their envy, is now perished; neither have they any more a portion forever in anything that is done under the sun." "There is no work, nor device, nor knowledge, nor wisdom, in the grave, whither thou goest."[383]

When will this resurrection take place? “For this we say unto you by the word of the Lord, that we which are alive [and] remain unto the coming of the Lord shall not prevent them which are asleep. For the Lord himself shall descend from heaven with a shout, with the voice of the archangel, and with the trump of God: and the dead in Christ shall rise first: Then we which are alive [and] remain shall be caught up together with them in the clouds, to meet the Lord in the air: and so shall we ever be with the Lord. Wherefore comfort one another with these words.” [384] That is really comforting and helps produce good blood pressure.

Even the Old Testament character Job was aware of this future resurrection: “If a man die, shall he live again? all the days of my appointed time will I wait, till my change come. Thou shalt call, and I will answer thee: thou wilt have a desire to the work of thine hands.”[385]

What change was Job anticipating at the ressurection? Paul answers this for us, “In a moment, in the twinkling of an eye, at the last trump: for the trumpet shall sound, and the dead shall be raised incorruptible, and we shall be changed. For this corruptible must put on incorruption, and this mortal must put on immortality. So when this corruptible shall have put on incorruption, and this mortal shall have put on immortality, then shall be brought to pass the saying that is written, Death is swallowed up in victory. O death, where is thy sting? O grave, where is thy victory? The sting of death is sin; and the strength of sin is the law. But thanks be to God, which giveth us the victory through our Lord Jesus Christ. Therefore, my beloved brethren, be ye stedfast, unmoveable, always abounding in the work of the Lord, forasmuch as ye know that your labor is not in vain in the Lord.”[386] If you are faithful to God, you have the promise of a new body at Jesus’ return, free from diseases such as hypertension.

The outcome of the judgment at the second coming of Jesus is that the righteous go to heaven and the wicked to hell. For some people the resurrection is the beginning of a happy afterlife, these are the ones we discussed earlier who believe in a good afterlife and experience lower blood pressure now. “And many of them that sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt.”[387]

And what is the punishment of those who choose to reject God’s offer of forgiveness and mercy? Is hell forever? Contemplating hell is daunting, and the thought of being condemned to go there could certainly raise blood pressure. Why should there even be a hell? “Then shall he say also unto them on the left hand, Depart from me, ye cursed, into everlasting fire, prepared for the devil and his angels:”[388] Hell was never intended for you or I. It is for the devil and his angels who oppose God. But, if we join the devil in sin, in fighting the righteous law of God, then we are choosing to join the devil in his plight. Really, God would rather we repent and choose His way of life: “The Lord is…longsuffering to us-ward, not willing that any should perish, but that all should come to repentance.”[389]

Do the wicked suffer in the fires of hell through all eternity? “For, behold, the day cometh, that shall burn as an oven; and all the proud, yea, and all that do wickedly, shall be stubble: and the day that cometh shall burn them up, saith the LORD of hosts, that it shall leave them neither root nor branch. And ye shall tread down the wicked; for they shall be ashes under the soles of your feet in the day that I shall do this, saith the LORD of hosts.”[390] So really, although it is a fearful ordeal, it is self-limited, it comes to an end, all that is left is ashes. Matthew speaks of this, “Whose fan is in his hand, and he will throughly purge his floor, and gather his wheat into the garner; but he will burn up the chaff with unquenchable fire.”[391] Burned Up!

Has this ever happened before? It has: “Even as Sodom and Gomorrah, and the cities about them in like manner, giving themselves

over to fornication, and going after strange flesh, are set forth for an example, suffering the vengeance of eternal fire."[392] These cities were very rebellious against God and His Law so God destroyed them with eternal fire as an example of hell. Are they still burning? Of course not, but they did burn to ashes, to be trodden under foot, as the wicked will be.

Okay, but what if my loved ones choose a life which lead to hell, won't this be on my mind through all eternity? No, "And God shall wipe away all tears from their eyes"[393] "For, behold, I create new heavens and a new earth: and the former shall not be remembered, nor come into mind."[394]

Will God bring a complete end to all sorrow, pain, the high blood pressure? "What do ye imagine against the LORD? he will make an utter end: affliction shall not rise up the second time."[395]

While those who do not embrace God's ways and law are "as though they had not been."[396], the righteous will be enjoy being with Jesus and eating from the Tree of Life whose leaves are for healing, "In the midst of the street of it, and on either side of the river, was there the tree of life, which bare twelve manner of fruits, and yielded her fruit every month: and the leaves of the tree were for the healing of the nations."[397] Perhaps for healing even of hypertension. We know that there will be no disease in heaven. "And God shall wipe away all tears from their eyes; and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain: for the former things are passed away."[393] What a wonderful day that will be! Don't you look forward to that—Total freedom from death, sorrow, crying and pain? Are you ready to be healed?

Review and Recap

Let's review: Blood pressure is a produce of the pumping of the heart, the size of the blood vessel through which the blood must flow, the thickness of the blood, and the volume of blood to be pumped.

A fast heart rate pumps more blood than normal and increases blood pressure. We call this tachycardia. Common causes of tachycardia are: stress, having poor cardiovascular fitness (being out of shape), caffeine, tobacco and dehydration.

If the blood vessels tighten up or constrict, making the blood vessel size smaller, higher blood pressure is required to get the required amount of blood to its destination. We refer to this tightening up effect as vasoconstriction. Vasoconstriction is caused by: psychological and physical stress, thermal stress from cold exposure, caffeine, tobacco, and dehydration.

Blood vessels normally expand and relax with each heartbeat. If the blood vessels become hard, their stiffness resists the free flow of blood and up goes the blood pressure. Atherosclerosis is an example of this process, so are sugar glycation, endothelial dysfunction, and stiffness of the blood vessels running through muscles from a sedentary lifestyle.

If the blood becomes thick and sludgy, more pressure is required to carry it through the blood vessels and hypertension results. When blood gets thick we say that the viscosity has increased too much. Examples of the blood thickening threats include: dehydration, overeating, psychological stress, a diet too rich in fat and refined carbohydrates, and high blood cholesterol or triglycerides.

If the blood vessels are being choked by something pressing on them from their sides, the effect is like putting your thumb over the end of a garden hose, the result is increased blood pressure. We call this external compression. Things that press on the blood vessels include tissue swelling, atherosclerotic plaque, sugar coating called glycation (usually from diabetes), inflammation, and especially tight clothing like belts and elastic bands.

Finally, if the volume of blood increases, this increases the amount of blood entering the heart, which in turn increases the amount of blood leaving the heart and with each beat this increases the overall blood pressure. We often refer to this phenomenon as fluid retention. Lifestyle habits causing volume overload include eating too much salt, obesity, a sedentary lifestyle, poorly clad chilled extremities and kidney failure.

Summary: Letting Hypertension Go!

- Keep well hydrated with pure vitalizing water; add a little fresh lemon juice too.
- Take regular time for enjoyable exercise in the great outdoors, far from traffic, pollution, cities and stressful crowds.
- Get plenty of warm sunshine and invigorating fresh air.
- Eat a delicious unrefined whole plant based diet, high in fiber, minerals, vitamins and antioxidants; low in salt, with no refined carbohydrates, processed fats, or hypertension causing animal products.
- Avoid the pitfalls of tobacco, caffeine, alcohol, drugs, fried foods, fructose, sodium, MSG and overeating.
- Make weight control a habit.
- Guard your sleep and evaluate its quality for effectiveness.
- Let God know you need Him to release you from stress, guilt, fear and hypertension. Rely on Him for guidance as you come more into line with His original plan for diet and lifestyle.

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