



# IMAGE AWARENESS

## WELLNESS INSTITUTE

### HIGH BLOOD PRESSURE

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## INTRODUCTION

High blood pressure is also known as hypertension. By the age of 65 over half the population suffers with hypertension. It is important to realize that blood pressure tends to rise with age. An elevated blood pressure in an older individual might be beneficial while it would be problematic for a young person.

High blood pressure significantly increases the risk of death. It speeds the deposition of cholesterol and fatty material in the arteries and can weaken the walls of blood vessels leading to rupture. The heart can become enlarged. High blood pressure is most likely to damage the heart, kidneys, and brain. Elevated blood pressure often leads to stroke.

Blood pressure is measured by two numbers. The higher number represents the pressure when the heart beats and is called systolic pressure. The lower number represents the pressure when the heart rests and is called diastolic pressure. High blood pressure, abbreviated as BP, is generally considered a systolic pressure over 140 and/or a diastolic pressure over 90 mm Hg (millimeters of mercury).

## CAUSES OF HIGH BLOOD PRESSURE

Blood pressure is influenced by how well the heart, arteries, and kidneys work together. The rate

at which the heart beats and the force of contraction plays a role in high blood pressure. Thus a rapid pulse can increase blood pressure.

Another factor that can contribute to high blood pressure is an inability of the arteries to dilate properly due to nutrient deficiencies, hormonal imbalances, or blockage or stiffening of the arteries.

Finally, fluid accumulation due to poorly functioning kidneys can result in increases in blood pressure.

Stiffening of the arteries and kidney deterioration are common contributors to elevated blood pressure in elderly individuals.

A sometimes overlooked cause of elevated blood pressure is “white-coat hypertension.” Some people develop an elevated blood pressure as soon as they walk into a doctor’s office. This is an anxiety-induced fight-or-flight response. This is ordinarily not treated unless severe. Some hypertension experts consider this “labile hypertension” a problem if an individual is under a great deal of stress or anxiety and want to monitor it at home carefully.



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## PERIPHERAL EDEMA

Hypertension is often treated with calcium channel blockers. One little recognized potential side-effect of even a mild calcium channel blocker like diltiazem is the risk of fluid accumulation in the extremities. This side-effect can afflict between 5% and 70% of those using these drugs depending upon the drug, dosing, and how long an individual uses the drugs. Edema will often resolve when the medication is discontinued. Avoiding side-effects is a good reason to consider some of the natural approaches to dealing with high blood pressure discussed in this paper.

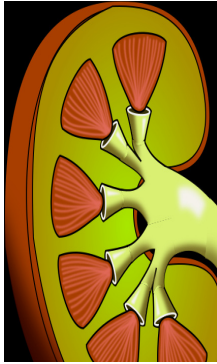
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## KIDNEY DAMAGE

### Lead

Heavy metals can cause serious damage to the kidneys contributing to high blood pressure. Lead has been



linked to hypertension, gout, and kidney damage. Huge quantities of lead have been released into the environment as a result of leaded gasoline, paint containing lead, and lead in ammunition for firearms.

Chelation with various compounds has been used to reduce levels of lead and other toxic metals. In serious poisoning this procedure may be helpful, but the body has the ability to rid itself of toxic substances when certain nutrients are available as discussed below.

In some studies vitamin C and zinc have been shown to address lead toxicity. Pfeiffer concluded, "Vitamin C and zinc may be an attractive alternative to chelation therapy in the treatment of chronic lead intoxication." The combination of these nutrients was found to "significantly decrease the blood lead level."

Lead can accumulate in the bones. Calcium is also a consideration in lowering lead levels in bone and blood and in reducing the risk of hypertension. One study concluded, "...our study suggests that dietary calcium intake is an important factor modifying the risk that cumulative lead burden imposes on blood pressure. Low dietary calcium, as well as high lead levels in cortical bones and blood increases the likelihood of hypertension. It is possible that individuals with a history of elevated lead exposure may be able to reduce their risk of lead-associated hypertension by increasing dietary calcium intake."

In pregnancy induced high blood pressure, the ratio of calcium and magnesium to lead was found to correlate with the blood pressure. The higher the ration of the minerals to the lead, the better the blood pressure.

## Mercury and Cadmium

Mercury and cadmium have also been associated with high blood pressure. Cadmium is specifically linked to hypertension, while mercury can cause a wide variety of cardiovascular problems.

## Arsenic

Arsenic is commonly found in drinking water and as a contaminant in rice. Arsenic accumulation has also been associated with increased blood pressure. In a 2007 study arsenic was associated with hypertension, especially if intake of B vitamins and folate was low.

## Glyphosate

Glyphosate has been implicated as an agent responsible for chronic kidney disease of unknown origin. The theory is that glyphosate picks up heavy metals like arsenic, lead, and mercury and releases them in the kidney due to the acidic environment. If this proves to be the case, widespread herbicide use could be contributing to elevated blood pressure.

Since both heavy metals and glyphosate appear to contribute to high blood pressure avoidance of exposure may produce benefits when an individual suffers with hypertension.

## Autoimmunity

A number of studies have shown that omega-3 fatty acids protect the kidneys, particularly in autoimmune conditions. Heavy metals and toxic chemicals in the environment can alter kidney structure resulting in autoimmune damage to the kidneys. Such damage can increase blood pressure.

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## TREATING HEAVY METAL TOXICITY

Four out of five people with high blood pressure fall into a category of moderate to borderline. The majority of these people can obtain significant benefit by changes to the diet and lifestyle. This can reduce the risk of side-effects from medications. The rest of this newsletter will address natural approaches which may be helpful in addressing high blood pressure.

The body has two primary means of dealing with heavy metal toxicity:





glutathione and metallothionein.

Glutathione is the body's most abundant antioxidant. It is composed of three amino acids containing sulfur. Consuming foods and supplements rich in sulfur is one highly effective means of increasing the body's levels of glutathione. Among the most effective foods are cruciferous vegetables, the allium family of foods including garlic and onions, eggs, meats and whey protein.

Vitamin C supplementation of only 500 mg a day has been shown to increase glutathione levels by nearly 50%. Vitamin C can spare glutathione by its powerful antioxidant activity.

Selenium is a necessary cofactor for glutathione functioning. The requirement can usually be met by the quantities of the mineral in a good multiple vitamin. Excess selenium can be toxic.

Finally some foods are rich in glutathione including avocados, spinach, asparagus, and okra. Even though glutathione is poorly absorbed, these foods do have all the building blocks necessary for producing glutathione.

Metallothionein is a protein rich in cysteine, one of the same sulfur rich amino acids found in glutathione. This family of proteins is produced in the liver and kidneys and provides protection from a wide variety of toxic metals. Metallothionein production requires not only sulfur containing proteins, but also zinc, copper, and selenium.

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## WEIGHT & EXERCISE

Exercise is extremely important for the prevention and treatment of high blood pressure. An examination of 13 controlled studies found an average reduction of 11.3 mm Hg in systolic blood pressure and 7.5 mm Hg in diastolic blood pressure. Exercise also reduced insulin resistance by 40% in diabetic patients.

Even moderate weight loss in obese individuals can have profound effects upon blood pressure. In one study the loss of about 15 pounds reduced blood pressure about as much as calcium channel blocker medication. Blood pressure was reduced both at rest and during exercise.

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## SPECIFIC NUTRIENTS & HYPERTENSION

### Green Tea

In animal experiments, green tea has been shown to be a powerful protectant against developing high blood pressure. The researchers suggested that this is the ability of green tea to deal with free radical oxygen and help maintain normal functioning of the inner lining of the arteries. Antioxidants have been shown to prevent hypertension in animals.

### Coenzyme Q10

Another powerful agent in addressing hypertension is CoQ10. In one study ten patients, average age 61, were treated with only 50 mg of CoQ10 twice daily for 10 weeks. Systolic blood pressure (the higher number) dropped almost 20 points on average, while diastolic (the lower number) decreased over 15 points. The researchers felt that the nutrient was reducing resistance to blood flow

in the extremities.

A sidelight of the study on CoQ10 was a rather remarkable reduction in total cholesterol (24 points on average), and an increase in the beneficial HDL cholesterol.

A combination of green tea and CoQ10 was found to protect the kidneys from damage when rats were given antibiotics.

### Magnesium

Work by Touyz found hypertension associated with elevated calcium and sodium and deficient magnesium. The magnesium was of such significance that he suggested the possibility of combining the mineral with medications that function as calcium channel blockers. Magnesium is a natural calcium channel blocker.

Identifying magnesium deficiency can be difficult as blood levels may be normal, while levels in red and white blood cells can reflect clear cut deficiency in those with high blood pressure.

### Vitamins C and E

High blood pressure is associated with increased risk of stroke. In one prospective study men with the lowest intake of vitamin C had a risk of stroke 2.4 times higher than men with the highest levels of vitamin C in the blood. The risk was even higher if men were overweight and had low levels of vitamin C.

Matthias Rath points out that vitamin C not only lowers blood pressure, but is also absolutely essential for the health of the inner lining of the arteries. Vitamin C is one deficiency which is common to humans, but rare in the animal kingdom because most





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animals internally synthesize the vitamin, but humans do not.

A study by Rodrigo and Prat of vitamins C and E came to the following conclusion, “The present study supports the view that oxidative stress is involved in the pathogenesis of essential hypertension. The enhancement of antioxidant status by vitamins C and E supplementation in essential hypertensive patients is associated with lower blood pressure. This suggests intervention with antioxidants as an adjunct therapy for hypertension.”

### Omega-3 Fats

A randomized, controlled study of 100 patients with high blood pressure found that supplementing with low doses of omega-3 fats and reducing omega-6 fats substantially improved blood pressure after six weeks. After 6 weeks of supplementation not only was blood pressure reduced, but insulin, cholesterol, LDL, and triglycerides were also reduced.

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