

FROM THE HEART

Newsletter from
 **Saint Luke's**
 CARDIOVASCULAR CONSULTANTS

The Secret to Health, Happiness, and Longevity

James H. O'Keefe, MD, with Kathleen C. O'Keefe

"The only ones among us who will be truly happy are those who will have sought and found how to serve." **Albert Schweitzer**

Ironically, the single best strategy for improving your own health, happiness, and even life expectancy is to stop thinking about yourself and start focusing on improving the wellbeing of other life.

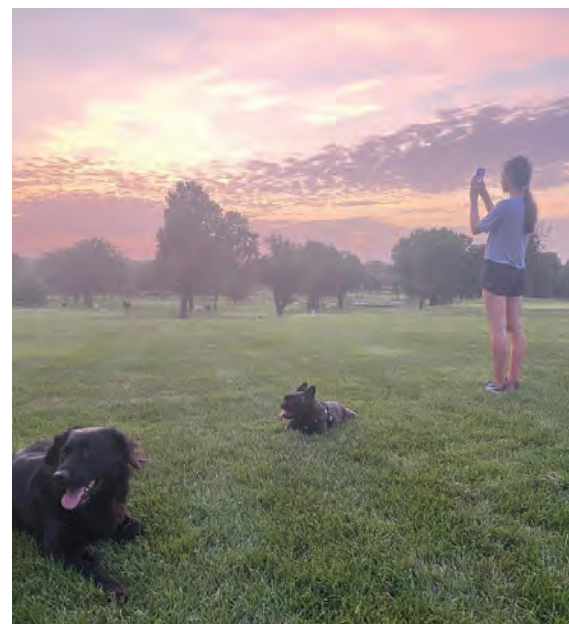
It's truly mind-boggling to ponder the fact that each of us is a biological package of self-organizing chemicals. We take in energy (food), water, and oxygen from the environment; then our DNA and RNA send instructions to the ribosomes—little protein factories in our cells—that churn out a variety of very specific proteins which spontaneously fold into just the right shapes and then self-assemble into lipid bilayer cell membranes and innumerable other components that are used to make up cells, tissues, and organs. All these chemical reactions are self-orchestrated to interact and automatically create, maintain, and fine-tune you. As advanced as we are in modern science, we are just scratching the surface of understanding how intelligently designed and exquisitely adaptable living organisms are.

When you think about it this way, it's astonishing that biologically we

tend to hum along as well as we do—there are just so many opportunities for the wheels to come off. Yet each living species is a successful experiment as a good match for their niche environment. If we are to realize our full potential as a living organism, our environment, diet, social milieu, and activity patterns need to be similar to that in which we evolved, so as to enable all of those self-organizing processes to happen just right.

Of the countless species that have existed since the origin of life, almost 4 billion years ago, about 99.9% of those species are extinct today. Even the Homo sapiens species has been on the brink of extinction at times. One scientific model estimates that about 100,000 years ago the entire human population on Earth had contracted down to just 2,000 to 10,000 individuals. Regardless, through it all, your bloodline survived, and here you are today.

You are not average; you never have been. You come from a very long line of hardy survivors. If you could trace your lineage all the way back to the last universal common



Lady, Francis, and Kathleen

ancestor (LUCA), you would discover that over the last 3.7 billion years, each and every one of your direct blood relatives—child to parent to grandparent to great grandparent, etc.—endured long enough to reproduce and successfully nurture their offspring. It's an unimaginably long, unbroken, winning streak of survival in the face of very long odds.

Toughness, creativity, and resourcefulness are programmed deeply into

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The Secret to Health, Happiness, and Longevity

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your genes, but you won't manifest those virtues by following the path of least resistance and dwelling in your own comfortable and insular world. Tony Robbins says, "The path of least resistance will never make you proud." You need a cause bigger than yourself, with goals beyond your own hedonistic pursuits if you want to really blossom.

Depending upon their environment, living organisms via epigenetic signaling will switch on or off whole segments of genes, which can drastically alter hormones, appetite, mood, immunity, body composition, and ultimately physical and mental health. Through similar epigenetic signaling mechanisms, being self-centered and always taking the easy way predictably leads to lethargy and weakness. When you demand less from your mind and body, your strength and mental sharpness will atrophy. In contrast, when you confront meaningful challenges and invest your energy in helping other life, epigenetic switches are turned on, which alters your genes to radically transform you into a stronger, more resilient and resourceful version of yourself.

Some people wonder, "What's the meaning of life?" Our planet Earth is a cosmic oasis in an otherwise cold, largely empty, and lifeless (except for us) universe. It's a special privilege to be part of the wondrous spectacle of life on Earth. So, it seems to me, one important "meaning of life" is to do what we can to help keep the spark of life alive and well here on Earth. Could helping our neighbor help us to become better ourselves? Today, more than ever, with climate change, a global pandemic, and the possibility of another world war threatening our survival, we need to band together.

Our lives should be centered around fostering positive relationships, acts of service, and preserving our planet. The more we can focus on these fundamental pillars of life, the happier and healthier both the world and we will be. Obviously, nobody is going to solve any of these catastrophic problems on their own. It's going to take an all-hands-on-deck approach. Theodore Roosevelt famously said, "Do what you can, where you are, with what you have." Mostly that means each of us must help make things better in our little corner of the world.

Do you want to know the secret to a long and happy life? In his superb book, *The Courage to be Disliked*, Ichiro Kishimi writes, "Just like the traveler who relies on the North Star, in our lives we need a guiding star. That star is 'contribution to others.' As long as we do not lose sight of this compass, and keep on moving in this direction, there is happiness. No matter what moments you are living, or if there are people who dislike you, as long as you do not lose sight of the guiding star of 'I contribute to others,' you will not lose your way and you will have always companions by your side."

Fostering Positive Relationships

The quality of our relationships and how happy and secure we are with the people we are closest to has a profound influence on our health and longevity. Put another way, relationships are our most important possessions in life—by far. The Harvard Adult Development Study enrolled 724 Boston men as teenagers in 1938 and followed them closely ever since. This landmark study found that having close long-term relationships, more than money or fame, was the most important predictor of how happy the people were throughout their



lives. Emotional ties protected people from trauma and stress, helped to delay age-related physical and mental decline, and were better predictors of long and happy lives than genes, education, income, or IQ. The protective effect of relationships proved true across the board among both the Harvard men and inner-city males born into impoverished families. Dr. Robert Waldinger, one of the directors of the Harvard study said, "Loneliness kills; it's as powerful as smoking or alcoholism." In contrast, the participants who cultivated warm relationships enjoyed longer and happier lives, whereas the loners often died earlier. The bonds that we forge with our family, friends, neighbors, pets, and plants are like lifeboats that will save us when the inevitable storms of life ravage our worlds.

This means you need to get outside your own head and tend to the wellbeing of other life—and it doesn't always have to be other humans. Adopting and caring for a dog does wonders for your physical and mental wellbeing, providing devoted companionship, unconditional love, and constant entertainment. For people for who have a canine housemate, it's no mystery why dogs are man's (and woman's) best friend.

Recently, dog ownership's effect on human survival was assessed in a

definitive meta-analysis of 10 studies that included about 4 million participants. People who lived with a dog were 24% less likely to die during the 10-year study compared to people who didn't have a dog companion. Dog ownership conferred an even greater 31% risk reduction in cardiovascular death. These health and longevity benefits of sharing one's home with a dog were especially pronounced for people who lived alone.

Life, in its wisdom, channels energy to organisms that are contributing to the common good, whereas life force tends to be shunted away from isolated organisms that are not being collaborative with other life around them. Because life is intricately interconnected, to be fully participating in the phenomenon of life you need to be investing much of your time and energy into the wellbeing of living things around you. I think of my grandmothers, Alice and Dorothy, and my mother Leatrice, who dedicated their lives to their family, friends, and communities. They were happy, active, social people who lived into their 90s; Dorothy made it to 103. How many grouchy, anti-social, mean-spirited hermits do you know who are healthy and living with vitality into their 90s?

My mother's mantra when I was growing up was, "Go outside and play with your friends." As a teenager I had a long list of phone numbers memorized and was constantly calling my buddies to get a game together. Since med school I've always continued to do a lot of exercise, but I neglected my play time. Just in the last couple of years I've gotten back into playing, so I'm up to my old antics of frequently nagging my pals to join in on a game of pickleball, badminton, and even pool—it makes me feel like a kid again. Mammals invented play 100 million years ago, to hone physical skills while frolicking with their littermates. Play helped them develop

fitness that improved their chances of surviving future threats in the real world. Importantly, playing also helped them forge bonds with their pack, reduce stress, and boost mood.

There's still nothing quite as therapeutic as play. Peter Schnohr and Jacob Marott, my friends/colleagues from Copenhagen, Denmark, and I recently published studies showing that the exercises that best improve life expectancy are those that involve physical interactive play, like tennis, badminton, volleyball, golf, basketball, softball, and soccer. Play is a collaborative endeavor—everyone in the game benefits and usually comes away with warm feelings about their playfellows. Play is also a way to engage our competitiveness in a fun and harmless manner. These days I play pickleball at least twice a week; we laugh, hoot, and kiddingly harass each other for 90 minutes. I have come to believe that play is one of life's essential ingredients—let's call it vitamin P. Doctor's orders, get your vitamin P at least twice a week.

Acts of Service

Even for the most introverted, we need to connect to other life to prosper. We're like ants that way. Investing time and energy into helping our family and/or colony survive is what we are genetically programmed to do. We also have a strong inclination for altruism that not only makes us feel good when we help others, it also improves our health and longevity.

A study that closely tracked 10,000 people in Wisconsin for over 40 years found that people who volunteered reduced their risk of dying during the study by over half.

Jimmy Carter, at age 97, is the United States' longest-lived president. About 42 years ago he retired from his work as "leader of the free world", but he's been passionately involved in volunteer work ever since and is still

going strong. Even in his 90s, Carter continues fighting for human rights, resolving international conflicts, promoting democracy, leading clean water initiatives, assisting hurricane victims, and personally building homes with Habitat for Humanity.

A recent Harvard study of 13,000 adults reported that people who volunteer for even two hours/week have a longer life expectancy, fewer physical impairments, and a stronger sense of well-being. According to Dr. Eric Kim, the study's lead author, "Humans are social creatures by nature. Perhaps this is why our minds and bodies are rewarded when we give to others. Our results show that volunteerism among older adults doesn't just strengthen communities, but enriches our own lives by strengthening our bonds to others,



helping us feel a sense of purpose and well-being, and protecting us from feelings of loneliness, depression, and hopelessness. Regular altruistic activity reduces our risk of death."

The take-home message is the same one my wife Joan has been telling me and the kids for decades: "It's not all about you." The more we can keep this in mind, the better our lives will be.

Pam and Scout: Who Rescued Who?

James H. O’Keefe, MD

Pam Emerson is a scheduler for us in the Duboc Cardio Wellness Center and the Haverty Cardiometabolic Center. She also sits at our front desk and checks our patients in when they arrive for their in-person office visits. Pam is a smart, friendly, conscientious, and helpful person who is a key member of our team. She welcomes people when they come through our front door, and in so doing, makes our first impression. Indeed, Pam usually has a halo effect on the patient’s perception of our team, which is one of the many reasons most everybody who knows her loves her.

Pam has only been working with us for 15 months; before that she was in a job that didn’t showcase her strengths, but instead made her feel unappreciated and stressed. And she had gotten into some bad habits. Pam told me, “All day I used to drink nothing but Coke or Diet Coke, and sweets were my comfort food.” As her weight crept up and her mood slumped down, she became increasingly sedentary. Exercise started becoming uncomfortable, so she was spending less time pursuing her passions, like playing with grandchildren, hiking trails with her friends and/or her dog, and gardening. Instead, she was spending her free time sitting around indoors staring at passive entertainment on screens. Pam felt herself getting pulled into a downward spiral that was draining the joy and vitality from her life.

About 18 months ago, when the lead scheduler/front desk position opened, Pam was our first-draft pick because a few of us already knew her and were impressed with her work. We were grateful and elated to have



Scout, Pam, and Tyler

Pam join our work family, and she settled right in. Pam said, “It smacked me in the face. It suddenly dawned on me that I had been killing myself! I needed to wake up and start paying attention to my health.” So she started drinking water instead of pop and ate more vegetables, fruits, berries, and nuts instead of junk food and sweets. Pam understood that as a visible and important member of our Cardio Wellness/Cardiometabolic team she needed to be setting a good example. As her diet and lifestyle improved, the fat started to melt away and her energy surged, which allowed her to get more active and reengage physically with the world again.

We also started Pam on semaglutide, a game-changing drug for her type 2 diabetes that not only reduces hunger, blood glucose, and body weight, it also lowers risk of cardiac catastrophes, like heart attack and stroke, and cardiovascular death. Semaglutide reduced Pam’s cravings for sweets and other junk food. Since starting semaglutide, Pam eats much smaller serving sizes because she

feels satiated with less food and is not so ravenous all the time. Nothing succeeds like success—the more progress she made with her weight, the more motivated she was about following her new active lifestyle and healthy eating habits.

A turning point for Pam came when her daughter, Tyler, had her first child

about 6 months ago. It was a difficult and dangerous delivery, and Tyler relied heavily on her mother to support her emotionally during the days following the birth. Scout, the new baby, is a beautiful and healthy little girl, but like all infants she is very needy. Pam and Scout formed a very close bond from the first day, and her new granddaughter is the light of Pam’s life now. “Scout made me realize that my life is not about me; it’s about making sure that the people in my family are safe and loved. I want to be here for my grandkids, and they need me. I want to help them grow up to be happy and successful, to follow their dreams, and to become good citizens too.”

Ikigai is a concept that comes from Okinawa—a Japanese island famous for its long-lived and healthy inhabitants. One of the central features of traditional Okinawan culture is ikigai, which means “one’s reason for being.” Your ikigai is your life’s purpose or your bliss. This is what brings you joy and inspires you to get out of bed in the morning and make you enthused to greet the day. It is generally a cause

that's above and beyond one's own self interests. The Okinawans focus on cultivating a strong sense of ikigai as an essential trait to help them lead long, healthy, and fulfilling lives.

Pam's eyes twinkle as she talks about how Scout comes and stays with Grandma and Grandpa on weekends. Scout is becoming busier and more interactive by the day, yet Grandma Pam's newfound energy and enthusiasm have made it enjoyable to care for the baby. She used to get sore when she would get down on the floor to play with Scout, but now, Pam has no trouble crawling around with her.

Over the past year, Pam has lost 60 pounds. She wears her ID badge that has a picture taken the day she began working with us 15 months ago. Patients and visitors are always commenting about how different she looks today. Her numbers have dramatically improved, too. Pam's blood pressure, triglycerides, cholesterol, blood glucose, A1c, and markers of inflammation have all come back down to normal healthy levels. She is sleeping soundly again and is back to hiking the state trails, planting and tending a big garden, and raising three dozen free-range chickens whom she refers to as her devoted fan club. "They follow me everywhere I go when I am outside," she says. She brings in eggs for us from her pet chickens, which taste nutritious and delicious. In the past, Pam's go-to food was generally sweets and highly processed foods, but now she eats a lot of fresh vegetables/fruit and enjoys fish, chicken, and beans, but makes a point of eating nothing that comes from an animal with hoofs.

Pam's health has been radically transformed by awakening to the reality that the world needs her, and that she can make a big positive difference for the people in her life.

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Dr. O'Keefe

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Editor-in-Chief

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An Avocado a Day Keeps the Doctor Away

James H. O’Keefe, MD, with Joan O’Keefe, RD



Back in the 19th century, when Johnny Appleseed was planting trees across the American wilderness and doctors made house calls, an apple was considered a superfood. In the 21st century, adding avocado, instead of bacon, to your daily routine is a smart and scrumptious way to boost your vitality. Joan and I are both huge fans of avocado, though when I titled this article “An Avocado a Day...” implying that a person should eat a whole avocado each day, it triggered an argument that nearly got me banished to the couch for a night. And Joan has a good point—this is a high-fat food, with one average-sized avocado packing a whopping 320 to 350 calories. Experienced registered dietitians like Joan say the recommended serving size is anywhere from one-third to one-half of an avocado per day. I get away with eating a whole avocado (or two) per day, but I’m very active, getting about 15,000 steps per day, and I use celery or carrot sticks rather than chips for dipping guacamole. Personally, I find that an avocado fills me up so that

I’m not hungry for things like sweets and starchy foods. Heck, at a Mexican restaurant, I can almost make a meal out of a large order of guacamole.

Botanically speaking, the avocado is a fruit—a berry to be precise—a strange one that contains only one tiny gram of sugar and a single gigantic seed. The fruits that are best for your health tend not to be very sweet, like avocados, tomatoes, and berries, including blueberries (wild ones are best), blackberries, strawberries, or raspberries. These nourishing fruits tend to be high in fiber, potassium, and antioxidants, yet low in sugar. A Harvard study published in March 2022 in the *Journal of the American Heart Association* followed 110,000 people for more than

30 years and found that eating half of an avocado twice per week reduced the risk of developing coronary disease by 21%. These investigators used sophisticated statistical modeling to estimate that replacing a daily serving of margarine, butter, egg, cream, or processed meats such as bacon, with a similar amount of avocado was associated with a 35 to 40% lower risk of heart attack and stroke.

Around our household, if we run out of avocados, somebody is making a trip to the supermarket that day. We usually buy a few that are ripe or nearly so, and several that will ripen over the next few days.

Avocados, besides being delectable, contain at least 20 essential vitamins and minerals. Because of its exceptional nutrient density, avocado, when consumed on a regular basis, can confer a host of health benefits, such as improved gut function and reduced risks of depression, heart disease, and cancer. Additionally, avocados are very high in fiber—both soluble and insoluble. One avocado provides an astounding 14 grams of dietary fiber, which is more than half the daily value for a woman (21 to 25 grams per day) and over a third of the daily value for

| | Whole Avocado | ½ Avocado | ⅓ Avocado |
|-----------------|---------------|-----------|-----------|
| Calories | 322 | 161 | 106 |
| Fat | 29 g | 14.5 g | 10 g |
| Protein | 4 g | 2 g | 1.3 g |
| Carbs | 17 g | 8.5 g | 6 g |
| Fiber | 14 g | 7 g | 5 g |

men (30 to 38 grams per day). Getting lots of daily fiber is essential for keeping your bowel habits regular, and the high fiber also keeps levels of blood sugar, cholesterol, and blood pressure in ideal ranges, all of which helps to keep your heart youthful and strong.

One whole avocado has about 20 grams of monounsaturated fat. Many people are confused about how avocados can be so high in fat and calories but still be good for you. Avocados are rich in monounsaturated fat, a heart-healthy fat that raises your HDL “good” cholesterol and lowers the LDL “bad” cholesterol. Eating healthy fats in the form of extra-virgin olive oil, nuts, seeds, and avocado lowers your risk of heart disease and metabolic syndrome (prediabetes), helps to burn off belly fat (especially if you minimize the intake of sugar and starch), and keep you satiated longer after a meal.

Avocado is also a great source of vitamin C, which in combination with the monounsaturated fat and antioxidants in this unique fruit, helps to keep your skin soft, supple, and smooth. Avocado is also a superb source of vitamins K, E, and B6, in addition to riboflavin, niacin, folate, pantothenic acid, magnesium, and potassium. Half of an avocado contains 488 mg of potassium, which is more than a full banana. And a high potassium diet is one of the simplest and best strategies to lower your blood pressure without medications.

Joan and I keep our guacamole simple: mash up a few ripe avocados, add fresh squeezed lemon juice and a pinch of salt, and voila! It’s one of the healthiest and best-tasting dips on the planet. By the way, guacamole is like many of the most nutritious foods out there—you will eat more of it if you feel free to salt to taste. Natural whole foods like nuts, vegetables, and fruits such as avocados and tomatoes are loaded with potassium and countless

other nutrients, but essentially devoid of sodium. So even when you add a dash of salt to improve taste, these naturally delicious foods are still low in sodium, and tend to keep your blood pressure nice and low-normal.

One of my favorite breakfast items is an avocado sliced in half with the

pit removed. I squeeze a fresh lemon into each of the half-sphere hollows, sprinkle in a pinch of sea salt, and then eat them with a spoon. On the other hand, Joan and my kids prefer avocado toast—another delicious way to enjoy this treasure from nature.

Generous Support for the Haverty Cardiometabolic Center of Excellence

Michael and Marlys Haverty have recently donated another \$1 million grant to support the Michael & Marlys Haverty Cardiometabolic Center (CMC) of Excellence at Saint Luke’s Mid-America Heart Institute. About 4 years ago, Michael and Marlys donated \$1 million to launch the Haverty CMC, which is co-directed by Drs. Mikhail Kosiborod and James O’Keefe. This is an entirely novel care model that has now been demonstrated to substantially improve the quality of care and outcomes in high-risk individuals with diabetes or prediabetes and heart disease. Using a comprehensive, team-based, and coordinated approach to prevention and game-changing therapies, the CMC model can positively impact all the key cardiovascular risk factors (blood glucose and cholesterol levels, blood pressure, weight, insulin resistance, and others), and most importantly, help our patients feel better and live longer. The remarkable success of the



Dr. James O’Keefe, Marlys and Michael Haverty, Dr. Mikhail Kosiborod, and Jani Johnson, CEO of Saint Luke’s Hospital of Kansas City.

Haverty CMC is the model upon which the team led by Dr. Mikhail Kosiborod and Melissa Magwire is building a national movement to transform the quality of care in individuals with cardiometabolic disease nationally. The non-for-profit organization, called the Cardiometabolic Center Alliance has been growing rapidly since its launch in 2020, and as of today, has 12 participating healthcare systems across the U.S. And work is ongoing to potentially expand this even to organizations outside the United States.

Patients trust us with their health and their lives. Our ability to improve their future wellbeing and vitality through the Michael & Marlys Haverty CMC is a mission that we feel privileged to serve every day.

Are You Getting Enough Magnesium?

The Heart-Healthy Mineral

James H. O'Keefe, MD, with Joan O'Keefe, RD



Are you are having issues with sleep, mood, muscle cramps, weakness, high blood pressure, skipped heart beats, or constipation? You could be low in magnesium. About 50 percent of Americans don't consume adequate amounts of this beneficial mineral. A diet rich in magnesium is high in nuts, seeds, legumes (like beans and peanuts), spinach, and other leafy green vegetables. But even among my patients who eat a very healthy diet, many of them seem to feel better when I start them on a daily magnesium supplement.

Magnesium is an essential mineral and electrolyte that serves over 300 functions, including catalyzing enzymatic reactions responsible for everything from creating DNA and generating energy in your mitochondria to optimizing function of nerves and muscles. It also plays a central role in hormonal balance; for instance, magnesium affects estrogen levels and stress hormones and is needed to make thyroid hormone. Moreover, having low levels of magnesium increases your risk of weight gain, insulin resistance, high blood sugar, type 2 diabetes, chronic inflammation, and heart disease.

Magnesium and Heart Health

Magnesium is one of the most heart-friendly minerals. Sodium is

magnesium's evil twin. Excess salt intake increases blood pressure and swelling, and also predisposes to stroke and heart failure. Unfortunately, most people eat too much sodium and not enough magnesium. Oral magnesium acts as a natural calcium channel blocker, increases nitric oxide, improves endothelial dysfunction, and relaxes/dilates arteries and veins. All these actions of magnesium help to make it an effective therapy to lower blood pressure and normalize left ventricular hypertrophy (abnormal thickening of the heart muscle), particularly when done in conjunction with increasing intake of potassium and reducing sodium intake. Magnesium supplementation increases the effectiveness of blood pressure lowering meds. The dose of magnesium required to reduce blood pressure is 500 to 1000 mg/day.

A deficiency of magnesium can also cause dysfunction of the lining of the blood vessels, predisposing to spasm of the arteries and abnormal blood clotting. Magnesium is essential for activating the ion pump that maintains the gradient across the cell membrane, keeping the sodium out of the cell and the potassium inside the cell. When magnesium levels are low, it allows excess sodium and calcium to seep into the cells. This is one of the ways in which low magnesium levels

make the cells of the heart more irritable, which can increase risk for cardiac rhythm disturbances like ventricular tachycardia (VT) and even sudden cardiac arrest. In fact, for some serious cardiac rhythm disorders, giving 2 grams of intravenous magnesium can be a life-saving intervention.

The daily allowance for magnesium is about 300 to 350 mg for women and 420 to 480 mg for men. American women consume an average about 230 mg of magnesium per day and men about 300 mg per day. For comparison, our hunter-gatherer ancestors consumed about 600 mg of magnesium daily. For various reasons such as depleted soil from corporate farming and food processing that strips magnesium out of whole foods, it can be difficult to rely on diet alone for getting enough of this key mineral. Many factors contribute to magnesium deficiency, including a diet based on refined and processed foods, diseases including kidney disease, gastrointestinal disorders, cancer, medications (including diuretics, birth control pills, proton pump inhibitors), excess alcohol, stress, frequent use of sauna and steam baths, strenuous exercise, and vitamin D deficiency.

People who aren't getting enough magnesium in their food tend to feel better when they take a supplement. I often prescribe anywhere from 300

to 1000 mg of magnesium daily to reduce muscle soreness or cramps, to facilitate sleep, and treat/prevent constipation. Magnesium is also being studied for its potential benefits in the treatment of mild cognitive impairment, where it may improve memory and overall mental functioning.

Magnesium is one of the safest and most effective sleep therapies. I personally take two capsules of a magnesium supplement just before bedtime on most nights and find that it produces a gentle calming effect on my mood and helps me sleep more deeply. Magnesium comes in many forms, but the best for improving sleep are magnesium glycinate, magnesium taurate, or magnesium threonate.

Because magnesium citrate and magnesium oxide are poorly absorbed forms of magnesium, they are good for improving bowel function in people who deal with constipation. Indeed, increasing your intakes of water, magnesium, and dietary fiber like psyllium (Metamucil), is the best strategy to avoid or treat constipation and improve bowel regularity. We generally recommend that people take about 200 to 400 mg daily of magnesium, but for more severe cases of constipation, you can use higher doses of magnesium, up to 800 or 1000 mg daily as needed.

Magnesium is important for activating vitamin D and has a protective role against oxidative stress. Furthermore, inadequate magnesium levels can lead to depressed immune responses, whereas restoring normal magnesium levels can improve immunity. Considering that magnesium and vitamin D are important for immune function and resilience against infection, a deficiency in either of these nutrients may contribute to severe illness with COVID infection.

You should design your diet to contain plenty of magnesium. The foods highest in magnesium—nuts, seeds, leafy greens, yogurt, legumes, and dark chocolate—also tend to be among the healthiest foods for many other reasons. If you are experiencing muscle cramps, increasing intake of magnesium and potassium from vegetables, fruits, and legumes is often effective for relieving these and other muscle-related symptoms.

I have become personally enamored with taking a warm mineral bath with magnesium salts to soothe sore muscles and joints. For thousands of years, hot springs and mineral baths have been a popular way to relax, de-stress, and improve overall health. The Romans built spas by natural hot springs and relied upon the mineral baths for their restorative and rejuvenating effects. Magnesium is the secret behind the healing powers of a hot mineral spa or an Epsom salts bath. The dissolved magnesium soaks into and rejuvenates your skin, muscles, and joints, and even gets absorbed into your bloodstream, helping to boost the levels of this health-giving mineral.

Options in Magnesium Supplements

We encourage a “food first” strategy but acknowledge that many of our patients may need additional magnesium in supplement form to feel and function best. You have many different formulations of magnesium to choose from. One of the most common is magnesium oxide, which tends to be less well absorbed, and thus is effective for relieving constipation. Too high a dose of magnesium oxide can cause bloating and loose stools or diarrhea. Magnesium citrate is another great option for people

with constipation, as it will produce a gentle laxative effect by pulling water into the intestines to make your bowel movements softer and easier to pass.

Magnesium glycinate and magnesium taurate are my favorite forms of supplemental magnesium. These forms are absorbed in the gut and pass the blood-brain barrier where they interact with neurotransmitters (chemicals in your brain), like serotonin and GABA, to boost mood and induce feelings of calm. Additionally, magnesium glycinate and taurate can be helpful for lowering blood sugar levels and reducing overall inflammation in the body and brain. These forms of magnesium are less likely to produce a laxative effect but are often useful for issues like anxiety, insomnia, chronic stress, and inflammatory conditions. Some supplements provide a combination of different forms of magnesium to provide a range of potential benefits for functioning of the brain, musculoskeletal, cardiovascular, gastrointestinal, and immune systems.

Bottom line: magnesium is a very safe mineral, and many people would benefit from increasing their daily intake of it. Patients with serious kidney disease are at risk for high levels of magnesium if they take it as a supplement. If you’re curious about this mineral, ask your health care provider if magnesium might be right for you.

Disclosure: Dr. O’Keefe is the founder and Chief Medical Officer for CardioTabs, a supplement company.



The Power of Continuous Glucose Monitoring: When We Know Better, We Do Better

Mitchell Fagan, 4th year medical student

People always ask me what the odd-looking patch on my arm is. When I respond that it's a continuous glucose monitor (CGM), the next statement I usually hear is, "I didn't realize you were diabetic." I don't have diabetes, so why would a healthy medical student like me would want to wear a CGM? Well, there are more than a few reasons.

More than half of Americans have pre-diabetes or diabetes, and many more have hyperinsulinemia—defined as elevated blood levels of insulin. There is a well-studied connection between hyperinsulinemia and the risk of cardiovascular disease, cancer, and Alzheimer's disease. Insulin is the hormone released from your pancreas that lowers your blood sugar levels. It also induces lipogenesis, which is a fancy word for the process of creating and storing fat. Too much insulin, whether it's injected as a drug or made by the person's own pancreas, causes weight gain, insulin resistance, and other problems with your metabolism. In other words, if we want to achieve optimal health, we need to avoid chronically elevated



Mitchell Fagan

insulin levels. Because insulin isn't easily measured, the next best thing to monitor is glucose.

The metric we use to define diabetes is the blood glucose level. While glucose levels exist on a spectrum, a fasting glucose over 126 mg/dL or a hemoglobin A1c (HbA1c) over 6.5% will land you a diagnosis of diabetes mellitus. You've probably had your HbA1c tested at your doctor's office, which is a three-month average of your glucose levels. However, HbA1c doesn't necessarily tell you if you have high insulin levels. A more precise and nuanced way to evaluate your metabolic status is to wear a CGM and utilize your glucose levels as a proxy for insulin.

Research suggests that higher glucose variability and higher peak glucose levels are associated with mortality and earlier onset of chronic diseases. High peak glucose levels have also been found to be associ-

ated with endothelial dysfunction. Your endothelium is the critically important lining on the inside of your blood vessels. When the endothelium becomes dysfunctional, it markedly increases risks for stroke and heart attack. Further, higher glucose levels after eating promote atherosclerosis— inflammation and hardening of your arteries. These changes compound over decades and you may only discover your HbA1c is elevated after years of hyperinsulinemia and high glucose variability. Most people are surprised to discover that the sugar they consume is also transformed into fat called triglycerides and stored as subcutaneous fat and belly fat. This is why a low-carb diet and/or fasting are sure-fire strategies for lowering blood triglyceride levels.

When I first inserted my glucose monitor into my arm, I found that after a high-carb meal my glucose was often spiking into the 160s mg/dL and then crashing to the 50s mg/dL. In medical jargon, this is hyperglycemia followed by a hypoglycemic episode. Being on this blood glucose roller-coaster causes endothelial dysfunction and heart disease. I found a few simple tricks to help keep my blood glucose stable and prevent large swings. Now, most of the time, I keep my glucose within 70 to 100 mg/dL with my postprandial (after consuming a meal) glucose under 140 mg/dL, which is ideal.

I quickly discovered that the order in which I consume various foods during a meal is critically important. I eat a lot of handmade pasta and I found

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Gratitude is the Antidote to Envy James H. O'Keefe, MD

When Tom Brady and the Buccaneers were beaten in the NFL playoffs last winter, many people who don't live in Tampa Bay rejoiced. *Schadenfreude* is a German word that means "finding joy in another's misfortune or struggle." In fact, it's part of the fun of sports, where you can indulge the dark side of these natural human emotions without feeling guilty. For those of us in Kansas City, it's been especially fun to be on the Chiefs' bandwagon in recent years. Face it—we humans are instinctively tribal animals, and there's something that feels deeply gratifying when our tribe vanquishes the competitors and victory is ours.

A zero-sum game is the simple idea that when one person gains, the other person must lose—like in boxing, poker, or war. For sure, there are times when we must adopt a dog-eat-dog mentality, say when you're trying to win the Superbowl, get into a prestigious school, compete for a mate, or do almost anything that involves a lawyer.

And life in America in the 21st century seems more hypercompetitive than ever. Even so, most of the time we humans do best when we avoid the winner-take-all attitude and look for ways to make life a win-win proposition. Candice Millard, a widely acclaimed author who lives and works in KC, wrote, "My advice (for what it's worth) for success and happiness: Compete with yourself and root for everybody else."

We are the omnipotent masters of the world, and our technological power and collective intelligence are rising exponentially. But this is only possible because the human race now func-



tions like one global interconnected being. The secret of the phenomenal success of the *Homo sapiens* species is that we all are like one giant organism. When a creative genius comes up with a transformative invention, we all benefit from it. A brilliant anonymous person in the region that is now eastern Poland/western Ukraine dreamed up the wheel about 5,500 years ago. Their oxen-pulled wheeled carts allowed them to expand across Europe and displace all the hunter-gatherers who were living there. As a result, today you get to work on wheels, rather than by foot.

Each one of us is analogous to a single cell in the giant complex organism that is life on Earth, and now the internet is like our collective brain. From that perspective, it's humbling to imagine how hard it would be for any one of us to survive on our own—like a single cell removed from the body, a person left to fend for themselves out in the wild wouldn't last long.

Objectively, nearly all of us are way better off today than, say, even the king of England was in 1500. Your house is comfortably climate controlled no matter what the weather,

and you have a giant-screen TV to watch a vast array of entertainment. You fly safely around the U.S. and the world at near super-sonic speeds and have access to life-saving drugs and procedures that our ancestors could have not even imagined—our life expectancy has doubled in the last century. And then there's that all-knowing rectangular electronic device in your pocket. Not one of these astounding technologies for improving the quality and quantity of life that we now take for granted was available to even the wealthiest person in the world 100 years ago. Yet, when we look around and see someone who is doing a little better than we are, it tends to cause angst.

For some strange reason, there is a nefarious emotion called jealousy deeply imbedded in the *Homo sapiens'* brain software. Oscar Wilde said, "Anybody can sympathize with the sufferings of a friend, but it requires a very fine nature to sympathize with a friend's success." Humans are funny that way—someone we know has some good luck or does something great, and often this negative

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HEART HEALTHY LIFESTYLE

The Fountain of Youth in a Patch of Dirt: Let Nature Nurture You

James H. O'Keefe, MD

I have a confession to make. All my life I've had a penchant to develop long-term relationships with plants. As a young teen, I began working summers in a nursery up in Grafton, North Dakota, and would plant trees and shrubs around town. As I was growing up, my trees were too, and I took pride in seeing them thrive. When we moved to KC, a friend gave us a small ficus tree as a housewarming gift. Every fall I drag this tree in from the patio, and we pick up its leaves off the floor all winter. Then in spring, I drag it back outside again and nurse it back to health. Now it's 35 years old, 15 feet high, and weighs north of 250 pounds—it's like delivering a very large baby twice a year as I pull it through the sliding glass doors. We also have two shamrock plants that come in and out with the ficus. These were gifts from two different patients/friends, both of whom have been gone for many years. When I water these lush shamrocks—one with pink flowers and the other white—I always fondly remember my beloved friends. Around the yard we have innumerable hostas that I transported here after splitting them off from hostas that still grow in the yard of my childhood home, and others from hostas that grew in my grandparents' yard.

Gardening and yardwork is a hobby that cultivates wellbeing in plants and people. Dan Buettner has studied five cultures across the globe where residents are famous for their longevity: Sardinia, Okinawa, Costa Rica, Icaria, and Loma Linda. These so-called Blue Zones share specific factors in com-

mon—good social support networks, a physically active outdoor lifestyle, and lots of whole natural foods in their diet. Yet, they also share another surprising commonality—their residents traditionally have gardened throughout life, often into their 80s, 90s, and beyond.

Gardening Therapy

A host of studies have reported that gardening and yardwork confer both physical and mental health benefits. Tending to a yard and/or garden is an enjoyable hobby that will naturally get you more outdoor physical activity, which has been linked to improved wellbeing and life expectancy. There is abundant scientific evidence that gardeners on average tend to live longer and be less stressed.

Digging in the soil and getting your hands dirty bolsters your microbiome—the trillions of friendly microbes that reside on and inside you. Sunlight stimulates the exposed skin to produce vitamin D, which is a key nutrient for strengthening bones and immune system. Being out in bright daylight also helps to synchronize your body's internal clock, and that improves the quality of your sleep at night. Sunshine boosts your brain's levels of serotonin—a neurotransmitter that brightens mood, gives you more energy, and keeps you calm, focused, and optimistic. Exposing skin to sunlight also reduces blood pressure and dilates arteries by increasing production of nitric oxide in the blood vessels, which in turn cuts risks of heart attack and stroke.

A recent study from Holland required participants to do a stress-inducing task that made them feel harassed. Immediately afterwards they were randomly assigned to either read indoors for 30 minutes, or garden outdoors for 30 minutes. The group that read reported no improvement in their agitated mood, while those assigned to gardening not only reduced their levels of the stress hormone cortisol, they also noted improvement in their mood.

An Australian study of people in their 60s reported that the men and women who gardened regularly had a 36% reduced risk of developing dementia compared to a matched group of people who didn't garden. There is no cure-all to prevent aging, but for many people, gardening seems to improve both the quality and quantity of life as the decades roll by.

May The Forest Be with You

A feeling of being emotionally connected to other people is important for wellbeing, but so too is one's connection to nature. A study from Harvard University found that people who lived in a house surrounded by verdant greenery had better life expectancy and reduced risks for



developing respiratory illnesses and cancer.

Doctors in Shetland, Scotland, routinely prescribe physical activity out in nature to reduce blood pressure and anxiety and improve wellbeing for people with conditions such as diabetes, mental illness, stress, heart disease, and high blood pressure. Planting a garden and trees, even on a small yard in an urban setting, is an easy and enjoyable way to integrate some outdoor nature time into your daily life.

The practice of consuming an abundance of fresh vegetables, ideally from local gardens and markets, is central to longevity. Even so, vegetables and fruit that you grow yourself will make you healthier even if the produce never makes it to your own table. The famously therapeutic Mediterranean diet—the traditional eating style of peasants from the shores of the Mediterranean Sea—is rich in home-grown vegetables, fruits, nuts, olives, and grapes, from which they make olive oil and red wine.

If you are outside for more than 15 or 20 minutes apply sunscreen to your exposed skin. However, modest doses of ultraviolet light from the sun may improve some skin conditions like eczema and psoriasis. I personally take advantage of the mood-brightening effects of fresh air and sunshine by getting outside for at least two walks daily.

A balanced life, like a chair, is stabilized by four legs: social connection, wholesome diet, physical activity, and mental engagement. A person needs to invest energy into all four of these fundamental factors to stay in optimal balance with their health and wellbeing. Gardening is a simple and enjoyable habit to cultivate that can contribute to all four of these pillars of health.

The Power of Continuous Glucose Monitoring

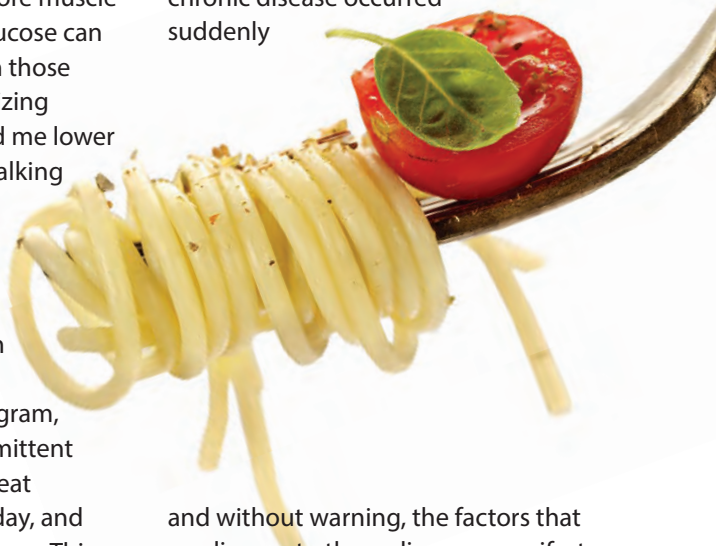
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that when I consume pasta before my protein, vegetables (fiber), and fat, my glucose could go as high as 160 mg/dL. Yet, when I consume high-quality protein like fish with a salad and then have pasta, my glucose will rarely go over 130 mg/dL (a massive improvement!). While data suggests that a pesco-Mediterranean diet is generally healthy, there is considerable variability in what the perfect diet is for an individual. Using a CGM is the best option we have to offer for diet personalization. Moreover, everyone has a different carbohydrate tolerance, and monitoring glucose will help you titrate your carb intake for optimal health. I have found the CGM to be the best behavior modification tool ever for customizing one's diet and improving well-being.

Exercise also plays an important role in glucose stability. Your muscles are the main engine that burns sugar in your body. Therefore, the more muscle mass you have, the more glucose can be burned for energy within those muscles. I found that prioritizing strength training has helped me lower my postprandial glucose. Walking before or after a meal also helps prevent a glucose spike after eating. Another strategy I rely upon to keep my glucose and insulin levels low is fasting. I follow a time-restricted eating program, commonly referred to as intermittent fasting, which allows me to eat between 4 to 6 hours each day, and fast for the other 18 to 20 hours. This strategy keeps my glucose and insulin levels low for most of the day and night. Since the goal is to keep insulin as low as possible, it intuitively makes

sense that fasting would be a simple yet effective strategy to accomplish this. I also complete a 3-to-5-day water-only fast every few months and my glucose usually stabilizes at 75 mg/dL and stays there consistently until I break my fast.

Using the simple tactics described above, I have been able to lower my average glucose, glucose variability, postprandial glucose, and lipid levels. There is no substitute for high-quality data that can lead to data-driven behavior change. Because there is no one-size-fits-all diet plan, a CGM will help personalize your diet to your body. Although a CGM requires a physician's prescription, it is simple and easy to attain. Using a GoodRx coupon helps lower the price as well, to about \$70/month out-of-pocket cost (insurance generally won't pay for CGM unless you have diabetes). Although many feel that the diagnosis of their chronic disease occurred suddenly



and without warning, the factors that predispose to these diseases manifest over many decades. Therefore, monitoring your glucose now may play a critical role in preventing disease years down the line.

Physician Leaders of Saint Luke's Cardiovascular Surgical Program



Dr. J. Russell Davis is a board-certified general and thoracic surgeon who specializes in cardiothoracic

and heart transplant surgery. He is the Chief of Cardiothoracic Surgery at Saint Luke's Hospital of Kansas City. Dr. Davis is especially interested in developing blood conservation techniques and minimally invasive valve procedures. Dr. Davis is proud of the work of SLCC and the service they provide to the community. "We have a highly functioning group of surgeons that offer a large scope of cardiac work," he says. "Patients have no reason to leave Kansas City for cardiothoracic surgery or care."



Dr. Karthik Vamanan is a board-certified vascular surgeon who specializes in treating a wide range of vascular

disease processes. Dr. Vamanan serves as Surgical Director of the Saint Luke's Vascular Program. Dr. Vamanan wanted to be a surgeon at a very young age. After trying various fields, he found he loved vascular surgery and the patients he treated. "Every time I see a patient in clinic, especially the ones that have been seeing me for 15 years or more and whose lives we have significantly improved, I feel very fortunate and privileged to do what I do."

Gratitude Is the Antidote to Envy

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emotion called envy wells up, which is a disguised form of hostility based on one's own insecurity. We each have only a few dozen people with whom we are personally connected. When something good happens to someone in our little circle of family/friends/coworkers, it should be a reason to celebrate their victory.

When I see someone accomplishing their dreams, I remind myself to be genuinely happy for them and pass along hearty congratulations. My wife Joan says that when she sees a person who is succeeding wildly, she tells herself, "Don't be envious, be inspired." Joseph Epstein said, "Of the seven deadly sins, only envy is no fun at all." To refresh your memory, during the 14th century Dante Alighieri wrote a poem called *Inferno*, in which he listed the seven deadly sins as lust, gluttony, sloth, greed, wrath, pride, and envy. Harboring jealousy is like holding a grudge. Buddy Hackett joked, "I don't carry a grudge. While you carry the grudge, the other guy is out dancing."

Your brain and heart are linked by a high-bandwidth nerve connection that instantaneously transmits your emotions to your heart. Feelings of grief, anger, fear, and envy are toxic to your heart. Of the cardiotoxic emotions, jealousy ought to be the easiest to avoid. There is no personal upside to feelings of envy. In contrast, when thankfulness, joy, or love registers in your heart, these feelings tend to lower blood pressure and improve your cardiac health. For many people, social media can stoke feelings of envy. If that's the case for you, it may be best to limit the time you spend on Facebook, Instagram, etc.

Another great way to neutralize envy is to think grateful thoughts. Gratitude arises when you remind

yourself of the positive aspects of your life, and it turns out to be a very effective strategy to neutralize envy. Practicing gratitude has been shown to increase one's sense of wellbeing and improve heart health. Laura Redwine at the University of California, San Diego did a simple but remarkable randomized-controlled trial (our gold-standard way to test a therapy) involving 70 individuals who had early-stage heart disease. Half of them were asked to keep a daily gratitude journal, whereas the control group were treated as usual. The gratitude journal group were told, "For the next eight weeks you will be asked to record 3 to 5 things for which you are grateful on a daily basis. Think back over your day and include anything, however small or great, that was a source of gratitude



that day. Make the list personal, and try to think of different things each day." Impressively, the gratitude journaling lowered levels of harmful inflammation and improved heart rate variability—a measure of cardiac health and resilience.

An old English proverb says, "Envy shoots at others and wounds itself." On the other hand, a grateful heart tends to attract blessings and cultivate wellbeing. You choose.



Nature Bestows Health and Wellbeing

"Illnesses do not come upon us out of the blue. They are developed from small daily sins against Nature. When enough sins have accumulated, illnesses will suddenly appear."

Hippocrates

"The world breaks everyone, and afterward, some are strong at the broken places."

Ernest Hemingway

"Fasting is the greatest remedy; the physician within."

**Paracelsus,
16th century Swiss physician**

"Adopt the pace of nature; her secret is patience."

Ralph Waldo Emerson

"Breathe in deeply to bring your mind home to your body."

Thich Nhat Hanh

"Science is not the truth. Science is finding the truth. When science changes its opinion, it didn't lie to you. It learned more."

Brené Brown

"Nature itself is the best physician."

Hippocrates

"Worry is a misuse of the imagination."

Dan Zadra

"A healthy feeling of inferiority is not something that comes from comparing oneself to others; it comes from one's comparison with one's ideal self."

Ichiro Kishimi

"The present moment is filled with joy and happiness. If you are attentive, you will see it."

Thich Naht Hanh

"The greatest of follies is to sacrifice health for any other kind of happiness."

Arthur Schopenhauer

"The most exciting phrase to hear in science, the one that heralds new discoveries, is not 'Eureka, I found it!' but instead, 'That's funny.'"

Isaac Asimov

"Worry is pointless not only because it rarely makes things better, but also because you're rarely ever worried about the right thing!"

Ryan Holiday

"We must always change, renew, rejuvenate ourselves; otherwise, we harden."

Johann Wolfgang von Goethe

"All we really need to be happy is someone or some thing to be enthusiastic about."

H. Jackson Brown, Jr.

"It's a funny thing about coming home. Looks the same, smells the same, feels the same. You realize what's changed is you."

David Fincher

"It's not the load that breaks you down, it's the way you carry it."

C.S. Lewis

"You'll have far better luck toughening yourself up, than you ever will trying to take the teeth out of a world that is, at best, indifferent to your existence."

Ryan Holiday

"It's not that life is short, it's that we waste a lot of it."

Seneca

"We must sail sometimes with the wind, and sometimes against it—but we must sail, and not drift, not lie at anchor."

Oliver Wendall Holmes, Jr.

"Don't listen to the person who has the answers; listen to the person who has the questions."

Albert Einstein

"In every walk with nature, one receives far more than he seeks. For going out...is really going in."

John Muir



Sleep On It...The Best Bedtime Advice You Will Ever Get

John Camoriano, MD

"A good laugh and a long sleep are the best cures in the doctor's book." **Irish Proverb**

Most of us have a contradictory view of sleep. We recall the amazing sense of wellbeing after waking up from a great night's sleep feeling refreshed and full of expectation for a good day. On the other hand, we fear going to bed too early and missing out on free time. We may even complain, "I have so much to do...if only I did not have to waste a third of my life sleeping." Well, how bad is missing sleep you ask? *Fatal*.

For most of the history of medical education in America, doctors-in-training were expected to admit and care for sick patients all night long. They did not get any time off after such all-nighters but instead were expected to shoulder full clinical responsibilities the next day. It was not uncommon for these overworked interns and residents to be awake for 40 hours straight.

All of this changed in 1984 when a woman died while under the care of two sleep-deprived residents. A lawsuit from her aggrieved attorney father concluded her death was due to medical errors caused by sleep deprivation. This ultimately led to a law that regulated the hours medical residents worked and slept.

The economic burden of insomnia in the United States has been estimated to be as high as \$63 billion annually. Would you feel comfortable getting on an airplane knowing the pilot had only slept two hours the night before? Would you go under the knife of a surgeon who had been sleeping four hours a night for the last three days? Why do we think we can start our own days with a sleep deficit and not suffer suboptimal performance even if our jobs are not as critical? And by the way, who said

being a mom or a teacher or whatever you do is not just as important?

After 20 hours of being awake, drowsy drivers are impaired on a level equal to a 0.08% blood alcohol content, which is the current legal limit in most states.

Consider the following facts.

- There is a 24% increase in heart attacks each year the day after "springing ahead" and losing a single hour on daylight savings time.
- There is a 21% decrease in heart attacks when we gain an hour of sleep in the fall. The same pattern is true for car crashes and suicide rates.
- There is a 70% drop in your body's immune function (natural killer cell activity) when you get less than four hours of sleep.

- Night-time shift work is now considered a cancer-causing agent by the World Health Organization. The shorter your sleep, the shorter your life.
- Sleep reduction from 8 hours a night to 6 hours a night disrupts normal gene function for a substantial portion of our genome, switching bad genes on and switching good genes off.
- Patients with chronic insomnia are at increased risk for a variety of medical disorders, including chronic pain, heart disease, cancer, Alzheimer's, obesity, and diabetes.

A new controlled intervention trial from the Mayo Clinic showed that healthy young to middle-aged volunteers when sleep deprived to 4 hours of sleep per night for 2 weeks put on a significant amount of visceral fat. This is the dangerous belly fat that accumulates inside the abdomen and increases inflammation and risks of disease. Sleep is a non-negotiable biological necessity, not an optional activity.

Sleep is designed to:

- Balance hormone levels
- Control metabolism
- Lower blood pressure
- Boost immune defense
- Repair DNA
- Recover from psychological trauma
- Recover from exercise and physical stress

For a deeper dive into the nuances of optimizing sleep, watch the Youtube video "Sleep is Your Superpower by Matthew Walker PHD" at www.youtube.com/watch?v=5MulMqhT8DM.

For more resources to optimize your sleep go to www.sleepfoundation.org/sleep-solutions.

14 Tips from the Experts to Optimize Your Sleep

- Avoid caffeine after noon.
- Do not use alcohol within 3 hours of going to bed. Consume it earlier with food. Alcohol leads to middle-of-the-night awakenings.
- Make your going to bed and getting up times the same, seven days a week. Aim for sleep duration of seven to nine hours.
- Budget sleep into your day. Decide on a fixed wake-up time, work backwards, and identify a target bedtime.
- Keep your sleeping room cool at 68 degrees or less.
- Only use the bed for sleeping and for sex. It should not be an office, TV room, or dining table.
- Reduce lighting, especially screen time, a few hours before going to bed. Consider a soft eye cover in bed.
- Consider some or all of these natural supplements to assist in sleep
 - o Magnesium (glycinate, taurate, or threonate are the best forms of magnesium for sleep), 100 to 200 mg if you have normal kidney function.
 - o Melatonin, 1 to 5 mg at bedtime and/or upon middle-of-the-night awakening.
 - o Valerian root, 300 to 600 mg at bedtime. Works best after 1–2 weeks of use.
- Avoid prescription sleeping pills. They produce an illusion of rest but block dreaming and rob your body and brain of the deeper benefits of natural sleep. If you are already on them, work to wean off.
- To sleep best at night, use caution with naps. Napping too long or too late in the day may throw off your sleep schedule and make it harder to get to sleep when you want to.
- A subtle pleasant scent that you find calming can help ease you into sleep. A touch of an essential oil like lavender on your pillow is a favorite sleep aid for many.
- Cultivate peace and quiet. If you can't eliminate nearby sources of noise, consider a fan or white noise machine, or use earplugs.
- Use nighttime wakefulness as an opportunity to meditate, pray, or think grateful thoughts.
- Consider a wearable device for measuring your sleep (Apple Watch, Oura Ring, Fitbit, etc.) so you can see and measure what interventions work best for you. Or try Sleep Cycle, a free app for your smart phone that listens to you sleep and gives you a score each morning. What gets measured can be managed.

Don't Throw the Baby Aspirin Out with the Bathwater

James H. O'Keefe, MD, and Chetan Huded, MD



One of our patients—let's call him Jack—was 54 years of age when he had a CardioScan in 2008. His calcium score at the time was 195—a moderate amount of plaque. He had been taking baby aspirin since then and was doing well. Recently Jack read a news story warning about the bleeding risks with even low-dose aspirin, so he stopped taking it. Two weeks later Jack showed up in our Emergency Department in the throes of a heart attack. Fortunately, he came to the hospital immediately after his chest tightness started, and we promptly reopened his blocked LAD—the widow-maker—coronary artery with a stent. He went home in good spirits the very next day.

Cardiovascular (CV) disease remains the leading cause of mortality in the United States, causing about 1 in 3 deaths. Each year, 605,000 Americans have their first heart attack, and about 610,000 experience a first stroke. For decades, doctors routinely recommended aspirin to prevent stroke and heart attack—myocardial infarction (MI) in medical jargon. The U.S. Preventive Services Task Force previously recommended aspirin to prevent MI in men and to prevent stroke in women. However, recent studies and guidelines have indicated that the risks of bleeding even with low-dose aspirin (81 mg daily)—aka baby aspirin—outweigh its benefits for people

without a history of CV disease. But before we jump to conclusions, we need to carefully consider the pros and cons of aspirin therapy in different populations.

There are two main groups of people for whom we consider aspirin therapy. Primary prevention means you've never had a heart attack, stroke, coronary bypass surgery, coronary stents, or blocked arteries in your neck or legs, but you take a daily aspirin to prevent such CV events. The benefit of aspirin for this group is debatable and has been the subject of recent scientific updates and guideline changes. Secondary prevention is when you have already had a heart attack, stroke, or other atherosclerotic complication or CV intervention. The benefit of aspirin in this group of people is well established, and the guidelines for this group have not changed, 81 mg/day is still recommended.

Aspirin was one of the first drugs to come into common usage, and it continues to be one of the most studied medicines in the world, with approximately 900 clinical trials conducted on it each year. About 5,000 years ago, ancient civilizations in Egypt and the Fertile Crescent first used willow bark to relieve pain and inflammation. A professor of pharmacy at Munich University in Germany extracted the active ingredient from willow bark

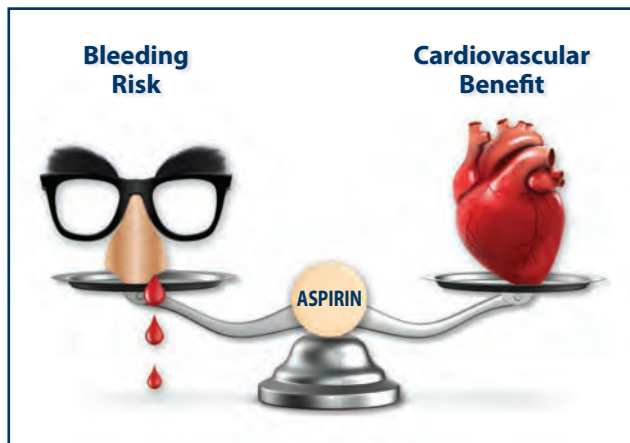
about 200 years ago and named it salicin. In 1897 a chemist working at Bayer further purified the compound into a bitter white powder and called it aspirin. You'd think after all this time and research aspirin wouldn't still be such a controversial drug.

A pooled analysis of 11 primary prevention randomized controlled trials (134,470 patients) showed that low-dose aspirin significantly decreased risk of MI by 12%. Similarly, a pooled analysis of five primary prevention randomized trials (54,947 patients) found that low-dose aspirin also significantly decreased risk of ischemic stroke (from a blocked artery) by 12%. But the dark side of aspirin is its tendency to increase risk of bleeding. This usually is in the form of non-life-threatening events such as bleeding from hemorrhoids or nose bleeds, but very rarely it can cause bleeding into the brain. Thus, in people without any CV disease, aspirin's modest benefit for reducing heart attack and stroke is largely offset by the increased risk of bleeding. These findings were recently confirmed by three contemporary randomized clinical trials, further supporting the concept that the risks of preventative aspirin match or outweigh the benefits in patients without known CV disease.

Based on these data, recent guidelines from the American Heart Association and the American College of

Cardiology suggested that aspirin be restricted in primary prevention of CV disease to high-risk patients <70 years old. Similarly, the recent US Preventive Services Task Force guidance on aspirin for primary prevention suggested it be used only for high-risk people <60 years old.

Yet, stopping aspirin may not be a good idea for some people like Jack, as shown in a study in the prestigious journal *Circulation* that involved 600,000 Swedes who were on aspirin. This study found that the people who stopped taking their aspirin subsequently had a 37% higher rate of heart attack or stroke during 3 years



of follow up. Of note, significant increases in risk of heart attack or stroke were seen in people with pre-existing cardiovascular disease (secondary prevention) who quit aspirin—46% increase in CV events, as well as a 28% increased risk in the healthy people like Jack, who stopped aspirin when it was being used as a primary prevention measure.

The risk for GI bleeding and intracranial hemorrhage (bleeding in or around the brain) increases with aspirin in a dose-dependent manner—the higher the dose of aspirin, the higher the risk of bleeding. Other risk factors for bleeding include age >65 years, male, diabetes, liver disease, smoking, elevated blood pressure,

and a history of GI issues like ulcers. Some medications magnify the bleeding risks of aspirin, including nonsteroidal anti-inflammatory drugs (such as ibuprofen and naproxen), steroids (prednisone), and anticoagulants (Eliquis, Xarelto, warfarin).

So, let's bring this all back home. Is baby aspirin right for you? Whatever you do, don't make this decision on your own; instead have the aspirin discussion with your trusted medical provider, who should review your history and determine whether aspirin is right for you based on (a) your reason for taking aspirin

(either primary or secondary prevention) and (b) the likelihood of serious bleeding complications from aspirin. We have seen many patients with prior bypass surgery and/or coronary stents who stopped taking aspirin after hearing these reports in the press.

This is unwise and dangerous. For patients with established CV disease, the benefits of aspirin on reducing MI and stroke events clearly outweigh the risk of bleeding.

For patients without established CV disease, the situation is more complex. To triage primary prevention people to aspirin or no-aspirin, our go-to strategy is to first determine if the patient has a high risk for bleeding. If the answer is yes, there is good evidence to avoid preventative aspirin. However, if the patient is not high risk for bleeding, the next step is a CardioScan—a CT of the heart to detect and quantify calcified coronary plaque. If the coronary calcium score is over 400, we have

good data to show that the benefits of baby aspirin outweigh the risks for most people. Even with a calcium score >100, the data indicates that the benefit to risk profile would be favorable. On the other hand, if you have no calcified coronary plaque (calcium score = 0) or just a mild amount (calcium score <100), you're a low risk for MI and stroke so the risk of bleeding due to aspirin likely outweighs the benefits.

If you do take aspirin, there are proven strategies for reducing risk of bleeding. Use the low-dose (81 mg) tablet and take it with food. Sometimes in people who need aspirin but who are at increased risk for bleeding, we may cut their dose down to one baby aspirin only 2 or 3 times per week taken on non-consecutive days.

There are other indications for aspirin that do not involve CV conditions. For example, a scientific paper in the journal *PLOS* in February 2022 concluded, "Meta-analysis of trial data shows that low-dose aspirin taken from early pregnancy is beneficial for reducing the incidence of preeclampsia and its associated complications, including preterm birth" (delivery before 36 weeks' gestation).

These and other potential indications for aspirin should be discussed in detail with your care provider. Last century, sleep-deprived doctors would placate patients during middle-of-the-night phone calls by telling them, "Take two aspirin and call me in the morning." This turns out to be generally bad advice. The aspirin conversation with your physician in 2022 needs to be much more nuanced.



20-Time Winner of the National Healthcare Advertising Awards!

Serene and Simple Wisdom for the Ages

James H. O'Keefe, MD

Exactly 100 years ago, shortly after the last global pandemic faded into history, Max Ehrmann, an attorney in Terre Haute, Indiana, wrote a short essay/poem that he called *Desiderata* (Latin for "things desired"). He finally got around to sharing it with others by sending it out in a Christmas card to his family and friends in 1933, and later that year it was published in a small local magazine, *Michigan Tradesman*. Max died in 1945, and *Desiderata* remained unknown and largely undiscovered until the 1970s, when it somehow became a popular poster. That's when I discovered it and hung that poster on the wall of my bedroom at home as a teenager and later in my college dorm room. When I got the chance to speak to classmates at graduation, I read *Desiderata* at the end of my address. Today, Max's simple wisdom resonates with my soul as much as it did when I was 15, and it continues to deeply shape my life. You may or may not be familiar with *Desiderata*, but I wanted to share it with you here in *From the Heart*.

Desiderata

Go placidly amid the noise and haste, and remember what peace there may be in silence. As far as possible without surrender be on good terms with all persons.

Speak your truth quietly and clearly; and listen to others, even the dull and the ignorant; they too have their story.

Avoid loud and aggressive persons, they are vexations to the spirit. If you compare yourself with others, you may become vain and bitter; for always there will be greater and lesser persons than yourself.

Enjoy your achievements as well as your plans. Keep interested in your own career, however humble; it is a real possession in the changing fortunes of time.

Exercise caution in your business affairs; for the world is full of trickery. But let this not blind you to what virtue there is; many persons strive for high ideals; and everywhere life is full of heroism.

Be yourself. Especially, do not feign affection. Neither be cynical about love; for in the face of all aridity and disenchantment it is as perennial as the grass.

Take kindly the counsel of the years, gracefully surrendering the things of youth.

Nurture strength of spirit to shield you in sudden misfortune. But do not distress yourself with dark imaginings. Many fears are born of fatigue and loneliness.

Beyond a wholesome discipline, be gentle with yourself. You are a child of the universe, no less than the trees and the stars; you have a right to be here.

And whether or not it is clear to you, no doubt the universe is unfolding as it should. Therefore, be at peace with God, whatever you conceive Him to be, and whatever your labors and aspirations, in the noisy confusion of life keep peace with your soul. With all its sham, drudgery, and broken dreams, it is still a beautiful world.

Be cheerful. Strive to be happy.

