Heart Disease: what it is, how it happens, what to do: Part 1

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Last week I tackled the confusing topic of cholesterol and its role in cardiovascular health. I pointed out that cholesterol is one of the most important substances in our bodies when it comes to preserving good health.

"But if it ain't cholesterol, what causes heart disease? We don't know enough to say for sure, but we do have many clues; and although these clues present a complicated picture, it is not beyond the abilities of dedicated scientists to unravel them. Nor is the picture so complex that the consumer cannot make reasonable life-style adjustments to improve his chances."

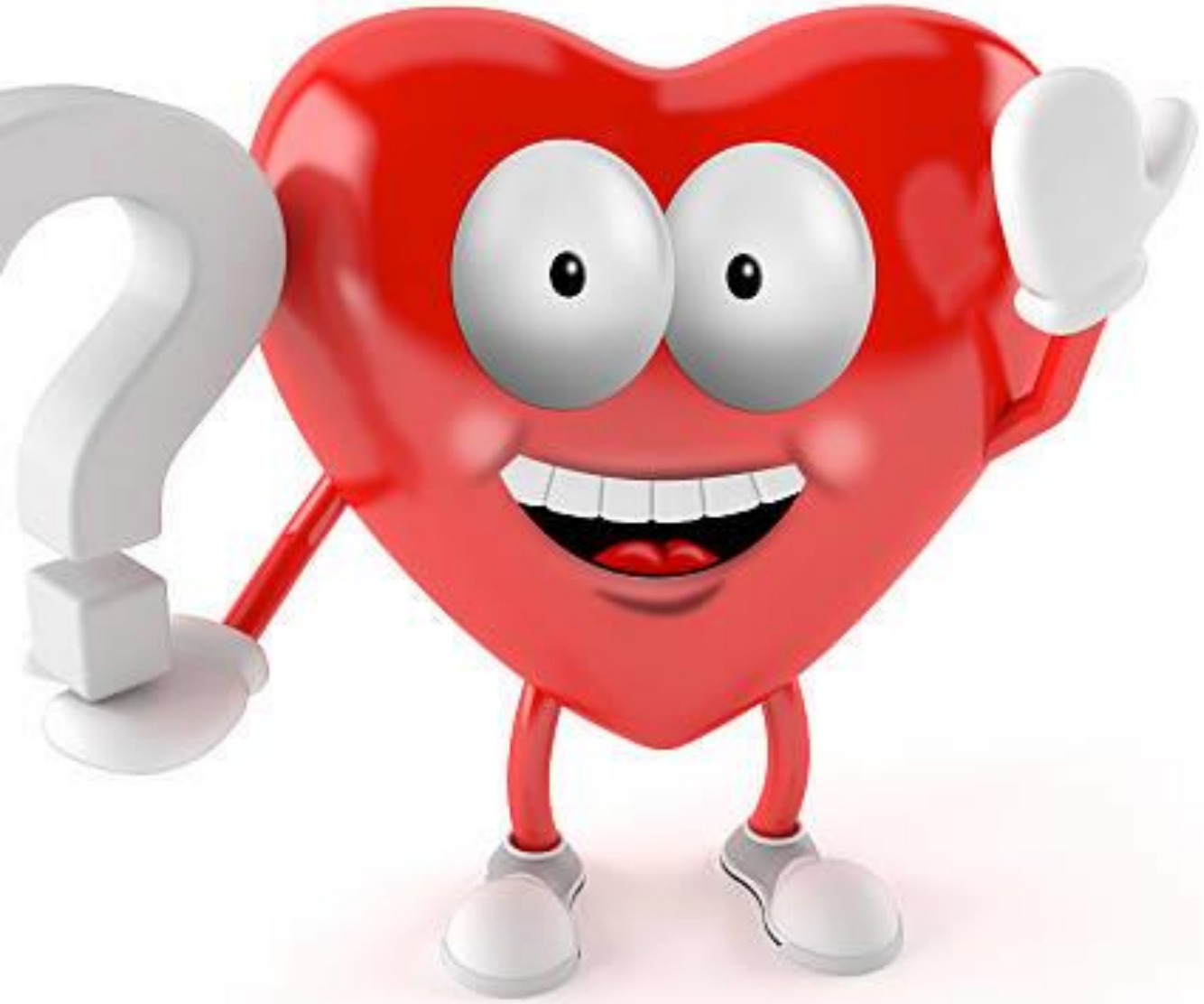
Heart Disease

What is it?
How does it happen?
Can it be prevented?

USING A PAPER BY SALLY FALLON AND MARY G. ENIG, PHD FROM THE WESTON A PRICE FOUNDATION IN THIS PRESENTATION

The Weston A. Price Foundation

- The Weston A. Price Foundation (WAPF) is your source for accurate information on nutrition and health, always aiming to provide the scientific validation of traditional foodways. People seeking health today often condemn certain food groups — such as grains, dairy foods, meat, salt, fat, sauces, sweets and nightshade vegetables — but the Wise Traditions Diet is inclusive, not exclusive.
- We show you how to include all these nourishing traditional foods in your diet through wise choices and proper preparation techniques. The result is vibrant health for every age of life, including the next generation



What *Is* Heart Disease?

What is Heart Disease?

"Coronary Heart Disease (CHD) is not a single disease, but a complex of diseases of varied etiology. Some of the recognized causes of heart disease include damage to the heart muscle or valves due to a congenital defect; or to inflammation and damage associated with various viral, bacterial, fungal, rickettsial or parasitic diseases. Rheumatic fever or syphilis can lead to heart disease, as can genetic or autoimmune disorders in which cellular proteins in the heart muscle are deranged or which disrupt enzymes affecting cardiac function."

Heart disease relatively rare in 1900

These factors probably contributed to most cases of heart disease recorded in the early part of the century, when rates of infectious diseases were much higher, and antibiotics were not in use. Nevertheless, according to CDC statistics, heart disease was relatively rare in 1900, accounting for approximately 9 percent of all deaths in the US (http://www.cdc.gov/nchs/data/dvs/lead1900_98.pdf)."

But for some reason(s), things changed…

But by 1950, CHD (including stroke) was the leading cause of mortality in the US, accounting for 48 percent of all deaths. Since that time, mortality rates from CHD have declined somewhat. In 1998, CHD (including stroke) accounted for about 38 percent of all deaths. One reason for the decline is the fact that victims of heart disease are living longer, due most likely to improved surgical techniques, the advent of angioplasty and the use of anti-clotting drugs given to heart attack victims. But the morbidity rates—the incidence of heart disease—remains high. Of greatest concern is the high rate of heart disease in American men between the ages of 45 to 65—during the period of greatest family and career responsibilities."

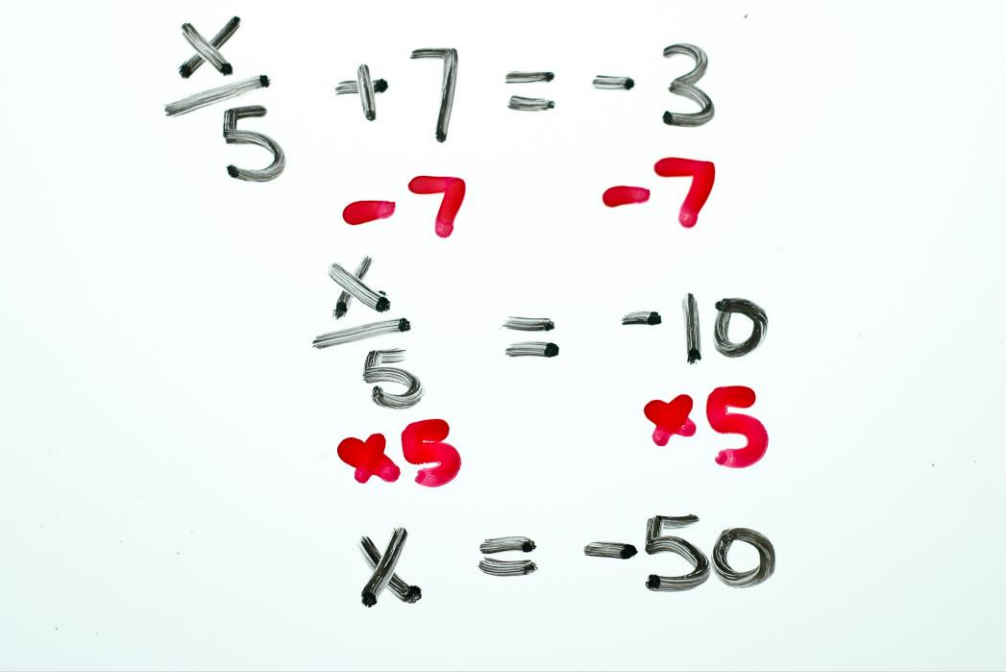
“Heart Attack” – Myocardial Infarction (MI) – became a new and the most prevalent form of heart disease

“The interesting thing is that most cases of heart disease in the twentieth century are of a form that is new, namely heart attack or myocardial infarction—a massive blood clot leading to obstruction of a coronary artery and consequent death to the heart muscle. Myocardial infarction (MI) was almost nonexistent in 1910 and caused no more than 3,000 deaths per year in 1930. Dr. Paul Dudley White, who introduced the electrocardiograph machine to America, stated the following during a 1956 American Heart Association televised fund-raiser: “I began my practice as a cardiologist in 1921 and I never saw an MI patient until 1928.” By 1960, there were at least 500,000 MI deaths per year in the US. Rates of stroke have also increased, and the cause is similar—blockage in the large arteries supplying the brain with blood.”

The factors that initiate a heart attack (or a stroke) are twofold

"One is the pathological buildup of abnormal plaque, or atheromas, in the arteries, plaque that gradually hardens through calcification. *Blockage most often occurs in the large arteries feeding the heart or the brain. This abnormal plaque or atherosclerosis should not be confused with the fatty streaks and thickening that is found in the arteries of both primitive and industrialized peoples throughout the world. This thickening is a protective mechanism that occurs in areas where the arteries branch or make a turn and therefore incur the greatest levels of pressure from the blood. Without this natural thickening, our arteries would weaken in these areas as we age, leading to aneurysms and ruptures. With normal thickening, the blood vessel usually widens to accommodate the change. But with atherosclerosis the vessel ultimately becomes more narrow, so that even small blood clots may cause an obstruction."*

And…



*"**The other half of the MI equation is the blood clot or thrombus that blocks blood flow to the heart or brain.** Thus, any search for the causes of heart disease must consider complex factors in the blood that promote clotting at inappropriate times, that is, other than in response to bleeding from a rupture or wound. In fact, while a great deal of attention has been focused on the cause and solution to atherosclerosis, the role played by clotting factors in the blood has been relatively neglected. Yet a heart attack due to a clot can occur even in the absence of arterial blockages."*

However, inflammation may also cause blockages…

"In fact, a new view of coronary artery disease is that it is an inflammatory process, characterized by cycles of irritation, injury, healing and reinjury inside the blood vessels.[1] The inflammatory response is actually a defense mechanism that helps the body heal but when the inflammatory process goes awry, plaques may rupture, provoking clots that lead to heart attacks."

The health and integrity of the blood vessel walls is another factor that must be considered

"Aneurysms, the dilation and rupture of blood vessels due to weakness in the vessel walls, will naturally provoke a clotting response, not to mention the more immediate danger of rapid blood loss. In addition, biochemical imbalances in the smooth muscle cells may result in spasms that can be just as effective as a blood clot in cutting off blood flow to the heart."

Finally, arrhythmias…

"Abnormalities in the rhythm of the heart's pumping mechanism—can lead to interrupted blood flow, oxygen starvation of the heart muscle or complete shut down of the heart—the so-called ***cardiac arrest****.*

Regulation of the nervous impulses that govern the heart depends on a large number of factors—from mineral status to the integrity of the myelin sheath."

Risk Factors?

What might put a person more at risk for developing heart disease?

Risk factors as cited by medical orthodoxy

"There are dozens of risk factors for heart disease. Those cited most often by medical orthodoxy include high blood cholesterol, smoking, lack of exercise, stress and overweight. A high level of cholesterol in the blood is a mild risk factor for individuals with familial hyper-cholesterolemia (cholesterol levels chronically above 350 mg/dl) but for most of us, there is no greater risk of heart disease between cholesterol levels that are "high" (over 300 mg/dl) and those that are "low" (under 200 mg/dl)."

Smoking

“One factor of apparent importance is smoking, which has been associated in many studies with an increased risk of coronary mortality, even after correction for other risk factors. It is easy to speculate on the mechanism by which smoking causes heart disease. Exposure to fumes containing free radicals may promote the growth of atherosclerotic plaques. Perhaps chronic carbon monoxide intoxication limits the heart’s utilization of oxygen.”

But when it comes to smoking, this is interesting…

"But the picture is more complex than simple cause and effect. In a multi-year British study involving several thousand men, half were asked to reduce saturated fat and cholesterol in their diets, to stop smoking and to increase the amounts of unsaturated oils such as margarine and vegetable oils. After one year, those on the "good" diet had 100 percent more deaths than those on the "bad" diet, in spite of the fact that those men on the "bad" diet continued to smoke.[2] In a study of Indians from Bombay and Punjab, researchers found that those from Punjab had one-fifth the number of heart attacks even though they smoked eight times more cigarettes.[3] And while smoking was widespread at the turn of the century, myocardial infarction was not. This suggests that there may be factors in traditional diets that protect against the negative effects of smoking. It also raises the question of whether additives now used in cigarette paper and filters and changes in the curing process itself have exacerbated the harmful effects of cigarette use."

Another thought?

"Perhaps the association between smoking and heart disease is really an association with some other factor—stress, biochemical imbalances, nutrient deficiencies—that creates the desire or the need to smoke. Often when people quit smoking, they become nervous and overweight, which may seem a bad bargain of one risk factor in exchange for two more."

Exercise

“Regular physical activity is one of the few risk factors that has proved consistent. In all studies, regular physical activity is inversely associated with mortality from CHD, and physical activity is the only factor that has shown dose-response in the trials. Common sense tells us why exercise may be beneficial. When we exercise, our heart beats more rapidly, the arteries widen to provide more oxygen and arterial blood flow improves.”

And lack of exercise…

"Lack of exercise may also be a risk factor because it is a marker for something else that is the true cause. People who are overweight, for example, are less inclined to exercise. Prosperous people who have leisure time are more likely to exercise than those who must work long hours to make ends meet—and we know that heart disease in westernized nations is more prevalent among the poor.[4] Dietary factors may make people less inclined to exercise. An interesting finding in the Framingham study was that those who ate the most saturated fat, the most calories and the most cholesterol were the most physically active.[5] They also weighed the least and had the lowest levels of serum cholesterol!"

Stress

“Many doctors have noticed that heart attack strikes in the months just after severe emotional trauma—loss of a spouse or close friend, bankruptcy, layoff or disappointment. We know that grief changes many aspects of the body chemistry, making us more vulnerable to all sorts of diseases—not just heart disease but also cancer, allergies, tuberculosis and depression. But mankind has always suffered loss and grief. The question is why these traumas cause heart attacks today but did not in 1900.”

What about high blood pressure?

"For blood pressure, the situation is much more complicated. Much of the "one blood pressure fits all" approach comes from confusion over what a "risk factor" really represents. Most risk factors for heart disease are merely "risk markers" that simply have some statistical association with an increased incidence of coronary events. There are over 300 risk factors for heart attacks, including a deep earlobe crease, premature vertex baldness, high selenium toenail levels, having a pot belly, having been born in northern Finland, not having a daily nap or drinking more or less than one or two glasses of wine a day. Attempting to treat or remove such markers will accomplish nothing since they do not cause coronary disease. The same can be true for lowering an elevated systolic or diastolic blood pressure unless the treatment is directed at what is causing the problem, which is usually not clear."

Blood Pressure & Health

I intend to cover this in greater depth in an upcoming presentation in this series on heart and cardiovascular health. Blood pressure is another confusing and misunderstood health topic, so it deserves a focused program and discussion.

Beyond risk factors...

"Although the known risk factors may not be the underlying causes, it makes sense to exercise regularly, to avoid smoking, to maintain an appropriate body weight and to minimize stress. Unfortunately, avoidance of these risk factors is no guarantee. We all know of slim, nonsmoking, active, successful individuals who have developed heart disease—including athletes who have keeled over while jogging. And stress cannot always be avoided. All of us face loss and challenge. The question is, how do we fortify the body to deal with stress in a way that minimizes its impact on the physical body?"

The ABC's of Nutrient Deficiencies

"In 1930, Dr. Weston Price published an interesting paper in the Journal of the American Dental Society.[6] For years, Dr. Price had been analyzing the amount of vitamin A and vitamin D in butterfat. He noted that these nutrients were most plentiful in the spring and fall, when cows had access to rapidly growing green grass. During the winter and the dry summer months, levels of these vitamins in butterfat declined or disappeared completely."

Lacking Nutrients

Could nutrient deficiencies be playing a role?

An interesting correlation

“Dr. Price also tabulated the number of deaths from heart attacks in local hospitals. When he plotted these two variables against time on the same graph, he found that deaths from heart disease were inversely proportional to the vitamin content in the butter. In other words, when nutrient levels were high, deaths from heart disease were low; and when nutrient levels were low in the winter and summer, deaths from heart disease were high. He found this pattern in many different localities, even in areas in the far north where there was only one vitamin peak, in midsummer, due to the short growing season.”

Fat-Soluble Vitamins - Overlooked?

"Heart disease researchers have largely ignored the possible role of vitamin A and D in protecting the heart, probably because these fat-soluble vitamins are found only in the foods they have demonized—animal fats. Yet both nutrients play numerous important roles in the body chemistry, principally as catalysts for protein and mineral assimilation.[7] Both nutrients support endocrine function and protect against inflammation. Vitamin A is needed for the conversion of cholesterol into steroid hormones and, in fact, is rapidly depleted by stress. Cholesterol-lowering drugs increase the body's need for vitamin A."

"Vitamin D helps prevent high blood pressure and protects against spasms. As vitamin D is needed for calcium absorption, it contributes to a healthy nervous system and helps prevent arrythmias."

Vitamin E and Cardiovascular Health

"In the 1960s, a pair of Canadian doctors named Wilfred and Evan Shute claimed to prevent recurrence of problems in CHD patients with the administration of vitamin E.[8] They pointed out that lack of vitamin E in the American diet is partially due to the milling process which eliminates the highly perishable wheat germ, a significant source of vitamin E. High levels of omega-6 fatty acids from commercial vegetable oils can actually raise the body's requirements for vitamin E. Vitamin E is an antioxidant that can prevent free radicals from causing damage at the cellular level and it plays an essential role in cellular respiration, particularly in the cardiac muscles. Vitamin E makes it possible for these muscles and their nerves to function with less oxygen. It promotes dilation of the blood vessels and inhibits coagulation of the blood by preventing clots from forming."

Vitamin C

"Dr. Linus Pauling, famous for his work on vitamin C, proposed vitamin C deficiency as a possible cause of CHD.[9] A six-year Finnish study linked low blood levels of vitamin C to increased risk of heart attack during subsequent years.[10] As an antioxidant, vitamin C protects against free radical damage. It has the effect of making oxygen metabolism more effective and may also help prevent clot formation. Vitamin C is essential for the production of collagen and therefore protects the integrity of the artery walls. Vitamin C is used up very quickly during periods of stress."

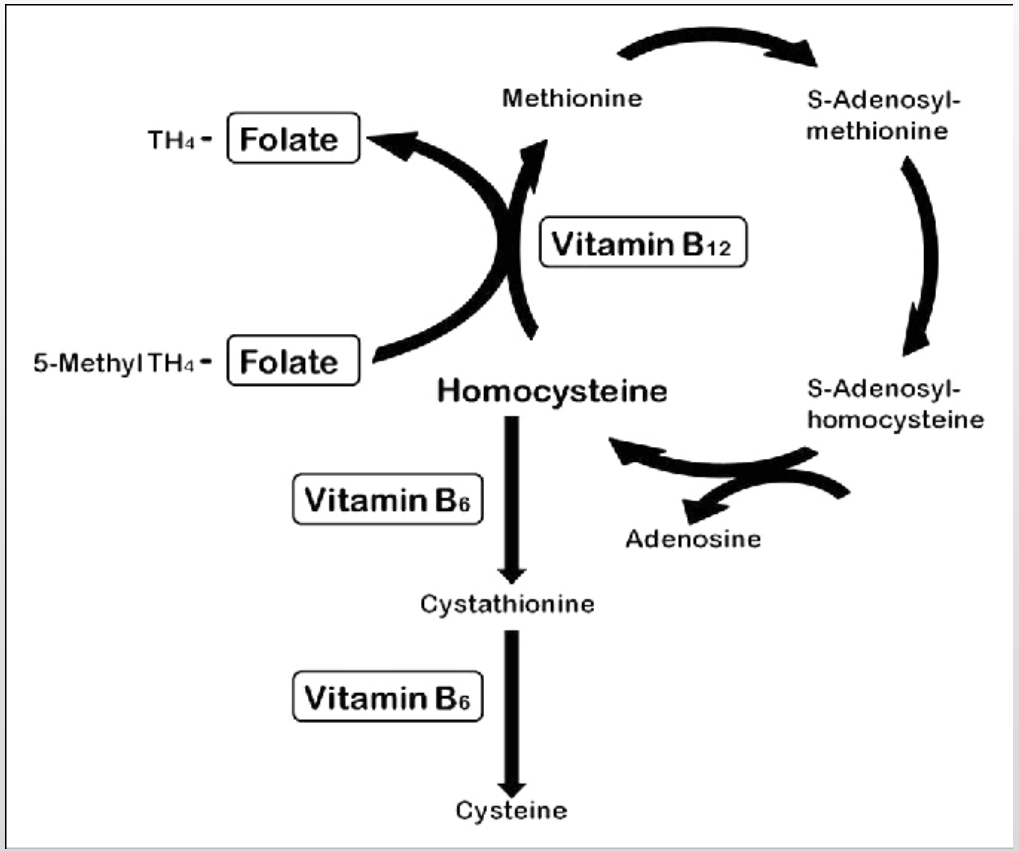
Vitamin C and small-particle LDL – *ah-ha!*

"Another type of cholesterol is Lp(a) which occurs in humans, other primates and guinea pigs, organisms that do not manufacture vitamin C. Nobel laureate Linus Pauling and his colleague Mathias Rath proposed that our bodies produce Lp(a) to compensate for low levels of vitamin C.[35] They caused atherosclerosis in guinea pigs by depleting their bodies of vitamin C. Vitamin C depletion caused Lp(a) to appear in the plaque. A high level of Lp(a) is a risk factor for heart disease.[36] That does not mean the Lp(a) is the cause. The cause may be vitamin C deficiency in association with other factors, such as low levels of vitamin B3 (niacin), which also lowers Lp(a). Consumption of trans fatty acids causes levels of Lp(a) to rise while consumption of saturated fats lowers blood levels of Lp(a).[37]"

The B Vitamins - Folate, B12, B6

"Researcher Kilmer McCully has found a positive relationship between deficiencies in folic acid, B6 and B12 and severity of hardening or stiffness of the arteries, as well as the buildup of pathogenic plaque.[11] Vitamin B6 and vitamin B12 are found almost exclusively in animal products—the foods that proponents of the lipid hypothesis advise us to avoid."

I would point out that this relates to homocysteine; elevated homocysteine leads to hyperthrombosis (accelerated blood clotting). People with the MTHFR mutation in the C677T variant are at risk for high homocysteine, and so we employ the use of these vitamins to counter that tendency.



Coenzyme Q10

"Another nutrient found exclusively in animal products, particularly in red meat and organ meats, is coenzyme Q10, which serves as an antioxidant and as fuel for the mitochondria in the cells. In the body, coenzyme Q10 is most concentrated in the heart muscle cells. It seems to be helpful in reducing inflammation and has been used successfully in the treatment of heart disease.[12] Cholesterol-lowering drugs greatly increase the body's need for coenzyme Q10."

Minerals

Magnesium

"According to Dr. Roger Williams, an inadequate supply of magnesium may result in the formation of clots and contribute to calcium deposits in the blood vessels.[13] Heart attack patients improve their survival chances from 50 to 82 percent when given intravenous magnesium in the first 24 hours following myocardial infarction.[14]"

Copper & Zinc

"Many other minerals play a role in cardiovascular health. Copper and zinc, for example, are contained in enzymes that the body uses to defuse free radicals and help create healthy collagen. These minerals are most easily assimilated from animal foods."

More Minerals

Selenium

"Deficiency of selenium has been linked to CHD[15] and is associated with Keshan disease, characterized by fibrotic lesions in the heart.[16] In conjunction with vitamin E, selenium has been used successfully to reduce or eliminate angina attacks. Soils in most of Finland are deficient in selenium, which may account in part for the fact that heart disease in that country is high. A national program to add selenium to the soil, initiated in 1985, may offer partial explanation for the decline in heart disease in Finland (although the decline began before the selenium enrichment program was instituted)."

Iodine

"One of the most significant findings from recent studies is the link between low iodine levels and an increased risk of coronary artery disease. Coronary artery disease occurs when the arteries that supply blood to the heart muscle become hardened and narrowed due to plaque buildup. This condition can lead to chest pain, shortness of breath, and, in severe cases, heart attacks. ***Research*** *indicates that individuals with lower levels of iodine have nearly twice the likelihood of developing CAD compared to those with higher iodine levels."* source

"It is easy to make the case that, in spite of our prosperity, the actual nutrient content of our foods has declined during the last 70 years. A number of researchers have cataloged the decline of minerals in our soils, due to intensive farming practices.[17] Most milk in the US today comes from cows housed in confinement dairies. They are fed dry feed and never see the green grass their bodies need to make large quantities of vitamin A and vitamin D. Isolated isomers of vitamin D are added to milk in an attempt to rectify this situation. Processed food, usually based on sugar, white flour and vegetable oils, has replaced many nutrient-dense foods that were eaten routinely in the past. Few Americans eat liver on a weekly basis or take cod liver oil as our ancestors did."

In spite of prosperity, nutrient availability has declined over the last 70 years

Animal Lard (Yes; animal lard!)

“Nor do they use lard, which is another rich source of vitamin D. Like humans, pigs can get sunburned, and, like humans, they make vitamin D through the action of sunlight on their skin and store the nutrient in their fat. Pigs raised in confinement will die if not exposed to UV-B light, the wavelength needed for vitamin-D production. Fifty years ago, lard contributed important nutrients to the American diet, but few people use it today.”

- Infection
- Thyroid Disease
- Environmental Toxins

Other Factors & Associations

Infection & Heart Disease

- A number of pathogens have been associated with the development of CHD or have been found in the atherosclerotic lesions at autopsy, including both viruses and bacteria.[38] These pathogens have been around as long as man has lived on the earth. The culprit, therefore, is not the microbes but a compromised immune system which can no longer deal with them appropriately. A healthy immune system depends on an array of nutrients, including vitamin A, vitamin C and various minerals that play an antioxidant role.
- One of the most tragic aspects of the cholesterol campaign is that it has caused Americans and Europeans to abandon fats that provide protection against infection. Not only do animal fats carry vitamin A, they also contain palmitoleic acid, a 16-carbon monounsaturated fatty acid that has strong antimicrobial properties. Butterfat and coconut oil contain fatty acids that have similar properties. They protect against viruses and pathogenic bacteria and enhance the immune system. Areas of the world where coconut is consumed have low levels of heart disease.

The Thyroid/Heart Connection

"Thyroid insufficiency has been identified as a risk factor for heart disease, but treatment with thyroid hormone replacement does not necessarily improve the outcome.[39] Hormones taken orally may have unexpected effects compared to those produced by the body, effects that may increase the risk of heart disease, such as the provocation of arrythmias. Thyroid health depends on iodine status, but other factors are involved. Vitamin A, for example, plays a key role in thyroid health.[40] As individuals with poor thyroid function have difficulty converting carotenes in plant foods into true vitamin A, they must obtain adequate vitamin A from animal foods. Unfortunately, patients with thyroid problems are often advised to follow a lowfat diet because they are prone to heart disease."

Other Theories

"Many other theories have been proposed to account for the current epidemic in CHD: Chlorine and fluoride added to water; pesticides that mimic human estrogens or that provoke free radical reactions; carbon monoxide fumes; industrial chemicals; artificial lighting; synthetic vitamins; minerals that are toxic or that are consumed in toxic amounts; pasteurization and homogenization of milk; legal and illegal drugs; consumption of coffee and other stimulants; and additives in processed foods. Most are factors unique to the twentieth century and all need further study.

But who will do this work? Even today, all but a small fraction of the research dollar still goes to further study of the lipid hypothesis, and vested interests have the power to prevent funding for studies that may prove embarrassing."

In Closing…

Next time I will delve more deeply into the role of diet – the foods we should be eating, and the foods we should be avoiding.

Also, in this series on Heart & Cardiovascular Health, I will be reviewing the various nutrients and supplements we can incorporate into our daily regimens to support strong, healthy, durable veins, as well as a strongly pumping heart.

I hope you're finding this as fascinating and helpful as I am!

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