

## C Is for Sepsis

One of my favorite quotes comes from Benjamin Franklin: “You will observe with concern how long a useful truth may be known and exist before it is generally received and practiced on.” Although this is true in most facets of life, nowhere is it more apparent than in the field of health care.



*Dr. David Williams*

In the March 2003 issue of my newsletter, I reported that sepsis was on the rise in the United States. The rate of sepsis cases had been increasing at

a rate of 6.2 percent annually between 1992 (635,000 cases) and 1999 (965,000 cases).

Unfortunately, this upward trend continues. The latest figures from 1999 through 2014 reveal that *at least* 1.7 million adults in the United States now develop sepsis each year. Worldwide in intensive care units, sepsis is the second most common cause of death.

Unless you or someone you know develops sepsis, it's probably not a condition that you hear much about. Fewer than half of American adults have even heard of it. However, if you work in a hospital,

you know it's one of the deadliest health conditions that doctors are routinely faced with.

In this country alone, severe sepsis strikes roughly 750,000 individuals each year. Between 28 and 50 percent of those will die, which is more than the number of deaths from prostate cancer, breast cancer, and AIDS combined. In the elderly, the death rate can be as high as 80 percent.

Sepsis (also known as blood poisoning) is technically defined as systemic inflammatory response syndrome. In a nutshell, it is an overwhelming infection of the body tissue by toxin-producing organisms. Some cases of sepsis progress very quickly—in just a matter of hours—while others may take days or weeks, depending on treatment and other factors.

While a bacterial infection is the most common cause of sepsis, fungi, viruses, or parasites can also be to blame. Sepsis can start anywhere in the body, but most commonly begins in the urinary tract, bowel, lungs, liver, gallbladder, or lesions on the skin. For hospital patients, it also typically occurs at the site of intravenous lines, surgical drains, wounds, bedsores, or skin ulcerations.

As toxins flood into the bloodstream, they cause the blood

to coagulate or clot, which leads to blockages. Blood flow to vital organs like the brain, heart, and kidneys becomes impaired. Blood clots can also form in the arms, legs, fingers, and toes. This leads to tissue death (gangrene), organ failure, and oftentimes death.

Not only is sepsis deadly, it is among the most expensive conditions to treat. The standard treatment consists of broad-spectrum intravenous antibiotic therapy. However, as the number and virulence of antibiotic-resistant bacteria strains have continued to grow, treatment has become more challenging.

### An Alternative Treatment That Works

The success rate associated with conventional sepsis treatment is not very encouraging, but there is an alternative—and it works.

In 2011, I reported about a Canadian doctor who was successfully treating sepsis in mice by giving them vitamin C injections. ([\*Crit Care Med\* 2008 Aug;36\(8\):2355-62](#))

When a single dose of vitamin C was administered at the time sepsis was induced in mice, it could prevent the blockage in blood vessels and capillaries for as long as 24 hours. A second

injection later was shown to reverse capillary plugging and restore blood flow.

The lead researcher, Dr. Karel Tylm, later told me that since vitamin C injections were safe and inexpensive, they had the potential to save lives. This treatment could be particularly beneficial in Third World countries, where sepsis is more common and conventional medical care is either unavailable or unaffordable.

My comment at the time was, “As you and I know, the fact that a therapy is cheap, readily available, and safe can make it even more difficult to be approved and accepted in this country. Hopefully, that will change.”

Well, sadly, things haven't changed.

### Dr. Paul Marik's “HAT” Protocol

Recently, Dr. Paul Marik at Sentara Norfolk General Hospital in Eastern Virginia, has reignited the controversy of using vitamin C for sepsis. When he first published his results, they caused a quite a stir within conventional medical circles. And his subsequent reports have only fueled the fires. ([Chest J 2017 Jun;151\(6\):1229–38](#)) ([Intensive Care Med 2017 May;43\(5\):625–32](#)) ([Br J Anaesth 2016 Mar;116\(3\):339–49](#))

([Acta Anaesthesiol Scand 2015 May;59\(5\):561–7](#))

His early study showed that only four out of 47 patients treated with his three-ingredient protocol for sepsis died—an 8.5 percent mortality rate. Of those four, none actually died of sepsis, but rather from the original condition that led to the sepsis. In the year prior, when standard treatment measures were used, 19 of the hospital's 47 septic patients died—a 40.4 percent mortality rate.

Last I checked, Dr. Marik has now treated more than 1,300 patients using his IV mixture of hydrocortisone, ascorbic acid (vitamin C), and thiamine (vitamin B1)...i.e., HAT therapy. The success rate has remained pretty much the same. Although some of the patients died, it was usually because of the underlying disease that led to sepsis, not from the sepsis.

With such dramatic results, you would think his protocol is now being used in every intensive care unit in the country. But that's not the case. Only about 50 medical centers have implemented his protocol. The response he gets from other doctors is about 50/50. Half are willing to give it a try and the other half think it's utter nonsense.

Dr. Marik's protocol involves giving a combination of vitamin C (1,500 mg

every six hours for four days, or until released from ICU), hydrocortisone (50 mg every six hours), and thiamine (200 mg every 12 hours).

- **IV vitamin C 1.5 grams q6hr X4d or ICU DC**
- **IV hydrocortisone 50 mg q6hr X7d or ICU DC\* 3d Taper**
- **IV thiamine 200 mg q12hr X4d or ICU DC**

Obviously, since these are administered intravenously, this is not a do-it-yourself remedy. But keep the dosages above handy, in case you ever end up hospitalized.

Typically, those in conventional medicine want to see the results of a large randomized clinical trial before embracing any new procedure or therapy. Dr. Marik's study wasn't that type of study. It was more of a “retroactive” study. In other words, he compared patients who were previously treated for the same condition to those he treated in a different manner at a later date. A randomized, controlled clinical trial would have required treating half of a group of patients with his therapy and the other half conventionally, and then comparing the results. Keep in mind, his primary interest wasn't to conduct a study. His goal was to save the lives of dying patients.

Randomized, controlled clinical studies have their place, but in this instance, it reminds me of the

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parachute analogy. You don't need to do a randomized clinical trial to prove that a parachute can save your life when you jump out of a plane. The results speak for themselves.

Dr. Marik initially tried this therapy as a last resort. In January 2016, a 53-year-old female patient with sepsis was on the verge of dying and none of the conventional treatments had worked. He thought she was surely going to die within a few hours.

With nothing left to lose, he gave her the intravenous therapy before going home for the evening. Miraculously, the following morning, she was well on her way to a complete recovery. She left the ICU four days later with no organ dysfunction or residual problems. So naturally, he continued to repeat the process with future patients and saw the same amazing results.

I think it's also important to note that Dr. Marik's HAT protocol has absolutely no side effects. In fact, various vitamins have been safely administered intravenously for decades.

Dr. Marik is openly in favor of larger studies being done to validate this treatment. He even offered to assist and be a part of such studies, but his offer was denied. In fact, larger studies are currently underway, but who knows how long it will be before the results are made available.

Not that it would be a factor, but Dr. Marik's intravenous solution is extremely inexpensive since we're talking about a couple of common vitamins and a small amount of hydrocortisone. Cost-wise, it's somewhere between \$80 and \$320 for the entire treatment. That's a

drop in the bucket compared to conventional sepsis treatment.

Conventional treatment involves extended hospital stays and the administration of fluids and exotic antibiotics. More severe cases might require mechanical ventilation to assist with breathing difficulties and dialysis when the kidneys fail. Hospitalization costs for sepsis are 70 percent more expensive than an average hospital stay. It is difficult to find exact figures on what treating a single sepsis patient costs, but it can easily range anywhere from \$25,000 to \$50,000 per episode.

From the latest figures I could find (2013), the cost of treating sepsis in the US alone was \$24 billion. And worse, that cost was increasing yearly at a rate of about \$1.7 billion. It is the most expensive condition to treat in the entire US health care system. We are spending roughly \$65,000,000 every single day in this country to treat sepsis, and as many as 1,000 individuals die every day from it.

I'll leave it up to you to decide if pharmaceutical and hospital profits from \$24 billion in treatment costs has anything to do with why Dr. Marik's therapy has not been embraced. Skepticism about new treatment programs can be warranted. However, when you have a highly effective, inexpensive, proven, simple method to treat a life-threatening condition, common sense should prevail. While the skepticism and delays in implementing this protocol continue, patients are dying. To quote Dr. Marik, "There are 20 billion reasons why there are so many skeptics..."

The pharmaceutical companies have conducted well over 100 clinical

trials and spent hundreds of millions of dollars over the last couple of decades trying to develop a cure for sepsis. They've failed. From a business standpoint, treating sepsis is a very large and lucrative market. It's an opportunity they are fighting to maintain, and as a result, millions of people will needlessly die.

If eventually accepted, nobody will make any money using Dr. Marik's protocol. In fact, pharmaceutical companies and hospitals will lose billions in profit. But at the same time, millions of lives would be saved worldwide.

## Another Point About Vitamin C

There's another important take-away from all of this.

Nearly every animal on the planet is able to produce vitamin C, with the exception of humans, primates, fruit bats, and guinea pigs. (The ability to internally produce vitamin C is one of the reasons you rarely see your cat or dog come down with a cold or flu.)

Humans have all of the genes necessary for cells to synthesize vitamin C, however one of these genes (GULO) is "broken." Technically, it has mutated to the point of being nonfunctional. Unlike other animals whose cells can produce vitamin C, we have to get ours from our food. The mutation isn't really a problem with primates because vitamin C-rich fruits are a very large part of their diet. The same holds true with fruit bats and guinea pigs. (Without vitamin C, monkeys and apes wouldn't be able to survive. Their species would be wiped out from scurvy. Their inability to produce vitamin C has restricted them to specific geographical locations and

climates where vitamin C is readily available. For that reason, you will never see a “planet of the apes.”)

Vitamin C is a powerful antioxidant that scavenges free radicals and prevents new free radicals. It also helps regulate the immune system, reduces inflammation, and can directly eliminate harmful bacteria. It is quickly depleted during chronic illness. Many of the symptoms associated with a deficiency of vitamin C bear similarities to sepsis, including malaise, coagulation abnormalities, and the breakdown of blood vessel walls.

Thiamine is a water-soluble B vitamin that also has a long list of functions that help keep us healthy. It is a key component in the production of cellular energy and the recycling of crucial antioxidants like glutathione. Thiamine deficiencies (beriberi) are common in critically

ill individuals and many of the symptoms of deficiency are similar to those of sepsis, including blood vessel dilation in the extremities, heart dysfunction, and a buildup of toxic cellular waste material.

Remember that sepsis is the body’s overreactive response to an infection. Under ideal circumstances, the infection is controlled before reaching the point that sepsis occurs. One way to help facilitate this is to increase your vitamin C and thiamine levels at the first sign of any infection, or if you ever stay in a hospital. And it should go without saying, since your body can’t make vitamin C, your diet should always include fruits, vegetables, and a vitamin C supplement.

Taking a high-quality multivitamin/mineral supplement will go a long way in this regard. But I would still keep a bottle of vitamin C tablets

and B complex around. At the first sign of an infection, I suggest taking 500–1,000 mg of vitamin C four times daily and a B complex until the infection clears.

If your body was capable of producing vitamin C or increasing thiamine levels, rest assured it would be ramping them up at the first sign of infection. But it can’t. That’s when you need to help it.

As a final note, I don’t suggest taking a corticosteroid. In large part, the biological basis for including hydrocortisone in Dr. Marik’s sepsis protocol is based on research that indicates corticosteroids are only effective for sepsis when used in conjunction with vitamin C.

Hold on to this issue (like I hope you do with all issues of *Alternatives*). It’s another one that may one day help save your life. ■

## Want to Lose Weight “Fast?”

I’ve never been a fan of weight loss diets. Regardless of the diet, studies show that within two years, most people regain any weight they had lost.

This regaining of weight is so common because the body is innately programmed to adapt to its environment. It adapts to dieting by eventually lowering the metabolic rate. This is why temporary changes in diet are unsuccessful in the long term.

Losing excess weight and keeping it off almost always requires a change in lifestyle. Ideally, this includes eliminating (or greatly reducing) refined carbohydrates, and engaging in regular exercise. In addition, there’s another relatively

easy lifestyle change that can really help keep weight off: meal timing, otherwise known as fasting.

There are many variations of fasting, but it’s certainly not a new concept. It has been practiced for thousands of years (oftentimes involuntarily), and in almost every case, fasting does have benefits.

One form of fasting is called the 5:2 diet, where you eat normally for five days, then the other two days you restrict calories to two small meals per day consisting of 250 calories per meal for women and 300 calories for men.

Alternate day fasting is where you either fast completely every other

day, or restrict your caloric intake every other day to 500 calories.

“Eat-stop-eat” involves completely fasting once or twice a week for a 24-hour period. For example, if you eat dinner one night at 6:00 pm, you wouldn’t eat again until dinner the next night at 6:00 pm.

Another form of fasting has been labeled the Warrior Diet, where you eat only one large meal per day, at night within a 4-hour window. The rest of the day, you fast.

All of these variations of fasting can help with weight loss, but the main problem is that they are hard to maintain long term.

The easiest and most sustainable “semi-fasting” program, in my

opinion, is the 16:8 fast. With it, you limit your eating to an 8-hour window. The other 16 hours, you fast. For example, if you ate breakfast at 8:00 am, dinner would be at 4:00 pm. That is your 8-hour window, and the remaining 16 hours you fast until 8:00 the next morning.

My personal routine is slightly different. In the morning (5:30–6:00 am and sometimes later on weekends) I consume a small protein shake along with my vitamins. Then I might have some nuts and another small protein source (protein bar, small shake with a scoop of protein, cottage cheese, etc.) sometime between noon and 2:00 pm. And then I have dinner between 6:00 and 7:00 pm.

Of course, there are instances when this varies, such as on the weekend or when I have lunch with someone during the week. Personally, I find that the small protein shake in the morning and

the protein snack around lunch not only helps curb my appetite, but allows me to maintain a stable blood sugar level.

Less frequent eating and limiting food intake to a shorter time frame earlier in the day is more in harmony with the body's natural internal clock, as well.

In a new study, researchers at LSU found that coordinating your meals with your body's circadian rhythm doesn't necessarily burn more calories. However, it tends to result in weight loss by burning fat more efficiently and decreasing appetite. ([Obesity \(Silver Spring\) 2019 Aug;27\(8\):1244–54](#))

Seven overweight men and four overweight women were first instructed to eat meals at 8:00 am, 2:00 pm, and 8:00 pm for a period of four days. Then they changed the times to 8:00 am, 11:00 am, and 2:00 pm for four days. Calories and

meals were equivalent during both of the 4-day periods.

The first 4-day schedule had a 12-hour fasting period, while the second 4-day schedule had an 18-hour fasting period. The 18-hour fasting period resulted in decreased levels of the hunger hormone ghrelin. The lower levels were consistent with the surveys filled out by the study participants, which showed they had a better sense of fullness, less desire to eat, lower hunger levels, and more energy.

While changing the timing of your eating might seem difficult at first, in my experience you can adapt pretty quickly. And unlike restrictive diets, fasting is a habit that can easily become part of your everyday lifestyle. Restoring and maintaining your health isn't about quick fixes. It's about making permanent lifestyle changes that continue to provide health benefits down the road. ■



## Migraines and Caffeine

**Question:** *Within the last couple of years, I've started having migraine headaches. When I searched my back issues of Alternatives for solutions, I ran across a couple of articles where you mention caffeine as a possible cause. How much does it take to lead to migraines? —Claire T., Seattle, WA*

**Answer:** Only recently has there been any clear research in this area, and thanks to a recently published study, we may have some answers to this question. This particular study tracked the caffeine

consumption of 98 patients, mostly white women, for six weeks. The individuals typically experienced migraines between two and 15 days per month. As a whole, the group experienced an average of 8.4 headaches over the six weeks. ([Am J Med 2019;DOI:10.1016/j.amjmed.2019.02.015](#))

To adjust for the fact that caffeine levels can vary widely depending on the product, one serving of caffeine was considered to be 8 ounces of caffeinated coffee, 6 ounces of tea, a 12-ounce can of soda, or 2 ounces of an energy drink.

The study found that among those who typically consumed less than one daily serving of caffeine, same-day headaches increased when they consumed even one or two servings of caffeinated drinks. (This was even more apparent among women taking birth control pills. Typically, the body breaks down caffeine very quickly. However, oral contraceptives slow this process and result in higher residual caffeine levels. Most women aren't informed of this when prescribed

birth control pills and remain completely unaware that they could be the cause of their headaches.)

Among others in the group that regularly consumed higher amounts of caffeine, there didn't appear to be any association between one and two caffeine servings and headaches on the same day. However, if three or more servings of caffeine were consumed, the number of headaches the following day did increase.

To answer your question, the amount of caffeine that can trigger a migraine varies among individuals, but it apparently doesn't take much. If you're more sensitive, just one serving can be a problem. And keep in mind that a migraine headache today can be a result of caffeine consumed yesterday.

Also, this study didn't monitor any caffeine included in over-the-counter painkillers. Caffeine is commonly added to painkillers like BC Powder, Excedrin, and Midol because it tends to increase their effectiveness by as much as 40 percent. Ironically, the pain medication you take to relieve a headache may be setting you up for another one the following day.

You will also find caffeine in some medications used to treat colds, nasal congestion, sinusitis, arthritis, asthma, muscle pain, fever, and hangovers.

Personally, I seem to have a very low tolerance for caffeine. Although I don't drink coffee, I occasionally will have tea. After a week or so of regular caffeine consumption, I begin to notice the early signs of hypoadrenia—fatigue, sensitivity to bright light, and low blood sugar.

Other triggers for migraine headaches include cervical spine misalignment, hormone imbalances, low blood sugar, and low magnesium levels. It may require a little detective work to figure out what other aspects of your life may be causing your migraines, but caffeine is a good place to start.

## Thoughts on the Keto Diet

**Question:** *What are your thoughts on the keto diet? I have several friends who have lost a considerable amount of weight and swear by it. It seems, however, that everyone is doing it somewhat differently from each other. — Devin T., Denver, CO*

**Answer:** I mentioned in an earlier article that I'm not a big fan of most weight loss diets, and that's also the case with a strict ketogenic (keto) diet. It's not because it doesn't work. In fact, the keto diet does work, and I believe certain aspects of it are highly beneficial. It is a good way to cut back on excess

sugar and carbohydrates, which are directly linked to an increased risk of diabetes, cardiovascular disease, cancer, obesity, and dozens of other health issues.

The keto diet is a high-fat, moderate-protein, low-carb eating plan. The basic premise is to restrict carbohydrates and get more of your calories from protein and, ideally, fat. As your body runs out of carbohydrates as an energy source, the liver begins to produce molecules from fat called ketones. When the body is burning fat for energy, you are in a state of ketosis. Depending on the individual, this will often take a couple of days. (The body also enters the metabolic state of ketosis during fasting.)

Due to the high fat content, adhering to a strict keto diet over the long term can be challenging. We saw this several years back with the Atkins diet, a low-carb plan that shares many similarities to the keto diet.

With the Atkins diet, most people who claimed to be following the plan really hadn't done their homework to learn the ins and outs of what they needed to do. Instead, they heard from a friend that if you cut out all the carbs and concentrate on eating protein, you'd lose weight. To a large extent, the same thing is happening with most of those following the keto diet. I would suggest doing a little research and following a plan rather than just winging it.

Even when you strictly follow a keto plan, it's difficult to determine when your body is actually in ketosis and burning fat stores. You can monitor it with laboratory tests, but no one wants to have to do a finger stick test every few hours. For this reason, I recommend investing in a device called the Keyto Breath Sensor and the Keyto smartphone app that works along with it. The app offers some excellent food guidelines and suggestions to provide variety in your diet.

The Keyto device is a breathalyzer that looks similar to a vaping pen. It was developed by a cardiologist and measures your breath for acetone, a byproduct of ketosis. Last time I checked, the breath sensor was \$99, but it allows you to monitor your progress and know if your body is in a fat-burning mode. It gives almost instant feedback so you can check anytime without the cost or pain of a finger stick test.

It comes with a few mouthpieces, which makes it fun to compare your results to those of your friends and family members. It's a great motivational tool since it immediately lets you know if your efforts are working. It's hard to get that with other diets.

It's important to note: There are cases, for example during breastfeeding, where it might be detrimental

to alter or interfere with body fat stores. And undertaking a program like this, which causes significant changes in blood sugar levels, requires monitoring if you are taking medication for diabetes.

Don't get me wrong. A low-carb, keto-leaning diet can be an excellent tool to help reverse or control type 2 diabetes and most likely reduce or eliminate the need for medication. You just need to be monitored as the changes happen. For these reasons, if you take medication for diabetes or high blood pressure, or if you're breastfeeding, I don't

recommend starting a keto diet without the advice and guidance of your doctor.

In closing, the keto diet can be a good way to transition into healthier eating while at the same time burn excess body fat and normalize blood sugar levels. But because it is hard to sustain a strict keto diet long term, it's probably not something you can or would want to stay on forever. If you want to put your body into a state of ketosis without dramatically altering how much fat you need to consume, try fasting, which I discuss in greater detail on page 4. ■

## NEWS TO USE *from around the world*

### Nighttime TV & Weight Gain

Sleeping with the television or a light on in your bedroom could add as much as two pounds of body weight per year. I've discussed in the past how exposure to artificial light during the evening hours disrupts the body's natural circadian rhythm and the accompanying cycle of hormone production, particularly melatonin.

This latest study was performed to see if the obesity epidemic might, in part, be linked to nighttime artificial light exposure. It is.

The study included 43,722 women, aged 35–74. Baseline measurements of weight, height, hip circumference, and body mass were taken when the study began and then again five years later.

Women who slept with various light sources in their rooms were compared to those who slept in dark rooms. Those sleeping with a light or the television on were 17 percent more likely to have gained 11 pounds in the five years. The amount of weight gain correlated to the level of artificial light exposure. Smaller gains were associated with light coming from outside the

room, and even less or no gain was associated with a small nightlight. ([JAMA Intern Med 10.1001/jamainternmed.2019.0571](#))

### The Risk of Sitting

Not too long ago, there were headlines everywhere claiming that "sitting is the new smoking." Studies reportedly found that too much sitting overall, and prolonged sitting, increased the risk of cardiovascular disease and even cancer. Anyone sitting for more than eight hours a day was said to have a risk of death similar to the risk posed by obesity and smoking. As the word spread, it created a whole new segment within the furniture industry. Now we have adjustable height standing desks along with special standing desk chairs, leaning stools, and yoga balls.

However, there were several problems with these studies. For one, they didn't follow people for a long enough period of time. It would take years to make the connection between the time you sat at work and whether or not it resulted in an increased risk of cardiovascular disease or cancer. Also, the majority of the people involved in the study were of European descent rather than African Americans, who have

a greater risk of heart disease compared to white people.

A new study has found that sitting in front of a TV all day, but not sitting at work, could increase your risk of heart attack. While it's not unusual to sit for hours watching TV, most people at work get up from their desk and move around frequently. And even if you do sit for longer periods of time, any increased risk can be offset with exercise during your leisure time. ([J Am Heart Assoc 2019;8\(13\):e010406](#))

The takeaway here is to stay hydrated at work by drinking water throughout the day, so that you'll have to take regular bathroom breaks. In the evenings and on your days off, exercise regularly. And feel free to sell your sitting yoga ball and pneumatic adjustable standing desk to an unsuspecting office mate, before they learn about this latest study.

### Schizophrenia & Glutathione

Schizophrenia is a condition that appears to be getting more attention these days. In many of the bizarre and violent acts we see in the news, schizophrenia is

**NEWS TO USE** *from around the world (continued...)*

often mentioned as a contributing cause. The condition has been related to chemical imbalances in the brain, which result in hallucinations, delusions, and disordered thinking, feelings, behavior, perception, and speaking.

One of the critical brain chemicals involved is glutamine. Glutamine is associated with the transfer of messages between brain cells. Researchers have found that, compared to healthy people, the brains of those with schizophrenia or psychosis have significantly lower levels of glutamine (4 percent vs. 8 percent). When there is less glutamine, nerve cells are more excited and fire faster, further reducing glutamine levels and resulting in more problems associated with psychosis.

Knowing that glutamine is stored in the brain as glutathione, the researchers felt if they could increase glutathione levels, it would in turn make more glutamine available to brain cells. To increase glutathione levels, they utilized the chemical sulforaphane, found in broccoli sprouts.

With the addition of sulforaphane, the speed at which nerve cells fired slowed down and they sent fewer messages. Brain scans revealed the brain cells began to behave like those of healthy individuals instead of like those with psychosis and schizophrenia. ([Mol Neuropsychiatry 2018 May;3\(4\):214-22](#))

Over the years, I've explained how glutathione levels have been shown to be a direct reflection of one's overall health. It is one of the most important antioxidants

and immune boosters available to the human body. In every case, it seems those in failing health have low glutathione levels and those in excellent health have higher levels. This study is further evidence of that.

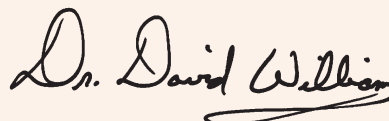
The best and most economical methods of raising glutathione levels are to:

- Regularly consume cruciferous vegetables;
- Consume a high-quality whey protein;
- Take the supplement sulforaphane; and/or
- Take the supplement N-acetyl cysteine

Sulforaphane is readily available as a supplement right now. But even with this latest study, I don't expect the medical community to start recommending it to their patients who have these mental health disorders. They will wait until a patented pharmaceutical solution is created.

I wouldn't be the least bit surprised if many of the violent acts we're now seeing are linked to poor diet and suboptimal glutathione levels in the brain. Cruciferous vegetables have fallen out of favor during the last several decades. Yet study after study has shown higher consumption is directly related to lower rates of inflammation, cardiovascular disease, and practically all forms of cancer.

Until next month,



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