

## Blood Flow and Alzheimer's: A Key Preventive Tool

**W**hen you think about it, good health is merely the slowest possible rate at which one can die. I accept this. No one gets out of here alive.

However, maintaining your health doesn't just give you more time, it also gives you the option



*Dr. David Williams*

of enjoying that extra time. In fact, that is one of the best attributes of being healthy. There aren't many things more important than maintaining and/or restoring your health.

As such, in my research efforts and travels, I don't spend a lot of time delving into the latest anti-aging fads. Those seem to come and go. And if or when someone ever does discover a method to dramatically increase longevity, it will make news worldwide.

I am, however, very interested in any study that demonstrates how lifestyle habits, nutrition, or other factors lead to accelerated aging. These studies often provide details about what we definitely *should not* be doing and can offer insight into ways we can counteract or help slow the aging process. Oftentimes, just by making a few simple lifestyle and/or dietary

changes, we can completely avoid, or at least significantly reduce, the risk of losing our health prematurely.

One such study was just released. In it, researchers found that poor heart function results in less blood flow to certain areas of the brain, which can lead to accelerated brain aging. The study involved 314 people (average age 73) without heart failure, stroke, or dementia, but 39 percent had mild cognitive impairment. ([\*Neurology 2017 Dec 5;89\(23\):2327-34\*](#))

Mild cognitive impairment (MCI) is a slight but noticeable decline in cognitive skills in areas such as thinking, language, judgment, and memory. MCI is a step between the changes you would expect to find with normal aging and the more serious decline you see with dementia. A person experiencing MCI would be aware that their memory or mental function has slipped a little. Family and friends would also notice a change, but it wouldn't be severe enough to interfere with normal activities or day-to-day life. They might be more forgetful, have difficulty remembering names, show poor judgment, lose their train of thought, or forget appointments or events. Not surprisingly, people with MCI tend to be at greater

risk of progressing to full-blown dementia caused by Alzheimer's or other neurological conditions.

Researchers discovered that decreased cardiac output resulted in significantly less blood flow to the left and right temporal lobes of the brain. These are the specific parts of the brain that process memory. These areas also have a less extensive network for blood flow, and happen to be where Alzheimer's disease first appears. The difference in blood flow to these areas of the brain was equivalent to the decrease one would expect to see in someone 15 to 20 years older.

Cardiac output is the amount of blood your heart pumps at each moment. It is determined by the number of times your heart beats (your pulse or heart rate) and the volume of blood pumped out with each heartbeat (stroke volume). Numerous health factors can decrease cardiac output, including a weakened heart muscle, clogged or inelastic arteries, and low or chronically high blood pressure.

It's easy to understand how low blood pressure can decrease blood flow to the brain. And while situations that lead to temporarily high blood pressure, such as exercise, can increase blood flow to the brain for a short while, chronic high blood pressure can lead to

heart failure, resulting in chronic decreased cardiac output.

Decreased blood flow to the brain has now been directly linked to many of the conditions we've come to associate with the aging process, including poor cognitive function, depression, senility, and Parkinson's and Alzheimer's diseases. Alzheimer's is, by far, the most serious of these conditions. Knowing that reduced blood flow is part of the disease process suggests that there may be new avenues of prevention.

### Stats & Basics

Alzheimer's has become the defining disease of the baby boomer generation. The first of the baby boomers (born between 1946 and 1964) started turning 65 in 2011, and by 2030 all of them will be 65 or older. Although 5 percent of Alzheimer's cases are early onset and strike before the age of 65, the majority happen after 65.

Alzheimer's is the most expensive medical condition in the US. It threatens to bankrupt Medicare and Medicaid and drain the life savings of millions of people. The number of Alzheimer's cases is going to skyrocket as 71 million baby boomers head toward the age of increased risk. Currently, as many as 25 million people in this country have Alzheimer's. That number

is expected to rise 55 percent by 2030, and by 2050, as many as 14 million more could have the disease. It is projected to be the biggest epidemic in medical history.

I'm shocked that more publicity hasn't been given to this. Without some major breakthrough, we are rapidly approaching what could become one of the perfect storms in medicine: a dramatic increase in the percentage of older citizens combined with a huge rise in an incurable, deadly disease.

Of the top 10 diseases (which include cancer, HIV/AIDS, heart disease, and stroke) Alzheimer's is the only disease where there are absolutely no survivors. The average life expectancy after diagnosis is six to eight years, but it can be as short as three or, rarely, as long as 20. There is no cure or effective treatment that can slow its progression.

While no studies prove that anything can totally prevent the development of Alzheimer's, based on the new research I mentioned, poor circulation to the areas of the brain involved in the disease appears to be a contributing, if not causative, factor.

I certainly can't claim that the suggestions I'm going to make in this article will keep you from developing Alzheimer's disease. But with conditions like this, I believe it's highly prudent to examine the

available research and give particular notice to the differences between those individuals who develop Alzheimer's and those who do not. History has repeatedly shown that by making a few simple lifestyle and dietary changes, we can often completely avoid, or at least significantly reduce, the risk of losing our health prematurely. This may be the case with Alzheimer's disease as well.

### Proteins & Plaques

Although Alzheimer's is a complex disease with many unknowns, there's now a considerable amount of research that shows striking similarities between the two leading forms of dementia: vascular dementia and Alzheimer's.

With vascular dementia, the brain doesn't receive enough blood, which results in the death of nerve cells from lack of oxygen. New research has found that blood flow (oxygen) to the brain is also reduced in Alzheimer's disease, and could very well be the reason nerve cells die in this form of dementia.

In Alzheimer's, the death of brain cells shrinks the brain 400 percent faster than one that ages normally. A brain with the disease can weigh up to five ounces less than a healthy brain. This is about the weight of an average orange. To visualize the distinct size difference,

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do a Google image search of an Alzheimer's vs. normal brain.

When the body realizes that cells aren't getting enough blood, it switches on a protein known as vascular endothelial growth factor (VEGF). VEGF is made all over the body and triggers the growth of new blood vessels. VEGF is expressed at higher levels in the brains of those with Alzheimer's disease compared to the brains of healthy individuals.

Although brain levels of VEGF are higher in Alzheimer's patients, the protein's ability to improve blood flow gets blocked by clumps of protein called beta-amyloid. Beta-amyloid plaques are considered to be a hallmark of Alzheimer's disease. These plaques form around nerve cells and build up inside the blood vessel walls within the brain. The beta-amyloid plaques damage blood vessels and further interfere with blood flow.

Beta-amyloid proteins are normally found in the brain and are a primitive part of our immune system. However, they seem to be a double-edged sword. The purpose of these sticky clumps of protein is to trap and kill microbes that have crossed the blood-brain barrier and can attack brain tissue. They are very effective at killing pathogens, but if the body isn't able to clear them away quickly enough after they've done their work, it leads to inflammation, nerve death, and the progression towards Alzheimer's disease. It appears that the residual beta-amyloid proteins are what causes the damage in the brain, not the pathogens.

Researchers believe that ill effects caused by beta-amyloid proteins could be reduced if we

decrease pathogen-induced inflammation. Many in conventional medical circles have suggested that we should vaccinate for all types of common pathogens that could potentially cross the blood-brain barrier. The list of pathogens would undoubtedly be long (chlamydia and herpes, for instance), but dwarfed by the list of vaccine side effects.

A safer alternative might be to reduce pathogens by restoring and maintaining a healthy gut microbiome. A balanced microbiome can help keep pathogenic microbes in check throughout the body.

Additionally, the routine consumption of natural antimicrobial foods and spices could also help. These include garlic, onions, cabbage, raw apple cider vinegar, grapefruit seed extract, rosemary, cayenne, mustard seed, cinnamon, ginger, cloves, thyme, sage, nutmeg, oregano, anise, sassafras, and wintergreen.

One animal study even found that by helping to control blood sugar levels, red chili peppers could aid in the prevention of beta-amyloid protein accumulation.

### Type 3 Diabetes

I've discussed this before, but research indicates that Alzheimer's disease may be a progression of type 2 diabetes. The thinking is that the diabetes advances to the point that it begins to destroy and alter brain function. Some are now calling Alzheimer's disease "type 3 diabetes."

It's certainly no coincidence that the dramatic increase we're seeing in Alzheimer's disease is on the heels of the diabetes epidemic. The sugar-rich, highly processed

diet that set the stage for the diabetes epidemic also just happens to increase all the risk factors for Alzheimer's disease.

As I mentioned earlier, one of the keys to preventing Alzheimer's appears to be the ability to clear beta-amyloid plaques from the brain once they have trapped and killed pathogens. The body naturally clears these plaques by binding them to a chemical called apolipoprotein E (ApoE). ApoE shuttles beta-amyloid out of the brain.

One recent study found that consuming a high glycemic diet reduces levels of ApoE. This increases the amount of unbound beta-amyloid protein in the brain, leading to plaque formation, which results in reduced blood flow and ultimately nerve cell death.

While this study doesn't prove that a high glycemic diet directly causes Alzheimer's, it strongly suggests that diet is a contributing factor. But this study is important because it does prove that beta-amyloid levels can be significantly decreased in a very meaningful way—through diet. ([\*JAMA Neurol\* 2013;70\(8\):972–80](#))

If you need another case where sugar kills, this is it.

### Techniques That Increase Cerebral Blood Flow

When it comes to Alzheimer's prevention, much of the should focus should be on improving circulation to the brain. Decreased blood flow is both an initial risk factor and something that continues to deteriorate as the disease progresses. Keep in mind that circulation in one area of the body is typically indicative of problems throughout. As such, taking care of

your heart and circulatory system in general is good for the brain. However, there are specific steps you can take to improve blood flow to the brain itself.

### **Moderate Exercise**

As you would suspect, cerebral blood flow improves with moderate forms of exercise. (It decreases temporarily during heavy exercise.)

### **Ice Baths/Cold Exposure**

Some studies suggest exposure to cold can temporarily increase cerebral blood flow. ([Front Physiol 2012;3:308](#)) ([Brain Res Bull 2003 Jun 30;61\(1\):81-6](#))

Cold showers, and particularly ice baths, have recently become popular among athletes. Some feel ice baths speed up their recovery following workouts. The research is mixed on whether there's really any benefit.

However, whether you're icing your forehead for 60 seconds, taking a five-minute cold shower, or sitting in an ice bath, all seem to improve cerebral blood flow, which can act as a mood enhancer. For more long-term, lasting effects, I would suggest taking an occasional cold shower.

### **Whole-Body Vibration**

I first wrote about the benefits of whole-body vibration more than 15 years ago. At the time, the Russian and US governments were looking at ways to help astronauts maintain their strength during long space flights and increase the performance of military personnel. Whole-body vibration was found to help prevent bone loss and osteoporosis in zero gravity situations. Additionally, under normal conditions, it increased bone/muscle mass and strength, while also

boosting testosterone and human growth hormone levels. Another benefit was improved circulation, including cerebral blood flow. ([Clin Physiol Funct Imaging 2015 Nov;35\(6\):425-35](#))

When I first reported on the benefits of whole-body vibration, the only company making this type of equipment was Power Plate. The only model they sold cost \$10,000. Fortunately, that has changed over the years. Not only do they carry less expensive models, other companies are now selling vibration platforms for as little as \$500.

After 15-plus years, I still use my early Power Plate for workouts. It is great for improving joint stability—and knowing that it may also enhance cerebral blood flow is icing on the cake.

### **Periodic Caffeine Restriction**

I'll probably get into trouble with this suggestion. Any time I even hint about restricting coffee, I'm deluged with letters. Dedicated coffee drinkers are definitely a force to be reckoned with. Please keep in mind, I am just the messenger.

Caffeine blocks adenosine receptors in the brain, resulting in the constriction of blood vessels. This, in turn, lowers cerebral blood flow. A 250 mg dose of caffeine has been shown to reduce resting cerebral blood flow between 22–30 percent. (For reference, a regularly brewed 8-ounce cup of coffee contains 133 grams and a 16-ounce cup of Starbucks coffee has 330 grams.)

There is a bit of good news, or at least partially good news, for chronic coffee drinkers. Over time, the brain tends to compensate somewhat from daily caffeine consumption by increasing the

number of adenosine receptors. Unfortunately, this does not totally counteract the decrease in blood flow. ([Biol Psychol 2011 Mar;86\(3\):298-306](#))

It appears the brain has compensated to its fullest extent after about two weeks of 400 mg of caffeine daily, or 600 mg daily for a week. The downside of this addition of adenosine receptors is that it makes caffeine withdrawal more difficult. Symptoms like headache, fatigue, and impaired concentration begin to emerge 12 to 24 hours after caffeine cessation. ([Hum Brain Mapp 2009 Oct;30\(10\):3102-14](#))

I'll talk more about caffeine later, but when it comes to reducing your risk of MCI or Alzheimer's, the last thing you want to do is decrease cerebral blood flow. You want to do what you can to increase it. Any habit that cuts cerebral blood flow by up to 30 percent isn't good.

One way to possibly mitigate this effect of caffeine would be to take periodic breaks from it. I realize this isn't easy if you are a coffee lover, especially considering the withdrawal symptoms.

## **Supplements for Better Cerebral Blood Flow**

The following supplements have been shown to increase cerebral blood flow.

### **Niacin**

I've repeatedly said that niacin (vitamin B3) is one of the most under-utilized heroes of the vitamin world. One of my early mentors used to swear that taking 100 mg of niacin every day for a year would increase IQ. While there's no proof

of that, I have no doubt niacin can boost overall health.

Niacin improves memory by strengthening nerve transmission and enhancing cell metabolism and oxygen supply to the brain. It also helps protect brain cells when there is a disruption in the supply of oxygen. Daily dosages range from 100–400 mg.

Taking niacin can produce a “flush”—and it’s one reason many people dislike using this vitamin. I personally enjoy the sensation. One study did find a delayed flush is associated with a lower IQ. So there may actually be something to my early mentor’s theory.

### Multivitamin

Both brain function and metabolism are improved through the sustained and regular use of a high-quality multivitamin/mineral supplement.

One study found that multivitamin/mineral supplements can modulate cerebral blood flow by increasing the total concentration of oxygen-carrying hemoglobin during cognitive task performance. (*Nutr Metab (Lond)* 2016 Feb 11;13:11)

### B Vitamins

A double-blind study of 271 individuals over the age of 70 found that B vitamins could help slow the rate of accelerated brain shrinkage that results in MCI.

It appears that elevated levels of the amino acid homocysteine speed up brain shrinkage. This study found that, by reducing homocysteine, vitamins B12, B6, and folic acid could decrease brain shrinkage by an average of 30 percent—and in some cases by as much as 53 percent—during a

24-month period. Not surprisingly, those individuals taking the B vitamins not only experienced less shrinkage, they also exhibited higher cognitive test scores than those not taking the vitamins. (*PLoS One* 2010 Sep 8;5(9):e12244)

The levels of B vitamins tested in this study may be slightly higher than what you might find in most multivitamins. However, all of these B vitamins are readily available, inexpensive, and can easily be added to your daily regimen to achieve the levels used in this study. The daily dosages were 0.5 mg of B12, 20 mg of B6, and 800 mcg of folic acid.

### Ginkgo Biloba

A standardized extract of ginkgo biloba (24 percent flavone glycosides and 5 percent terpene lactones) has been shown to increase cerebral blood flow by as much as 29 percent without raising overall blood pressure. The dosage is 60 mg taken twice daily. (*Neuroradiology* 2011 Mar;53(3):185–91)

### Bacopa Monnieri

*Bacopa monnieri*, also known as water hyssop, is a creeping plant found in warm wetlands native to India, but it now grows in the US. Bacopa has a long history in Ayurvedic medicine. It has strong neuroprotective properties and has been used in India to support memory, focus, clarity, and cognitive health. It has a way of shielding the brain tissue from toxins and free-radical damage. Much of the brain is composed of cholesterol, which is very susceptible to oxidative damage. Bacopa helps prevent the oxidation of fats and cholesterol in the brain. Bacopa has also been shown to increase cerebral blood flow in animals by

25 percent without increasing overall blood pressure.

The typical daily dose is 50–250 mg of bacopa leaf extract or 5–10 grams of non-standardized powder.

### L-Arginine and L-Citrulline

L-arginine is an amino acid, as is L-citrulline, which the kidneys convert to L-arginine.

Endothelial cells (which line blood vessels) and platelets both produce nitric oxide (NO) from L-arginine. NO is a short-lived gas that causes blood vessels to dilate (or open), increasing cerebral blood flow and blood flow throughout the body.

You might recall that nitroglycerin tablets given to individuals with angina (a sudden lack of blood flow and oxygen to the heart) also work by boosting NO levels. Viagra and Cialis, two of the drugs used for erectile dysfunction, also work by increasing or prolonging NO.

### Beetroot

Beetroot juice (and especially powder) have become favorite supplements of mine. I add beetroot powder to my protein shake every morning.

Beets are naturally high in nitrates. Other foods rich in nitrates include celery, lettuce, mustard greens, turnip tops, spinach, Chinese cabbage, regular cabbage, eggplant, leeks, scallions, potatoes, string beans, and carrots. It’s hard to find powders of any of these vegetables, but beetroot powder is readily available and a kilo (2.2 pounds) costs less than \$20. At a daily dose of 10 grams (about one teaspoon), it’s a real bargain in my book.

The nitrates in beetroot are converted to NO and improve

circulation throughout the body, including cerebral blood flow.

One study found that 90 minutes after drinking a single dose (450 ml) of beetroot juice, participants significantly increased their cerebral blood flow and improved cognitive performance tests for more than 50 minutes. (*Physiol Behav* 2015 Oct 1;149:149–58)

The nitrates in beetroots don't just improve cerebral blood flow, they also enhance athletic performance and have been shown to boost cognitive function.

### Resveratrol

Resveratrol has also been shown to improve cerebral blood flow, but due to the high dosages needed, it could become cost prohibitive compared to many of these other supplements.

For longevity and cardiovascular health, the daily dose of resveratrol is 5–10 mg. For improving cerebral blood flow, most studies have used 250–500 mg. If cost is an issue, I would stick with beetroot powder.

### Vinpocetine & L-Carnitine

Finally, both vinpocetine and acetyl-L-carnitine can increase cerebral blood flow and improve cognition. The typical recommended daily dosage of vinpocetine is 10–30 mg taken with meals. The daily dosage for L-carnitine is 600–2,500 mg.

## Other Substances That Protect Brain Tissue

**Vitamin E** not only helps protect brain tissue, it also improves oxygen utilization in the brain.

**N-acetyl-cysteine** is another amino acid that has been shown to have a protective effect on brain

cells after there is a disruption in oxygen supply.

**The herb *astragalus*** has been used extensively in Eastern medicine to prevent and treat damaged brain tissue in stroke patients.

**Ginger** has numerous compounds that seem particularly adapted to protecting the brain. Drug companies are currently analyzing these compounds for future drug possibilities.

**Anthocyanins**, the colored pigments found in red and purple berries and vegetables, are particularly helpful at safeguarding brain tissue.

Some of the foods you can add to your diet include blueberries, cranberries, chokeberries, elderberries, bilberries, raspberries, blackberries, black currants, cherries, red cabbage, Concord and muscadine grapes, strawberries, black plums, pomegranates, red radishes, red onions, blue corn, and the peel of eggplants.

**Phosphatidylcholine**, a fat-like molecule found in foods like egg yolks, liver (particularly beef liver), raw dairy products, and, to a lesser extent, nuts and vegetables such as broccoli and cauliflower, is the body's main source of choline, which is essential for brain function.

Phosphatidylcholine is one of the primary components of all cell membranes (as is cholesterol). It has been shown to protect nerve cells in the brain when there's a lack of blood/oxygen. It helps restore damaged brain cells and has been found to stimulate the growth of new brain cells and neural connections (neurogenesis), which

was once thought impossible to do after a certain age.

In one mouse study, supplemental choline during pregnancy protected newborns from developing Alzheimer's later in life. Numerous other studies have shown that higher choline consumption is directly related to improved memory and cognitive abilities later in life.

In addition to eating the foods mentioned earlier, there are phosphatidylcholine supplements you can take, though it's actually choline you want. There are numerous good choline supplements on the market that work very well.

One of the least expensive ways I've found to increase choline intake is with non-GMO sunflower lecithin granules. (I don't recommend the more common soy lecithin granules.)

A tablespoon of lecithin granules contains about 1,700 mg of phosphatidylcholine, which translates to about 250 mg of choline. A tablespoon also provides the additional benefits of around 1,000 mg of inositol and 2,200 mg of essential fatty acids like linoleic acid.

I currently add two tablespoons of granules to my morning protein shake. I've been using lecithin granules for at least the last 30 years and started after my discussions with the late Jacobus Rinse, who developed "The Rinse Formula" to deal with his angina problems.

## Dietary Changes Are Also to Blame

Alzheimer's is clearly a very grave and imminent danger facing every one of us. It truly is an example of a perfect storm that has been brewing for the last few decades.

Historians will look back and wonder why we didn't see it coming. The writing was on the wall.

First, we saw several dramatic shifts in our diet. Fats were demonized as the cause of cardiovascular disease.

But nobody was blaming man-made hydrogenated fats that chemically turned vegetable oils into crocks of semi-liquid plastic. Instead they were implicating the natural fats—the ones humans had been consumed safely for thousands of years...long before heart disease was ever a problem.

Based on shoddy research, and a not-so-shoddy marketing campaign, the entire population switched to a low-fat diet almost overnight.

Beneficial saturated fats and essential fatty acids were replaced by carbohydrates and newly created zero-calorie, artificial sweeteners. But carbohydrates can't provide the same satiety that slower metabolizing fats can, which only fueled the consumption of more sugars and simple carbohydrates.

When that couldn't provide the necessary energy to avoid the hypoglycemic rollercoaster, caffeine drinks were introduced. To say they were a hit is an understatement. The \$7 cups of coffee from Starbucks and the so-called "energy drinks" created billion-dollar companies around the world. Caffeine became the answer.

In fact, caffeine became the most widely used neurostimulant in the world. And it's not just for breakfast anymore. It can now be found in sodas, bottled water, alcoholic drinks, cookies, candy, chocolate, ice cream, cereal, sunflower seeds, chewing gum, yogurt, flavored

milk, cold and flu remedies, weight loss pills, cosmetics, and soaps.

During this same period, cholesterol was also declared guilty without a proper trial. Right along with saturated fats, cholesterol moved to the top of the undesirable list.

As a result, egg consumption fell. Meat sales plummeted. No one wanted to drink whole milk anymore. Coconut oil and lard were abandoned, right along with every other form of saturated fat. This only propelled carbohydrate consumption to higher levels and led to increases in diabetes, obesity, and cardiovascular disease.

The pharmaceutical industry then jumped onstage to save the day with their unproven cholesterol-lowering statin drugs. Statins became some of their most profitable products of all time. Even without the supporting research data, statins quickly changed from a drug of treatment to one of prevention. The marketing plan was a huge success.

More than one in five Americans between the ages of 40 and 75 now take statins, and the new "guidelines" (read...marketing plan) put out by the American Heart Association and American College of Cardiology would double that number. (Keep in mind that most people are prescribed statins because they have risk factors, not because they have a history of cardiovascular problems.)

Technology also reached new highs during this same period. We were introduced to the Internet, cell phones, and streaming video. All of this has contributed to less movement and exercise, and the

growing obesity epidemic that continues to this day.

Every single one of these factors has and will continue to set the stage for Alzheimer's disease.

I've talked briefly about caffeine reducing blood flow within the brain, which is not a desirable effect. I think most people aren't aware of just how much caffeine is currently being added to food and beverages. And no one knows what effects this might have on today's children decades down the road. Will any short-term benefits outweigh a possible increased risk in diseases like Alzheimer's?

Our increased consumption of sugar and simple carbohydrates promotes inflammation throughout the body. It leads to blood sugar fluctuations, insulin resistance, body fat accumulation, metabolic syndrome, and eventually type 2 diabetes. As the destruction progresses to the brain, we see the beginnings of Alzheimer's, or type 3 diabetes.

When you look at the various minerals in the cells of a typical Alzheimer's patient, there is one mineral that is totally deficient or significantly below normal: sulfur.

Sulfur is an antagonist of aluminum and copper, both of which have been implicated in the development of Alzheimer's disease. Regularly consuming eggs is one of the best ways to replenish sulfur in the body, but their undeserved reputation as a source of cholesterol have kept many people from eating them. This alone has probably contributed to an increase in Alzheimer's disease.

The public has still not accepted the fact that fats are not the enemy

of health. On the contrary, they are essential for maintaining blood sugar and energy levels. This is especially true for the nervous system and the brain in particular.

It has finally been recognized that a diet high in saturated fat affords better protection from heart disease than a low-fat diet. Saturated fat and cholesterol do not cause cardiovascular disease. A dietary overload of refined carbohydrates and inflammatory omega-6 vegetable oils fuel that process.

The brain relies on saturated fats and cholesterol for cellular building blocks, insulating the myelin sheath, and in synaptic nerve transmission. The brain contains only 2 percent of the body's mass, yet 25 percent of the body's total cholesterol. Both fat and cholesterol are severely deficient in the brains of Alzheimer's patients.

High cholesterol is not a risk factor for Alzheimer's. According to the research, it appears that lowering both the liver's and brain's ability to produce cholesterol (which is what statin drugs do) probably contributes, maybe even causes, Alzheimer's disease.

Statins may promote Alzheimer's disease in other ways as well.

It's now been reported that statin use raises the risk of developing diabetes. Studies have definitively shown that 20–30 percent of all statin users will develop diabetes.

Statins block the synthesis of coenzyme Q10, which protects the brain from oxidative damage. Also, vitamin D is synthesized from cholesterol in the skin upon exposure to UV rays from the sun. Statin drugs keep cholesterol levels artificially low, and by doing so, the

body is unable to replenish cholesterol for vitamin D conversion, resulting in a deficiency. Vitamin D plays a vital role in brain protection, development, and function.

### Enjoy Your Life...*Truly*

I know this is a lot of information to digest, but Alzheimer's is a threat currently knocking at the door. If it gets in, it's not leaving. Personally, I've incorporated into my own daily routine most of the measures I've outlined in this issue. I hope you look at your health and nutrition program and implement as many of my recommendations as you can to prevent Alzheimer's.

In closing, I'd like to share one last thought...

Our society devotes far more resources in helping people reach old age than in helping them enjoy it. Most of us (I'm definitely including myself here) need to take the time and effort to develop a wider variety of activities that balance our work and family life. It's something many of us have forgotten. If we're fortunate enough to have our health, we need to learn how to enjoy it to the fullest.

The writer Susan Ertz probably summed it up best: "Millions long for immortality who do not know what to do with themselves on a rainy Sunday afternoon."

With that said, here's hoping 2018 is full of good fortune and most importantly, excellent health. Until next month,



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