Circulatory Problems and Heart Disease

An Interview with Caldwell B. Esselstyn, Jr., M.D.

Q: How does the circulatory system work?
A: The circulatory system is a truly remarkable process. It starts at the pump, which is the heart, and delivers this wondrous supply of oxygen and nutrients throughout the entire body so that every cell receives the vital nourishment that it requires. Then the circulation continues beyond the arteries to the capillaries and returns back through the venous system to receive fresh oxygen through the lungs. Then it returns to the heart for the cycle to begin again.

Q: What are the most common circulatory problems?
A: In the United States, the most common circulatory problem is coronary artery disease (CAD); it afflicts approximately one of every two men and one of every three women in the course of their lifetime. The other vessels, which are afflicted by this same process (called atherosclerosis) are the blood vessels to the legs, brain, and kidneys.

Q: How can we prevent circulatory problems in the first place?
A: Before we talk about prevention, we must look at the prevalence of CAD. There are many cultures on the planet in which this disease does not exist. For instance, if we were to look at American soldiers who died in combat in Korea and in Vietnam, it is estimated that roughly 80 percent of those battle casualties had coronary artery disease that could be seen at autopsy without a microscope. A good example of more recent research is the Pathobiological Determinants of Atherosclerosis in Youth (PDAY) trial. This study was interesting because it looked at those who had died of accidents, homicides, and suicides between the ages of 16 and 34. In that group, the disease was literally ubiquitous. Even in the 16-year-old girl, there was early disease in the right coronary artery. It gives one an idea of just how prevalent this is.

Dr. Lewis Kuller, a professor of Public Health at the University of Pittsburgh School of Medicine, conducted the 10-year Cardiovascular Health Study. He said that all men 65 years of age and all women 70 years of age who have been exposed to the traditional Western diet have cardiovascular disease and should be treated as such. The studies on soldiers during the Korean and Vietnam Wars and the results of the PDAY study clearly indicate how early and how diffuse this disease begins to afflict us. It is no surprise that Dr. Kuller can state that all Americans age beyond 65 who have been exposed to the traditional Western diet have CAD.

The thing that I find so exciting about this epidemic—which is destroying Western health and has been touted to become the number one cardiovascular disease and should be treated as such—is that this disease is figuratively a "paper tiger." By that, I mean it need never exist. If coronary disease does exist, it need never progress.

There are cultures that by heritage and tradition do not consume oils, dairy, or animal products, which are the foundation for this horrendous epidemic. Those populations, which survive on plant-based nutrition, such as cereal, bread, pasta, vegetables, legumes, and fruit, do not really know of this disease.

There is one particular experience in Norway that I have always found particularly compelling, because it almost begins to approach the strongest basic tenet that we have in medicine. Let us suppose you were to take a nation and, by some natural event or calamity, selectively eliminate all of its animal products and dairy foods. That was pretty much what happened in Norway during World War II. When the Germans invaded and occupied this country, they took away the cattle, sheep, goats, chickens, and pigs. After this happened, this population was largely subsisting on a plant-based type of nutrition.

What is so striking about the studies of this country was that the death rates from strokes and heart attacks in 1939 through 1945 absolutely plummeted. At that time, there were no statin drugs, bypass operations, and pigs. After this happened, this population was largely subsisting on a plant-based type of nutrition.

Dr. Robert Vogel, of the University of Maryland School of Medicine in Baltimore, has developed the brachial artery tourniquet test. First, we all have a single cell layer lining the innermost portion on our arteries, the endothelial layer. The endothelial cells, one cell layer thick, deliver nitric oxide, the strongest vasodilator in the body. It tends to widen the arteries when there is a need for more blood.

During the brachial artery tourniquet test, an ultrasound probe is placed over the brachial artery, just below the elbow. There, the technician takes a reading of the diameter of the brachial artery. A blood pressure cuff is encircled above the upper arm and inflated above the systolic blood pressure for five minutes, during which time there is no circulation to the forearm. Then the cuff is released, and the technician again measures the diameter of the brachial artery below the elbow. When there is no circulation to the forearm, there is a great stimulus to the healthy, normal endothelial cells to pour out nitric oxide. This is why when you re-measure that diameter of the brachial artery, it is now wider, because it has dilated. That is a perfectly healthy response.

Dr. Vogel took a group of students to a fast-food restaurant; half of them ate corn flakes, and their tourniquet test result remained normal. However, two hours later, the students who consumed the hash brown potatoes and sausages had failing results. Those young students were unable to experience normal dilatation or widening of the artery, because the fat and grease from their meal had so injured their endothelial cells that they were unable to respond in a normal way. Because these were young students, a few hours later the endothelial cells recovered.

This test produces similar results when we eat saturated fats from meat, dairy, olive oil, and so on. Although we might not feel the injury to the endothelial cells if we eat this way—meal after meal, three times a day, day after day, week after week, month after month, year after year, decade after decade—it is not surprising that with those repetitive injuries to the most delicate cells in our arteries, teenagers and young adults already begin to develop this disease. It universally affects all people by the time they are in their middle and late 60's.

Scientifically, this is a powerful condemnation of the present food pyramid in the United States, which recommends all of these foods that, when eaten, guarantee that such a significant portion of our population will develop and perish from this disease; this need never occur. When we recognize the power that food has and how immediately it can cause injury, we can also see how this whole thing can be turned around and worked the other way. We saw that from the Norway experience. That was the basis of the research in which I became involved.

Q: What is a heart attack?
A: The public's misconception is perhaps the same one that the medical profession had until 15 or 18 years ago. The popular belief used to be that the coronary arteries of the heart would just slowly and gradually accumulate debris and become smaller and smaller. Then, when the artery

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"I had new plumbing installed. I got tired of fretting about my cholesterol!"
A properly functioning circulatory system, bringing oxygen-rich blood to the extremities, is one of the wonders of the human body. As with so many other health benefits, this system is usually taken for granted and given no attention until complications arise. Some of the major problems that can arise in relation to the circulation include hardening of the arteries (arteriosclerosis), blockages, and spasms.

These developments, often more prominent in patients with diabetes, can lead to Raynaud’s disease, Buerger’s disease, and the rare Marfan’s syndrome. Problems of this type carry certain general precautions. Eliminating smoking is of utmost importance to preserve a healthy circulatory system. Although we do not have a huge amount of data on this topic, secondary smoke may also be a contributing factor to vascular problems.

Certain medications must be checked for their possible side effects. Plaque is a major contributor to poor circulation. It is basically a result of deposition of oxidized cholesterol on the arterial walls. It is noteworthy that iron can act as an oxidizing agent, making cholesterol more dangerous than usual. Therefore, it may be prudent that non-anemic men and women, especially postmenopausal women, avoid the ingestion of iron in their daily vitamin-mineral supplements. The “grandaddy” of iron supplements, ferrous sulfate, seems to be more of a troublemaker than the later organic “grandchildren,” such as ferrous fumarate.

The most widely prescribed drug in the U.S. is Lipitor (atorvastatin), which is used to lower blood cholesterol levels. Although it is widely known among nutritionists and nutrition-conscious physicians, Lipitor causes coenzyme Q10 levels to decline; in most cases, this essential enzyme should be supplied to the body.

Normal aging also results in some degree of arteriosclerosis. Thus, nutritionists recommend the use of various healthy oils, which may be beneficial in preventing hardening of the arteries.

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finally closed off, the person would have a heart attack because all of the blood and nutrients that were being supplied through a portion of the heart muscle was suddenly gone. Then a portion of the heart muscle, now deprived of its blood supply, dies.

We have since learned that only about 10 percent of heart attacks occur in the manner I just described. About 88 to 90 percent of heart attacks occur from one of these small, young unstable plaques, which is on the side of the wall of the artery. Under the influence of the traditional Western diet, one of these small plaques eventually ruptures. As long as that artery remains open and given no attention until complications arise. Some of the major problems that can arise in relation to the circulation include hardening of the arteries (arteriosclerosis), blockages, and spasms.

Which foods might be helpful in aiding the circulatory system? A diet low in saturated fats, especially trans fats (artificially altered fats that clog the arteries), is the cornerstone of a proper diet designed to maintain circulatory health. It seems wise to avoid foods such as chips and snacks that contain artificial ingredients. Sufficient water is always a centerpiece of a good diet.

What about nutrients? The amino acid l-carnitine, at a dose of 500 milligrams (mg.) twice daily, helps the circulatory system and strengthens heart muscle. As mentioned, the nutrient coenzyme Q10, 50 mg. twice daily helps oxygenate the tissues. Lecithin, either in granule or chewable tablet form, is an efficient emulsifying agent that helps to break up fat and fatty deposits. Vitamin C, either buffered (calcium ascorbate), or unbuffered (ascorbic acid) helps prevent blood clots. A balanced B complex covers many nutritional needs and is most useful for circulation.

The use of niacin in high doses may be helpful, but it must be used only under the care of a physician who will perform frequent liver tests. In contradistinction to almost all of the vitamins, the therapeutically valuable dose of niacin is often close to the dangerous dose. Thus, niacin therapy should not be undertaken without a doctor’s supervision.

Whereas physicians generally recognize the importance of the veins and arteries, less attention is often given to the capillaries, which are connected to the smallest veins in the body. These vessels are often fragile, and this presents a problem. Many individuals find that bioflavonoids can help strengthen the capillaries.

The preservation of a well-functioning circulatory system is among the key factors of a general program of health. Keeping the blood vessels healthy can undoubtedly prevent much illness and cut down on the staggering health costs in this area.

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they had less than a year to live. I am happy to say that all of those patients are still alive today. What is so exciting is that everybody who was compliant with diet was able to destroy the capacity of this disease to progress. The criticism that I most frequently receive from cardiologists or other physicians is that they do not believe patients will follow plant-based nutrition. I think that is inaccurate for several reasons. One, there are entire cultures that have preferred a plant-based diet. We find that when patients are fully informed of how this disease works, they make exchanges for foods that they are going to give up. However, I give them fiber foods that taste delicious. I simply take away other ones that are injuring them with every meal.

Q: Can diet affect circulation in other ways?
A: We have not talked about the brain and dementia. Megan Clare and her team, back in 2001, reported on more than 11,000 MRIs of the brain. They discovered that by age 50, Americans begin to develop little white spots in the brain, which we now know were tiny strokes. Because the brain has so much reserve and the stroke is so tiny, it does not register. If people continue to eat this traditional Western diet and are now in their 60s, then perhaps their memories also begin to fade. These little strokes will continue if they are still using the traditional Western diet, as documented by a number of researchers. Now we have the foundation for dementia and Alzheimer’s disease. Roughly 50 percent of Americans by age 85 will have dementia. Having these little strokes seems to be something that is avoidable.

We teach people that if they eat the traditional Western diet, they will have coronary artery disease and 50 percent will also have dementia by age 85. The majority of men, of course, will have erectile dysfunction. There will also be an absolute epidemic of obesity, hypertension, and congestive heart failure. These are just a few of the needless chronic illnesses that come from this traditional Western diet. Osteoporosis is caused by a gradual weakening and demineralization of the skeleton. The primary culprit is animal protein, whether it is milk or meat. Animal protein has a way of acidifying the body in a way that causes the depletion of calcium. You do not see anything like this degree of osteoporosis in cultures that are plant-based. Instead of using milk on cereal, people can use non-fat soy milk, oat milk, almond milk, hazelnut milk, multigrain milk, etc.

Q: Why do Americans seem to prefer taking a pill or going under the knife rather than modifying their diet?
A: I think that is something that certainly can change. For instance, think of how wonderful it was that we finally were informed about how harmful the use of tobacco products are. It took us many years to understand that tobacco is one of the worst things that you can use. Thirty or 40 years ago, doctors were advertising cigarettes because we did not know how terrible they were. Along came the science, which began to show how dangerous tobacco was, but it took another 30 years for that information to have an effect on the tobacco industry. Having investigated the downside of tobacco, it is time to look more carefully at foods.

There are certain foods that injure us. Even though we consume those foods exactly as the manufacturers intended, there are immediate injuries. No American is spared. That is a powerful argument.

Q: You ask your patients to eliminate all oils in their diet, even olive oil. Would it matter whether they consumed it at room temperature or used it in cooking?
A: Olive oil is oil. Has there ever been a study in which people have been using lots of olive oil and arrested or reversed their heart disease? We all know about how conflicting those statements from the F.D.A. were and how selective the F.D.A. was in its language. No matter how the agency plays with the wording, the facts are the facts. Well-controlled studies, such as those by Dr. David H. Blankenhom of the University of Southern California School of Medicine and Dr. Lawrence Rudel of Wake Forest University, published in The New England Journal of Medicine, in peer-reviewed professional medical journals, show that olive oil causes and perpetuates these diseases.

Q: What is the Mediterranean Diet? What are its advantages and disadvantages?
A: Fifty years ago, the traditional Mediterranean Diet was largely composed of grains, beans, vegetables, fruit, and maybe a small amount of lean meat or fish. The antioxidants that were so plentiful in the plants in some ways compensated for the downside of the olive oil. Now, of course, the present-day Mediterranean Diet is nothing like the original.

Fast foods and the Western diet that have been adopted have devastated those patients. The present-day “Mediterranean Diet” was in the news recently. In the Lyon Diet Heart Study, Dr. Michel de Lorgeril of Joseph Fourier University in Grenoble studied 300 patients in an experimental group and 300 control patients, all of whom had had a recent heart attack.

One group received the American Heart Association Step 1 Diet; the other half followed the Mediterranean Diet. The Step 1 Diet is so close to being a traditional Western diet that those patients sadly, but not surprisingly, did terribly. If you had compared any other diet to the Step 1 Diet, they would have done better, which is why those following the Mediterranean Diet did better. After four years on the Mediterranean Diet, 25 percent of the people either died or had another major cardiac event. To me, that has absolutely nothing to do with the arrest and reversal of heart disease; that is simply slowing the rate of progression. We want to use nutrition that can arrest and reverse disease, not slow the rate of progression.

Q: Since you do not recommend that your patients consume olive oil, what can people use?
A: People are in the habit of using olive oil. When you put anything in a saucepan, you do not have to grease it in olive oil. You can simply use a non-stick pan and use water, tomato, or anything else to make it moist. You literally get over the habit. When you think about it, what does olive oil have in it? A tiny bit of vitamin E, no minerals, no other vitamins, and no fiber. All you are getting is 100 percent fat, 14 percent of which is artery-clogging.

Q: Are some people genetically more susceptible to heart disease?
A: We can look at genetics by way of an analogy. Let us suppose that you have a village located next to a river. During the flood season, only the strongest swimmers can get across that river. If we wait until the dry season, when the river is only four inches deep, everybody gets across safely. The analogy applies in the following way. When you have a traditional Western diet, where blood cholesterol and lipid levels are elevated above 200 mg./dL., some people will succumb sooner than others. That is just the way it is in biology. However, when we get rid of that toxic, traditional Western diet and we have everybody keeping total cholesterol levels under 150 mg./dL and LDL-C levels under 80 mg./dL., everybody is spared. There are not enough fatty materials to injure the arteries.

For a plant-based diet to be successful, we must down-regulate the fat receptor. Just as we have receptors in the brain for cocaine, heroin, and nicotine, we have receptors for sugar and fat. According to the Monell Chemical Census Center in Philadelphia, Pennsylvania, if we compare people consuming three types of fat diets (one at 35 percent fat, one at 20 percent fat, and another at 11 or 12 percent fat)—where patients on my diet are—only one of the groups lose the craving for fat after 10 to 12 weeks; that is the 11 or 12 percent group. Once the fat receptor is down-regulated, they lose that craving. If they lose the craving, they do not get into the misery of denial, which leads to recidivism.

Caldwell B. Esselstyn, Jr., M.D., is the author of Prevent and Reverse Heart Disease © 2007, Avery Publishing Group, Inc. He won a gold medal in a rowing event in the 1956 Olympics. He also served in the Vietnam War as an Army surgeon and was awarded the Bronze Star. Dr. Esselstyn has worked at the Cleveland Clinic in Ohio since 1968.