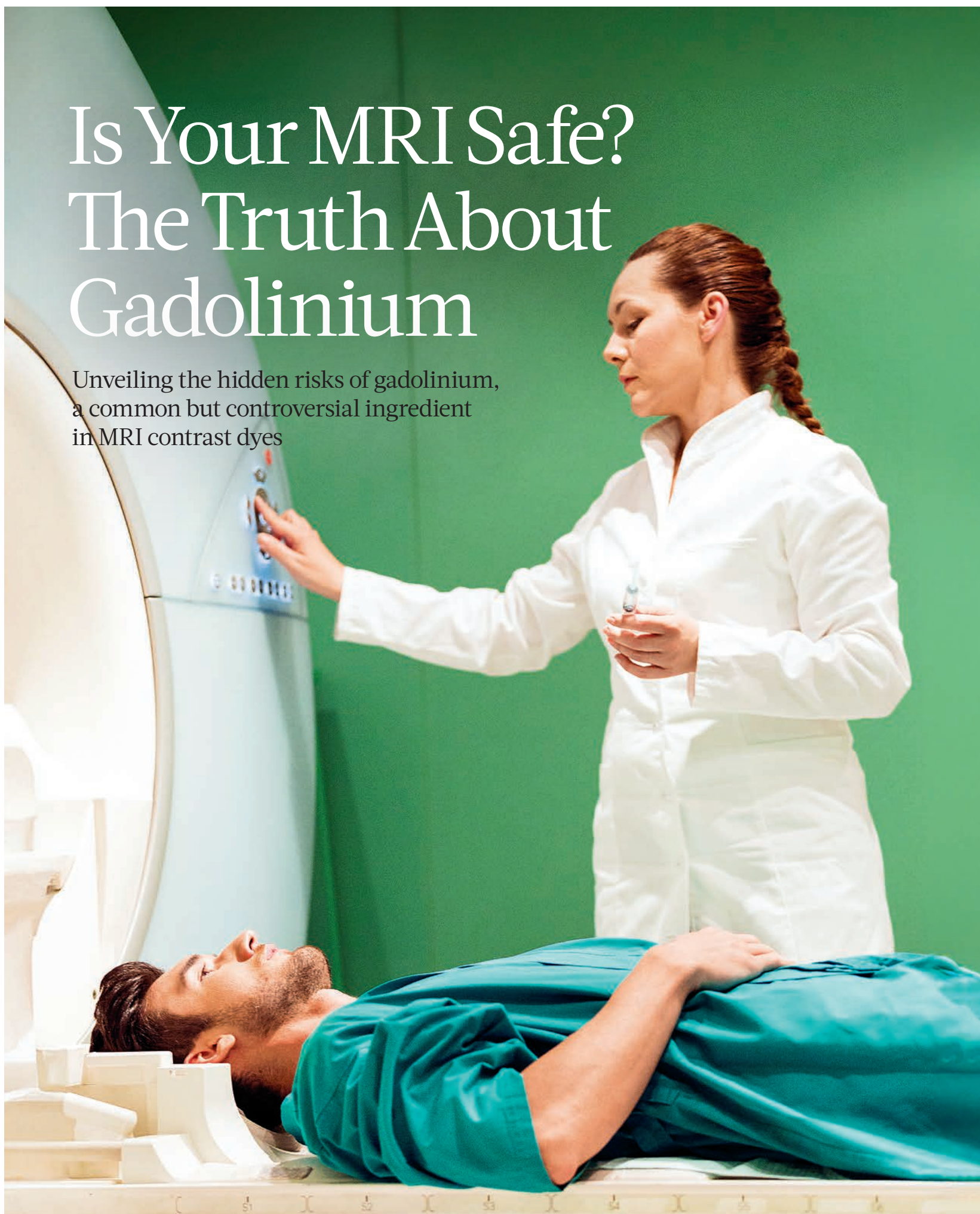


MIND & BODY

FOTOSTORM/GETTY IMAGES

Is Your MRI Safe? The Truth About Gadolinium

Unveiling the hidden risks of gadolinium, a common but controversial ingredient in MRI contrast dyes



◀ Experts say patients must be informed about the risks of gadolinium exposure when deciding about getting an MRI with gadolinium contrast.

By Sheramy Tsai

When Darla Torno entered the radiology suite for a routine MRI with contrast, she expected clarity. After all, she was about to undergo a scan for preventive measures, not due to any illness. The procedure required gadolinium, a standard imaging agent.

But in the weeks following the procedure, Ms. Torno's energy levels plummeted, a mysterious weakness crept into her muscles, and a cognitive fog settled over her. Within months, normalcy became a distant memory.

Initially dismissed, her symptoms eventually were traced back to an unexpected source: the very contrast dye used in her scan.

The Role of Gadolinium in Modern Medicine

Gadolinium, a dense rare-earth element categorized as a heavy metal, distinguishes itself from essential metals such as iron and zinc. Unlike these nutrients, it's absent from the human body, only making its way in through medical injections tailored for diagnostic purposes. Its role? To bring clarity to the MRI process.

When MRI machines cast powerful magnetic fields upon our body tissues, they rely on gadolinium's intrinsic magnetic properties. Gadolinium-based contrast agents enhance the distinction between healthy and diseased tissue. The outcome? Crisp, high-contrast images that, according to many doctors, are instrumental in making accurate diagnoses.

"Currently, there are a number of things you can only do with gadolinium contrast agents," Dr. Max Wintermark, chair of the Department of Neuroradiology

Continued on Page 6

64
Gd
Gadolinium
157.25



Gadolinium is the most paramagnetic of all elements when it's above 68 degrees F. That means it gains a weak magnetic attraction when exposed to an applied magnetic field, but loses it when it's not. This property makes it essential to MRI imagery.

3
TIMES

The U.S. performs three times as many MRIs as Finland with no evidence of additional benefit.

XAVIER BONGHI/GETTY IMAGES

Is the Goliath in Autism Research About to Fall?

New study cements findings that autism has environmental rather than genetic causes

By Amy Denney

1 in 36
CHILDREN

had an autism spectrum disorder in 2020, up from 1 in 44 in 2018, according to the CDC

Autism is increasing at rapid rates, and researchers may be looking in the wrong places for the answer as to why.

An extensive meta-analysis of 25 autism studies could shift the focus of research into the cause of autism from genetics to environmental triggers. That shift could open up new, revolutionary avenues for potential treatments.

The research ties the disorder to changes in the gut microbiome, a community of microbes that live in the colon and are responsible for creating metabolites and

other compounds crucial to our health and wellness.

Many influences outside of the human body are killing these beneficial microbes, which aren't genetically part of us but live in symbiosis with humans. The new study, published June 26 in Nature Neuroscience, has linked autism spectrum disorders (ASD) to a distinct microbial signature that's dysbiotic, or unnaturally out of balance. As in an ecosystem, too much of certain problematic species can destroy the overall ecology or lead to problematic consequences,

Continued on Page 10



◀ Researchers have found a distinct microbial "fingerprint" in children with autism spectrum disorder.

EMF

The Invisible Hazard

PART 3 EMFS A POSSIBLE HUMAN CARCINOGEN

Various studies strongly suggest EMFs can trigger cancer but debate rages on

In this series, we explore the health effects of electromagnetic fields, an omnipresent radiation created by technologies ranging from common home electronics to 5G towers.



Previous Parts:
TheEpochTimes.com/EMF

By Marina Zhang

Many people know ultraviolet rays and X-rays can cause cancer. These are high-frequency, ionizing electromagnetic fields (EMF). Ionizing EMFs are considered carcinogenic, while nonionizing EMFs, such as Wi-Fi, Bluetooth signals, and fields from electronic devices, are generally not. This perception has prevailed in the public mindset for decades.

However, fewer people know that certain nonionizing EMFs are also classified by the International Agency for Research on Cancer (IARC) as class 2B carcinogens—a category indicating potential human carcinogenicity.

Dr. David Carpenter, an environmental health professor at the University of Albany who received his medical doctorate from Harvard Medical School, noted that radiofrequency, a type of nonionizing radiation used in telecommunications, might eventually fall under class 2A classification, denoting a probable human carcinogen.

Oxidation, DNA Changes, and Cancer

Cancer is usually caused by mutation or changes to DNA. Factors like viral infections, radiation, and environmental toxins can cause these alterations DNA.

Ionizing EMFs directly damage DNA. Ul-

traviolet, X-rays, and gamma rays remove electrons from DNA, causing mutations. Accumulated mutations lead to cell malignancy. The body is accustomed to a certain amount of this kind of damage, particularly from sunlight. Excessive amounts are a different matter.

Nonionizing radiation doesn't have enough energy to damage DNA directly. Yet various studies have linked exposure to nonionizing EMFs with DNA breakage. Cells from EMF-exposed animals and phone users have shown genetic damage.

Cancer can also be induced through physiological stress alone. Examples of this include asbestos and arsenic, which cause cancer in the absence of direct DNA damage.

For this reason, Dr. Carpenter suggests EMFs may be carcinogenic just by inducing "reactive oxygen species" that stress the cell environment through oxidation. Oxidation generated by EMFs has been shown to break DNA in human sperm and fibroblast cells, indicating potentially carcinogenic risks.

Our digital pastimes come with EMFs that induce reactive oxygen species that stress our cells.

Professor emerita Martin Pall, specializing in biochemistry and basic medical sciences at Washington State University, explained that EMFs are complicated in that stronger EMFs don't necessarily mean more DNA damage. Instead, only specific frequencies and intensities cause an effect.

This has been shown in a recent University of Colorado study, finding that at a 4.2 megahertz (MHz) frequency-

State University, explained that EMFs are complicated in that stronger EMFs don't necessarily mean more DNA damage. Instead, only specific frequencies and intensities cause an effect.

This has been shown in a recent University of Colorado study, finding that at a 4.2 megahertz (MHz) frequen-

cy, human fibroblast and fibrosarcoma mitochondria increased in mass, inducing cell stress. This effect was absent at higher and lower frequencies.

According to the IARC, possibly carcinogenic nonionizing EMFs include:

- Extremely low frequency EMFs** commonly found at frequencies of 50 to 60 Hz emitted by power lines, electronic wires, and virtually all electrically powered devices.
- Radiofrequency EMFs** emitted by wireless devices such as phones, Wi-Fi modems, TVs, and cell-phone towers used in telecommunications. These are also utilized in magnetic resonance imaging (MRI).

Research indicates chromosomal breakage after MRI sessions.

The IARC rated radiofrequency as class 2B rather than 2A, with one of the reasons being the lack of evidence linking it to cancer in animal studies.

Contrastingly, the 2018 U.S. National Toxicology Program study from the 1990s presented "clear evidence" of radiofrequency-induced heart tumors in rats, along with "some evidence" of brain and adrenal cancers.

The Ramazani Institute's 2018 study also discovered heart and brain tumors in rats, aligning with these findings.

EMFs and Brain Cancer

Senior consultant in radiation sciences Kjell Hansson Mild from Umea University in Sweden told The Epoch Times that the link between EMF exposure and brain cancer and tumors is well-established.

A study from the 1980s revealed a 39 percent higher risk of brain cancer among amateur radio operators due to EMFs.

"Brain gliomas associated with cell-phones have the most research. The gliomas appear after 10 years of moderate cell-phone use, primarily ipsilateral cancers (cancer on the same side of head where you hold the cell-phone)," professor emerita Magda Havas told The Epoch Times through email.

Glioma are malignant brain cancers. A 2017 study linked long-term ipsilateral use of mobile phones with an over 40 percent increased risk of slow-growing glioma. A large French study conducted between 2004 to 2006 found that people with "heavy mobile phone use" had increased folds in glioma risk after years of use.

In 2004, oncologist and professor Lennart Hardell from Orebro University in Sweden published a study involving over 1,600 patients with benign brain tumors. His research found a 30 percent higher likelihood of brain tumors in wireless phone users. These tumors primarily developed on the side of the head in contact with the phone, with an over 60 percent higher risk after 10 years of phone use.

Benign tumors typically don't become cancerous; they grow slower and do not invade nearby tissues or other areas of the body.

Another Swedish study in 2004 indicated no initial risk increase of acoustic neuroma (benign brain tumor) associated with phone use within the first year. However, by the 10th year, the risk surged to 90 percent.

Other research on brain tumors emerged from occupational exposure studies.

During the late 1990s, a study examined approximately 880,000 U.S. Air Force personnel with at least one year of service. This study detected 230 cases of brain cancer potentially linked to radiofrequency exposure, revealing a 39 percent heightened risk through occupational exposure. In 2001, a review demonstrated that those working with electricity faced an up to 20 percent greater risk of developing brain cancer than the general public. Still, research-



Research has linked working with electricity and power grids to a 20 percent higher risk of brain cancer.

SOURCE: ENVIRONMENTAL HEALTH PERSPECTIVES, 2001



Nonionizing radiation from wireless devices and infrastructure has been linked to DNA breakage.

SOURCE: BIOELECTROMAGNETICS, 1996; INDIAN JOURNAL OF HUMAN GENETICS, 2005



Studies as early as 1979 linked proximity to high-current power lines to increased rates of childhood cancer.

SOURCE: AMERICAN JOURNAL OF EPIDEMIOLOGY, 1979

INDUSTRY-FUNDED STUDIES SLANTING RESEARCH?

University of Washington research professor Henry Lai reviewed 200 studies on the effects of cellphone radiation and found three out of four non-industry sponsored studies reported a biological effect while only one out of four industry-funded studies found an effect. Undisclosed actors also tried to get the National Institutes of Health to pull his funding for research into the effects of cellphones on DNA damage in brain cells.



ers concluded the risk was too low to warrant a discussion on causality.

Despite increased environmental radiofrequency exposures among the public, Mr. Hansson Mild's primary concerns are power lines and occupational exposures.

He noted that cellphones used in previous studies emitted stronger signals than today's phones.

"Today, you only need to reach 200 meters to the next base station. But yesterday, you needed to reach 35 kilometers to reach the base station," Mr. Hansson Mild said.

While phones emitted stronger radiation in the past, Ms. Havas emphasized that radiofrequency radiation still poses a health risk, given its higher prevalence today.

Not everyone owned a phone in the past, but most people today have a wireless phone.

"So many people now use cell-phones, and they still emit far more energy than necessary, and brain tumors (gliomas) are increasing in the population," Ms. Havas said. "So many wireless devices now emit radiofrequency radiation in addition to cellphones, like Wi-Fi, smart meters, cordless phones, wireless baby monitors, smart watches, etc., and these are active 24/7 in most homes, schools, and occupational settings."

Some of the earliest research linking nonionizing EMF with cancer came from studies on leukemia.

"We know that from Hiroshima and Nagasaki... that the [latency for leukemia] may be five to seven years, but for brain cancer, when you look at ionizing radiation or chemical exposure, the time between exposure and when the cancers are detected is usually 20 to 30 years," Dr. Carpenter said.

This shorter latency makes it easier to research, he explained.

Leukemia has been strongly linked with extremely low frequency (ELF) EMF exposures through power lines and home wiring. The flow of electricity creates powerful magnetic fields that can penetrate walls and glass. (We will explain more details in the following articles.)

One of the first studies investigating this link came from a 1979 paper on leukemia in Colorado. The authors found that between 1976 to 1977, childhood cancer in the region was disproportionately found in families living near power lines carrying high currents of electricity.

The risks also appeared dose-related; for instance, children who had not moved had the highest cancer risk.

Studies from the early 2000s found that children exposed to 0.3 to 0.4 microtesla of magnetic fields had up to twofold increased risk of childhood leukemia compared to children exposed to magnetic fields under 0.1 microtesla.

The official safety limit for magnetic fields is much higher, at 100 microteslas.

Research published since the 1990s shows that 50-Hz to 60-Hz EMFs promote breast cancer growth in cell culture by blocking the action of melato-

nin, an anti-tumor agent that prevents tumor growth.

ELF EMF has also been shown to inhibit the breast cancer drug tamoxifen in human cell cultures. Tamoxifen is also used to prevent cancer cell growth. Epidemiological studies on women and men have indicated EMFs increase the risk of breast cancer in both sexes.

Radiofrequency from mobile phones has also been linked with breast cancer. A 2020 Taiwan study on women with breast cancer found that those with habitual smartphone use before bedtime had a 43 percent higher risk of breast cancer.

Women who routinely put their mobile phones against their breasts may also be at a higher risk. This was illustrated in a 2013 American study investigating four unusual breast cancer cases in women under 40 with no family history or genetic predisposition.

Breast cancer typically occurs in women 50 or older with a family history or certain genetic predisposition. The authors, therefore, looked for other reasons and found that all patients regularly carried their smartphones directly against their breasts in their brassieres for up to 10 hours a day for several years and developed tumors in areas of their breasts immediately underlying the phones.

Difficult Research Despite the above studies, it has been challenging to definitively prove if EMFs cause cancer, according to Dr. Carpenter.

Due to the widespread use of electricity and telecommunications globally, finding an unexposed group for comparison in cancer rate studies has become nearly impossible.

Another problem is that biology is very complicated; not all cells respond to EMFs, and not all EMFs will cause a biological reaction. Cells can behave very differently depending on the biochemical processes within the cell at the time of exposure. Even samples of the same cell line from the same laboratories can respond differently to EMFs.

There is also published research led by researchers inexperienced in researching the effects of EMFs. For instance, researchers testing magnetic fields on cell cultures in incubators might overlook that the incubator itself could emit stronger magnetic fields, rendering the study invalid.

Financial motivations within the industry could also contribute to inconclusive links between EMFs and cancer. Independent research by Dr. Carpenter and Professor Emeritus Henry Lai from the University of Washington has revealed that industry-funded studies often find no connection between EMFs and health effects. In contrast, independent and government-funded research tends to identify an association.

"You can always find no effect if you design a faulty study," Dr. Carpenter said. "I think that in many ways, the telecommunications industry has very intentionally muddied the water by supporting publication of results that are designed to not show any effect.

"And therefore," he continued, they state that the results on EMFs causing cancer "are inconsistent, and inconclusive."

Statins: The Lesser-Known Dangers, and a Good Alternative

These popular drugs may increase insulin resistance and fuel muscle pain and fatigue

By Vance Voetberg

For decades, statins—the most common cholesterol-lowering medications—have been recognized as a lifesaver for those with heart disease. Although statins have positively revolutionized heart health, some studies highlight the lesser-known concerns of the medication: energy-sapping, increased diabetes risk, and, for many people, muscle pain.

Puzzling Link Between Statins, Insulin Resistance

A recent systematic review of 11 epidemiological studies with nearly 47 million participants found associations between statin use and decreased insulin sensitivity, and increased insulin resistance—both significant factors for developing Type 2 diabetes. Additionally, statins were found to reduce glycemic control and elevate fasting glucose levels.

Experts are uncertain about the precise mechanism through which statins might affect insulin resistance, considering their advantages, such as lowering inflammation, decreasing oxidative stress, and enhancing endothelial function—all of which improve insulin sensitivity rather than diminish it.

A 2021 study published in the journal *Arteriosclerosis, Thrombosis, and Vascular Biology* also found that statins can increase the risk of Type 2 diabetes, but how was unclear. Despite the risks, most researchers and health care professionals still believe statins are more beneficial than harmful.

"It is generally viewed that the strengths of lower cholesterol by a lot outweigh a modest increase in insulin resistance," Michael Snyder, a genetics professor and chair of the Genetics Department at Stanford University School of Medicine, told The Epoch Times.

But the double-sided nature of statins remains unclear to researchers, according to Dr. Snyder, who has coauthored multiple studies investigating the correlation between statin usage and insulin intolerance.

Lifestyle factors such as obesity also play a major role in insulin resistance, and people can reduce body weight to potentially offset statins' effects, Dr. Snyder said.

Why Do Statins Drain Energy?

Fatigue and muscle pain seem to be common with statin use. A study of more than 350 statin users found that 93 percent reported muscle pain and fatigue, while 85 percent reported weakness.

"This is of no surprise because of the well-documented effects that statins have on coenzyme Q-10 (CoQ10), which is a primary cofactor for mitochondrial function," Dr. Node Smith, a board-certified naturopathic physician, told The Epoch Times. Mitochondria create energy for the entire body at the cellular level. Therefore, statins can deplete the body's cellular energy by depleting CoQ10, he added. A letter to the editor published in the

British Journal of Clinical Pharmacology noted that people taking statins who also supplemented with CoQ10 were less likely to experience chronic fatigue.

Dr. Smith said many of his patients who have taken statins long-term have reported experiencing persistent muscle pain, weakness, fatigue, and brain fog.

"Some of these patients are avid athletes and simply are confused why they can no longer work out," he added. "If I see this presentation in someone on a statin medication, I will almost always assume the statin is at least a contributing factor and discuss with the patient its removal and replacement with another therapy."

Vitamin B3 a Potential Alternative Statins are commonly used alongside niacin (vitamin B3), which has been recommended for more than 40 years to prevent heart disease because of its positive effect on lipid levels.

Niacin is the most common and effective treatment that replaces statins, according to Dr. Smith.

"Of all the pharmaceutical medications I've helped people get off of, statins are the easiest, least concerning, and patients typically have the best results with—because it is not uncommon for them to feel almost instantly better."

Niacin decreases LDL cholesterol, which can build up plaque in arteries when levels are too high. It also increases HDL cholesterol, which absorbs other forms of cholesterol in the bloodstream and carries it back to the liver for removal, according to a clinical trial of more than 300 people. Additionally, niacin lowers triglycerides, a type of fat in the blood. Optimized niacin therapy costs patients \$15 to \$30 per month and is worth trying before statins, Dr. Smith said.

Studies have found that combining niacin and statins may outperform statins alone. Dr. Smith has observed similar results in his practice, although some studies suggest otherwise.

Niacin fell out of favor because of the side effect of niacin flushing, which produces a slight prickly heat sensation for about 30 minutes and can be uncomfortable and concerning for some people, he said.

About 15 years ago, wax-coated niacin tablets were developed. They allow high doses of niacin to be delivered while reducing flushing for most people, according to Dr. Smith. Side-effect management methods such as taking niacin with food or baking soda can also help.

However, Dr. Smith cautioned that people with familial hypercholesterolemia, a genetic disorder, may need more aggressive therapies, potentially including statins.

Vance Voetberg is a freelance journalist for The Epoch Times based in the Pacific Northwest. He holds a B.S. in journalism and aims to present truthful, inspiring health-related news. He is the founder of the nutrition blog "Running On Butter."



▲ Statin use has been linked to decreased insulin sensitivity, and increased insulin resistance, hallmark characteristics of Type 2 diabetes.



Women who kept their cellphones in their brassieres had a higher risk of breast cancer.

XAVIER LORENZO/GETTY IMAGES

NEXT WEEK Are EMFs contributing to infertility and miscarriages?

The Ultimate Guide to KICKING SUGAR

PART I HOW SUGAR CHANGES YOUR BRAIN

Sugar can trigger powerful changes in the brain similar to hard drugs

In this series, we will explore the good and bad sugars and sweeteners, including popular natural ones, uncover the unexpected outcomes of cutting out sugar, and discover the ultimate way to achieve this.

By Flora Zhao

Our brains often instinctively crave sugar. It could be a slice of cake during times of stress, a bar of chocolate when bored, or a sweetened coffee when needing a pick-me-up. The inability to quit sugar may not stem from a lack of willpower but rather from not fully grasping the nature of sugar and not finding the most effective methods to quit.

Sweet Cravings: The Instinct for Survival, Growth

"Sugar is very important for our body and our brain. And I think this is where a lot of the difficulty (in cutting out sugar) lies," Jessica Russo, a clinical psychologist from Philadelphia, told *The Epoch Times*.

Sugar serves as the primary energy source for every cell in our body and much of the food we eat is broken down into various sugars.

"The brain is the most energy-demanding organ, which uses about half of all the sugar energy in the body.

"We're biologically driven toward sweet foods," as this is a survival mechanism, Ms. Russo said, explaining that in nature, sweet-tasting foods are generally healthy, while toxic foods may taste bitter, and spoiled or rotten foods may taste sour, both of which lack sweetness.

Therefore, when we taste something sweet, our brains signal, "Oh, this is good!" Besides helping us identify safe food, sweetness also plays a role in human survival and growth.

"We see babies being born with the ability to detect sweet taste and to prefer it," Julie A. Mennella, a scientist at the Monell Chemical Senses Center in Philadelphia, said during an interview. It indicates that sweetness is associated with the quality of breast milk, which can attract infants to suckle.

To quit sugar, one must first understand sugar.

There is evidence to suggest that children's preference for sweet foods may be linked to their higher caloric needs during the growth stage, which typically continues from infancy until the end of puberty, she told *The Epoch Times*.

The Effect of Sugar on Our Brains

When we consume sugar, the receptors on our tongues send sweet signals

to the brain, triggering the release of dopamine, which can induce feelings of joy and happiness.

"We taste with our brains," Ms. Mennella explained. Sweetness makes us feel good because these signals are sent to various parts of the brain, many of which are associated with rewards.

"The brain pathways used are significant for pleasure, memory, and reward," she said.

This means that when we engage in activities that trigger dopamine release, we experience joy, form memories, and look forward to doing it again.

"In the brain, it has very specific actions and is the most important molecule in the brain that's involved in bringing about well-being," said Kenneth Blum, a renowned scientist with a doctorate in neuropharmacology.

Dopamine can also counteract stress, said Mr. Blum, who is a professor at the Western University of Health Sciences' Graduate School of Biomedical Science, and a part-time professor at the University of Vermont and Wright University.

"When you have stress, the dopamine is released 100 times above the normal rate." It can block the action of stress hormones such as adrenaline.

However, Mr. Blum emphasized the importance of maintaining a balance for this crucial molecule; otherwise, the brain could suffer severe negative consequences.

Many people are unaware that excessive sugar consumption can lead to consequences very similar to drug abuse.

Mr. Blum explained that excessive sugar consumption can trigger acute dopamine release.

"It's like abusing alcohol or other drugs of abuse," he said.

Over time, that can result in a chronic



Modern diets are filled with highly refined sugars that evoke drug-like allure.

Compared to fruit, refined sugars trigger a more powerful signal from the sweet receptors in the brain.

decrease in dopamine levels. Consequently, individuals may seek larger quantities of sugar to experience the same level of pleasure, eventually leading to an addictive state where they consume more and more.

When you consume a large amount of refined sugar, "your brain lights up like a pinball machine due to the intense release of dopamine," said James DiNicolantonio, a cardiovascular research scientist and doctor of pharmacy at Saint Luke's Mid America Heart Institute in Kansas City, Missouri.

When ingesting refined sugar, the sweet receptors signal the brain's reward system more effectively than when eating fruit. The levels of dopamine released

by the brain far exceed what we can handle.

A study published this year in the journal *Nature* revealed that when a person drinks water or is injected with saline, the brain remains relatively calm. However, when administered a sucrose solution or injected with cocaine, multiple regions of the brain's neurons become activated (highlighted in the image). Multiple brain regions that respond to sugar signals also exhibit responses to cocaine signals.

"Our research shows how similarly both additive and nonaddictive rewards are processed by our brains, both on the whole-brain scale and on a cellular level," said Anna Beroun, the study's lead

author and the head of the Laboratory of Neuronal Plasticity at the Nencki-EMBL Center of Excellence for Neural Plasticity and Brain Disorders (BRAINCITY) of the Nencki Institute of Experimental Biology of the Polish Academy of Sciences in Warsaw, Poland.

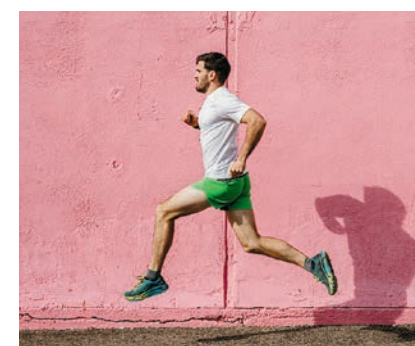
"Sugar/food becomes addictive if we value it over other rewards."

Is Sugar More Addictive Than Drugs? Sugar is irresistibly alluring, not only because it stimulates the brain to produce dopamine, which brings joy, but also because it triggers the production of endogenous opioids in the brain, which can lead to addiction and dependence.

Mr. Blum said that the brain has glucose receptors, and when they are stimulated by sugar, it triggers a series of signaling pathways that ultimately

OUR BODIES NEED SUGAR TO FUNCTION

Sugar is the main energy source for all of our cells. Plant and dairy foods, including grains, provide healthy sugar with additional nutrients and fiber.



lead to the production of addictive substances. This mechanism is inherently present "so that if you abuse sugar, you're going to order the brain—reward circuitry in a negative way, as if you use heroin."

An experiment revealed that mice fed large amounts of sugar intermittently exhibited withdrawal symptoms when injected with a drug that blocks opioids. These symptoms included teeth chattering, forepaw tremors, and headshakes.

Sugar's effect on the brain not only shares similarities with drugs but also, in certain circumstances, is even more alluring.

Over the years, French researchers have conducted a series of animal experiments, with the results revealing that when given the choice between cocaine and sucrose, rodents consistently preferred sucrose over cocaine. This preference held even for mice previously addicted to cocaine before the experiments.

"When we over-consume sugar, there is a release of dopamine and endogenous opioids that cause a 'high,' but then we get a 'low.' If we do this over a prolonged period of time, this can lead to dependency on sugar, especially in those who are vulnerable," said Mr. DiNicolantonio, summarizing the addictive mechanism of sugar.

When there is a deficiency of dopamine and endogenous opioids, one may feel sad, confused, sluggish, and unable to concentrate, all of which can further drive the desire to consume more sugar.

Additionally, numerous human experiments have demonstrated the link between sugar and addiction.

For example, a prospective observational study published in *Addiction Biology* in 2021 revealed that a significant proportion of individuals with alcohol

use disorder (40 percent) experienced an increased craving for sugar during their inpatient alcohol detoxification.

Additionally, a study published in the journal *Addiction* showed that children with a family history of alcoholism and depression were likelier to prefer intense sweetness. On average, these children opted for water with a sucrose concentration of 24 percent, equivalent to about 14 teaspoons of sugar in a glass of water—more than twice the sugar concentration found in regular soda water.

In contrast, children without such familial backgrounds preferred water with a sucrose concentration of 18 percent.

Multiple brain regions that respond to sugar signals also exhibit responses to cocaine signals.

Know Your Sugars: The Key to Overcoming Addiction

Sugar and the brain share an innate strong connection. Unfortunately, modern diets are filled with highly refined sugars that evoke drug-like allure. In fact, the sweetness we consume today differs significantly from what our ancestors once had.

Ms. Russo vividly described the body and brain's conflicting views on sugar with a lively scene, noting that our bodies resist certain sugars while are more receptive to others.

She says: "The brain says, 'We need sugar; we must have sugar; we can't survive without it.' On the other hand, the body disagrees, saying, 'We don't like all types of sugar.'"

There is an ancient Chinese saying: "If you know the enemy and know yourself, you need not fear the result of a hundred battles." To quit sugar, one must first understand sugar. However, the truth is that some sugars and sweet substances are natural and even beneficial to the body.

NEXT WEEK Stevia offers some sweet health benefits.



IS SUGAR ADDICTIVE?

It appears so. Refined sugar triggers the release of dopamine and endogenous opioids that bring the same kind of "high," and "low" of an addictive drug. Over time, this appears to create dependency similar to drug addiction.

COVID-19

COVID-19 Link to Dysautonomia: New Study

Inflammation in the vagus nerve from COVID-19 can cause dysfunction in the nervous system

By Megan Redshaw

For those experiencing persistent symptoms long after their bout with COVID-19 has ended—including fatigue, light-headedness, brain fog, cognitive issues, gastrointestinal problems, heart palpitations, shortness of breath, or an inability to tolerate upright postures—new data may provide answers.

SARS-CoV-2 infection may damage the nerves of the autonomic nervous system (ANS), causing an inflammatory response that can later lead to dysautonomia observed in long COVID patients, a July 15 study published in *Acta Neuropathologica* suggests.

Study Findings

Using several methods, researchers at the University Medical Center Hamburg-Eppendorf in Germany performed a microscopic analysis of the vagus nerves in 27 deceased patients with COVID-19 and five others who died of other causes, without COVID-19.

The vagus nerve is a vital component of the ANS that regulates critical functions such as digestion, respiratory and heart rate, and immune response. Vagus nerve signaling to the brainstem also controls

the "sickness behavior response," where the brain mounts flu-like symptoms that include nausea, fatigue, pain, and other chronic symptoms in response to inflammation.

The researchers detected SARS-CoV-2 RNA in vagus nerve samples obtained from deceased patients with severe COVID-19 showing direct infection of the nerve was accompanied by inflammatory cell infiltration composed mostly of monocytes—a type of white blood cell that finds and destroys germs and eliminates infected cells. Their analysis revealed a "strong enrichment of genes regulating antiviral responses and interferon signaling," supporting the idea that vagus nerve inflammation is a common phenomenon with COVID-19.

The researchers also analyzed 23 vagus nerve samples of deceased COVID-19 patients grouped into low, intermediate, and high SARS-CoV-2 RNA viral load to determine if the virus was directly detectable in the vagus nerve and if the viral load correlated with vagus nerve dysfunction. Results showed the virus was present in the vagus nerve and also determined there was a direct correlation between

SARS-CoV-2 viral RNA load and dysfunction of the central nervous system.

Researchers then screened a cohort of 323 patients admitted to the emergency room between Feb. 13, 2020, and Aug. 15, 2022, categorized by whether they had mild, moderate, severe, critical, or lethal COVID-19. They found that the respiratory rate increased in survivors but decreased in non-survivors of critical COVID-19. These results suggest SARS-CoV-2 induces vagus nerve inflammation followed by autonomic dysfunction (respiratory rate decrease), which "contributes to critical disease courses and might contribute to dysautonomia observed in long COVID."

Responding to the study, microbiologist Amy Proal of PolyBio Research Foundation wrote on X, "Because the vagus nerve is an essential component of the autonomic nervous system and regulates body functions such as heart rate, digestion, and respiratory rate, direct infection of the nerve by SARS-CoV-2 may contribute to related symptoms." She added, "The findings beg the question: Could persistent SARS-CoV-2 infection of the vagus nerve contribute to dysautonomia in #LongCovid?"

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Postural orthostatic tachycardia syndrome (POTS) is a common form of dysautonomia that has increased since the COVID-19 pandemic began and has been reported by those with long COVID and in those following COVID-19 vaccination.

Symptoms of POTS include but are not limited to lightheadedness, difficulty

thinking or concentrating, severe and long-lasting fatigue, intolerance to exercise, blurred vision, low blood pressure, heart palpitations, tremors, and nausea.

Since the rollout of COVID-19 vaccines, 801 cases of POTS were reported to the Vaccine Adverse Events Reporting System as of July 28. This includes 597 cases attributed to Pfizer and 171 cases to Moderna.

Treatments for Dysautonomia Therapeutic treatment options for autonomic dysfunction in the medical community are aimed at symptom management and avoiding triggers using pharmaceutical drugs and nonpharmacologic measures.

Cardiovascular Dysautonomia For dysautonomia affecting the cardiovascular system, a 2022 study in *Frontiers in Neurology* recommended the following:

- Drink water before getting up in the morning.
- Elevate the head during sleep.
- Monitor water and salt intake.
- Use compression garments.
- Engage in progressive aerobic exercise.
- Avoid situations that worsen symptoms such as sleep deprivation, heat exposure, large meals, and alcohol consumption.

To prevent fainting, perform physical movements such as crossing the legs,

tensing muscles, and squatting. For those who don't respond to nonpharmacological options, medications that inhibit heart rate, vasoconstrictors, sympatholytic drugs, and volume expanders, including intravenous fluids may be prescribed.

POTS

The *Frontiers* study stated that people with POTS may benefit from fluid replacement and one or two additional teaspoons of salt per day, avoiding caffeine and alcohol, and avoiding anything that worsens symptoms such as prolonged standing, hot environments, and dehydration. Moving carefully from a lying or sitting position to standing is advised.

Medical treatments may include beta blockers, drugs for orthostatic hypotension to increase blood pressure, propranolol to reduce heart rate, and pyridostigmine—typically used to treat people with muscle weakness. However, the effectiveness of drug therapy is modest, and some drugs aren't well tolerated.

Dysautonomia Associated With Long COVID or Post-Vaccine Syndromes

The Frontline COVID-19 Critical Care Alliance (FLCCC) has played a major role in treating long COVID and post-vaccine injuries, including people with dysautonomia.

Many long COVID patients are vaccinated, making it difficult to determine whether their prolonged symptoms

are due to COVID-19 or vaccine injury. Regardless, both are manifestations of "spike protein-related disease" and share a significant overlap in symptoms, pathogenesis, and treatment, according to the FLCCC.

The FLCCC has developed protocols for people with long COVID and those experiencing post-vaccine injuries, including POTS.

They recommend that patients undergo a series of initial tests to determine whether they have long COVID, and a chest scan for those who have respiratory symptoms to differentiate between long COVID and post-vaccine syndrome.

Protocols are geared toward either long COVID or post-vaccine injuries—including dysautonomia disorders such

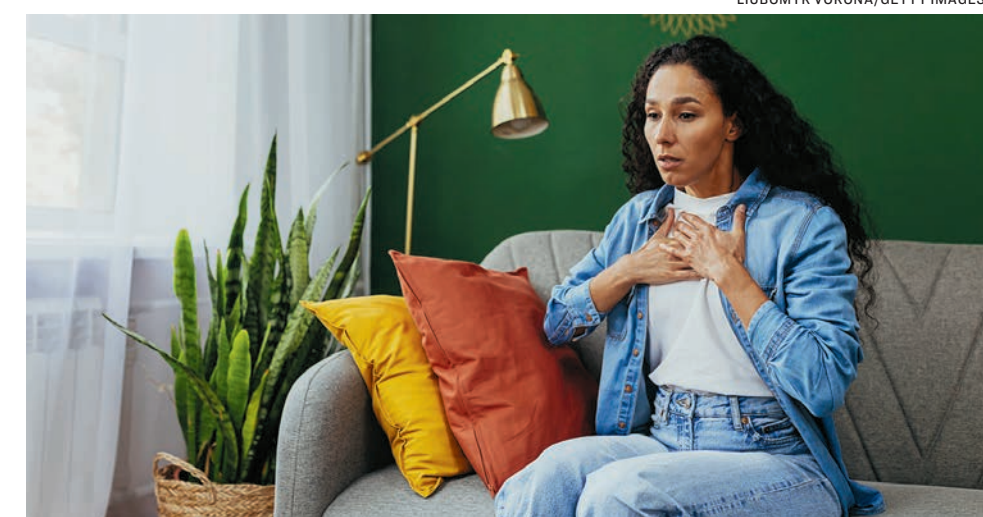
as POTS—exercised under the care of a practitioner.

Other Dysautonomia Treatments

Another study published in *Frontiers Neurology* found that noninvasive neuromodulation using ultrasound and other techniques may benefit patients with dysautonomia.

These noninvasive therapies were shown to alleviate musculoskeletal pain and systemic fatigue and improve cognitive and physical rehabilitation and neurological disorders.

Megan Redshaw is an attorney and investigative journalist with a background in political science. She is also a traditional naturopath with additional certifications in nutrition and exercise science.



▲ Research suggests COVID-19 can cause inflammation in the vagus nerve, which is critical for regulating heart rate, digestion, and respiratory rate.



Patients often report brain fog, a searing skin pain, and a distinct rib discomfort.

Dr. Richard Semelka, radiologist

Sometimes MRIs are used in an attempt to diagnose symptoms caused by gadolinium from previous MRIs, said Dr. Richard Semelka.

Is Your MRI Safe? The Truth About Gadolinium

Gadolinium collects in the bones and organs, including the brain, skin, kidney, liver, and spleen.



LIVAGO/SHUTTERSTOCK

Continued from Page 1

at The University of Texas MD Anderson Cancer, told The Epoch Times. “Large studies have shown that approximately one-third of MRI studies are performed using contrast because of the additional, clinically relevant information provided by the contrast administration.”

In 1988, gadopentetate dimeglumine (Magnevist) made its groundbreaking debut as the first MRI contrast dye. Since that seminal moment, eight additional chelates have been introduced to the medical world.

“Today, CE-MRI is a valuable and established diagnostic imaging tool worldwide, used annually in approximately 30 million procedures, with more than 300 million procedures performed to date,” the authors of a 2016 study stated.

Red Flags

In the decades that followed FDA approval, researchers began sounding the alarm about gadolinium-based contrast agents (GBCA). Initially, these concerns emerged in patients with kidney diseases.

In 1998, a study uncovered gadolinium deposits in patients with kidney failure, with a quarter of the contrast dye untraced. Medical professionals curtailed the use of first-generation GBCAs among those with kidney issues, connecting it to nephrogenic systemic fibrosis. By 2004, evidence emerged that gadolinium could remain in the bones of even those with sound kidneys.

In the ensuing decade, troubling reports surfaced of gadolinium deposits discovered in the brain. Subsequent investigations reveal a haunting truth: once introduced into the bloodstream, gadolinium might linger in the human body for years or in-

definitely, a sweeping concern that affects anyone who has undergone the procedure.

Dr. Richard Semelka, a distinguished radiologist with nearly 30 years of experience and an extensive bibliography of more than 370 peer-reviewed articles and 16 textbooks, spearheaded an initiative alongside other experts, coining the term “gadolinium deposition disease” (GDD) to categorize those affected by the condition.

Dr. Semelka’s epiphany came through listening to his patients.

“The first three I saw, including a fellow doctor, described feeling sick post the GBCA injection at my center. One vividly recounted feeling as though her entire body was on fire,” he said.

“Patients often report brain fog, a searing skin pain, and a distinct rib discomfort. Additional symptoms can range from tinnitus and vision shifts to cardiac arrhythmias,” he told The Epoch Times. “These symptoms can manifest immediately or within a month of the GBCA injection. Their novelty to the patient is a crucial indicator.”

Despite numerous studies claiming that gadolinium is safe, Dr. Semelka highlights the potential overlooked risks, suggesting that thorough follow-ups for symptoms consistent with GDD are often lacking. He reiterates the concern that gadolinium may linger in all individuals who undergo an MRI with contrast, particularly within the bones.

Complementing these concerns, emerging research indicates that gadolinium might reach our cellular level. A 2022 study suggests a link between GDD and disturbances in our mitochondria, the energy-producing organelles in our cells. This research discovered that the persisting symptoms seen in GDD pa-

tients bear striking similarities to those found in mitochondrial-related diseases. Research into gadolinium’s potential impacts continues.

Patient Perspectives

As concerns over gadolinium grew, the voices of patients became louder. Online communities and forums began to spring up, where thousands of affected individuals shared their experiences and symptoms. One private Facebook group amassed more than 6,100 members. Many reported eerily similar symptoms.

One member of this group is Ms. Torno. The Spokane, Washington, resident always trusted the medical system, until a cascade of mysterious symptoms after a series of magnetic resonance imaging (MRI) scans turned her world upside down. A previously healthy woman, Ms. Torno has had seven MRI scans throughout her life, with four performed in a two-month span in 2019.

“My muscles started shrinking throughout my body, more on my left side. I also had severe muscle weakness, which I first noticed when I was removing a tooth-paste cap.”

She also suffered numbness that started on her face, had trouble swallowing, and couldn’t tolerate places that didn’t have good airflow.

Over the months, new symptoms continued to develop, she recalls. Despite dozens of visits to medical practitioners, her strange symptoms went undiagnosed, a dismissal that felt like a “gaslight,” as her symptoms were attributed to anxiety and mental health issues.

Pursuing answers, Ms. Torno eventually sought out Dr. Semelka, whose diagnosis of GDD became a crucial turning point.

Ms. Torno, once a master’s level social worker with three decades of experience, has seen her life unravel due to gadolinium deposition disease.



Sweating it out in a sauna can help the body clear toxins, as can chelation therapies.

BOSTOCK72/SHUTTERSTOCK

search shows that sweating has natural antimicrobial benefits. For these reasons, Dr. Angove recommends sweating a few times weekly.

Is AC Noise Harming Your Health? Noise also affects health, according



STUDIO ROMANTIC/SHUTTERSTOCK

Keeping your AC unit clean will go a long way toward keeping you both healthy and cool.

to research by Arline Bronzaft, a renowned noise expert who holds a doctorate in environmental psychology.

“The way our bodies react to noise can cause an increase in heart rate and blood pressure, which may lead to physiological damage,” Ms. Bronzaft told The Epoch Times.

Modern technology and urbanization contribute to noise pollution.

Chronic noise forces the body to use extra energy to cope, impairing well-being, according to Ms. Bronzaft.

“Adapting to a situation is not advantageous for our health,” she said. “Instead, it will adversely affect the well-being of the body.”

Ms. Bronzaft said it’s possible for air conditioning to contribute to noise pollution if the AC unit is excessively loud. However, given that we’re choosing this noise for greater comfort, it’s unlikely that noise from air conditioning will induce stress. Still, she recommends quiet AC units to avoid adding noise.

“It’s about making your home as peaceful as possible,” she said.

He conducted a provoked heavy metal test that confirmed high levels of gadolinium.

This life-altering revelation transformed Ms. Torno’s perspective on health care.

“They had me sign something right before taking me back but told me not to worry, it was just protocol and that the contrast was safe and would be out of my body within 48 hours,” she recounted, highlighting the urgency for increased transparency and patient awareness.

Ms. Torno, once a master’s-level social worker with three decades of experience, has seen her life unravel due to GDD. Her relationships, family home, and her career have all suffered. Everyday actions, from taking ibuprofen to dining out, pose challenges due to severe reactions and dietary restrictions from mast cell activation syndrome. Despite significant investments in varied treatments, her recovery remains an uphill battle, but one that she’s determined to overcome.

National and Global Response

In the wake of escalating concerns about gadolinium-based contrast agents, regulators and manufacturers worldwide have taken action. In 2018, manufacturers conceded in a public letter that gadolinium is retained in all patients injected with the contrast dye, leaving its trace on the brain, bones, tissues, and organs.

“Gadolinium from gadolinium-based contrast agents (GBCAs) may remain in the body for months to years after the injection,” a letter signed by top executives from Bayer, GE Healthcare, Bracco Diagnostics, and Guerbet expressly states. “The highest concentrations have been identified in the bone, followed by other organs (brain, skin, kidney, liver, and spleen).”

On the regulatory front, the U.S. Food and Drug Administration (FDA) issued a safety warning on Dec. 19, 2017, about the potential risks associated with using gadolinium.

“GBCAs are mostly eliminated from the body through the kidneys, however, trace amounts of gadolinium may stay in the body long-term,” the warning reads.

“Health care professionals should consider the retention characteristics of each agent when choosing a GBCA for patients who may be at higher risk for gadolinium retention, including those requiring multiple lifetime doses, pregnant women, children, and patients with inflammatory conditions.”

In 2018, European health authorities drew a clear line in the sand, withdrawing select linear versions of gadolinium-based contrast agents from circulation. This decisive measure from one of the world’s key health care markets signaled a significant pivot in the approach to the unfolding gadolinium conundrum.

Questioning the Necessity of MRIs

The United States eclipses every developed country except Japan when it comes to MRI use, with a striking 40.4 MRI machines per million residents. Even so, such extensive access to and use of MRIs hasn’t translated into superior health outcomes, raising concerns over potential overuse and associated health risks.

In an article published in the Journal of the American Medical Association, researchers from Stanford University and Mayo Clinic warned about the prevalence of “unnecessary diagnostic imaging” in the United States.

The team argues that despite the high usage rates—with yearly MRI scans standing at 118 per 1,000 people, triple the rate in Finland—there’s “virtually no evidence” this translates into improved overall health

for the population. This leads them to conclude that the U.S. health system might be experiencing a case of “wasted overuse” in medical imaging.

But the issue of over-imaging isn’t just the waste—unnecessary scans may expose patients to other health risks.

“While information can be useful, too much information can create numerous problems,” the physicians, Ohad Oren, Electron Kebebew, and John P.A. Ioannidis, argue.

“There is virtually no evidence that screening of this kind improves overall population health,” they wrote.

Balancing Safety and MRI Practices

MRI has undeniably established itself as a crucial diagnostic tool in the medical landscape. However, the management of gadolinium toxicity, affecting a fraction of those exposed to GBCAs, remains a complex issue.

Addressing gadolinium toxicity presents a significant challenge. Central to any treatment approach is preventing further exposure to the harmful substance.

“The disease always becomes worse with each additional MRI with gadolinium, and ironically, these are often performed to investigate what turns out to be GDD itself,” warns Dr. Semelka, emphasizing the crucial role of early detection in managing the condition. He underscores the deteriorating health trajectory of patients with each subsequent exposure to GBCA, underscoring the dire consequences of repeated exposures.

Chelation therapy, specifically with the FDA-approved chelator DTPA, is currently the most effective method to remove gadolinium from the body. Additional treatments may include sauna use (with caution), an anti-inflammatory diet, and supplements.

Dr. Semelka also notes that the risk is minimal for most patients.

“GBCAs are still safe for the majority of patients. Maybe only 1 in 10,000 develop GDD. Just because it is rare does not mean we should ignore it and hope it goes away,” he said.

Dr. Semelka also stresses the vital role of transparency in health care, warning of the potential erosion of trust when adverse reactions are concealed.

“If patients believe that doctors are hiding or covering up adverse reactions to drugs or procedures, trust, which is already on shaky ground, will decrease further,” he cautions.

Dr. Semelka also advocates for more thorough education and proactive patient screening. He calls for including pertinent questions about prior GBCA use and associated symptoms on MRI screening forms.

“I would like to see a change in regulations where all product inserts describe GDD and its symptoms,” he adds.

Such disclosures are necessary for informed consent and patients’ active participation in their health care journeys and are the responsibility of everyone involved in the MRI process—from the MRI technologists and radiologists to the referring physicians.

Patients must be informed about GDD symptoms and their potential onset following an MRI with gadolinium contrast.

Sheramy Tsai, BSN, RN, is a seasoned nurse with a decade-long writing career. An alum of Middlebury College and Johns Hopkins, Tsai combines her writing and nursing expertise to deliver impactful content. Living in Vermont, she balances her professional life with sustainable living and raising three children

Is Air Conditioning Bad for Your Health?

The benefits of air conditioning are many—but only if you keep it clean

By Vance Voetberg

As the sun’s scorching rays shower the country, the collective hum of air conditioners fills the air, offering a refreshing sanctuary from the relentless heat.

Yet amid the cool comfort, some health professionals wonder: Could air conditioners be bad for you?

AC’s Impact on Air Quality

There seems to be no consensus on the effect that air conditioning (AC) has on indoor air quality, a basic component of good health. One study shows that AC can improve cardiovascular health by enhanc-

ing air quality. However, other research suggests that AC is linked to increased rates of sick building syndrome (SBS), acute discomfort, and health issues such as headaches, nausea, and fatigue compared to natural ventilation if not kept clean.

The spread of pollutants through AC filters is also a concern, although newer AC systems often have advanced air filters to reduce exposure to respiratory irritants.

A comprehensive analysis of 47 virus studies found that modern heating, ventilation, and air conditioning systems can mitigate the transmission of viruses such as SARS-CoV-2, which causes COVID-19. Still, some AC units may circulate indoor

Double-Edged Sword of Artificial Cooling

Artificial cooling provides relief from excessive heat and safeguards against heat-related illnesses. But excessive use can impair natural immune responses.

Constant cold air from AC enables pathogens to thrive, according to Dr. Angove. This causes what’s known in traditional Chinese medicine as cold wind invasion (CWI). Described as an aversion to wind and chill, the condition causes symptoms that include fever, aches, cough, and runny nose.

Historically, these symptoms appeared only in winter but now manifest in summer as well because of AC overuse. Proper

ventilation mitigates that reaction, however, because cold air in conjunction with poor ventilation is what may cause symptoms of CWI, Dr. Angove said.

AC also inhibits sweating. But lack of sweating hinders the body’s natural mechanisms for eliminating toxins. Re-

air conditioning systems come with filters that can remove allergens, dust, and airborne particles, improving indoor air quality and reducing allergy symptoms.

- **Humidity control.** Air conditioning can help reduce indoor humidity levels, inhibiting the growth of mold and mildew and helping people with respiratory conditions breathe easier.

- **Improved sleep.** A cooler indoor environment can contribute to better sleep quality, as excessively warm temperatures can disrupt sleep patterns.

The key is to get air conditioning’s benefits without encountering any of the potential consequences. That means using AC responsibly and keeping the space it’s cooling and the system itself clean. That way you can stay cool without worrying about mold and bacteria.

PREPARING FOR A GOOD END

PART 5 MAKING YOUR FUNERAL A GIFT TO GRIEVING LOVED ONES

When death draws near, planning your funeral and burial helps everyone grieve, connect, and say goodbye

In this series, we'll examine ways of making meaning in the face of death, offering tools founded in traditional wisdom and scientific evidence to help our readers live well right to the very end.



Previous Parts:
TheEpochTimes.com/
Good End

By Sharleen Lucas

To registered nurse Gina Vaughan, death isn't a surprising anomaly.

"Call it lucky or unlucky," she told *The Epoch Times*, "I've been around a lot of people who passed. ... It becomes less scary. It becomes a little more normal because, really, is there anything more normal than dying? It's as natural as being born."

After serving more than 20 years in an emergency department, intensive care unit, and now the public health system, Ms. Vaughan is well acquainted with death. The most recent one was that of her 29-year-old cousin, whose informal lakeside funeral reconnected scattered family.

"It was the only good thing you could get out of a young death. She had a baby that wasn't 8 months old. You can't make sense of it, but she brought the whole family back together from 15 different states, and now, we all talk on a regular basis ... I feel closer to them ever since Katie died."

After caring for dying patients and grieving her own losses, Ms. Vaughan said she believes getting in close to the sacred moments of dying offers solace and connection.

She once sat with a dying father in the ICU who talked to Ms. Vaughan thinking she was his daughter. He died not long after the encounter, apparently satisfied that he'd said what he wanted to say. Ms. Vaughan quickly wrote it all down during a busy shift, asking coworkers to cover for her for a few minutes. When the daughter arrived at the ICU hoping to see her dad before he died, Ms. Vaughan consoled her with the words her father intended

for her. Listening to Ms. Vaughan, the daughter sobbed with gratitude.

Moving in close to vulnerable moments of death can soothe the human soul, but it's also something many people fear.

The U.S. funeral industry seems satisfied to help people keep their distance with its \$16 billion business. Its goal—much of it from genuine, kind-hearted undertakers—is to create a final blessed moment with a loved one by preserving bodies with embalming fluid and fixing blemishes with makeup as if to rewind time.

This tradition goes back for thousands of years, as several ancient civilizations practiced some form of embalming, from the famous example of the Egyptians to the Aztecs, Mayans, and more.

But some loved ones report that this preservation prolongs their grief rather than eases it by hiding death's stark and physical reality. Still, many who grieve are grateful to have their loved one quickly removed, beautified, and placed into a watertight casket to protect the corpse from its inevitable decay.

However, this growing dissatisfaction with our modern funeral and burial practices invites questions as to whether an unrealistic distance from death is what most grievers truly want.

According to the National Funeral Directors Association (NFDA), 60 percent of Americans today want to learn more about green burial alternatives, which oppose embalming, lacquered and metal caskets, and concrete vaults or liners. Meanwhile, the NFDA predicts that cremation rates will reach 78.7 percent by 2040.

The booming businesses of cremation and burial alternatives reveal people's increasing desire to blend modern and traditional practices.

You can now create diamonds and stained glass from your loved one's cremated ashes or scatter them into outer space. Meanwhile, green burial offers body composting, water cremation, or burial in an egg-like pod at the base of a tree.

Riding the coattails of this creativity



ALL PHOTOS BY GETTY IMAGES

is the rise of natural burial cemeteries, which refuse modern practices. They encourage earth-friendly burials using simple pine caskets or cloth shrouds to lay the dead to rest in a natural reserve, letting their bodies decay to feed the soil.

This reflects the ethic of rejoining the earth, which some prefer to the practice of sheltering the body against it.

body of the one who died," she wrote.

Death care laws differ from state to state, but there is more freedom and personalization in burials and funerals than many know.

As Ms. Tisdale wrote, "You don't have to do any of the things many people do with the body, but hardly anyone will tell you that."

No federal law requires the dead to be embalmed or placed in a vault. Most cemeteries, however, require vaults or liners to keep the land structured under the weight of large lawnmowers and trucks.

Rules about funerals are minimal, too, giving rise to more home funerals, sometimes with loved ones tending to the body instead of nurses or morticians.

As more people discover death care freedom, stories surface of people designing their burial and funeral to add meaning and personality to their final act on earth.

Experts in the palliative care community aren't surprised. They've known for a long time that planning one's memorial helps the dying add meaning to their last days, leave a final legacy, and care for loved ones left behind.

Death care laws vary by state, but there is more freedom and personalization in burials and funerals than many know.

Freedom of Choice in Burials, Funerals
Death care options—what happens to the body after it dies—are becoming increasingly diverse.

In her book "Advice for Future Corpses (And Those Who Love Them)," Sallie Tisdale, a veteran hospice nurse and Buddhist, wrote: "Why does it matter what happens to the body ... why would the body have meaning? Yet it does, it always does; whether we cling to it or flee it, what happens to the emptied body feels momentous."

"As long as we will continue to live, we will remember what happened to the

Wrapping Up the Loose Ends of Life

At first, participating in one's funeral planning hardly seems important when reeling from a new terminal diagnosis, worrying about loved ones, and tying up life's loose ends. But as dying patients progress, many see that planning helps them process their life and relationships while soothing those left behind.

"We make a death plan because we can—for our own peace of mind, and as an act of compassion for the people nearest to us who will be left, quite literally, holding things," Ms. Tisdale wrote. "Birth and death are the only human acts we cannot practice."

And when we can't practice, we plan. "All the planning and support and advance directives in the world won't give you control," Ms. Tisdale wrote.

Still, as her book argues, preparing is an act of processing your life and ending it as well as you can while tending to your loved ones.

Planning Your Funeral

Ms. Vaughan recalls how her stepfather's funeral helped him and her mom grieve as they made plans together.

▲ While conventional funerals involve embalming and placing a coffin in a concrete vault, there are many other options now available that may better align with an individual's values.

After caring for dying patients and grieving her own losses, Ms. Vaughan said she believes that getting in close to the sacred moments of dying offers solace and connection.

"It helped them both because they sat down and talked about it. He wanted to be a part of it, but it also made her feel better. She wasn't having to make a decision and think, 'Oh, would that be what he wanted?' It really took pressure off both sides because he felt like, 'I'm helping her get ready and prepare ... and it gets to be what I want as well.'"

Ms. Vaughan's mom and stepfather talked about every detail. "They discussed who they would invite and who they wouldn't. They discussed how many people her stepfather wanted there and which photos to display. He chose an informal potluck as his memorial service."

Ms. Vaughan said: "He wasn't the kind of guy that would wear a suit normally. So, I think because of that, everyone came as they really were in his life, if that makes sense."

As a result, everyone felt comfortable telling stories, crying, and laughing together.

"It gave everybody some closure because ... they knew this is what he wanted." Perhaps best of all, Ms. Vaughan said, her mom also "felt a little bit closer to him because while she was doing it, she thought, 'This is what we talked about; this is what he wants.'"

Getting in Close

Embracing one's burial and funeral can help everyone involved accept death. Ms. Tisdale's message throughout her book is to get close to death when it moves close to you. She says it with raw honesty and painfully beautiful stories.

Ms. Vaughan shares another fitting memory. When her best friend Dovie unexpectedly lost her husband of 42 years, Ms. Vaughan helped her clean and prepare Sandy's body as he lay dead on his hospital bed.

Surprising to many, nearly every hospital allows this and gives you all the time needed to grieve next to a loved one's bed.

Tears streaming down their faces, Dovie "cared for every inch of her husband" to the point of separating and cleaning each finger while she talked to him.

"Watching her do that and thinking she never gets to do this again just brought me to my knees," Ms. Vaughan recalled. "I think it helped her process so much. It was like her own little funeral."

As they tended to him, they shared stories, processing their loss as they did. "There were times you'd start crying, and there were times where we would start laughing," Ms. Vaughan said. "There was this grace about it."

Since watching Dovie tenderly care for Sandy, Ms. Vaughan said firmly, "If I ever have the chance ... I would want to do that for the person I loved ... It really was a very thorough goodbye."

Getting in close, even to a funeral and burial, can help you and your loved ones finish with a meaningful goodbye when your time inevitably comes.

Sharleen Lucas, R.N., is a freelance writer with medical, spiritual, and emergency care expertise.

After two decades of serving patients and families at the bedside or as a spiritual care director, she's committed to empowering readers' physical and spiritual well-being by boiling down health information with the warmth and skill of an RN next door. You can find her at RNextdoor.com



Cremation has become increasingly popular.

3 Ways to Fight Chronic Inflammation, Fatigue

By Amber Yang

Do you often feel tired or find yourself struggling to perform even simple tasks? If so, this might be a sign that your body is living in a state of chronic inflammation.

Left unattended, chronic inflammation can lead to autoimmune disorders, cardiovascular symptoms, and even cancer. Traditional Chinese medicine (TCM) physician Chen Junru from Jinghe Traditional Chinese Medicine Clinic in Taiwan provides three ways to fight chronic inflammation. As a fitness coach, I will also share methods for building a fatigue-immune body.

Know the Types of Inflammation

Inflammation is an immune response, like a fire the body rolls out to burn off invading pathogens, toxins, or other injury. Acute inflammation is short term, like the swelling that comes after a bug bite. But when this immune response is triggered constantly, due to stress, or poor diet, or environmental toxins, it becomes chronic and that fire starts to burn the body out.

Acute inflammation can follow a such as a urinary tract infection (UTI) or cellulitis, a bacterial skin infection usually following an injury. In the case of cellulitis, you know there is inflammation because you can visually see the redness and swelling at the injury site, and it will feel hot and painful.

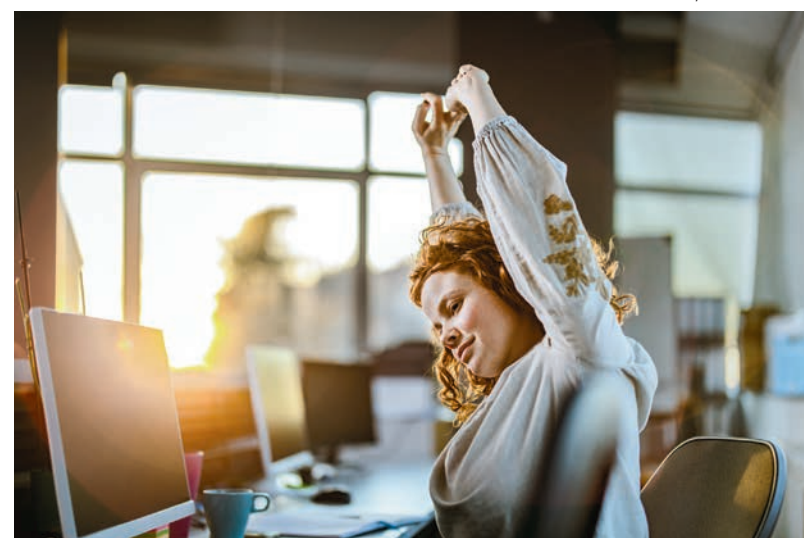
TCM points to another kind of inflam-

mation, manifesting as "burning symptoms." This inflammation is usually caused by personal habits, such as going to bed late or overeating hot and dry food. It usually shows itself in the form of oral ulcers, constipation, hemorrhoids, and other ailments.

Dr. Chen said chronic inflammation often doesn't much immediate discomfort but silently harms the body's mucous membrane tissue. Without treatment, chronic inflammation can develop into precursors of Alzheimer's, Parkinson's, and cardiovascular diseases. Moreover, other conditions such as rheumatoid arthritis, dry skin (xerosis), and cancer may be related to chronic inflammation.

Left unattended, chronic inflammation can lead to autoimmune disorders, cardiovascular symptoms, and even cancer.

SKYNESHER/GETTY IMAGES



▲ The body doesn't function properly without frequent movement as several systems rely on muscle contraction to move fluids and stay strong.

3 Factors That Lead to Inflammation

Dr. Chen pointed out that TCM believes chronic inflammation is directly related to stress and poor sleep, resulting in a decline in the body's self-repair capability. Modern medicine has also affirmed these ideas, linking poor sleep to a dysregulated immune system and a breakdown in cellular repair and clearing cellular waste from the brain.

TCM attributes the following three factors as the primary causes of chronic inflammation:

Inefficient Gastrointestinal System

There's a saying that "disease enters through the mouth." If the food we eat is slow to digest and accumulates in the intestinal tract, it will cause an inflammatory reaction.

This is especially true for the small intestinal mucosa, with the largest number of immune cells. When too much waste accumulates, the intestines become "unclean," reducing immune function and increasing the chance of inflammation.

Poor Sleep Quality

When you don't get enough or get poor-quality sleep, the body can't repair itself and becomes less resilient.

Since we are exposed to many inflammatory substances daily, the body's mucous membranes are overwhelmed with even more allergens. Coupled with

behaviors such as going to bed late and overeating cold food, the respiratory tract becomes more prone to allergies.

High Stress

When the body is under stress, it secretes adrenal cortisol, which reduces the production of lymphocytes in the immune system. Over time, such a reduction can affect the immune system and prompt complications such as chronic inflammation.

3 Ways to Build an Inflammation-Free Body

To build an inflammation-free body, Dr. Chen believes the most crucial thing is sufficient and high-quality sleep, followed by eliminating inflammation-causing stress. Sleep is the most critical time for the body to self-repair. Insufficient sleep, poor sleep quality, and too much emotional stress cause inflammation.

She pointed out that when inflammation occurs, no amount of healthy or medicinal food will help if the body doesn't have time for self-repair during sleep. So how do you ensure good sleep quality?

Dr. Chen recommends exercise to help you sleep better. Although many older people engage in lots of housework, without actual cardiorespiratory exercise, they may not have an easy time falling asleep at night. In addition, Chinese medicine can also be used to deal with sleep disorders caused by autonomic nervous complications.

Dr. Chen mentioned that one of her patients suffered from chronic, treatment-resistant eczema. She later learned he was an engineer who often had to wake up to work in the middle of the night.

This work routine deprived him of sleep and made for poor-quality rest, resulting in the body not having enough time for self-repair.

He would report that his eczema was under control when he had gotten enough rest during that week. When it recurred, it typically coincided with him having eaten some inflammatory food or having worked overtime.

The body must have enough time to self-repair to keep inflammation at bay. After that, stress must be low and the diet quality high.

In addition to having a balanced diet and eating more antioxidant foods, Dr. Chen believes choosing a quality edible oil is essential. Reusing cooking oil can lead to its oxidation, resulting in inflammation in the body. At the same time, overeating processed food will also cause inflammation.

Dr. Chen said that although the human body has its own repair mechanism, if someone constantly eats processed and ultra-processed foods, serious harm may come to the body. These foods contain nonfood ingredients, such as preservatives and stabilizers, and overly processed ingredients such as refined sugars that the body treats as foreign, triggering inflammation.

She encourages people to eat more fresh vegetables and fruits with antioxidants to fight free radicals and to also use high-quality, healthy cooking oils.

The Best Way to Recover From Fatigue

If you have been suffering from poor sleep and experiencing the symptoms of chronic inflammation, you are likely exhausted. As a fitness coach, here are my three tips for recovering from fatigue and developing a fatigue-resistant physique.

1. Sleep at the Right Time

Sleep is the best time for the body to repair itself, but some people still feel tired no matter how long they sleep. The problem lies in whether you sleep at the right time. The 12-hour meridian health regimen of TCM divides the 24 hours of the day into 12 2-hour intervals, and each corresponds to one viscera.

The period from 11 p.m. to 3 a.m. corresponds to the gallbladder and liver meridians. Entering deep sleep at this time is most beneficial to the liver and gallbladder's health. In addition, the most potent antioxidant hormones known in Western medicine, melatonin and growth hormone, are also released at night, so sleeping at the right time can be more effective in restoring energy than how long you sleep.

2. Don't Sit for Too Long

Sitting for a long time at work, playing video games, or watching TV are all sedentary activities detrimental to physical fitness. Being physically unfit will make you more tired. Set an alarm that

reminds you to stand up every hour to move around for 5 to 10 minutes, use the restroom, drink water, or stretch.

3. Exercise to Strengthen Muscles

Both muscle strength and muscle endurance are very important. I suggest you engage in moderate-intensity exercise to train yourself. Moderate intensity is when you can sweat a little and even converse while exercising. Aim to exercise for 20 to 30 minutes at this level three times a week. During exercise, the brain releases dopamine, which makes you feel happy and less tense. Sticking to this routine will help you build a body resistant to fatigue and inflammation.

5 Signs of Chronic Inflammation

How do we know if we have chronic inflammation? The symptoms can often be subtle and easy to miss, but if you pay attention to these five signs, you can better determine if you have chronic inflammation:

- Depression
- Constantly tired and easily fatigued
- Inexplicable skin rash
- Nasal congestion or sneezing without a respiratory infection
- Obesity

NEXT WEEK Palliative care lets you live better for longer.

MINDSET MATTERS

Using the Unconscious to Shape Lasting Habits

When it comes to making or breaking habits, repetition, ritual, and a higher power can help



Bringing intention to our unconscious ways requires self awareness and a deeper understanding of ourselves.

ALL PHOTOS BY GETTY IMAGES

By Jano Tantonco

"Until you make the unconscious conscious, it will direct your life and you will call it fate." — Carl Jung

How many times have you resolved to change something about your life only to give up after a few weeks—in spite of detailed plans and gushing motivation? Change is hard. And, like many things, it's even harder to achieve on our own. But, as it turns out, we have an invisible actor working behind the scenes that plays a huge role in our habits—for better or worse. It's our unconscious mind.

By learning to collaborate with this hidden partner, studies show we can better achieve the transformations that seem impossible through willpower alone.

Think It Takes 21 Days to Form a Habit? Think Again

The common belief is that habits form in 21 days. However, research suggests otherwise. A 2012 paper in the British Journal of General Practice traced the 21-day figure to plastic surgery patients adjusting to their new appearance.

A 2009 study published in the European Journal of Social Psychology provides a clearer picture. Tracking 96 participants, it found that the average time to achieve "automaticity"—when actions become automatic, requiring little conscious effort—was 66 days. The range, however, was 18 to 254 days.

A study published in the British Journal of Health Psychology in 2021 roughly corroborated the number, finding that participants achieved peak automaticity at a median figure of 59 days.

The Conscious Versus the Unconscious Mind

The mind is complex, and there are different models to describe how it operates. In a common current view, it's said the conscious self handles analytical, linear thinking and the ego experiences consciousness. The ego is the "I" that experiences awareness, according to Dr. Daniel Lieberman, psychiatrist and author of "Spellbound: Modern Science, Ancient Magic, and the Hidden Potential of the Unconscious."

In contrast, the unconscious is mysterious—it's the part we can't directly control, Dr. Lieberman told The Epoch Times.

"You can make a spreadsheet, you can drive to the grocery store. Those are in your control," he said. "[But] you can't make yourself have creative ideas. Those come from the unconscious," he said.

Pure willpower can't drive lasting change. This may explain why most people fail to keep their New Year's resolutions. A 2019 YouGov poll found that only 7 percent stuck to all resolutions and 19 percent to some. Fitness app Strava saw most people quit exercising goals by the second Friday of January, a day dubbed "Quitter's Day."

When it comes to habits, many believe that it's the unconscious that drives long-term behavior. Fortunately, the conscious mind appears to have a critical influence over the unconscious.

When Habits Take Over

Consciously deciding to adopt a habit carves neural pathways in the unconscious mind, according to a model of mind described in a 2017 scientific review in Annals of the New York Academy of Sciences that outlines how the brain favors automaticity.

An automatic response happens without active involvement of consciousness, leading the prefrontal cortex, the brain region responsible for higher-level cognitive functions, to activate established patterns rigidly and repetitively, according to the review.

As a result, unconscious patterns can override intentions, winning out over conscious will.

Despite the focus on goals and intent for habit change, evidence suggests that engaging the unconscious is more effective.

A 2011 report of two studies published in the Journal of Experimental Social Psychology found that contextual cues trumped goal-setting.

And a 2006 meta-analysis of 47 experiments published in Psychological Bulletin concluded that intentionality has a limited effect on actual behavior change. "Future behavior change efforts might do well to give greater consideration to nonintentional routes to action," the authors wrote.

with patients are heavy metal and mold exposures, multiple infections, and vaccines. Clarifying, quantifying, and understanding the contributions of environmental exposures are important, as it opens doors to novel treatments.

Some Environmental Influences Are Known

Autism researcher James Adams said that many hypothesized risk factors continue to be validated by research. In a recent study that he conducted on a small cohort of children with autism, he discovered that common themes were prevalent throughout research.

"It turns out mothers of kids with autism consumed lower fiber, less fiber than moms of typical kids. That's important because fiber is a very important food for some gut bacteria," he said. "You inherit most of your microbiome from your mother."

A 2021 study in Frontiers in Immunology found that there's an uptick of SCFA production in pregnant women associated with fetal immune system development. The study connected breastfed babies with more diverse and robust microbiome development.

Mr. Adams said that his research and other studies have shown formula-fed babies and those with increased use of oral antibiotics are more likely to be diagnosed with autism. Early delivery is also a risk factor for autism; the Frontiers article noted that premature birth tends to impact microbiome development. Babies delivered vaginally also have more diverse microbes and lower rates of illness than those born via cesarean section.

Other common, pregnancy-related factors for ASD include maternal obesity, maternal diabetes, and complications associated with trauma, ischemia, and

To achieve lasting change, Dr. Lieberman suggests a two-part approach: engage the unconscious "animal" side and the "divine" side by connecting with a higher purpose.

That divine side of the unconscious tends to be very unpredictable.

Dr. Daniel Lieberman, psychiatrist and author

66 DAYS

is the average amount of time it takes to achieve "automaticity"—a state in which actions require little conscious effort.

When it comes to habits, many believe that it's the unconscious that drives long-term behavior.

Training Our Inner Animal

To train our inner unconscious "animal," Dr. Lieberman said consistency and ritual are key. He emphasized patience because humans learn some things the same way animals do—through repetition.

A 2015 study published in the Journal of Behavioral Medicine found that exercising four days a week for six weeks established a habit, facilitated by simple routines and positive outlooks.

"I can't say, 'Well, every day, I'll look at my schedule and choose when I'm free.' That's not going to work," Dr. Lieberman said. Wear the same gym clothes and do the same exercises every day but add the kinds of things animals respond to—such as rewards—as much as possible, he added. "When you're training animals, you always give them the same treat."

However, some negative reinforcement helps. Dr. Lieberman described the "least reinforcing syndrome," a training technique by which dolphin trainers stand still after a mistake, careful not to respond. Any response fuels behavior, but no response lets it die.

"You punish the animal, but you punish the animal only by withholding rewards," Dr. Lieberman said. "If you don't go to the gym ... don't allow yourself to watch your favorite show on Netflix."

Building a habit is one thing; breaking one is harder. To address the issue, Dr. Lieberman recommended reversing the protocol—reward yourself for resisting a bad habit, even halfway through a day. Watch Netflix or save up for a treat when you don't smoke or eat unhealthy foods.

Divine Intervention

Although working with our inner animal helps, connecting to a higher power can achieve deeper unconscious integration, whether through traditional religion or secular meditation.

"That divine side of the unconscious tends to be very unpredictable. Artists never know when they're going to be inspired. Scientists never know when

they're going to be inspired. Intuition comes and goes," Dr. Lieberman said. Alcoholics Anonymous taps into addicts' relationship with a higher power to overcome alcoholism. A 2016 empirical studies review in the Journal of Religion and Health showed that participants who feel God's presence daily and believe in a universal spirit have better outcomes for cravings and distress.

Self-affirmation through focus on a valued self-concept, such as being an honest person, increased physical activity and positivity, according to research published in 2014 in the Journal of Sport and Exercise Psychology. Affirmation is used by some people as a way of communicating with their unconscious, integrating distinct but strongly intertwined halves.

Religious practice facilitates implicit unconscious self-regulation, versus explicit conscious regulation, a 2010 review of 30 independent experiments published in Personality and Social Psychology Review found.

There is also research, published in 2003 in the Journal of Personality and Social Psychology, suggesting that religious concepts unconsciously helped people exercise self-control against temptation because they were slower in recognizing temptation-related words.

Religiosity may enable an integrative, embodied, whole-person focused self-regulation that explains religious individuals' frequent greater well-being.

The Inner Committee

If behaviors flow from habits, we must become the architects of our routines. When setting goals such as healthy eating, the ego tells the unconscious to change.

"The ego's pretty unified," Dr. Lieberman said. "The unconscious—there's many, many voices down there." Pure willpower won't establish habits long-term—we must work with these voices: our internal motivations.

This "committee" doesn't respond to dictates. It responds better to inquiring about our own drives, outlining an enjoyable framework with consistent ritual, and tapping into a higher power to invigorate our efforts.

Jano Tantonco is a writer and digital creative based in New York. He covers health, culture, and politics.

Is the Goliath in Autism Research About to Fall?

Continued from Page 1

such as too many of certain metabolites and not enough of others.

Meanwhile, autism rates are increasing at a speed that defies improved screening and diagnostic practices, as well as genetic patterns. The Centers for Disease Control released statistics in April that show the latest autism rate was 1 in 36 children in 2020, up from 1 in 44 in 2018, and 1 in 150 in 2000.

Taken together, the evidence suggests that it's time to direct resources to pinpointing exactly what it is in our environment that appears to "turn on" autism development, according to doctors who are treating patients with ASD.

"Genetic diseases aren't responsible for epidemics," Dr. Arthur Krigsman, a specialist who treats children with ASD around the world, told The Epoch Times. "There's something in the environment that's triggering a gene that otherwise would be silent. There is no gene responsible for an epidemic."

Our genes are wound up tightly in DNA spirals—many of them never being used—similar to blueprints that never make their way to the manufacturer. But cues in our environment can trigger epigenetic processes that trigger some genes to get turned on or others to get turned off, dramatically changing our likelihood of developing certain diseases or attributes.

The new research suggests that autism is linked to epigenetic triggers, which are influenced by the microbiome and modifiable over the course of our lifetime.

Researchers will undoubtedly keep trying to tease out some of the genetic links to the neurological disorder, which is largely diagnosed in childhood. Au-

tism has been connected to more than 100 genes so far. But the puzzle has gotten more complex with environmental associations that seem to keep growing. And the heterogeneity of ASD makes it impossible to accuse one single factor as the cause.

The Epigenetic Nature of Autism

Many doctors believe that autism arises when "toxic" environmental pressures are applied and trigger epigenetic changes, Dr. Mark Cannon, a professor at Northwestern University, told The Epoch Times.

Toxicities can be biological and chemical but also emotional and social, and they can interfere with physiology. Examples include air pollutants, artificial food ingredients, glyphosate, medications, viruses, and even stress, which causes a biochemical cascade of changes in the body. All exert influence by changing the microbiome.

This community of trillions of bacteria, viruses, and fungi is responsible for breaking down food into metabolites, especially short-chain fatty acids (SCFAs) that communicate vital information to the whole body to perform digestive, neurological, and other functions. The main roles of these gut bugs are metabolism, nutrient absorption, and immune function.

Microbiomes are constantly in flux, and it's becoming impossible to define exactly what a healthy microbiome looks like because our industrial world has already altered

our microbiome in severe ways. We're only learning how to study them in detail now. That said, patterns are emerging, and studies are offering powerful clues about how diseases are linked to certain microbiome patterns.

Dr. Cannon pointed to an autism study published in 2012 in Microbial Ecology in Health and Disease that showed the epigenetic nature of autism. Rats were given SCFAs from a subject with autism.

The rats displayed abnormal motor movements, repetitive behavior, cognitive deficits, impaired social interactions, and other traits common in autism. The brain tissue of treated rats also showed neurochemical changes—such as innate neuroinflammation, increased oxidative stress, and glutathione depletion—consistent in patients with ASD.

"Conceptually, it is the author's opinion that the pathophysiology of ASDs may be more completely understood as being similar to conditions such as ethanol intoxication, or diabetes, and the resultant complex interactions between diet, genetics, metabolism, host microbiome, and behavior, that are well known to exist in these treatable disorders throughout the life cycle," Dr. Derrick F. MacFabe, the study's author, wrote.

He suggested that SCFAs are the trigger of ASD or ASD behavior. SCFAs are derived from the fermentation of non-digestible polysaccharides, such as resistant starches and dietary fibers. Among their physiological functions, SC-

FAs are important to intestinal epithelial cell growth, which protects the gut barrier, and to inflammation regulation.

"Yes, you can turn autism on," Dr. Cannon said. "I can't tell you how many times I've sat at a conference and heard, 'I always thought that was genetic,' when in fact the data has never supported that."

Disempowerment of Genetics

Focusing too much on genetics as the cause of disease can be a detriment to important avenues of research and treatment, and can discourage families with autistic children. Wholeheartedly embracing genetics leaves them powerless, Dr. Armen Nikogosian told The Epoch Times.

In that case, for people with autism and their families, the only option is to manage the symptoms with pharmaceuticals, he said.

Dr. Nikogosian shifted his entire medical practice in 2010 after one of his sons was diagnosed with autism.

"That's the message I got. That's the message a lot of parents get," he said. "They're entrenched in this idea that there's this genetic cause involved in this."

Dr. Nikogosian's goal is to help parents who want to address the root causes of the disorder with a more holistic model of care that doesn't rely on drug management of symptoms.

He said that the development of other treatments has stagnated because of the broad denial that environmental factors are involved.

"There's absolutely, positively, no question there's a massive input from environmental exposures," Dr. Nikogosian said.

Some exposures that he explores

Genetic diseases aren't responsible for epidemics.

Dr. Arthur Krigsman, pediatric gastroenterologist

Recognizing the environmental causes of autism opens up new avenues of treatment and prevention.

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hypoxia, according to data reported in Neuron in 2018.

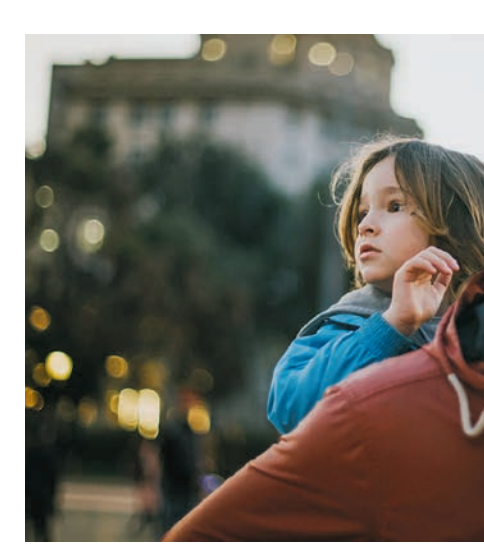
A study recently published in Psychological and Cognitive Sciences that included 450 mother-child pairs noted

that at age 2, children whose moms had experienced adversity as children had altered microbiomes. Other issues that moms can experience that appear to impact their babies' microbiomes are antibiotic use and infections.

The pathway between the microbiome and autism has gained several validating findings, making it difficult to deny as a causal factor. In a perfect world, physicians say, it should lead to major changes in clinical settings.

"You always want to know the cause, because if you know the cause, you can stop the disease," Dr. Krigsman said. "Stop looking for a gene that probably doesn't exist and won't be found. Try to find the cause, and then remedy that, remove that."

MAYE TORRES/GETTY IMAGES



Why Cause Matters

Microbiologist Kiran Krishna told The Epoch Times that what appears to be coming is similar to the global realization that smoking was causing cancer.

The tobacco industry eventually couldn't stop the number of small, cumulative studies that clearly documented the link. Mr. Krishna said that the same thing is happening regarding the connection between the microbiome and autism, and the new meta-analysis is important because it can help other researchers attract grants and funding to look more intentionally at microbes and their environmental influences.

"Before this, we had smoke indicating the microbiome was involved in autism, and now we have fire," Rob Knight, the director of the Center for Microbiome Innovation at the University of California-San Diego and a study co-author, said in a statement.

As autism becomes an epidemic, researchers are demanding a renewed focus on environmental causes.

He said that the study illustrates a cultural shift driving the marriage of researchers who tend to "camp out" in their own disciplines and are now uniting for the greater good of finding the cause of autism.

"That was one of the key points in our paper," Mr. Morton said. "We wanted to highlight that when we are thinking about autism and these complex systems, you need everyone sitting in the same room. You need not just one dataset. You need all of them. You need genetics. You need microbiome. You need diet. You need metabolites, behavioral data, everything you can get your hands on."

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THE EPOCH TIMES



2 Strange Ways Medicine Is Manipulating the Microbiome

Desperation to fix gut dysbiosis is driving solutions using stool and synthetic microbiomes

By Amy Denney

The human microbiome is a vast frontier of known and unknown microscopic creatures carrying out untold biochemical transformations for metabolic pathways we have yet to map out. Trillions of microbes—including bacteria, viruses, and fungi—interact with human physiology, outnumbering human cells. Most microbes are “friendly,”

and among their functions is keeping the disease-causing pathogenic ones from creating problems. Pathogenic bugs occasionally cause acute illnesses and play a role in chronic diseases. But sometimes, even the ones that live in harmony with us and one another—called commensal microbes—depopulate into harmful ratios. Anytime the ratios are believed to be unhealthy, it’s called dysbiosis, a condition believed to be driving inflammation and autoimmune disease.

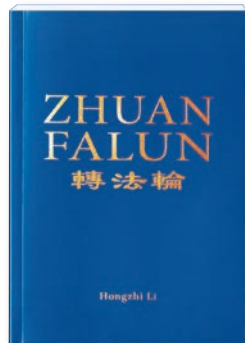
Research is rapidly cataloging various microbial demographics associated with diseases such as autism spectrum disorder, Parkinson’s disease, Crohn’s disease, Alzheimer’s disease, various cancers, cardiovascular disease, and others. Against a backdrop of increasing disease rates, the concept of a healthy microbiome seems like a possible elixir. Maybe that’s why so many are embracing radical concepts such as fecal transplants that use donor stool to

repopulate good gut bacteria or even a synthetic microbiome made up of microbes grown in a lab. The past year has brought developmental leaps in both methods, as science attempts to outpace the destruction of the microbiome, which has seen entire families of bacteria disappear from the guts of industrialized populations. The U.S. Food and Drug Administration (FDA) has recently approved two

Continued on Page 16



A Life-Changing Bestseller



Zhuangzi Falun expounds on the profound principles of Truthfulness, Compassion, and Tolerance. It focuses on a long-forgotten term called “cultivation” and the importance of moral character on one’s path to spiritual perfection. The book is the main text of the spiritual practice Falun Dafa. It was a national bestseller in China in the 1990s, and has since been translated into more than 40 languages. Find out why it has captured the hearts and minds of tens of millions of people in more than 100 countries worldwide.

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Arthur Waldron
LAUDER PROFESSOR, UNIVERSITY OF PENNSYLVANIA

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Higher quality salt contains various minerals and sodium itself is an essential mineral that the body requires. Unfortunately, much of the salt we eat is of poor quality and comes in processed foods.

FOOD REGULATIONS

FDA Proposal on Salt Substitutes May Bring Unexpected Harms

By Sheramy Tsai

The Food and Drug Administration’s drive toward salt substitutes, aimed at reducing dietary sodium, faces mounting skepticism from top health experts. Salt has been in the FDA’s crosshairs for some time. Since October 2021, the federal agency has notably urged restaurants and food manufacturers to take voluntary measures to reduce salt use, targeting reductions in sodium across more than 160 food categories. The FDA is now advocating for a transition from traditional salt to potential lower-sodium alternatives, a notable

deviation from prior guidelines, as outlined in its proposal, “Use of Salt Substitutes to Reduce the Sodium Content in Standardized Foods.” The FDA is currently revising the “standards of identity”—essentially the official blueprints that determine the ingredients and processes required for a product to bear a specific label, such as “bread” or “mayonnaise.” With these updates, the agency proposes that certain foods can now include “safe and suitable” low-sodium salt alternatives, marking

a shift from the traditionally stricter guidelines. Explaining the motivation behind this move, FDA Commissioner Dr. Robert M. Califf emphasized the broader goal of enhanced nutrition and chronic disease reduction. “By providing manufacturers another tool to decrease sodium in food production, we aim to lower Americans’ risk of conditions such as hypertension, which is intrinsically linked to heart disease and stroke,” he stated in a press release. In response to the FDA’s proposal on salt substitutes, the International Food Additives Council (IFAC) and The Glutamate Association voiced support, underscoring potential benefits for food manufacturers and consumers. The IFAC emphasized flexibility in using salt alternatives. The Glutamate Association pointed to research from countries such as Japan and Brazil that showed glutamates and MSG can reduce sodium by as much as 50 percent in diverse cuisines without sacrificing flavor.

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FOOD REGULATIONS

FDA Proposal on Salt Substitutes May Bring Unexpected Harms

Continued from Page 13

If the proposal moves forward, its impacts could reach every corner of our pantries. Everything from canned goods to the assortment of condiments, down to the very bread that we use for our sandwiches, might be affected by this guidance.

About 90 percent of Americans regularly surpass the suggested daily sodium limit, set at 2,300 milligrams, according to the Centers for Disease Control and Prevention (CDC). Sodium consumption by adults is 50 percent above this recommended limit, according to an FDA report, which states that more than 70 percent of the nation's sodium intake comes from manufactured and commercially prepared foods.

Replace Salt With What?

Salt substitutes, such as Nu-Salt or Morton Salt Substitute, primarily contain ingredients that mimic the familiar salty taste without sodium. While sodium chloride forms the essence of regular table salt, these substitutes typically employ potassium chloride. However, some might blend in other components, such as herbs, spices, or amino acids.

The FDA's draft doesn't pinpoint specific allowable substitutes but simply labels them as "safe and appropriate," hinting at alternatives beyond potassium chloride. "Other ingredients listed in the scientific literature include herbs and spices, yeast extracts, monosodium glutamate, amino acids, and dairy extracts," the brief reads.

For an additive to make its way into our foods, it must either have FDA approval or be universally accepted as safe. Sodium chloride, our go-to table salt, effortlessly checks that box. But as these regulations evolve, the definition of a "salt substitute" might transform. These envisioned alternatives, which could be a single ingredient or a mix, must reduce sodium without sacrificing the food's core flavor or safety—a challenge that manufacturers will have to address.

Health Organizations Caution Against Salt Substitutes

In a collaborative letter dated Aug. 8, leading health organizations, including the American Association of Kidney Patients (AAKP), the Academy of Nutrition and Dietetics, and the National Kidney Foundation, raised significant concerns about the FDA's recent proposition to use potassium-based salt substitutes in standardized foods.

The concerns revolve around the potential health risks to the 37 million Americans who have been diagnosed with chronic kidney disease (CKD). Many CKD patients, they note, are unable to adequately process excess potassium, making them susceptible to hyperkalemia, a dangerous condition that can lead to severe cardiac complications and even sudden death.

While these organizations laud the FDA's efforts to mitigate the high sodium consumption among Americans, they stress the need for a more cautious

approach. The letter pointedly highlights that adding "hidden potassium" in foods, especially without clear labeling, could inadvertently imperil a significant portion of the population.

Potassium—crucial for muscle contraction, especially in the heart—must be carefully balanced. When this balance is disrupted, it can cause muscle malfunction, including in the heart. While kidneys manage about 80 percent of the potassium that we consume, other organs such as the adrenal glands and pancreas, as well as many medications, can also affect potassium levels.

Dr. Stephen Z. Fadem, chair of AAKP's Medical Advisory Board and clinical professor of medicine at Baylor College of Medicine, cautions against unchecked potassium in food products. "If potassium is indiscriminately added to foods, it will result in many patients ingesting more than their body can handle. This is ill-advised and against the U.S. FDA's mission of shepherding safe and effective care," he told The Epoch Times.

The letter further warns that the dangers extend beyond those with kidney disease. "Other populations vulnerable to excessive potassium and associated health risks, because they too are unable to normally excrete it, include those with heart failure, diabetes, adrenal insufficiency, and those taking medications that impair potassium excretion."

Everything from canned goods to the assortment of condiments, down to the very bread we use for our sandwiches, might be affected.

The letter strongly urges the FDA to pivot toward alternate strategies in light of these potential health ramifications. This could include developing flavor enhancers that aren't potassium-based, intensifying public health education about safe sodium reduction, or enhancing food labeling. The collective plea underscores the need for both public safety and transparent communication in any forthcoming regulatory changes.

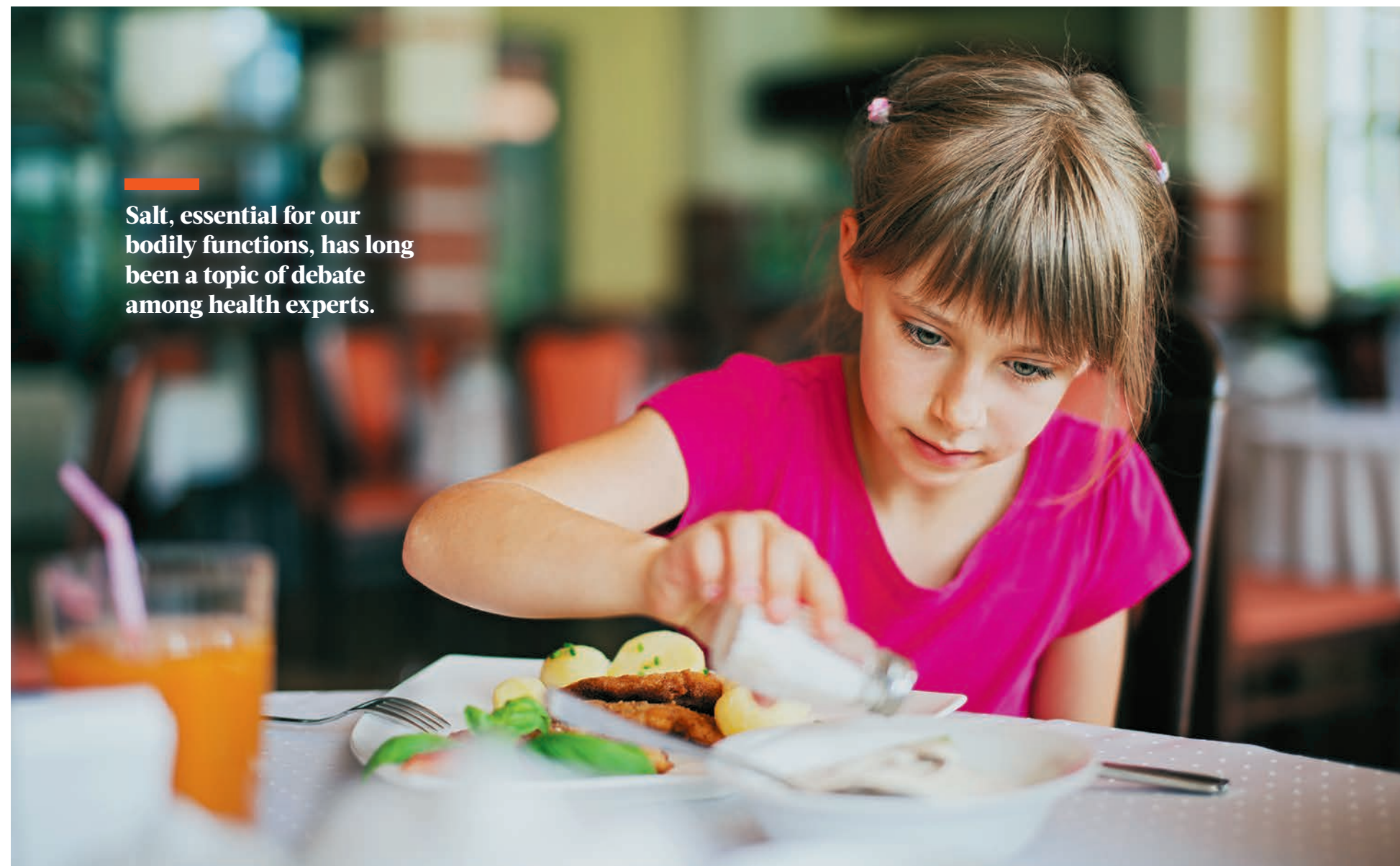
Paul Conway, AAKP's chair of policy and global affairs, highlighted the significant impacts of kidney disease on patients and the economy.

"Kidney disease is a health care and workforce issue because of the amount of disability it can create. Beyond the personal toll on patients and their families, it's a financial strain, costing America \$130 billion a year for kidney care. This figure doesn't even account for the repercussions of disability, job loss, and unemployment due to the disease," he told The Epoch Times.

Mr. Conway also took issue with the FDA's approach to formulating its proposal, noting that crucial organizations, such as his own, were sidelined from the outset, leading to a policy with unintended consequences.

"We should have been at the forefront of this policy. If you release regulations for public comment and are met with surprise feedback, you've gone about it wrong. We don't always weigh in on such matters. When we do, our voice carries significant weight due to the severity of the disease we address and its associated mortality rates," he said.

The American Diabetes Association and



Salt, essential for our bodily functions, has long been a topic of debate among health experts.

the American College of Cardiology didn't respond to requests for comment.

The Great Salt Debate

Salt—essential for our bodily functions—has long been a topic of debate among health experts.

The National Institutes of Health brought salt into sharp focus in 2001 with the DASH-sodium study, suggesting a connection between reduced sodium consumption and decreased blood pressure that led to salt's cautionary positioning in America's dietary guidelines.

Despite significant investments in research, definitive evidence remains hard to come by. The central question revolves around whether prolonged high salt intake, culminating in hypertension, ultimately escalates to hyper health complications.

James DiNicolantonio, a cardiovascular research scientist and author of "The Salt Fix," offers a critical perspective on this issue.

"It's more than likely that replacing nature's oldest food preservative and essential mineral with a salt substitute will lead to more harm than good and unintended consequences, such as kids no longer eating their bitter vegetables, eggs or meat because there's no salt (flavor) to go with it and now consuming more refined carbohydrates and refined sugars," he said.

"Additionally, when it comes to storing food, low salt versions dramatically increase food spoilage (they don't last as long) and food borne illness."

In a comprehensive study of more than 28,000 high-risk individuals, re-

searchers found a nuanced relationship between sodium and heart health. Elevated sodium levels were linked to a rise in cardiovascular risks. Surprisingly, however, very low intakes were associated with an increased likelihood of cardiovascular mortality.

Adding complexity, a 2023 investigation revealed that heart failure patients who were consuming less than 2.5 grams of sodium daily faced an 80 percent heightened mortality risk compared to their counterparts.

"Our findings showed that restricting dietary sodium below recommended levels was counterproductive in managing heart failure," Dr. Anirudh Palicherla, the study's lead researcher, stated. It's important to identify a safe sodium consumption level, he said.

Mr. DiNicolantonio further adds to the salt debate, saying, "There is no proof that lowering sodium intake will lead to definitive improvements in high blood pressure, target organ function, strokes, heart attacks, etc. Salt is an essential mineral and the body can't make it."

Andrew Huberman, a neurobiology professor at Stanford University School of Medicine, highlights sodium's pivotal role in cognitive and physical well-being. "I want to emphasize the possibility, that for some people, more salt might help them in terms of health, cognitive, and bodily functioning, and for other people, less salt

is going to be better," he commented in a recent podcast episode.

It's worth noting that not all salt is created equal, recent research suggests. In a Stanford University study, rats fed natural sea salt displayed consistently lower blood pressure and fewer cardiac and kidney issues than their counterparts on refined salt, suggesting that natural salts may have health benefits over their refined counterparts.

A Medical Perspective: Health Professional Weigh In

The call to cut sodium has sparked a spectrum of medical opinions. While many in the health care realm view this as an important step toward bolstering public health, the lurking hazards of high salt consumption remain ever-present.

"Lowering salt intake carries significant public health advantages, especially in reducing average blood pressure," Dr. Richard J. Solomon, medical director of nephrology at the University of Vermont Medical Center, told The Epoch Times.

He underscores the urgent need for precise product labeling and robust public education. Dr. Solomon believes that labels should indicate if foods contain potassium chloride—an essential warning for those with kidney issues. He advises the public to "consult with a physician" before reaching for products laden with salt substitutes.

Nephrology specialist and dietician Desiree De Waal emphasizes the importance of clear labeling, akin to "added sugars." However, she highlights pitfalls in potassium labeling. Labeling such as "good source of potassium" aids those with kidney ailments, but poses risks for the unaware.

"Those uninformed of their kidney disease risk hyperkalemia, which can lead to cardiac arrest. I've seen many patients misled by this, with dangerously high potassium levels resulting in hospitalizations," Ms. De Waal told The Epoch Times.

She expressed concerns about the long-term risks of food additives, especially harmful preservatives such as phosphorus additives. "We need to focus on herbs and spices. Our salt-centric society has lost the authentic taste of food," Ms. De Waal said.

Amid ongoing debates about salt substitutes, Dr. Fadem suggests a return to the basics.

"People who eat more fresh foods will not only be healthier but will not have to rely on salt substitutes for flavor," he said. This viewpoint underscores the idea that a return to natural, unprocessed foods may hold the key to navigating the contemporary salt dilemma, as well as the many health concerns tied to diets high in processed and ultra-processed foods.

According to Mr. DiNicolantonio: "The FDA needs to go after actual harmful substances like refined seed oils, refined sugars and processed junk food. Leave salt where it should be, on the kitchen table."



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THE EPOCH TIMES
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COVID-19

Genes Linked to Asymptomatic COVID-19: Study

Research reveals a genetic variant may explain why 1 in 5 people who get COVID-19 don't show symptoms

By Megan Redshaw

Scientists have recently discovered a gene variant that may explain why 20 percent of people who get COVID-19 never develop symptoms.

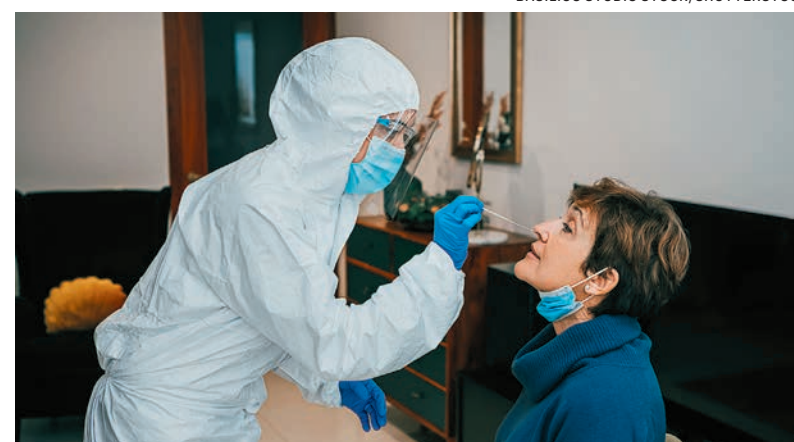
In a recent study published in Nature, researchers theorized that human leukocyte antigen (HLA) genes may be the reason some people are asymptomatic when they test positive for COVID-19. According to the authors, HLA genes

play a significant role in viral infections by helping the immune system recognize infected or foreign cells and are the most medically important region of the human genome.

To determine whether HLA gene variants are associated with asymptomatic COVID-19, researchers enrolled 24,947 bone marrow donors over a nine-month study period, as gene sequencing is a prerequisite for being a tissue or organ donor and recipient, and genetic information was already available.

Participants used a smartphone app to track positive COVID-19 tests and daily symptoms, including fever, chills, and mild symptoms such as scratchy throat or runny nose. Each week, volunteers noted whether they had taken a COVID-19 test, and each month reported whether hospitalization had occurred.

During the study period, 1,428 unvaccinated individuals reported a positive COVID-19 test, with 20 percent of individuals reporting no symptoms. Further analysis revealed a specific HLA-B*15:01 variant was "significantly overrepre-



One study found 1 in 5 unvaccinated people had no symptoms despite a positive COVID-19 test.

sented" in asymptomatic individuals compared to symptomatic individuals.

Those who carried two copies of the variant—one passed down by each parent—were more than eight times more likely to remain asymptomatic than those carrying other genotypes. Researchers confirmed their findings in two other groups of people.

The authors then examined the effect HLA-B*15:01 had on T cells—a type of white blood cell that helps the immune

system recognize germs and fight disease, including SARS-CoV-2.

Analyzing T cells donated by HLA-B*15:01-positive people before the pandemic, researchers discovered that T cells in asymptomatic participants reacted to a specific piece of SARS-CoV-2 spike protein, enabling the virus to enter the cells as if they had previously encountered the virus. Additional experiments showed that T cells with the specific HLA variant responded aggressively to an al-

most identical spike protein fragment from two seasonal coronaviruses associated with common colds.

"The findings suggest that T cells in many people with HLA-B*15:01 could already recognize SARS-CoV-2 because of their prior exposure to seasonal coronaviruses," according to the National Institutes of Health (NIH). This ability to recognize SARS-CoV-2 allowed their immune systems to respond rapidly to clear out the virus before it caused symptoms of infection.

"If you have an army that's able to recognize the enemy early, that's a huge advantage," the study's coauthor, Dr. Jill Hollenbach, a professor at the University of California-San Francisco's departments of neurology and epidemiology and biostatistics, told the NIH. "It's like having soldiers that are prepared for

battle and already know what to look for, and that these are the bad guys."

Although the study's results may explain why some people don't develop symptoms of COVID-19, the study had limited genetic data, relied on self-reporting, and consisted of participants who were white and mostly female.

Despite these limitations, the authors said their results "provide strong support" for the role HLA genes play in viral clearance causing asymptomatic SARS-CoV-2 infections and provide a framework for additional study treatments for COVID-19.

If you have an army that's able to recognize the enemy early, that's a huge advantage.

Megan Redshaw is an attorney and investigative journalist with a background in political science. She is also a traditional naturopath with additional certifications in nutrition and exercise science.

MICROBIOME

2 Strange Ways Medicine Is Manipulating the Microbiome

Continued from Page 13

different products for use with fecal microbiota transplant (FMT), a method by which healthy stool is transplanted into a recipient. One of the products is delivered directly to the colon via colonoscopy and the other is delivered in a pill form of stool intended to repopulate intestinal flora. The products are only approved for use with *Clostridioides difficile* (*C. diff*) infections.

A second approach—currently in the rodent research phase but with therapeutic intentions—is a synthetic microbiome of bacteria grown from scratch and mixed together in a design intended to mimic a human microbiome. While the treatment holds promise, there are some who question our ability to replicate this incredibly complex microbial community, one which we're still trying to understand.

A Snapshot of the Science

Stanford University researchers have developed what they call “the most complex and well-defined synthetic microbiome” with more than 100 bacterial species that they then transplanted into mice. After two months, 98 percent of the flora colonized in the mice and remained stable. The results were published in September 2022 in the journal *Cell*.

In fecal transplants, an entire microbiome is introduced into the human digestive tract. That makes it difficult to do research into what specific bacteria may be involved in certain diseases. The Stanford researchers say their synthetic microbiome research is aimed at creating a tool for the removal or modification of specific individual species. It would be the microbiome equivalent of gene silencing, an emerging area of science in which disease-causing genes are turned off.

“So much of what we know about biology, we wouldn't know if it weren't for the ability to manipulate complex biological systems piecewise,” said Michael Fischbach, corresponding author on the study and associate professor of bioengineering, microbiology, and immunology.

Microbiologist Kiran Krishnan told *The Epoch Times* that synthetic microbiomes will be beneficial for research, but he doesn't think a whole human microbiome will be successfully replaced with a manmade version in his lifetime. Any attempt, he said, would likely end up like baby formula—a crude imitation that companies attempted to convince moms was better than breast milk—now associated with increased risks of obesity, allergies, and immune dysfunction.

“We cannot replicate what microbes do naturally. It's too hard. There are mechanisms going on in the world of microbes that we don't even understand from a biologist's perspective,” Mr. Krishnan said. “Then you get into the whole world of quantum biology—microbes communicating in ways we don't even know exist. Anytime we've thought we could outsmart nature, we've created problems.”

Fecal transplants, however, have taken off therapeutically with impressive results, particularly with *C. diff* infections that tend to recur and can drastically alter the quality of life.

Rebyota's FDA approval in December 2022 was based on two studies in which 978 adults received at least one dose of donated human fecal matter. The success rate at eight weeks was 70.6 percent, compared to 57.5 percent in the placebo group, according to the FDA. Studies worldwide validate uniform FMT success for *C. diff*. FMTs have been part of the standard



TURNING MICROBES INTO DRUGS

Researchers want to develop new treatments that replace or augment the microbiome. Unfortunately, experts say we don't understand this complex biological system well enough to do so.

of care for re-current *C. diff* for years.

Besides severe diarrhea, *C. diff* causes colitis, an inflammation of the colon. It affects about 500,000 Americans annually, commonly those taking antibiotics, which kill the good flora, leaving the immune system vulnerable to future infections. One in 11 people older than 65 with a health care-associated *C. diff* infection die within a month, according to the U.S. Centers for Disease Control and Prevention.

FMT Application Outside the Gut Beyond *C. diff* infections, the FDA limits fecal transplants to clinical studies. Researchers are investigating FMT use with dozens of other infections, diseases, and conditions. Gastroenterologist Dr. Thomas Borody is a pioneer in this field. He's performed more than 35,000 microbial transplants at the Centre for Digestive Diseases Australia. There are almost no restrictions on its use in Australia. Dr. Borody holds more than 180 patents in areas such as FMT and the treatment of *Helicobacter pylori*, Crohn's disease, and irritable bowel syndrome.

During a Malibu microbiome meeting several months ago, Dr. Borody presented case studies of success using transplants for constipation in conjunction with Parkinson's disease. Not only did two patients experience relief from constipation, but tremors and other symptoms also vanished, Dr. Borody said.

“I took them to their neurologists to examine them and they said to me, ‘If you would have brought them to me now, I would have never diagnosed them with Parkinson's disease,’” he said, though he noted that the two subjects were part of a trial of FMT

on a dozen Parkinson's patients. “Only two out of the 12 responded, which means there is a lot of work to do.”

Such miracle case studies are legendary online, where desperate patients search for alternatives to pharmaceuticals that don't work well or have unpleasant side effects.

Proceeding With Caution

However, few doctors will offer FMTs outside FDA approval, except in rare situations in which patients have no other options and are informed of risks and benefits. That's the guidance spelled out in a 2020 perspective article in *Medicine in Microecology*.

Most patients—and providers—view FMTs as natural, safe, and separate from conventional medicine, according to surveys reported in the article. In 2017, only 12 percent of those polled had knowledge of fecal transplants. Once informed, 77 percent said they would undergo the procedure if it was needed.

The procedure is often misunderstood and comes with a plethora of ethical and logistical ramifications. As awareness of FMTs grows, people with any number of conditions may consider it a possible remedy and pursue DIY transplants using stool from a healthy family member. Such tales are what motivated the *Medicine in Microecology* article, which highlights this concern.

“Finally, there is a need for clinicians to strive to educate and to persuade patients not to pursue FMT as a do-it-yourself procedure any more than they would perform an organ transplant or blood transfusion at home. The relative ease of the procedure does not cancel out its risks of harm. As such, upon encountering a patient who mentions considering a ‘DIY FMT,’ clinicians have an obligation to explain the real risks and to counsel against such a course of action,” the authors wrote.

Patient familiarity with the procedure already has many asking for it by name for conditions associated with dysbiosis. Dr. Ari Grinspan, associate professor of medicine and director of the fecal microbiota transplant program at Mount Sinai Hospital, told *The Epoch Times* he gets two to three requests a week.

Take, for example, the patient who asked for a fecal transplant after taking a drug called finasteride, known by the brand name Propecia, for hair loss that gave him sexual, neurological, physical, and mental adverse reactions. It's such a common occurrence, it has a name—post-finasteride syndrome—and it's as-

sociated with dysbiosis.

“I've seen this for all different kinds of things over the past couple of years,” Dr. Grinspan said. “It's a common way that medicine fails, because we don't have answers for everything.”

Many Unknowns of FMT

All the hype may be blinding some to the unknowns associated with FMTs, such as unintended changes in the microbiome that could lead to acute infections or chronic disease. Six patients contracted diarrhea-causing *Escherichia coli* infections after receiving donor stool for *C. diff* treatment in 2020.

Other doctors have warned of the harm that could come from inadequately screened stool and unknown complications. The *Medicine in Microecology* article noted the need for record keeping on both short-term and long-term adverse reactions.

Given that many health care solutions are transactional—symptoms disappear quite possibly for the price of one or more side effects—researchers say it's important to reserve fecal transplants for the most severe situations.

Root Cause Still Ignored

There's another concern: An FMT does nothing to address poor choices, environmental exposures, and lifestyles that may have caused or contributed to dysbiosis in the first place.

Dr. Scott Doughty, integrative family practitioner with U.P. Holistic Medicine, told *The Epoch Times* that FMT has the potential to go the way of gastric bypass surgery, a weight-loss surgery that changes the size of the stomach to restrict the amount of food it can hold. A new anatomy forces habits to change, but it doesn't make a patient eat less, crave healthier foods, or change the physiological root causes that might have led to obesity.

“I would hope the market for fecal transplant doesn't skip over the notion that you got sick for a reason and let's try to figure out what led to you getting sick so some changes can be made,” Dr. Doughty said.

Still, he remains excited and hopeful about the concept, which he said affirms the gut-focused work of holistic-minded physicians, including dietary changes, detoxification, lowering exposure to toxins, and addressing inflammation.

Why Dysbiosis Is a Growing Concern

It's widely believed that industrialization has reduced microbiome diversity due to diet, herbicides, antibiotic usage, increased use of cesarean section and baby formula, over-sanitization, and reduced contact with soil and animals.

One very new discovery comes from a deep sequencing of the genomes from Hadza tribe stool samples collected a decade ago. New technology applied to the old samples allowed researchers to identify more species present in the microbiomes of one of the last remaining hunter-gatherer populations who live in Tanzania. They had an average of 730 species, compared to microbiome samples from California (277 species), Napali foragers (317), and Napali agrarians (436 species).

Published on July 6 in *Cell*, the study found that 124 gut-resident species have disappeared in industrialized populations. It also took a close look at the functional properties of those lacking species, which were predominantly in the fiber-fermenting genera *Prevotella* and the commensal *Spirochaetota*. Nonindustrial microbiomes were found to be more rich in bacteria associated with antioxidant and redox sensing functionality—roles of the microbiome that keep autoimmune issues at bay.

“The data generated from Hadza fecal samples in this study (collected in 2013–2014) may thus represent a critical permanent reference point for microbiome scientists to understand the impacts of industrialization on the gut microbiome,” according to the study.

The research found that *Treponema succinifaciens*—previously associated with a nonindustrialized lifestyle—is nearly completely absent from industrialized individuals. No *Spirochaetota* genomes were detected within Californian microbiomes.

A 2021 study published in *BMC Microbiology* validates the concern of our microbiome's rapid change in industrialized settings, “particularly, the observed decrease of *Spirochaetes* and *Prevotella* in westernized communities.” The authors note that these are likely linked to the rapid change in our lifestyles and dysbiotic microbiome, “which promote the etiology of chronic diseases.”



▲ New research that looked at how pollution contributes to dementia found industrial emissions were a relatively small contributor.

POLLUTION

Air Pollution Linked to Dementia

New study finds that agricultural emissions and wildfires could contribute to dementia

By Mary Gillis

Exposure to air pollution is linked to dementia in older adults, according to a new study published in *JAMA Internal Medicine*. Particulates from wildfires were associated with the second-highest risk, and pollution from traffic and coal burning weren't the worst offenders.

The study, which focused on air pollution in the United States, found that people over 50 exposed to high levels of pollution in the form of dust, dirt, and soot generated from multiple sources including agriculture, coal combustion, and wildfires had an 8 percent higher incidence rate of dementia than adults not exposed to the pollutants.

The Link to Dementia

Dementia is an irreversible brain disorder that causes nerve cells to be destroyed over time. The result is a progressive deterioration in cognitive function that can lead to a range of uncontrollable behavioral side effects such as mood swings, lack of emotional control, and decreased motivation. World Health Organization data estimate that 55 million people suffer from dementia globally. It's the seventh-leading cause of death worldwide.

To examine the association between dementia and pollution, researchers looked at 27,857 men and women who were an average of 61 years old and living in highly polluted areas across the United States. Participants were drawn from a database used in a previous study, and data were collected between Jan. 1, 1998, and Dec. 31, 2016. None of the adults had dementia at baseline.

A total of 4,105 adults, or 15 percent, were diagnosed with dementia over an average follow-up of 10 years. “We looked at how the particles from each source are associated with dementia accounting for other characteristics of person or place that might also put them at risk,” study author Sara Adar, an associate professor of epidemiology at the School of Public Health at the University of Michigan, wrote in an email to *The Epoch Times*.

Agriculture Emissions, Wildfires Pose Highest Risk

After adjusting for sex, race, household income, socioeconomic neighborhood status, and other characteristics, results showed that total emissions increased the dementia rate by 8 percent. Other findings were that:

- Agriculture emissions increased the dementia rate by 17 percent.
- Nonroad traffic emissions increased the dementia rate by 14 percent.

- Road traffic emissions increased the dementia rate by 11 percent.
- Energy coal and industry coal increased the dementia rate by 5 percent.
- Wildfires increased the dementia rate by 4 percent.
- Other energy-linked emissions increased the dementia rate by 2 percent.
- Other industrial emission increased the dementia rate by 1 percent.

However, this analysis “did not disentangle the impacts of each type of pollution in the form of dust, dirt, and soot generated from multiple sources including agriculture,

coal combustion, and wildfires had an 8 percent higher incidence rate of dementia after accounting for other characteristics of person or place that might also put them at increased risk, as well as particles from all other sources,” Ms. Adar said. When adjusted for both characteristics and the other particles, the link between increased dementia rate was only as

associated with agriculture (13 percent) and wildfires (5 percent). There was no significant link with any of the other seven particles. Agricultural emissions include pesticides and herbicides, substances already being studied for their links to dementia. Forest fires, meanwhile, release many different compounds that can affect neurological health.

“We then asked if the particles from each source are associated with dementia after accounting for other characteristics of person or place that might also put them at risk,” study author Sara Adar, an associate professor of epidemiology at the School of Public Health at the University of Michigan, wrote in an email to *The Epoch Times*.

Suggested Next Steps

“With the rapid aging of the global population and marked increases in the mean life expectancy around the world, the prevention of dementia has become increasingly important,” the authors wrote in the paper.

“Our cohort study suggests that reducing PM2.5 [particulate matter] and perhaps selectively targeting certain sources for policy interventions might be effective strategies to reduce the burden of dementia at the population level, although more research is needed to confirm our findings.” “Though we did not find that some particles like those of coal-fired power plants and traffic to be related to risk of dementia after accounting for particles of other sources, we know from the literature that they are linked to poor health through other outcomes like heart and lung disease,” Ms. Adar said. “Also, this is only one study, so our findings should be replicated by others.”

Mary Elizabeth Gillis is a health reporter and cardiopulmonary specialist with over a decade of experience. After graduating with her doctorate in applied physiology, she earned a master of science degree in journalism from Columbia University.

ALL PHOTOS BY SHUTTERSTOCK

Most microbes are ‘friendly,’ and among their functions is keeping the disease-causing pathogenic ones from creating problems.

500,000

AMERICANS HAVE COLITIS

C. diff causes colitis, an inflammation of the colon. It affects about 500,000 Americans annually.

Our industrialized civilization may have reduced or killed off certain bacterial strains that contributed to our overall well-being.

ALL PHOTOS BY GETTY IMAGES



ANCIENT ELIXIRS

Drink Oxymel to Fight Asthma, Inflammation, and Obesity

An ancient elixir is still being used and studied for its many health benefits and ease of preparation

By Alexandra Roach

In this era of readily available pharmaceutical products for every imaginable ailment, it can be easy to default to the drugstore when we need relief. It hasn't always been that way. For millennia, our ancestors had a deep knowledge of the remedies provided by the earth. Fortunately, much of that wisdom still exists, and many people are using it to skip the drugs—and the side effects.

One such example is an herbal tonic called oxymel, a recipe so simple that it can be made in your own kitchen.

Though the ingredients are basic, their healing effects are useful for an array of ailments. Various versions of this elixir have been studied for their effects on obesity, Type 2 diabetes, insulin resistance, prostate pain syndrome, and even moderate to severe asthma.

What Is Oxymel?

Also known by its Turkish name sirken-cubin, oxymel is a mixture of vinegar and honey with other ingredients added for taste or purpose. Its health benefits differ depending on the type of spice or herb used in the drink. Medieval Persian pharmaceutical manuscripts refer to 1,200 types of oxymel. Oxymel is a great way to extract and use the benefits of countless herbs and therapeutic plants.

Ancient doctors and healers knew from practical experience that its various ingredients had effective medicinal properties that modern-day scientists can now explain. Honey, for example, made wonderful wound treatments, soothed burns, improved ulcers, and treated other illnesses, such as upper respiratory tract infections.

Healthful Ingredients

A study on polyfloral honey, published in the *Journal of Argentine Chemical Society*, noted the presence of essential minerals such as potassium, calcium, and magnesium.

Peer-reviewed findings published in *BMC Complementary Medicine and Therapies* showed that honey's vitamins and digestive enzymes were powerful enough to relieve upset stomachs, improve digestion, promote weight loss, lower LDL-cholesterol, and reduce inflammation and allergies.

Choose a Target Health Issue

There are thousands of oxymel recipes. How do you know which one is right for you?

First, decide which health issue you'd like to address. All variations have a beneficial honey-and-vinegar base, but its effects will be aided by the specific herbs that you infuse in it.

Obesity

Insulin resistance is a health challenge for obese individuals, as well as for people with metabolic syndrome and diabetes. As outlined in the journal *Antioxidants and Redox Signaling*, this complication is often caused by oxidative stress. The good news is that you can counteract this effect by adding antioxidant-rich food sources to your diet.

One way to accomplish this is to create a delicious oxymel with natural antioxidants, such as turmeric, green tea, or hibiscus.

You can find more of these herbal wonders right in your kitchen—for instance, rosemary and sage, both of which have strong natural antioxidant properties.

Other kitchen spices and herbs such as clove, oregano, and cinnamon are also high in phenolic compounds and excellent sources of antioxidants. These and more herbs were studied and presented in the international jour-



▲ Oxymel is a mixture of honey, vinegar, and water with other herbs added as desired for different therapeutic effects or flavors.

Herbal Plant Foods for Human Nutrition.

Coriander seeds have shown significant health benefits through a reduction of oxidative stress and an enhancement of the tissue levels of antioxidant and detoxification agents, and the consumption of ginger promotes weight loss.

Upon venturing from the kitchen into the garden, you may find rose, dandelion, fennel, peppermint, yarrow, and nettles, among other medicinal plants. A study published in the *International Journal of Food Sciences and Nutrition* observed an improvement in digestion through the use of such garden-variety medicinals.

Chronic Inflammation

Inflammation itself isn't always bad—it's part of the body's natural defense mechanism. The immune system recognizes and removes harmful foreign irritants through inflammation in healthy individuals. Thus begins the healing process—inside and out.

The causes of inflammatory diseases differ. Inflammation becomes a problem when it changes from an acute form to a chronic form, persisting for a long time or returning frequently. Various conditions such as arteriosclerosis and diabetes are linked to chronic inflammation.

Don't be dismayed, however. You can thwart some of the symptoms of chronic inflammation by eliminating processed foods from your diet and by supplementing with common herbs and spices—such as in a refreshing oxymel beverage.

An article in the *Oxford Academic Journal of AOAC International recom-*

mends these anti-inflammatory herbs to do the job: chili pepper, cinnamon, ginger, black pepper, turmeric, fenugreek, rosemary, and garlic. The efficacy of turmeric, ginger, and rosemary is backed up by yet another study published in *Advanced Pharmacological Sciences*, which also points to borage and evening primrose.

Asthma

A study published in the *Journal of Evidence-Based Complementary and Alternative Medicine* indicates that herbal medicine is a good alternative treatment for asthma and chronic obstructive pulmonary disease.

A review article in *Frontiers of Immunology* describes the effects of honey and its natural power to strengthen the immune system, as well as to counteract allergic diseases, including anaphylaxis, asthma, and atopic dermatitis.

A 2019 study published in the *Journal of Medicinal Foods* indicates that honey in combination with other herbal substances shows a relatively high efficacy in patients with asthma.

Immune Support

The immune system defends your body against infections. When it gets weak, you get sick. A healthy immune system is a lifesaver.

Oxymel can support the quest to build a strong immune system by using the following herbs: elderberry, echinacea, tulsi, Schisandra, and astragalus.

Thyme oxymel is an excellent example of how the basic honey-vinegar mixture combined with just one common culinary and medicinal herb can create a multi-layered health remedy.

2 WAYS TO MAKE OXYMEL AT HOME

Note for all extracts:

- Many recipes suggest a 1:1 honey-to-vinegar ratio, but that can range widely, with some suggesting up to 3 parts honey to 1 part vinegar. Adjust based on your preference for a sweet versus tart flavor.
- It's best to use apple cider vinegar for its many health benefits.
- Always ensure that all plant matter is covered by the liquid, with no bubbles.
- Store finished oxymel in dark glass bottles, or store in a cool, dark space.

Oxymel-Preparation Technique I: Easy and Slow Extraction

- In a glass jar, mix the honey with the vinegar.
- Wash and cut chosen herbs into small pieces. Add them to the jar with the honey-vinegar mixture.
- If using a metal lid, place a double-layered piece of plastic wrap in between the glass and the lid (the acid in vinegar reacts with metal).
- Keep in a dark but warm place for 3 to 4 weeks.
- Shake vigorously every day.
- After the extraction time has ended, the oxymel can be kept with the herbs in it, or strained through a muslin cloth to filter out the plant matter.

Oxymel-Preparation Technique II: Fast and Dry Herb Extraction

The fastest extraction method utilizes heat—and in so doing some of the beneficial active components of the apple cider vinegar may be lost—however, this method works well when extracting from dried herbs.

- Add vinegar, honey, and cut herbs to a pot.
- Heat for about 1 hour or until the extract is syrup-like. Don't exceed a temperature of 195 degrees F.
- Stir frequently.

An article in *The Journal of Biomedicine and Pharmacotherapy* describes the drink as boosting support for the immune system. Thyme oxymel's effects are plentiful: anti-obesity, anti-inflammatory, anti-hyperlipidemic (lowering cholesterol and triglycerides), anti-viral, and antioxidant. The same study states that the beverage improves oxidative stress, lipid metabolism, homeostasis of some trace elements, and weight-regulating hormones.

Thyme oxymel is an excellent example of how the basic honey-vinegar mixture combined with just one common culinary and medicinal herb can create a multi-layered health remedy.

Bottom Line

As an effective medicinal remedy, oxymel has withstood the test of time.

The wisdom of Hippocrates, Dioscorides, Galen, and other ancient doctors who prescribed the drink for a litany of complaints still holds true today.

Many historical texts such as the *British Pharmacopoeia* (1898), *German Pharmacopoeia* (1872), and the *French Codex* (1898) also detail the formula.

Today, as we're often looking for the newest and most innovative pharmaceutical remedies, it would be wise to not cast aside the ancient wisdom they're built upon.

AGE WELL

Telomeres Reveal How Our Food Affects Longevity

Anti-inflammatory foods maintain the health of these crucial protectors of our DNA

By Emma Suttie

What if you could measure the effect that the foods you eat have on the length of your life? Might you change your mind about reaching for that bag of chips?

Research is revealing how different foods affect the length of our telomeres. Scientists consider these tiny caps at the end of each of our chromosomes to be a reliable mark of biological age and of our risk of developing age-related diseases.

Telomeres and Their Importance

The word telomere comes from the Greek "telos," meaning "end," and "meros," meaning "part"; telomeres are the protective end parts of our chromosomes.

Telomeres cap the ends of our chromosomes and protect our DNA by preventing chromosomes from breaking down and fusing with other chromosomes during replication.

Every time a cell divides, its telomeres get shorter, and the cell's lifespan decreases, resulting in cellular aging. Eventually, telomeres get so short that the cell can die. Shortened telomeres have been associated with increased risks of cardiovascular diseases, cancer, and other metabolic conditions.

Many scientists refer to telomeres as the molecular clock of our cells because as our age increases, our telomeres get shorter. But not everyone's telomeres shorten at the same rate—some people's telomeres shorten faster than others'. Scientists have been trying to understand how and why.

Telomeres naturally shorten as we age, but research has shown that they are also shortened by smoking, alcohol, chronic stress, lack of exercise, obesity, and poor diet.

Foods That Affect Telomere Length

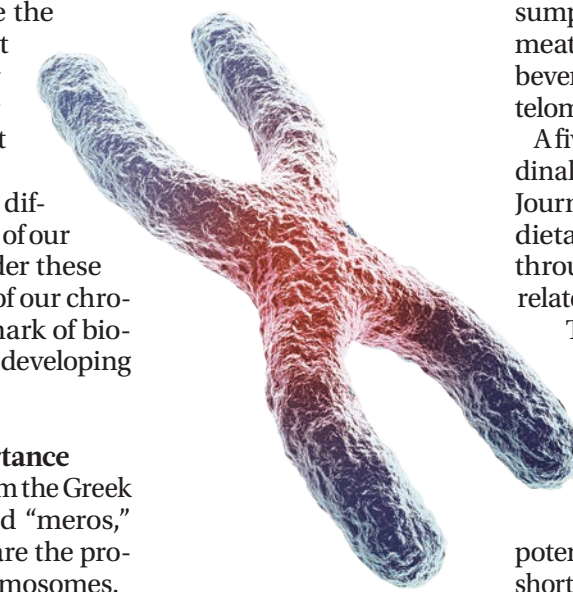
An article on a follow-up study published in *The Lancet Oncology* in 2013 by Dr. Dean Ornish and others showed the effect that comprehensive lifestyle changes, including to diet, activity, stress, and social support, could have on telomerase activity and telomere length.

Telomerase is an enzyme that can restore telomeres and potentially slow cellular aging.

Participants in the study ate a diet high in whole foods, plant-based protein, fruits, vegetables, unrefined grains, and legumes and low in fat (about 10 percent of calories) and refined carbohydrates.

The study found that at the end of the five-year follow-up, telomeres shortened in the control group (as would be expected after five years) and that in the lifestyle intervention group, telomeres actually increased in length.

A review published in *Metabolism* states that consuming antioxidant-rich, plant-derived foods helps to maintain telomere length.



▲ Our telomeres are short caps that keep our chromosomes from unraveling. As we age, they shorten and our DNA degrades.

When adults with high fiber intake were compared with those with low intake, mortality was 23 percent lower among those with high consumption.



▲ Our telomeres get shorter each time a cell divides, though the rate differs significantly from person to person.

The review also states that, by contrast, total and saturated fat intake and the consumption of refined flour cereals, meat, meat products, and sugary sweetened beverages are associated with shortened telomeres.

A five-year cross-sectional and longitudinal analysis published in the *American Journal of Clinical Nutrition* stated that dietary factors affect telomere length through oxidation and inflammation-related mechanisms.

The study aimed to determine whether diet-associated inflammation could modify the rate at which telomeres shorten after five years.

The analysis showed that diets with more anti-inflammatory potential could slow the rate of telomere shortening. Additionally, the participants eating a more inflammatory diet after a five-year follow-up had an almost two-fold higher risk of accelerated telomere shortening than those eating an anti-inflammatory diet.

A study published in *Public Health Nutrition* created a dietary inflammatory index to compare diverse populations on the inflammatory potential of their diets. It found that some of the most inflammatory foods are saturated fat, cholesterol, and trans fats.

Saturated fats are found in butter, ghee, suet, lard, coconut oil, and palm oil, cakes, biscuits, fatty cuts of meat, sausages, bacon, cured meats like salami, chorizo, cheese, and pancetta, according to the UK's National Health Service.

Cholesterol is also pro-inflammatory. Dietary cholesterol is a prominent steroid found in animal tissues. Primary food sources include egg yolk, shrimp, beef, pork, poultry, cheese, and butter.

Trans fats are another highly inflammatory food thought to accelerate the shortening of our telomeres. Foods that contain trans fats include commercial baked goods, shortening, microwave popcorn, frozen pizza, refrigerated dough, fried foods, nondairy coffee creamer, and margarine, according to the Mayo Clinic.

Conversely, one of the most anti-inflammatory food components is fiber.

In a study on dietary fiber and telomere length in 5,674 U.S. adults, researchers found that for each increase of one gram of fiber per 100 dietary calories, telomeres were 8.3 base pairs longer.

Meta-analysis results in the same study indicate that for every 10-gram increase in fiber consumption, the risk of death decreases by 11 percent. When adults with high fiber intake were compared with those with low intake, mortality was 23 percent lower among those with high consumption.

Humans have made great progress in improving our health in the past 150 years and have dramatically increased our lifespans, mainly thanks to increased access to clean water, improved sanitation, and greater access to basic medical care. Based on this research into diet and telomeres, the foods we eat appear to be one more factor in longevity.



▲ High quality whole foods, plant-based protein, fruits, vegetables, unrefined grains, and legumes can maintain and even regrow telomeres, a study found.



A significant part of oxymel's benefit—and delicious flavor—comes from the well-documented medicinal effects of honey.

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Ancient physicians, including Hippocrates, praised oxymel as an elixir for a litany of ailments.

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2019

STUDY

A 2019 study published in the *Journal of Medicinal Foods* indicates that honey in combination with other herbal substances shows a relatively high efficacy in patients with asthma.



ANTONIO DIAZ/SHUTTERSTOCK

Research suggests herbal medicine, including honey, can strengthen the immune system and help counteract allergic diseases like asthma.

OVERTREATMENT

Breast Cancer Widely Overdiagnosed in Older Women: Study

Sensitive screening technologies are triggering many women to get unnecessary and potentially dangerous treatments

By Jessie Zhang

More than 240,000 women in the United States will be diagnosed with breast cancer this year, and most will likely start treatment immediately. But according to new research, that may be a mistake.

Breast cancer in women ages 70 to 85 is often overdiagnosed, which may lead to unwarranted worry and unnecessary and intensive treatments such as surgery and chemotherapy that don't improve quality of life.

"Overdiagnosis refers to a phenomenon where we find breast cancers through screening that never would have caused symptoms," said Dr. Ilana Richman, the paper's lead author and an assistant professor of medicine at the Yale School of Medicine. "Overdiagnosis can occur when cancers grow very slowly or if a person's life expectancy is short."

Reevaluating Screening Practices for Older Patients

Published in the *Annals of Internal Medicine*, the research underscores the importance of reevaluating screening practices and engaging in informed discussions with patients.

Although mammography is a standard screening method for breast cancer, the study highlights a gap in research for older women. Individuals over 74 have frequently been excluded from large randomized screening trials, leaving uncertainty regarding the full spectrum of screening benefits and



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▲ Women facing a breast cancer diagnosis are often unaware of the risks of overtreatment or that delaying treatment is an option.

potential drawbacks.

The study, involving 54,635 women aged 70 and above, analyzed breast cancer diagnoses and related fatalities over a 15-year follow-up period.

The results indicate a significant likelihood of overdiagnosis among older women. Specifically, an estimated 31 percent of women aged 70 to 74 were overdiagnosed, as well as 47 percent of those aged 75 to 84 and 54 percent of those aged 85 and older.

"That finding points to a real need for better tools to identify which women may benefit from screening and which breast cancers are unlikely to be progressive so that we can avoid overtreatment," Dr. Richman said.

The Challenge of Overdiagnosis: Risks Versus Benefits

There are two primary challenges to putting the study findings into clinical practice.

First, balancing the risks of overdiagnosis against potential screening benefits is difficult on an individual basis, given the current uncertainties in the data, according to Dr. Richman.

Second, discussing the concept of overdiagnosis with patients presents communication difficulties, she added. As an abstract, unfamiliar idea that can't be directly observed, it doesn't fit neatly into busy clinic visits.

To address these issues, tools are needed to support patient-provider conversations and provide personalized information to women, Dr. Richman said.

"[This] can help ensure that decisions about screening are concordant with our patients' values."

Breast cancer rates peak among women aged 70 to 74, according to the American Cancer Society. The risk decreases as women age into their 80s, partly because women tend to die from other causes instead, such as heart disease or other cancers.

Improved Detection Comes at a Cost of Surging Overdiagnosis Rates

Recent technological advancements—such as three-dimensional mammography, computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET) scans—have increased detection rates.

However, the sensitivity of these ad-

vanced images leads them to detect a wide range of abnormalities, including noncancerous lesions, slow-growing tumors, and lesions that may spontaneously regress.

The introduction of screening programs has led to sharp rises in invasive breast cancer diagnoses—even if abnormalities that typically naturally regress.

In the present paradigm, once cancer is detected, it's typically treated aggressively with surgery, radiation, or chemotherapy. However, this amplified volume of treatment increases the risks of complications and financial burden, especially for older patients. It also unnecessarily exposes women to repeated radiation from mammograms.

A mammogram is essentially an X-ray, a form of ionizing radiation that has raised concerns due to its risk of causing radiation-induced breast cancer.

The central dilemma is that increased detection doesn't equate to improved outcomes. More research is needed to determine appropriate screening guidelines, especially for women over 75. The goal is to identify cancers destined to progress while avoiding overtreatment of regressive or indolent lesions.

In May, the U.S. Preventive Services Task Force, an independent panel of experts that provides screening guidelines for clinicians, issued new recommendations. The experts advised starting routine breast cancer screening at age 40 instead of 50. However, they also acknowledged the need for further research on screening benefits and harms to determine appropriate guidelines for women over 75.



▲ Many detected cancers present little risk beyond the fears they raise.

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