# THE EPOCH TIMES

Many doctors and consumer advocates fear that the tech industry, which lives by the mantra "fail fast and fix it later," is putting patients at risk —and that regulators aren't doing enough to keep consumers safe.

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A Reality Check on Artificial Intelligence Are Health Care Claims Overblown?

The FDA has eased market-entry requirements for some tech companies but that poses health risks for patients **2** 





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# A Reality Check on ARTIFICIAI INTELLIGENCE **Are Health Care Claims Overblown**?

#### LIZ SZABO

ealth products powered by artificial intelligence, or AI, are streaming into our lives, from virtual doctor apps to wearable sensors and drugstore chatbots. IBM boasted that its AI could "outthink cancer." Others say computer systems

that read X-rays will make radiologists obsolete. "There's nothing that I've seen in my 30-plus years studying medicine that could be as impactful and transforma-

tive" as AI, said Dr. Eric Topol, a cardiologist and executive vice president of Scripps Research in La Jolla, Calif. AI can help doctors interpret MRIs of the heart, CT scans of the head, and photographs of the back of the eye, and could potentially take over many mundane medical chores, freeing doctors to spend more time talking to patients, Topol said.

Even the Food and Drug Administration—which has approved more than 40 AI products in the past five years—says "the potential of digital health is nothing short of revolutionary."

Yet many health industry experts fear AI-based products won't be able to match the hype. Many doctors and consumer advocates fear that the tech industry, which lives by the mantra "fail fast and fix it later," is putting patients at risk-and that regulators aren't doing enough to keep consumers safe. Early experiments in AI provide a reason for caution, said Mildred Cho, a professor of pediatrics at Stanford's Center for Biomedical Ethics.

Systems developed in one hospital often flop when deployed in a different facility, Cho said. Software used in the care of millions of Americans has been shown to discriminate against minorities. And AI systems sometimes learn to make predictions based on factors that have less to do with disease than the brand of MRI machine used, the time a blood test is taken, or whether a patient was visited by a chaplain. In one case, AI software incorrectly concluded that people with pneumonia were less likely to die if they had asthma—an error that could have led doctors to deprive asthma patients of the extra care they need.

"It's only a matter of time before something like this leads to a serious health problem," said Dr. Steven Nissen, chairman of cardiology at the Cleveland Clinic. Medical AI, which pulled in \$1.6 billion in venture capital funding in the third quarter alone, is "nearly at the peak of inflated expectations," con-

cluded a July report from the research company Gartner. "As the reality gets tested, there will likely be a rough slide into the trough of disillusionment." That reality check could come in the

form of disappointing results when AI products are ushered into the real world. Even Topol, the author of "Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again," acknowledges that many AI products are little more than hot air. "It's a mixed bag," he said.

Experts such as Dr. Bob Kocher, a partner at the venture capital firm Venrock, are blunter. "Most AI products have little evidence to support them," Kocher said. Some risks won't become apparent until an AI system has been used by large numbers of patients. "We're going to keep discovering a whole bunch of risks and unintended consequences of using AI on medical data," Kocher said.

None of the AI products sold in the U.S.

have been tested in randomized clinical trials, the strongest source of medical evidence, Topol said. The first and only randomized trial of an AI systemwhich found that colonoscopy with computer-aided diagnosis found more small polyps than standard colonoscopy—was published online in October.

Few tech startups publish their research in peer-reviewed journals, which allow other scientists to scrutinize their work, according to a January article in the European Journal of Clinical Investigation. Such "stealth research"-described only in press releases or promotional events-often overstates a company's accomplishments.

And although software developers may boast about the accuracy of their AI devices, experts note that AI models are mostly tested on computers, not in hospitals or other medical facilities. Using unproven software "may make patients into unwitting guinea pigs," said Dr. Ron Li, medical informatics director for AI clinical integration at Stanford Health Care.

Diseases are more complex—and the health care system far more dysfunctional than many computer scientists anticipate.

AI systems that learn to recognize patterns in data are often described as "black boxes" because even their developers don't know how they have reached their conclusions. Given that AI is so new-and many of its risks unknown-the field needs careful oversight, said Pilar Ossorio, a professor of law and bioethics at the University of Wisconsin-Madison.

Yet the majority of AI devices don't require FDA approval. "None of the companies that I have

invested in are covered by the FDA regulations," Kocher said. Legislation passed by Congress in

2016—and championed by the tech industry-exempts many types of medical software from federal review, including certain fitness apps, electronic health records, and tools that help doctors make medical decisions.

There's been little research on whether the 320,000 medical apps now in use actually improve health, according to a report on AI published Dec. 17 by the National Academy of Medicine.

"Almost none of the [AI] stuff marketed to patients really works," said Dr. Ezekiel Emanuel, professor of medical ethics and health policy in the Perelman School of Medicine at the University of Pennsylvania.

The FDA has long focused its attention on devices that pose the greatest threat to patients. And consumer advocates acknowledge that some devices, such as ones that help people count their daily steps, need less scrutiny than ones that diagnose or treat disease.

Some software developers don't bother to apply for FDA clearance or authorization, even when legally required, according to a 2018 study in Annals of Internal Medicine.

Industry analysts say that AI developers have little interest in conducting expensive and time-consuming trials. "It's not the main concern of these firms to submit themselves to rigorous evaluation that would be published in a peer-reviewed ALL PHOTOS BY SHUTTERSTOCK

66 If failing fast means a whole bunch of people will die, I don't think we want to fail fast. Nobody is going to be happy, including investors, if people die or are severely hurt. Oren Etzioni, chief executive officer at the Allen Institute for AI in Seattle ......

Some risks won't become apparent until an AI system has been used by large numbers of patients.

journal," said Joachim Roski, a principal at Booz Allen Hamilton, a technology consulting firm, and co-author of the National Academy's report. "That's not how the U.S. economy works."

But Oren Etzioni, chief executive officer at the Allen Institute for AI in Seattle, said AI developers have a financial incentive to make sure their medical products are safe.

"If failing fast means a whole bunch of people will die, I don't think we want to fail fast," Etzioni said. "Nobody is going to be happy, including investors, if people die or are severely hurt."

#### **Relaxing Standards at the FDA**

The FDA has come under fire in recent years for allowing the sale of dangerous medical devices, which have been linked by the International Consortium of Investigative Journalists to 80,000 deaths and 1.7 million injuries over the will be responsible for monitoring their Some AI devices are more carefully past decade.

for use through a controversial process called the 510(k) pathway, which allows companies to market "moderate-risk" products with no clinical testing as long as they're deemed similar to existing devices.

In 2011, a committee of the National Academy of Medicine concluded the 510(k) process is so fundamentally flawed that the FDA should throw it out and start over.

Instead, the FDA is using the process to greenlight AI devices.

Of the 14 AI products authorized by the FDA in 2017 and 2018, 11 were cleared through the 510(k) process, according to a November article in JAMA. None of these appear to have had new clinical testing, the study said. The FDA cleared an AI device designed to help diagnose liver and lung cancer in 2018 based on its similarity to imaging software approved 20 years earlier. That software had itself been cleared because it was deemed "substantially equivalent" to products marketed before 1976.

AI products cleared by the FDA today are largely "locked," so that their cal-

culations and results will not change after they enter the market, said Bakul Patel, director for digital health at the FDA's Center for Devices and Radiological Health. The FDA has not yet authorized "unlocked" AI devices, whose results could

vary from month to month in ways that developers cannot predict. To deal with the flood of AI products,

the FDA is testing a radically different approach to digital device regulation, focusing on evaluating companies, not products.

The FDA's pilot "pre-certification" program, launched in 2017, is designed to "reduce the time and cost of market National Center for Health Research.

entry for software developers," imposing the "least burdensome" system possible. FDA officials say they want to keep pace with AI software developers, who update their products much more frequently than makers of traditional devices, such as X-ray machines.

Scott Gottlieb said in 2017 while he was FDA commissioner that government regulators need to make sure its approach to innovative products "is efficient and that it fosters, not impedes, innovation."

Under the plan, the FDA would precertify companies that "demonstrate a culture of quality and organizational excellence," which would allow them to provide less upfront data about devices. Pre-certified companies could then release devices with a "streamlined" review—or no FDA review at all. Once products are on the market, companies

own products' safety and reporting back Many of these devices were cleared to the FDA. Nine companies have been selected for the pilot: Apple, FitBit, Samsung, Johnson & Johnson, Pear Therapeutics, Phosphorus, Roche, Tidepool, and Verily Life Sciences.

> High-risk products, such as software used in pacemakers, will still get a comprehensive FDA evaluation. "We definitely don't want patients to be hurt," said Patel, who noted that devices cleared through pre-certification can be recalled if needed. "There are a lot of guardrails still in place."

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Once products are on the market,

companies will be responsible for mon-

itoring their own products' safety and

reporting back to the FDA.

But research shows that even low-

and moderate-risk devices have been

recalled due to serious risks to patients,

said Diana Zuckerman, president of the

"People could be harmed because something wasn't required to be proven accurate or safe before it is widely used." Johnson & Johnson, for example, has recalled hip implants and surgical mesh. In a series of letters to the FDA, the

American Medical Association and others have questioned the wisdom of allowing companies to monitor their own performance and product safety. "The honor system is not a regulatory re-

gime," said Dr. Jesse Ehrenfeld, who chairs the physician group's board of trustees.

In an October letter to the FDA, Sens. Elizabeth Warren (D-Mass.), Tina Smith (D-Minn.) and Patty Murray (D-Wash.) questioned the agency's ability to ensure company safety reports are "accurate, timely and based on all available information."

#### When Good Algorithms Go Bad tested than others.

An AI-powered screening tool for diabetic eye disease was studied in 900 patients at 10 primary care offices before being approved in 2018. The manufacturer, IDx Technologies, worked with the FDA for eight years to get the product right, said Dr. Michael Abramoff, the company's founder and executive chairman.

The test, sold as IDx-DR, screens patients for diabetic retinopathy, a leading cause of blindness, and refers high-risk patients to eye specialists, who make a definitive diagnosis.

IDx-DR is the first "autonomous" AI product—one that can make a screening decision without a doctor. The company is now installing it in primary care clinics and grocery stores, where it can be operated by employees with a high school diploma. Abramoff's company has taken the unusual step of buying liability insurance to cover any patient inju-

> ries. Yet some AI-based innovations intended to improve care have had the opposite effect.

A Canadian company, for example, developed AI software to predict a person's risk of Alzheimer's based on their speech. Predictions were more accurate for

some patients than others. "Difficulty finding the right word may be due to unfamiliarity with English, rather than to cognitive impairment," said co-author Frank Rudzicz, an associate professor of computer science at the University of Toronto.

Doctors at New York's Mount Sinai Hospital hoped AI could help them use chest X-rays to predict which patients were at high risk of pneumonia. Although the system made accurate predictions from X-rays shot at Mount Sinai, the technology flopped when tested on images taken at other hospitals. Eventually, researchers realized

the computer had merely learned to tell the difference between that hospital's portable chest X-rays, taken at a patient's bedside, with those taken in the radiology department. Doctors tend to use portable chest X-rays for patients too sick to leave their room, so it's not surprising that these patients had a greater risk of lung infection.

DeepMind, a company owned by Google, has created an AI-based mobile app that can predict which hospitalized patients will develop acute kidney failure up to 48 hours in advance. A blog post on the DeepMind website described the system, used at a London hospital, as a "game-changer." But the AI system also produced two false alarms for every correct result, according to a July study in Nature. That may explain why patients' kidney function didn't improve, said Dr. Saurabh Jha, associate professor of radiology at the Hospital of the University of Pennsylvania. Any benefit from early detection of serious kidney problems may have been diluted by a high rate of "overdiagnosis," in which the AI system flagged borderline kidney issues that didn't need treatment, Jha said. Google had no comment in response to Jha's conclusions.

False positives can harm patients by prompting doctors to order unnecessary tests or withhold recommended treatments, Jha said. For example, a doctor worried about a patient's kidneys might stop prescribing ibuprofen, a generally safe pain reliever that poses a small risk to kidney function, in favor of an opioid, which carries a serious risk of addiction.

As these studies show, software with impressive results in a computer lab can flounder when tested in real-time, Stanford's Cho said. That's because diseases are more complex—and the health care system far more dysfunctional—than many computer scientists anticipate.

Many AI developers cull electronic health records because they hold huge amounts of detailed data, Cho said. But those developers often aren't aware that they're building atop a deeply broken system. Electronic health records were developed for billing, not patient care, and

are filled with mistakes or missing data. A KHN investigation published last March found sometimes life-threatening errors in patients' medication lists, lab tests, and allergies.

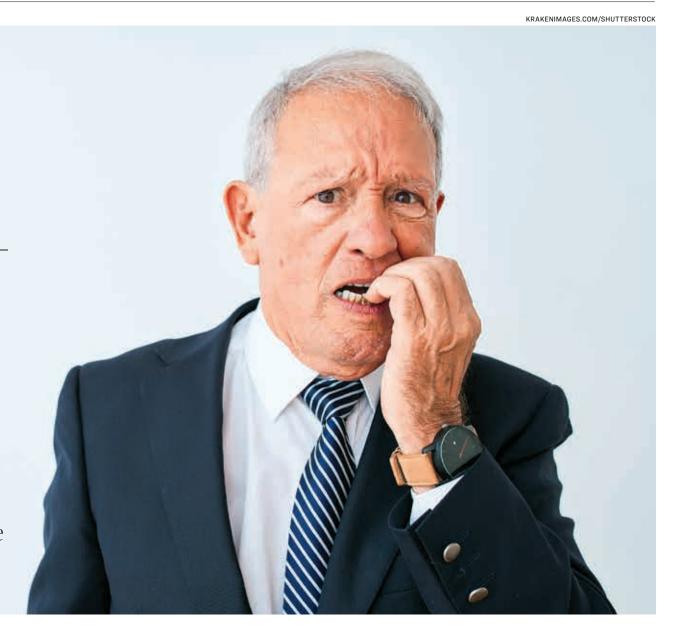
In view of the risks involved, doctors need to step in to protect their patients' interests, said Dr. Vikas Saini, a cardiologist, and president of the nonprofit Lown Institute, which advocates for wider access to health care.

"While it is the job of entrepreneurs to think big and take risks," Saini said, "it is the job of doctors to protect their patients.'

*Liz Szabo is a senior correspondent* focusing on acute care and end-of-life issues for Kaiser Health News, which originally published this article. KHN's coverage of these topics is supported by The John A. Hartford Foundation, Gordon and Betty Moore Foundation, and The SCAN Foundation.

THE ROOT CAUSE

# It's Official-Stress Ages Us



The impact of stress on the cells that color our hair reveals one way we age more quickly

#### **ARMEN NIKOGOSIAN**

Tress has been blamed for causing gray hair for ages and researchers have now discovered the specifics of this relationship. The stress response activates the fight-orflight response which can cause irreversible damage to pigmentproducing stem cells in the hair follicles known as melanocytes.

The recent study, published in Nature, investigated the effects of stress on the melanocyte stem cells of the hair follicle of mice. Melanocyte stem cells produce the pigment cells responsible for coloring the hair, skin, iris and other regions of the body.

The research team needed to single out the precise mechanism that led to the loss of these melanocyte stem cells. That was tricky due to the broad nature of the stress response, which affects systems throughout the whole body. Stress affects immune function, cortisol secretion, and norepinephrine production. Norepinephrine, (also known as noradrenaline) is used in the body and brain as a hormone and neurotransmitter. Norepinephrine's main job is to mobilize the brain and body for action.

After a process of elimination, the team focused their efforts on investigating the sympathetic nervous system, which generates the fight or flight response. The sympathetic nervous system is spread throughout the body with minuscule branches going to each hair follicle. When stressed, these sympathetic branches will secrete norepinephrine, which is then absorbed by the melanocyte stem cells nearby. Norepinephrine can spur the overproduction of melanocyte stem cells. If the stress lasts more than a couple of days, this overproduction leaves the melanocyte stems cells permanently depleted and they subsequently die.

The death of these stem cells is a process of aging. You can think of aging as something which once made ongoing contributions to the body no longer functioning and the body deteriorating as a result.

While researchers began linking stress to gray hair decades ago, these new findings reveal the specific mechanism and deepen our understanding of how stress affects the body. What first seems like a frivolous study confirming something most of us already knew—that stress turns hair gray—turns out to be another valuable addition to our understanding of exactly why stress is bad for us.

It seems highly unlikely that only the melanocyte stem cells of the hair follicle are killed off in this stress response. What about the implications of induced states mimicking the stress response. For example, amphetamine usage or even chronic anxiety create something nearly identical to a stress response. The ravages of chronic amphetamine use and abuse can be clearly seen in the user—and the effects go far beyond premature graying. Does The definition of aging is broad but the loss of regenerative ability is a core feature.

#### The stress

response activates the fight-or-flight response which can cause irreversible damage to pigment producing stem cells in the hair follicles known as melanocytes. norepinephrine cause these other aging effects as well?

What about the scores of other types of stem cells in our body regenerating cell lines that we don't wear on the top of our heads? We now have evidence that exposure to prolonged stress will permanently damage our regenerative abilities and stem cells are a primary driver for regeneration in our body. Loss of these cells directly impacts our regenerative ability. The definition of aging is broad but the loss of regenerative ability is a core feature. With the information presented here, I think we can now officially say: "Stress accelerates aging."

With this study, the groundwork has been laid for further consideration of how stress affects other tissues and organs in our bodies. This will hopefully pave the way for new studies investigating the effects on other stem cell lines as well as a better understanding of how to modify or even block the damaging effects of stress.

And what if there are ways to reverse this process?

In the world of naturopathy, relatively high doses of copper and manganese have been used to reverse some premature graying of the hair. Although I've never seen a complete reversal with this supplementation, I have seen hair darken again. Protection of the existing melanocyte stem cells seems like a probable mechanism but how do you get gray hair to turn dark again if the stem cell is dead? Could copper and manganese have effects on reviving the dead melanocyte stem cells? The sign of a good study is that it creates as many, if not more, questions than it answers. This study certainly fits that description.

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In the meantime, the best control against excessive stress in your life is you. Your stress response is not caused by what happens in your life, but how you respond to it. Many adults have poor stress management skills. Stress management can be learned and special emphasis should be placed on teaching our children and grandchildren these skills. The trend of insulating our children from the stress and difficulty of life has created a generation of adults who have little to no resilience to stress. We teach children the importance of hygiene, exercise, good nutrition, avoidance of tobacco and alcohol, and loads of other habits and behaviors to optimize their health. Now it is time to put stress management on that list.

Armen Nikogosian, M.D., practices functional and integrative medicine at Southwest Functional Medicine in Henderson, Nev. He is board-certified in internal medicine and a member of the Institute for Functional Medicine and the Medical Academy of Pediatric Special Needs. His practice focuses on the treatment of complex medical conditions with a special emphasis on autism spectrum disorder in children, as well as chronic gut issues and autoimmune conditions in adults.

#### FOOD IS MEDICINE

# Prebiotics and Probiotics Can Help Your Kids De-stress and Excel

Nurturing the beneficial microbes that live inside our bodies can help us cope with the stresses of modern life

#### JAYA JAYA MYRA

It's no surprise that kids are facing more stress than ever before. Global online learning platform Brainly did a national survey in December 2019 where they learned that 59 percent of students have constantly high-stress levels and 53 percent of students reported needing better sleep. Not surprisingly, 53 percent of students also reported needing better time-management skills. What can be done about this, and how can we as parents (covertly, if necessary) lend a helping hand? Surprisingly, it may be as simple as

adding additional pre and probiotics to your kid's diet. Probiotics are the beneficial bacteria in the gut and on our skin that are well known for supporting proper digestion. It turns out that those friendly microbes we all carry with us, known as our microbiome, do much more than just help digest our food: they and their prebiotic counterparts also play a significant role in improving mood, reducing stress levels, and helping us sleep.

Probiotics come in many forms, from supplements to kid-friendly fizzy drink shots, but you can get them easily from foods you're already eating, like yogurt, kefir, sauerkraut, tempeh, miso, and one of my favorites, kombucha, a type of fermented tea. Fermented foods, in general, contain active probiotics. Prebiotics are the food those healthy bacteria feed on. Getting probiotics into your body is great, but feeding them and nurturing them is perhaps even more important. It's only a fairly recent discovery that fiber is one of the primary prebiotic substances that your gut flora needs to thrive. Previously, doctors thought fiber was mainly for elimination, but now there are clear scientific connections to its role

as food for your microbiome. Not getting enough prebiotic fiber can contribute to things like poor sleep, brain fog, stress and lethargy, none of which are helpful to students of any age.

Any food that contains ample fiber is a great prebiotic nutrient, including bananas, avocado, leafy greens, oats, onion, garlic, and even apples. Apples are a wildcard because their seeds have been shown to also contain many probiotic strains. Eating apple seeds can be safe, contrary to popular belief regarding their cyanide content; as long as you don't chew dozens of apple seeds, you'll be fine. Swallowing them whole offers very little risk.

Recent statistics have shown that 95 percent of people don't get Traditional advice for aging well finds a helpful echo in modern medicine

#### LYNN JAFFEE

My neighbor Marie is hardly ever home. She's out during the day at one of her volunteering gigs or hanging out with a friend. Friday nights are date night, which usually involves dinner out with her boyfriend. Weekends are spent visiting with family, and during the summer, she spends time at the lake cabin. It's no wonder that I rarely see her she's constantly on the go. The kicker is

that Marie is 88 years old. Marie is a role model for how I want to age. She's active, involved, and relatively healthy. It's a puzzle, however, why some people grow older with good health and energy, and others decline much sooner.

Certainly, genetics and lifestyle play a big role. That said, there are many exceptions—people living into their 80s, 90s, and even past 100, who have been dealt a poor genetic hand and have never paid much attention to living the clean life. So, what's the deal?

One explanation may involve the theory behind epigenetics, in which your genes are affected by external or environmental factors instead of DNA sequencing. This simply means that beyond your inherited genetic makeup, how you live also impacts genetic expression—how your genes communicate with your cells.

In Chinese medicine, your body constitution is shaped by something called essence. It determines your overall health, how you grow and mature, your fertility, and the aging process. You inherit that essence from your ancestors, which sets the stage for your physical makeup (much like genes). As you age, that original essence is slowly depleted and can never be replaced. When it's completely used up, you die.

However, there is a second kind of essence that can augment and conserve the original stuff. By living healthfully, eating well, and avoiding crazy extremes, you can protect your original essence so it does not decline as quickly. This centuries-old theory from Chinese medicine sounds very much like

the current, cutting-edge study of epigenetics. Beyond claiming to have known this first, Chinese medicine also offers up some ideas on how to protect yourself to age as long and healthfully as possible. This includes the following:

**Balance your rest and work cycles.** You need enough rest in the form of sleep to heal and rejuvenate your body. In addition, while a certain amount of work is important to keep your mind sharp, in Chinese medicine working excessively is considered to be a cause of illness.

**Move your body.** Movement in the form of exercise is the closest thing to the fountain of youth. Movement creates





How you live also impacts genetic expressionhow your genes communicate with your cells. more movement and keeps your joints lubricated, your blood flowing, your heart and lungs healthy, and your mind sharp. Just remember to balance it with adequate rest.

What you eat makes a difference. You can't expect to ignore your diet for decades and live long and healthfully. Yes, sometimes it happens that you will see a 90-year-old who lives on bagged snacks and food from the drive-through window—but not many.

By eating real food, predominantly plant-based food that hasn't been preserved or otherwise "enhanced" with chemicals, you will be ahead of the game. And you don't have to revamp your whole kitchen. Research has documented that even small, healthful dietary changes make a positive difference in your health.

Movement

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youth.

of exercise is

Mind over matter. The Chinese have a saying that emotions are the cause of 1,000 diseases, and I have found this to be true in my acupuncture practice. Stress, anxiety, worry, depression, and negativity impact your health, and not in a good way. Negative emotions impact your digestion, sleep, blood pressure, and hormonal makeup, for

starters. The impact of a poor emotional state is very real and far-reaching. Current research indicates that people with a negative outlook have a shortened expected lifespan. My prescription? A little gratitude every day.

Your genetic makeup is a bit like a hand you are dealt in a card game. You may get a good or not-so-good hand, but how you play the game is really what counts. Whether talking about epigenetics or how to preserve essence in Chinese medicine, lifestyle choices make a difference in how you age.

Lynn Jaffee is a licensed acupuncturist and the author of "Simple Steps: The Chinese Way to Better Health." This article was originally published on AcupunctureTwinCities.com

enough fiber each day. So even if you're getting probiotics, if they don't have the food they need, they'll starve to death. Stress has also been shown to kill the gut microbiome, meaning that if you are dealing with lots of stress (like your kids do every day at school), regularly consuming both pre and probiotics can be important.

Making changes is not always easy, and few children will opt for a fiber supplement. So to help with that, here are some simple things you can do to get both the pre and probiotics you and your kids need to destress and get a better night's sleep.



**Breakfast:** Try swapping out cereal for oatmeal or steel-cut oats with banana. If you're more of a smoothie person, add some peanut butter, cultured yogurt, bananas, and fresh cacao. This will give you ample prebiotics to start your day off strong (even without the yogurt if you're dairy-free, as I am).

**Lunch:** For younger kids, peanut butter with whole-grain bread is a great prebiotic option, paired with cultured yogurt and granola to add in the probiotic content. If you're not a peanut butter fan, you can opt for a leafy green salad, fresh veggies, or

> Food, after all, is your best medicine and simple changes can lead to a mountain of positive difference.

even a grain bowl with barley or brown rice. Don't forget to add an apple.

**Dinner:** You have many dinner choices that ensure your kids will enjoy the healthful upgrade. Try a bowl of miso soup for an appetizer. Add some fresh grains or fresh vegetables as a side dish, or even a noodle veggie stir fry. Even a homemade fruit salad (don't forget the cultured yogurt) will give you a pre and probiotic boost to help you get better sleep.

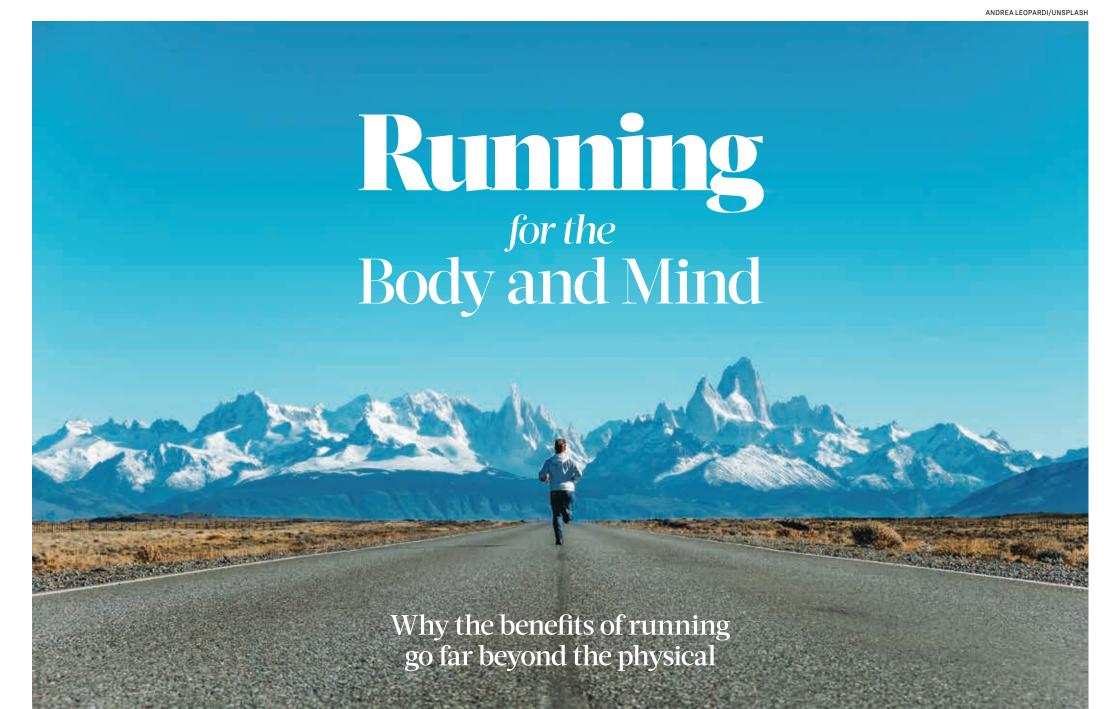
Don't take my word for any of this, try it for yourself and see how you



feel. Food, after all, is your best medicine and simple changes can lead to a mountain of positive difference, not just in your health, but in your mindset, motivation, and emotions. Happy eating!

Jaya Jaya Myra is a wellness lifestyle expert and go-to media expert on mind-body wellness, stress management, mindfulness, food for mood, and natural, healthy living. She's a best-selling author, TEDx and motivational speaker, and creator of The WELL Method for purpose-filled healthy living. Visit www.JayaJayaMyra.com





#### **CONAN MILNER**

aura Bourdeanu vividly remembers the moment police told her that her best friend had been killed. Shocked and short of breath, Bourdeanu went for a walk to clear her head. Then she began to run.

"I was not a runner, but it felt so good to do it," Bourdeanu said. "Every day after that, I ran a little more. It's been 20 years, and I haven't stopped."

Bourdeanu, now 47, has never had any ambition to run a marathon or set records. Instead, she runs as a kind of meditation. She learned from her first run that it was a way to find a way forward in the midst of an overwhelming event. What she's experienced every run since is that it clears her mind and puts her world into perspective.

"I try to run on days when I know I'm going to have a busy day, because that's usually how I'm going to plan my day," she said.

It also offers her rare quality time alone to recharge and refresh.

"I appreciate life more, and the people around me, by having time by myself. I think we forget how important that time is," said Bourdeanu. "You can watch TV or read a book, but it's not the same, because your focus is on something else, not you."

#### Your Brain on Running

As a nurse practitioner, Bourdeanu is familiar with all the physical benefits associated with running—it's one of the most effective and accessible exercises for burning calories, improving your respiratory function, and strengthening your cardiovascular system. But it's clear that the mental benefits are what keep her running first thing almost every morning.

"I know it sounds crazy for somebody to go running before work, and at some point in my life I felt the same way, but there is nothing better than that half an hour of running," she said.

Bourdeanu is not alone. Nearly all the runners who The Epoch Times spoke to said the biggest reward they received from running was a clear, focused, and more creative mind. Author Len Saunders has been an avid runner for almost 40 years. He says the concepts for the children's

books he's written all came to him while running. "It frees my mind," Saunders wrote in an email. "I do my best thinking while I run. Sometimes, it helps me think out a problem, or

to simply relieve stress I may have." Scientists have identified a few factors that may explain some of the positive mental effects of a good run. One is extra oxygen. Running makes you breathe harder and pump blood

faster, bathing your brain in much more oxygen than it receives in a sedentary state, thus improving brain function. Aerobic exercise also stimulates your hippocampus, a master gland in your brain that governs learning and memory. For those who run longer distances, there's the euphoric runner's high when the body rewards itself with calming chemicals. These include endorphins (hormones that fit into your body's opioid receptors to relieve pain and relax muscles)

and endocannabinoids (chemicals similar to the psychoactive constituents in marijuana that our body secretes in response to stress). Alexandra Dayrit, PR manager

for Gold's Gym in the Philippines, says she runs primarily because it lifts her mood. "Running makes me sane," Day

rit said in an email. "It takes all my life's stress away, and it gives me that added boost to tackle everyday challenges." For some, running can relieve

anxiety and depression. Studies show that regular aerobic exercise may be just as effective as medication, without the side effects.

For 31-year-old Ashley Davidson, a busy PR director, running is primarily a stress reliever, but it has also given her more confidence. "It's really helped with my selfesteem, which has been pretty low

my entire life," she said. Davidson started running in 2011, after her now ex-husband told her she needed to find a hobby. She has since run several marathons, half marathons, and 5Ks, but she recently took a break. The time away from running made her realize some of the attributes she was missing.

"I've not been sleeping as well as I usually do, and I'm not as creative. I feel my mind is a little more cloudy, and I think it's because I've taken time off from running," she said. "I'm a lot happier when I run."

#### **Preventing Injury**

A big reason running is so effective at clearing your mind is it demands that you make the most of your body. With the world whizzing by as fast as your feet will allow, you're forced to focus your attention on breathing, form, and movement

Running also offers a small taste of flight. One foot is always in contact with the ground when you're walking. When you're running, you're briefly airborne with each stride. However, such freedom means your body sustains more impact and faces a greater risk of injury when you run. But this doesn't mean running is inherently harmful

While many believe run-

#### I appreciate life more, and the people around me, by having time by myself. I think we forget how important that time is.

Laura Bourdeanu, nurse practitioner

Running makes you

breathe harder and

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bathing your brain in

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it receives in a sedentary

state, thus improving

brain function.

ning is "bad for the knees," research shows otherwise. In a 2017 study funded by the National Institutes of Health, leisure running was not found to cause long-term knee damage or osteoarthritis, contrary to what researchers anticipated. Runners were also less likely to have knee pain than non-runners. Other studies have shown that running can increase bone mass and slow bone loss.

Yet runners can still run into problems: Shin splints, runner's knee, iliotibial band injuries, and more are common among runners of all levels. According to Nate Helming, San Francisco-based running coach and co-founder of The Run Experience, postural of these injuries.

Helming says that our bodies are well-designed for running, but our modern lifestyle has dramatically changed the way it was intended to move. Hours of sitting, texting, and other posture-contorting behaviors leave us with a slouchy vehicle that is woefully underprepared when we pick up the pace.

"Running requires more range of motion, greater speed, greater impact, and greater coordination," Helming said. "If we're moving with a limited capacity—our hamstrings aren't as long, our hips aren't as open, our shoulders are stiffer that has mechanical consequences. When you add up enough time, it can lead to an injury."

Injury prevention goes deeper than a hamstring stretch. Helming recommends four basic exercises to address the common weaknesses in our hips, core, and shoulders that we compensate for when we run: the squat, pushup, lunge, and the burpee—a pushup/ jumping jack combo.

Many runners emphasize shoes as the primary protection against the rigors of running. Helming says to invest in something decent, but don't rely on shoes alone for injury prevention

> "You need something that gives you cushioning and support, but know that shoes are not going to be the savior for you and your body," he said. "Even the nicest shoes in the world can minimize impact

and correct your mechanics only so

much."

Hitting Your Stride Whether it's on a treadmill,

trail, or just a jog around the block, running is a convenient way to get in the daily 30 minutes of aerobic activity that health experts say we need to stave off obesity and chronic illness.

However, if it's been several years since you've attempted to run, Bourdeanu advises you to take it slow.

"Start walking. Run for 10 seconds, slow down until you catch your breath, and run again. The next day increase to 15 seconds. Eventually, you'll do a run," she said.

With time, running can become an exhilarating experience. Los Angeles-based yoga teacher Janay Rose incorporates running a few times a week into her fitness routine. While yoga is still her primary exercise, she says running gives her an extra jolt of energy. "It hits me imbalances and other body me- with that adrenaline. You can run chanics problems are at the heart away from everything going on in your life and really detox," Rose said in an email.

However, you can get too much of a good thing. Studies find that while a moderate amount of running can strengthen joints and improve cardiac function, pushing beyond this limit too often for too long can wear the body down and lead to heart problems.

Bourdeanu says running can be addictive, especially when she's overcoming a stressful time in her life. But seeing the damage of overdoing it keeps her from running too much.

"I have a lot of patients who are marathon runners who have no cartilage left," she said. "I tell them, 'Please don't do this. It's going to damage your joints.' They say, 'But it's so much fun.' Well, it's fun now, but once you turn 45 or 50, the pain is not going to be much fun.

Helming adds that the monotony of marathoning is not something our body was made to handle. For runners who seek a challenge, he recommends the hills, softer surfaces, and varied terrain of trail running

"I don't think we were designed to hit the same stride so much like in a marathon. Trail running is probably much more akin to what our body is used to," he said. "I've found that runners who run trails are able to cover the same distances, if not more, without being as beat up and are usually a little bit healthier because of the demand of it."

If you'd like to make running a part of your life, Helming recommends setting a plan that you can live with long-term. Challenge yourself, but don't set the bar so high that you become overwhelmed and give up. Most importantly, have fun.

"Will power is a limited mental muscle. You will run out of it. So figure out how to make running not some masochistic, joyless exercise, but something that is enjoyable," he said.



A new book explores how different mindfulness practices can change our relationship with depression

#### **DEBORAH YIP**

or many people, depression is a lifelong battle. If you have one episode of depression, there is a 30 percent chance of recurrence within 10 years, increasing to an 80 percent chance after two episodes. Only about onequarter of people achieve remission after six months of antidepressant medication treatment.

While these statistics are alarming, there is some good news: Mounting research points to the promise of mindfulness—paying attention to your present thoughts, feelings, and sensations without judging them—in helping people alleviate depression. Studies have suggested that mindfulness-based cognitive therapy is just as effective as medication in preventing depression relapse among adults with a history of recurrent depression, and in reducing depressive symptoms among those with active depression.

In his new book "When Antidepressants Aren't Enough: Harnessing the Power of Mindfulness to Alleviate Depression," Stuart Eisendrath, former director of the UCSF Depression Center, explores how people can use mindfulness to develop a healthier relationship with their depression. The goal, he writes, is not to get rid of depression completely—as this may be unlikely for many people—but to accept it and detach from it enough to live a happier, healthier life.

Eisendrath reminds us that we don't have to be completely free of depression to accomplish our goals. His book provides practical tools for people suffering depression. Here are a few of them.

#### **Distance Yourself From Depressive**

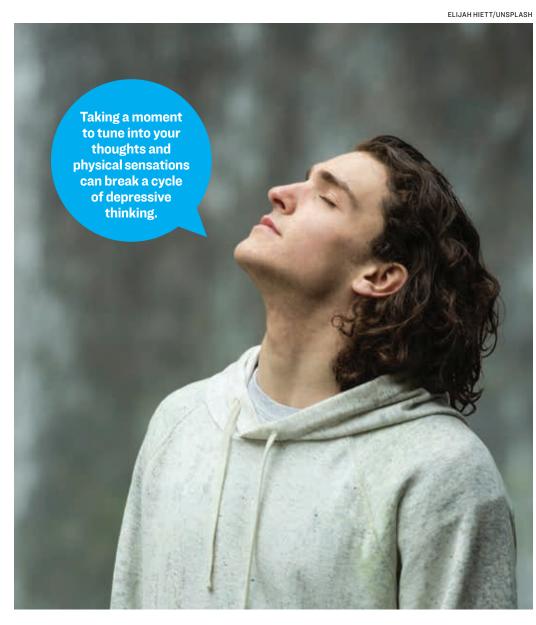
Thoughts Eisendrath emphasizes that depressionfueled thoughts are just thoughts and not facts. Leaning into them often triggers negative thought spirals, where you keep replaying the same thoughts over and over. However, learning to distance yourself from these self-critical or catastrophizing thoughts through mindfulness can help you choose to react differently the next

time they bubble up. One exercise he recommends is what he calls "thought detachment," where you imagine your thoughts are drifting clouds or leaves floating by and then practice not engaging or becoming attached to them.

Practices like this can strengthen your "observing self," a stance where you engage with emotionally charged thoughts in a less reactive way. For example, instead of thinking, "I am worthless," you may reframe it as "I am having a thought that I am worthless." Creating this bit of distance from your thoughts may help soften their potency and help you let go of judgment, criticism, and ruminations about the past.

#### **Accept Depressive Feelings and**

Thoughts Instead of actively avoiding or resisting de-



pression and depressive thoughts, which may worsen symptoms, Eisendrath recommends trying to accept them. Acceptance does not mean being resigned or giving up-it means acknowledging and embracing what feelings or thoughts are present, and letting go of the desire to change what happened in the past. Research suggests that practicing acceptance can help improve your symptoms of depression, quality of life, and ability to function.

To help with acceptance, Eisendrath suggests the RAIN technique:

- Recognize when a strong or upsetting emotion is present.
- Accept the emotion without judgment Investigate the feelings, thoughts, and sensations you are experiencing
- Think about how you might react to them, if at all. Nonidentify with your emotions and
- shift to your observing self.

#### **Focus on the Present**

Rumination about past failures and catastrophizing about the future take up a lot of mental space in depression. Eisendrath recommends mindfulness practices that can help you focus on the present, break your attention away from these thought spirals, and, over time, change these tendencies. Present moment awareness and counting breaths are two ways to practice mindfulness.

**Present Moment Awareness:** 

- Sit upright and comfortably. Close your eyes or allow your gaze to fall down. Notice the sensations throughout your body.
- Shift your attention to your breath • After a few minutes, shift your
- attention to the sounds around you. • After a few minutes, shift your attention to your thoughts. Notice them arise, then drift away.

#### Practicing acceptance can help improve your symptoms of depression, quality of life, and ability to function.

#### **Counting Breaths:**

- Focus on your breath moving in and out of your nostrils for a few minutes. Then, begin counting each inhalation.
- Start from zero and go up to ten, then go back down to zero. Repeat. If you notice your mind wandering,
- shift your attention back to your breathing and start from zero again. You can try this exercise for 5-10 minutes or as long as you are comfortable.

#### Self-Compassion

Self-compassion helps you practice selfkindness and recognize your common humanity with others (vs. feeling isolated and ashamed). Self compassion also helps you avoid overidentifying with your perceived faults. It can also help you manage your inner critic and lessen its impact—all of which may buffer against depressive symptoms. Eisendrath recommends several practices to improve self compassion, including a lovingkindness meditation and finding your common humanity.

Loving-kindness meditation: There are different variations of this practice, but Eisendrath suggests that you start by sitting comfortably in a quiet place and notice your breath. Place your hand over your heart and repeat the following with each breath:

May I be safe May I be healthy May I be happy May I live with ease

If you are not comfortable directing these phrases at yourself, you may direct them toward somebody else (e.g. a loved one, a pet, or an infant).

Common humanity: Throughout your day, observe other people with whom you cross paths. Bring your attention to a stranger, and practice saying to yourself:

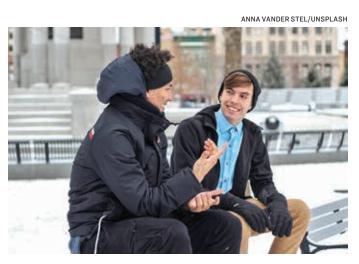
Just like me, they want to be happy. Just like me, they make mistakes and suffer, too. Just like me, they are doing their best

in the world.

While Eisendrath encourages people to try self-compassion when managing depression, he also reminds them to be self-compassionate when practicing mindfulness. Often when people first begin practicing mindfulness, they feel like they're failing because their minds wander and they are easily distracted. However, mind wandering is a common, natural part of mindfulness practice and happens even to the most advanced practitioners; it is not a sign of failure. Mindfulness is a skill to be honed at your own pace over time.

While mindfulness may not replace other types of therapy for depression for everyone, it can help people in conjunction with or after other treatments, providing lifelong tools for taking control of depression. If you are suffering from depressionor even if you're just someone wanting to be happier in life—it might help to pick up Eisendrath's book and try out some of these practices yourself.

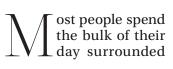
Deborah Yip is a medical student at the University of California-San Francisco, a former GGSC research assistant, and a contributor to Greater Good, which first published this article.



## Why You Should Chat Up a Stranger

Our random conversations have health benefits and deepen our sense of connection

#### **DEVON ANDRE**



by strangers: fellow shoppers, commuters, diners, people, we typically stay silent. But breaking the ice could help your health in a number of ways.

Research suggests that talking to strangers can mprove mood, boost wellpeing, reduce stress levels and help heart health. Unfortunately most people are averse to talking to people they don't know.

But that may be because of a misconception. Surveys suggest that most people think that others don't want to be spoken to by a stranger. Research, however, suggests the opposite: the majority of people are willing to engage in a conversation when a stranger strikes one up.

Conversing with strangers does a few things that pay health dividends. For starters, it allows people and those waiting for the to feel connected to the doctor. Even though we community around them. are surrounded by other It can also make relatively

Striking up a conversation with a stranger can boost your well-being-

when it comes

unpleasant situations like sitting on the bus or waiting for your turn at the checkout—that much

Social isolation, on the other hand, is closely associated with health risks that are comparable to smoking and obesity. Research indicates that human connection is more important than income when it comes to happiness.

A 2014 study found that people who felt more connected to their community were significantly less likely to suffer a heart attack. On a seven-point scale created by researchers, people who had a stronger sense of community—those who spoke to strangers or others in their community—enjoyed a 17-percent tor from the University lower heart attack risk for each point.

The health benefits are not exclusive to the insti-

gator, either. When people are spoken to by a stranger, receive a thank-you card, or receive a random act of kindness, their happiness goes up too. The more connected people are, the better they tend to feel and the less stressed they are.

Stress, as we know, can play a major role in sleeplessness, physical pain, blood pressure, obesity, and heart-related illnesses. So the next time you want

to strike a conversation with someone you don't know, go for it! You have far more to gain than to lose.

Devon Andre holds a bachelor's of forensic science from the University of Windsor in Canada and a Juris Docof Pittsburgh. Andre is a journalist for BelMarra-Health, which first published this article.

and their's too. better

Research indicates that human connection is more important than income

to happiness.

# Want to Stay Motivated to Accomplish Your Goals?

Mindset shifts can help you find a deeper connection to your goals so you stick with them

#### SACIA ASHE

n recent years there has been a surge against the tradition of setting New Year's res-Lolutions, but could this simply be the result of the majority of the population not being able to uphold their self-commitments?

Setting New Year's resolutions isn't the only time you can set goals that reflect the person you want to become. However, one of the pitfalls that many face when choosing these goals is treating them as a way to show their lofty ambitions off to friends and family, rather than truly looking inward for goals that align with who they truly want to be. A trick to setting goals you will stick to is asking yourself why you are setting them.

#### When you find honest motivation, you can set goals that will be easier to uphold.

If you are setting the goal to lose 10 pounds for the third year in a row, why? Do you truly want to lose weight? If so, what will make this year different? How will you feel when you

achieve this goal? What will it change? Asking yourself these deeper questions can sometimes be difficult. You may find that a goal you've repeatedly set but never achieved is not serving you.

You may discover that you don't want to lose weight but you want to feel more confident in your body. You can then set a goal based on that stronger motivation. Maybe you could find new forms of exercise that make you feel powerful. Perhaps you could do a closet refresh and purchase clothes you feel more confident in. When you find honest motivation, you can set goals that will be easier to uphold.

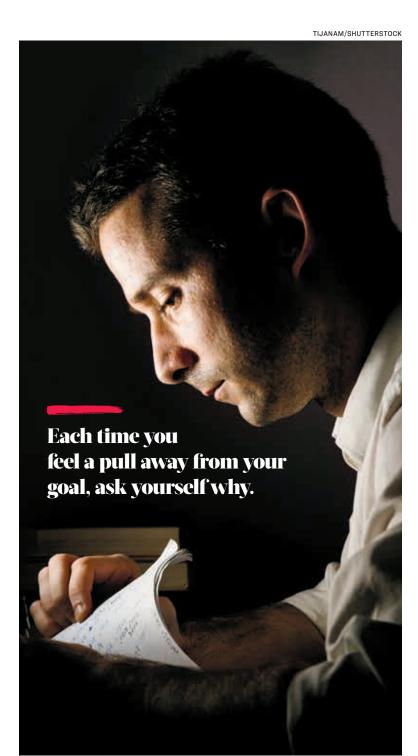
After setting goals you can commit to, you need to create a game plan that will lay out the specific steps it will take to achieve your goal. As an example, perhaps you want to start a passion project. The first step would be to figure out what specific and measurable things you want to accomplish by the next year. Perhaps by 2021, you hope that you will be making an extra \$10,000 from your side hustle. Now, what steps do you have to do to achieve that? Break down these steps into small tasks that you can write into your weekly or daily to-do list.

Once you know the steps it will take to achieve your

goal, how do you maintain motivation to follow through? Since your goal is based on your intrinsic rather than external motivations, when you waver in your discipline take a step back and remember why you want to achieve your goal. Envision how you will feel when you accomplish it and embody that feeling. Imagine the impact it will have when you achieve your goal.

Each time you feel a pull away from your goal, ask yourself why. What are you afraid of? What is making you waver, and how can you fix the situation? To truly maintain motivation, you need to ask yourself the uncomfortable questions and push through the temporary hardship while resisting the temptations of immediately rewarding activities (like eating brownies). With these mindset shifts, you can join the four percent of people who keep their resolutions each year.

Sacia Ashe is a dancer, health food lover, and blogger who has a passion for wellness and living a healthy lifestyle. Through sharing recipes, glimpses into her own life, and wellness tips and products, she strives to help others find a life that aligns with their values and health vision.



THE **EPOCH** TIMES

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# How to Start a **Kindness Revolution**

A book explains how to boost kindness in the world, and why that would make life better for us all

#### JILL SUTTIE

indness. That's a word we don't hear a lot these days. Perhaps it seems antiquated in our competitive, socialmedia-infused, politically contentious culture—reserved for fools and chumps, not for those who want to get ahead.

But nothing could be further from the truth, according to Tara Cousineau, researcher, and author of the book "The Kindness Cure." In today's world, she argues, we need to cultivate kindness how-to on starting a kindness revolution—and more than ever—not only for the sake of our so- overcoming barriers to kindness. ciety but for our own well-being.

Cousineau points out that we are wired for *Continued on Page 10* 

kindness—that it's part of our biological heritage, designed to help us foster relationships, work together, and survive in groups. When we are kind to others, it releases neurochemicals in our bodies that increase trust and give us a warm feeling.

Research suggests that being kind toward others is associated with better and stronger mental and physical health, relationships, life satisfaction, communities, and even economies, writes Cousineau. Her book points to some of the research behind these claims, but it is mainly a

We are wired for kindness that it's part of our biological heritage, designed to help us foster relationships, work together, and survive in groups.

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# How to Start a Kindness Revolution

#### Continued from Page 9

Because let's face it: It can be hard to be kind, particularly when we're stressed out or emotionally spent. I know when I'm overwhelmed I often forget to notice the people around me or be empathic to their suffering-sometimes withdrawing from them or, worse, lashing out at them. This kind of reactive behavior tears at the fabric of our relationships at the interpersonal, workplace, and even societal level—making it harder to feel good and to accomplish common goals.

So, how does Cousineau suggest we remember to practice the Golden Rule? Here are just a few of her most helpful ideas.

**Reset Your Stress** When you are feeling

stressed, your body is flooded with neurochemicals that prepare your internal alarm system for fight, flight, or freeze states. Obviously, all of these act against your desire to reach out and be kind to others.

So it's important to soothe yourself when you are feeling stressed. That could mean doing some slow, easy stretches, practicing breathing meditation, taking a walk in the woods, or spending time petting

your dog. It could mean talking to a friend or getting a hug from a loved one. When you soothe your psyche with these self-care practices, you will be more ready to be kind to others.

For me, self-care means planning a mid-afternoon stroll—if only for 10 minutes. Because writing can make me lose track of time, I like to set an alarm on my phone to remind myself to take around us; so it's important that we try a break. It's amazingly stress-relieving, to influence our social networks to be and I always come back to my desk feeling refreshed.

#### **Practice Awareness**

When we're rushed, we often tune out what's happening around us. You need only think of the famous study in which divinity students who were trying not to be late to their next class passed right by someone in clear distress—despite just having practiced a talk on the Good Samaritan parable from the Bible! They just didn't see that person.

To be kind, we need to learn to stop, pay attention, and practice empathy for others. Mindfulness meditation is one way to foster these skills.

By deliberately attending to the sensations in our bodies, our thoughts, and what's happening in our environment—without judgment—we can use mindfulness practice to become more open to our current experience and strengthen the skills of attention. It can also help us to become more attuned to our emotions, which, in turn, helps us

Savoring the

positive helps

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kindness in the

ourselves.

to be empathic toward others. And certain forms of meditationlike Metta meditation, in which you express loving-kindness for people outside of your re-train our own circle of careseem to increase compassion.

I began a mindful ness practice a couple of years ago, and I do feel it has helped me be kinder. For example, I recently had the urge to snap at my son, who'd texted me

that he needed a ride home from an event that was running two hours late. By stopping and noticing my feelings of anger and the thoughts I was having—He's not being considerate! I'm not a chauffeur!—I was able to see that my reaction was overblown. I avoided sending a blaming text, and we had a warm conversation about his conference experience. Relationship preserved!

**Use Positive Conditioning** 

We are naturally conditioned to pay attention to the negative things happening around us. Media headlines take advantage of that predisposition, leading with sensational stories bound to make us feel enraged, fearful, helpless, or all of the above. And those emotions are antithetical to kindness.

We need to counter that by purposefully creating opportunities for positive emotion. That could mean something as simple as smiling at the people you pass on the street, or giving your child a warm hug when you walk in the door.

In fact, being kind will likely fill you with warm feelings in the momentso it can be a gateway to even more

kindness. And you can augment those feelings by learning to savor them-either then or later on—by reflecting on your experiences. As Rick Hanson has pointed out, savoring the positive helps re-train our brains, making it easier to act with kindness in the future-even if the kindness is toward ourselves. This, I admit, is some-

times hard for me to do. I tend to see kindness toward others as part of being a good human, not a way to improve my own happiness. But one thing that helps me is writing in my journal at the end

of the day, zeroing in on moments of kindness and what they meant to me. Doing so deepens those positive feelings, setting the scene for future acts of

#### **Create Circles of**

**Caring and Kindness** We are incredibly influenced by those kinder.

One way to do this is by practicing gratitude-giving thanks to others for their kindnesses. Saying "thank you" to people can augment their feelings of trust and goodwill and can inspire both of you to be kind in the future. In this way, gratitude can create a circle of kindness that contagiously spreads outward.

We can also do favors for others, starting small and working our way up. Helping out a stranger may seem too difficult, especially if you tend toward introversion. But once you've mastered kindness toward those close to you, try practicing kindness with someone a little further outside your comfort zone. Maybe you can smile and say hello to your local coffee shop barista, or wave through the bike rider who gets to the intersection after you, or offer up your seat on the bus, or respond kindly to an online political rant.

I've tried all of these things, and have seen firsthand how they lead to kind responses and feelings

of well-being. In fact, it can be addictive—the more you do, the more you want to do. Of course, kindness is

not always the answer. Sometimes, we have to defend ourselves if we're being attacked or abused. But it's probably the answer more often than we think. If you start with kindness toward yourself, increase your awareness, practice empathy, and look for opportunities to be kind, no doubt you'll end up being

kinder to those around you. As Cousineau writes, "The kindness cure is not just for you, it's for all of us."

Jill Suttie, Psy.D., is Greater Good's book review editor and a frequent contributor to the magazine. This article was originally published by the Greater Good online magazine.



"The Kindness Cure" by Tara Cousineau, Ph.D. **New Harbinger** Publications.

generosity.



# **ADVERTISING OVERLOAD** Guarding Your Mind in the Age of Consumption

#### We absorb far more advertising messages than we think, and that has an impact on our thoughts and emotions

#### **CONAN MILNER**

e seek media for information and entertainment, but media seeks something from us too. In order to watch a video or read an article online, you'll probably be forced to see an advertisement.

And companies pay a lot to make sure we see them. An estimated \$579 billion was spent on advertising worldwide in year before. Ad spending in 2019 is estimated at \$639 billion.

According to Isha Edwards, a brand marketing consultant in Atlanta, Georgia, ads are designed to make people react in a particular way—which makes it all the more important to be mindful of the media we consume.

"We play with your subconscious mind," Edwards said. "Recording artists, film, television—any type of storyteller does the same thing. They don't all have evil intentions ... but from a marketing standpoint, it's very tactical. We're not just sharing, we're trying to get you to act on what we share."

This is what advertisers refer to as an "impression"—a subtle yet persistent command that advertisers use to get your mind to reach a desired conclusion. Often it's not obvious or overt manifesting in consumers as a small unconscious bias; a subtle like or dislike for certain things

The key strategy in promoting an impression is repetition, because marketers know the more you're exposed to a message, the more likely it is that you will react.

"People don't think these messages impact them but they do," Edwards said. "If media makes that same impression over and over, your mind will say, 'I've seen this seven times, so this must be important.' You either consciously make a choice of dismissing it, or say, 'Oh, Macy's is having a sale."

#### The Power of Branding

Archeologists have found advertisements that are over 3,000 years old. But back then, even in urban areas, ad exposure was minimal and contained. Posters and graffiti that announced events, showed goods, or endorsed political candidates were concentrated to highly trafficked sections of town.

Today, ads are virtually inescapable. Experts estimate that we're exposed to we can't process all of it, and much of monkey-baby character.

it we can tune out. But Edwards says that even the ads we don't consciously register do have an impact. "Your brain is so spectacular, it picks

up everything," she said. "A lot of it is subliminal and a lot of times you don't know that you're being impacted by what you see, feel, and hear until it connects to an experience."

A 2007 study from the University College of London found that invisible, subliminal images do in fact attract the 2016, up nearly five percent from the brain's attention on a subconscious level. The findings led to a ban on subliminal advertising in the United Kingdom. Advertisers are well aware of how

these messages impact the brain. Emerging techniques in neuromarketing can now utilize your smartphone and other wearable technology to measure your subconscious reactions to a product or message.

This is just one of many tools used to better capture our attention. With so many ads saturating the marketplace, the fight for exposure has never been more fierce.

This is why companies devote so much effort to building an indelible brand. In the past, branding referred to a hot iron that burned a mark on people, animals, or objects to signify ownership. Today, branding is used figuratively to describe a process of burning a message in our mind.

"We know that it takes multiple impressions (six to seven) before a concept or brand is sealed in a person's mind. Oth-

erwise, we wouldn't do it," Edwards said. Good branding can convince you to make a purchase, but the ultimate branding objective is forging a lifelong relationship with consumers. If this emotional connection can be maintained, the consumer will be forever

devoted to your product. The branding that worked on our parents or grandparents seems crude and quaint by current standards. In order to make an impression today, ads need to be funnier, sexier, or more relatable to be heard over the ever-increasing volume of messages competing for our attention.

Commercials now often feature bizarre content that is totally unrelated to the product being sold. It may seem silly, but the marketing is effective if it makes you remember the brand. A case in point is Mountain Dew's 2016 as many as 5,000 ads a day. Of course, Super Bowl ad featuring a hybrid puppy-

#### **Guarding the Mind**

Advertising is vital for companies to deliver their message to consumers, but Edwards believes we can do it better. She advocates for responsible marketing. This means instead of playing mind games or hiding their agendas, advertisers should work to tell accurate and honest stories. They should also be especially careful with marketing to children.

And it's not just advertising. Other forms of media can adopt persuasive tactics too. In fact, when a message is disguised as mindless entertainment, it's easier for the public to accept.

"The American motion picture is the reatest unconscious carrier of propaganda in the world today," wrote the founder of modern advertising tactics, Edward Bernays, in his 1928 book "Propaganda."

Until media cleans up its act, Edwards cautions people to be aware of the impressions that are being made on their mind. The most effective method is to limit the content you consume and to regularly reflect upon what you truly believe. It's a kind of media mindfulness-the more conscious you become of the hypnotic messages triggering your desires, the easier it is to break the spell.

Edwards calls this "guarding the

"It may be as extreme as not owning a TV or only subscribing to content that gives honest, accurate, unbiased commentary," she said.

Other examples of guarding the mind include avoiding movies, videos, or music that glorify violence, misogyny, and other

forms of disrespect, as well as choosing brands that support the community and promote having a positive self-image. "It's about protecting what goes into your psyche," Edwards said.

#### How We Got Here

mind.

The

most

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ent you consume and

to regularly reflect

upon what you

truly believe.

What fuels this ever-growing campaign to capture our hearts, minds, and wallets? History shows there is more than just market forces at work.

In the old days, ads were pretty basic-just a description of goods and services. But in the 1920s, Bernays changed the game. Inspired by his uncle, Sigmund Freud, Bernays used psychology to develop a new strategy of marketing that would influence the subconscious mind.

He called this strategy "engineering consent." In essence, it's a form of mass hypnosis. It was also the start of mass consumerism—an economic model in which people buy things not just for necessity, but for pleasure, prestige, or even rebellion.

Bernays's first strategic ad campaign

was in 1929. The owners of cigarette brand Lucky Strike were looking to capture the female market, but it was considered taboo for a decent woman to smoke. So Bernays hired some young women, gave them cigarettes, and staged a scene in the New York City Easter parade. He sold the event to the press as a brave display of female empowerment, and referred to the cigarettes as "torches of freedom." The story ran nationwide, and the number of women smokers skyrocketed.

Today, we would call this a publicity stunt, but back then it marked a profound cultural shift. Life Magazine has listed Bernays as one of the Top 100 most influential Americans of the 20th century.

#### From Citizens to Consumers

In the past, people's thoughts and actions were guided primarily by family, tradition, and the natural world. But in the 20th century, advertising became a major force of socialization, turning independent thinking citizens into consumers with malleable dreams and desires.

This transformation was essential to social engineers following the industrial revolution. New technology allowed for production on a massive scale, but for this economic model to work it required a public that was more uniform and predictable. In "Propaganda," Bernays argued that the masses needed guidance from an "invisible government" in order to provide social stability. By appealing to the unconscious desires described by Freud, Bernays proved that the masses could be much easier to control.

"We are governed, our minds are molded, our tastes formed, our ideas suggested, largely by men we have never heard of," Bernays wrote.

Bernays envisioned a few superior "wise men" overseeing the direction of society for the good of the masses, but a different story unfolded in practice. Bernays's techniques could be used by anyone with a sinister agenda looking to steer the public mind. This included Bernays himself at times. In the 1930s, he started marketing cigarettes as a way to soothe a sore throat and stay slim, despite being well aware of early evidence that smoking caused health problems. He did, however, discourage his own wife's smoking habit.

Nazi propaganda minister Joseph Goebbels borrowed heavily from Bernays's work. President Franklin Roosevelt considered hiring Bernays to sell the American public on World War II, but Supreme Court Justice Felix Frankfurter talked him out of it. In a letter to the president, Frankfurter described Bernays and his ilk as "professional poisoners of the public mind, exploiters of foolishness, fanaticism, and selfinterest."

# Why **Losing Kobe Bryant** Felt Like Losing a Relative or Friend

The power of the parasocial bond can make a oneway relationship feel more profound in the media age

#### EDWARD R. HIRT

n the afternoon of Jan. 26, was at the Indiana men's asketball game when a chorus of cellphones in the crowd pinged, alerting them to the news of Kobe Bryant's death. I was astonished at how quickly fans' attention switched from the game to utter shock and disbelief at the news of Bryant's passing. Soon, it seemed like the entire nation was in mourning.

Sure, we might expect the basketball world to grieve the passing of one of its alltime greats, but grief came from all corners. The Grammy Awards featured poignant tributes to Bryant. President Donald Trump and former President Barack Obama offered their condolences. People who had never met Bryant told reporters they felt like they had just lost a family member.

How can so many be so deeply affected by the death of someone they've never met? Why might some people see Kobe Bryant as a family member?

As a social psychologist, I'm not surprised by these reactions. I see three main factors that explain why Bryant's death had such a profound effect on so many people.

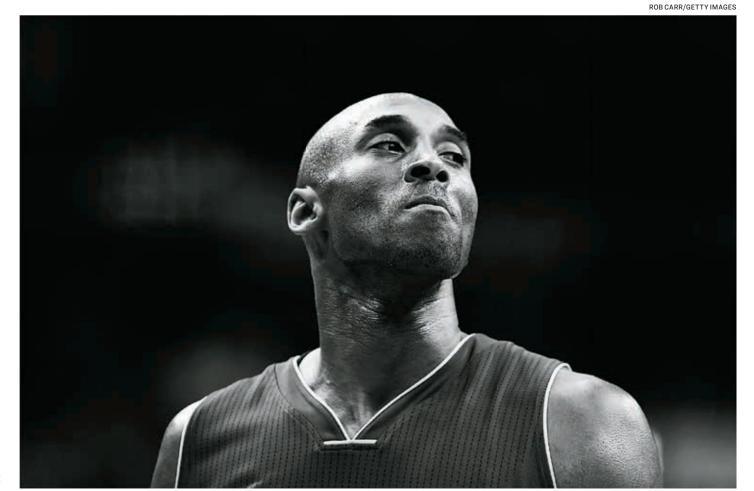
Feelings Formed From Afar

Psychologists Shira Gabriel and Melanie Green have written about how many of us form what are called "parasocial bonds" with other people. These tend to be one-way relationships with people whom we've never met or interacted with, but nonetheless feel intimately connected to.

Although ideas about parasocial bonds were first developed in the 1950s, they've garnered a lot of attention over the past couple of decades. For example, loyal fans of Oprah Winfrey and Ellen DeGeneres watch their shows almost every day, with the hosts actively trying to build a warm rapport with their viewers and their audience subsequently developing intense feelings of attachment.

But interest in parasocial relationships has exploded in the age of social media. People who follow celebrities on Twitter and Instagram get access to their relationships, emotions, opinions, triumphs and travails.

Even though it's a one-way relationship what are the chances a celebrity actually responds to a fan's message on social me-



Kobe Bryant #24 of the Los Angeles Lakers looks on against the Washington Wizards in the first half at Verizon Center on December 2, 2015 in Washington.

dia?-fans can feel a profound level of intimacy with the famous people they follow. Kobe Bryant, with over 15 million followers on Twitter and nearly 20 million followers on Instagram, clearly had a massive following.

The 'What If' Factor Still, there was something about Brvant's death that seemed par-

ticularly tragic There's no way to measure whether the outpouring of public grief surpassed that of other celebrity deaths like Michael Jackson, Prince or Robin Williams. But it's certainly possible that the unique circumstances

surrounding Kobe Bryant's death evoked

#### Bryant's death was a stark reminder that life's too short to hold onto petty grudges.

stronger emotions.

Bryant died in a helicopter during extremely foggy conditions. This can lead to a lot of "what ifs," otherwise known as "counterfactual thoughts." Work by psychologists Daniel Kahneman and Amos Tversky has shown that when we can easily come up with ways to undo an outcome—say, "if it had been a clear day, Kobe would still be alive"—it can intensify the anger, sad-

ness or frustration about a negative event. It makes the death seem that much more random—and makes us feel like it never should have happened in the first place. Furthermore, Bryant's 13-year-old daughter, Gianna, died in the accident, along with seven others. This broadens Bryant's identity beyond the basketball court, reminding people of his role as a father of four daughters-three of whom will now

It's About Us, Not Him I'd also add that our grief over J. Kobe's death may actually be less about him-and more about us.

have to live without their sister and father.

According to "terror management theory," reminders of our own mortality evoke an existential terror. In response, we search for ways to give our lives meaning and seek comfort and reassurance by connecting with loved ones. I found it striking that following the news of Bryant's death, his former teammate Shaquille O'Neal said that he had called up several estranged friends in order to make amends. Bryant's death was a stark reminder that life's too short to hold onto petty grudges.

Similarly, after the loss of loved ones, we'll often hear people suggest hugging those we love tightly, or living every day to the fullest.

Many felt like they had gotten to know Bryant after watching him play basketball on TV for 20 years. His death was random and tragic, reminding us that we, too, will someday die-and making us wonder what we'll have to show for our lives.

It's certainly possible that the unique circumstances surrounding **Kobe Bryant's** death evoked stronger emotions.

Edward R. Hirt is a professor of psychological and brain sciences at Indiana University. This article is republished from The Conversation.



# There's No Masking the Best Way to Avoid Coronavirus

Coronavirus is scaring up sales of face masks but to ward off the disease, focus on washing your hands

#### **ELISABETH ROSENTHAL**

Americans are watching with alarm as a new coronavirus spreads in China and cases pop up in the United States. They are barraged with information about what kinds of masks are best to prevent viral spread. Students are handing out masks in Seattle. Masks have run out in Brazos County, Texas.

#### Having a mask with you as a precaution makes sense if you are in the midst of an outbreak.

#### Hang on.

I've worked as an emergency room physician. And as a New York Times correspondent in China, I covered the SARS outbreak in 2002 and 2003 during which a novel coronavirus first detected in Guangdong sickened more than 8,000 people and killed more than 800. My two children attended elementary school in Beijing through-

out the outbreak. Here are my main takeaways from that experience for ordinary people on the ground:

1. Wash your hands frequently. 2. Don't go to the office when you are sick. Don't send your kids to school or day care when they are ill, either.

Notice I didn't say anything about masks. Having a mask with you as a precaution makes sense if you are in the midst of an outbreak, as I was when out reporting in the field during those months. But wearing it constantly is another matter. I lonned a mask when visiting hospitals where SARS patients had been housed. I wore it in the markets where wild animals that were the suspected source of the outbreak were being butchered, blood droplets flying. I wore it in crowded enclosed spaces that I couldn't avoid, like airplanes and trains, as I traveled to cities involved in the outbreak, like Guangzhou and Hong Kong. You never know if the guy coughing and

is ill or just has an allergy. But outdoors, infections don't spread well through the air.

sneezing two rows ahead of you

Those photos of people walking down streets in China wearing masks are dramatic but the subjects appear uninformed. And remember if a mask has, perchance, intercepted viruses that would have otherwise ended up in your body, then the mask is contaminated. So, in theory, to be protected maybe you should use a new one for each outing. The simple masks are better than nothing but not all that effective because they don't seal well. For anyone tempted to go out and buy the gold standard, N95 respirators, note that they are uncomfortable. Breathing is more work. It's hard to talk to people. On one long flight at the height of the outbreak, on which my few fellow passengers were mostly epidemiologists trying to solve the SARS puzzle, many of us (including me) wore our masks for the first couple of hours on the flight. Then the

Though viruses spread through droplets in the air, a bigger worry to me was always transmission via what doctors call "fomites," infected items. A virus gets on a surface—a shoe or a doorknob or a tissue, for example. You touch the surface and then next touch your face or rub your nose. It's a great way to acquire illness. So after walking in the animal markets, I removed my shoes carefully and did not take them into the hotel room. And, of course, I washed my hands immediately.

food and beverage carts came.

Remember, by all indications SARS, which killed about 10 percent of those infected, was a deadlier virus than the new coronavirus circulating now. So keep things in perspective.

Faced with SARS, many foreigners chose to leave Beijing or at least to send their children back to the United States. Our family stayed, kids included. We wanted them with us and didn't want them to miss school, especially during what would be their final year in China. But equally important in making the decision was that

on an airplane or in the airport seemed greater than being smart and careful while staying put in Beijing. And we were: I stopped taking my kids to indoor playgrounds or crowded malls or delicious but densely packed neighborhood Beijing restaurants. Out of an abundance of caution, we canceled a family vacation to Cambodia—though my fear was less about catching SARS on the flight than that one of the kids would have a fever from an ear infection upon our return at a border screening and would be stuck in a prolonged quarantine in China. We instead took a vacation within China, where we carried masks with us but didn't use them except on a short domestic flight In time, during the SARS

the risk of getting SARS

outbreak, the government shut down theaters and schools in Beijing, as it is doing now in many Chinese cities because these viruses are more easily transmitted in such crowded places.

But there was also a lot of irrational behavior: Entering



**By all** 

indications

SARS, which

killed about 10

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deadlier virus

than the new

coronavirus

circulating now.

Masks might be all the rage when it comes to keeping ogens from finding their way into our bodies, but washing our hands is far more important.

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a village on the way to a hike near the Great Wall, our car was stopped by locals who had set up a roadblock to check the temperature of all passengers. They used an oral thermometer that was only minimally cleaned after each use. What a great way to spread a virus. The International School of Beijing, where my children

were students, was one of the few in the capitalperhaps the only one-that stayed open throughout the SARS outbreak, though the classes were emptier since so many kids had departed to their home countries. It was a studied but brave move because a parent at the school had gotten SARS at the very beginning of the outbreak on a flight back from Hong Kong. She re-

covered fine, but it was close to home and families were scared. The school instituted a bunch

of simple precautionary policies: a stern note to parents reminding them not to send a child to school who was sick and warning them that students would be screened for fevers with ear thermometers at the school door. There was no sharing of food at lunch. The teacher led the kids in frequent hand washing throughout the day at classroom sinks, while singing a prolonged "handwashing song" to ensure they did more than a cursory pass under the faucet with water only.

If a family left Beijing and came back, the child would have to stay at home for an extended period before returning to class to make sure they hadn't caught SARS elsewhere. With those precautions in place, I observed something of a public health miracle: Not only did no child get SARS, but it seemed no student was sick with anything at all for months on end. No stomach bugs. No common colds. Attendance was

more or less perfect. The World Health Organiza tion declared the SARS outbreak contained in July 2003. But, oh, that those habits persisted. The best first-line defenses against SARS or the new coronavirus or most any virus at all are the ones that Grandma and common sense taught us, after all.

Elisabeth Rosenthal is a doctor, author, and editor-in-chief at Kaiser Health News, which first published this article.

# Steps to a Stronger Immune System

You can support the system that fights of disease with these habits

#### **MOHAN GARIKIPARITHI**

Your immune system is central to overall health, yet it can be easy to overlook. When thinking about good health, people tend to focus on their heart, muscle strength, weight, and bones.

Your immune system, however, compliments all of those components. A healthy immune system can help protect you from danger, toxins, infections, allergens, and more. Sometimes it can become overactive and attack healthy cells, leading to inflammation

and chronic disease. There is a growing body of research that indicates you can help manage and control your immune system. You may hold the power to increase its strength while keeping it in check if you have an autoimmune condition. As a result, you may experience less illness and improved symptoms.

There are five steps that can help build a healthy and functional immune system. They include:

weights: Certain things can pull your im-

Eliminating immune-system

mune system down and leave you more susceptible to illness or painful symptoms. Smoking, excess alcohol and drug intake, and unprotected sun exposure can all beat your immune system down.

#### Smoking, excess alcohol and drug intake can all beat your immune system down.

Focus on an anti-inflammatory diet: Including more plant-based foods, like colorful fruits and vegetables, can help build a healthy immune system and limit inflammation. Limit foods commonly featured in the standard American diet, like fried foods, refined grains, high-sugar snacks, sweetened beverages, and processed meats.

Exercise: There is a relationship between exercise and immunity. Whereas moderate exercise for about 150 minutes per week can reduce the risk of cold, flu, or other infections, being sedentary increases the risk of illness. Exercise can be performed in 10-minute bundles throughout the week if you don't have time to commit to a half-hour per day.

ALL IMAGES BY SHUTTERSTOC

Modify stressors: Working on mental and spiritual health so you're less affected by stress and anxiety can also contribute to a healthy immune system. Stress wears you down and increases the chance of illness, so seeking therapy, practicing mindfulness, meditation, yoga, tai-chi, or other stress-relieving activities can all help with immunity.

Good sleep: Poor sleep is also a drag on the immune system. Failing to give your body adequate time to rest and recover makes it hard to stand up to the challenges of the day. Good sleep hygiene and a regular sleep schedule help you achieve better and more consistent sleep.

Mohan Garikiparithi holds a degree in medicine from Osmania University (University of Health Sciences). This article was originally published on Bel Marra Health.



cause inflammation, cell death, free radical

formation, and DNA damage when present

at high levels. One class of compounds,

known as furfurals, triggers tumor growth

Flavor molecules, reacting with the

propylene glycol in the e-liquid, can pro-

duce metabolites, or intermediate sub-

stances that are part of metabolic reactions,

that are irritating to the respiratory system. Long-term exposure to irritants can lead to

chronic cough, inflammation, hyper-reac-

tive airway (wheezing, shortness of breath),

edema (swelling in the arms, hands, legs

Some flavorings, inhaled chronically or

at high levels, are already known to cause

serious and sometimes deadly respiratory

illnesses. Diacetyl, a buttery flavor used in

processed foods—notably some popcorn

products-causes "popcorn lung," an irre-

versible disease that affects factory workers

Many e-liquids contain diacetyl; an

analysis found the substance in 39 out of

51 tested e-cigarette samples. In about half

the samples, the estimated daily consump-

Patients with EVALI exhibit a significant

number of symptoms and all were attrib-

uted to vaping. In one survey, users report-

ed cough (40.0 percent), dry or irritated

mouth or throat (31.0 percent), dizziness or

or feet), and acute lung damage.

exposed daily to the compound.

tion was above safety limits.

in mice.

# E-cig Flavors May Be More Than Alluring;

Flavors shape vaping behavior and add another layer of chemical risk

#### **WEIHONG LIN & RAKAIA KENNEY**

llions of Americans are vaping, and some are getting sick. Since June 2019, 2,711 have been hospitalized and 60 have died due to EVA-LI (e-cigarette-associated lung injury), the devastating lung disease linked to ecigarettes.

Five million users are middle and high school students. Some are as young as 11, although it's illegal to sell vaping products to anyone under 21.

Especially for kids, much of the allure is flavor. E-cigarettes offer attractive smells and tastes. Fruit, mint, candy and dessert flavors are the favorites, and studies suggest they ignite the desire to vape. That's why the Trump administration just banned the sale of those sweet flavors from cartridge-based e-cigs, the delivery method most popular with teens.

One of us (Weihong Lin) is a chemosensory neurobiologist, and the other (Rakaia Kenney) is a research assistant in Lin's lab. Put simply, we study how the sensory systems and brain react to chemical stimulation. With e-cigarettes, we are focusing on how the enticing flavors ensnare our children.

But our studies have shown that the effect of flavor goes beyond the pleasure they may bring—the flavorings themselves may actually harm tissue.

#### **Flavors Enhance E-cig Appeal**

The tobacco industry has long been using flavorings make their products more palatable; it added menthol to cigarettes nearly a century ago.

Today, the allure of flavors in e-cigarettes bring potential health consequences, and kids are particularly vulnerable. E-cigarettes can put adolescents at risk for respiratory, cardiopulmonary diseases, brain disorders, and cancers.

About 20,000 flavored e-liquids are on the market—countless combinations of hundreds of flavoring molecules extracted from natural ingredients or artificially made. The

vast majority are volatile odor chemicals,

perceived not by taste, but by smell. Your olfactory system, with far more sensitivity than your taste buds, can distinguish more than 10,000 smells. During vaping, a flavoring enters our nose, and like any agreeable scent, immediately evokes the fond memories and pleasant emotions associated with the aroma. Vanillin, a popular e-cigarette flavoring, smells like dessert; ethyl maltol, a flavoring used in many foods, has a candy-like odor. The user, comforted and calmed, savors the moment—then goes back for more.

But e-cigarette vapor also contains nicotine, heavy metals, and formaldehyde, as pungent as they are harmful. Mixing in delectable flavorings disguises the unpleasantness of these chemicals, much like the cherry additive that camouflages the otherwise medicinal taste of children's cough syrup.

Yet perceptions of irritation and pain in the nose, mouth, and throat serve as warning signals. A bitter taste might originate from a toxic plant. Irritation in the nose or respiratory tract indicates the inhaled substance is potentially harmful.

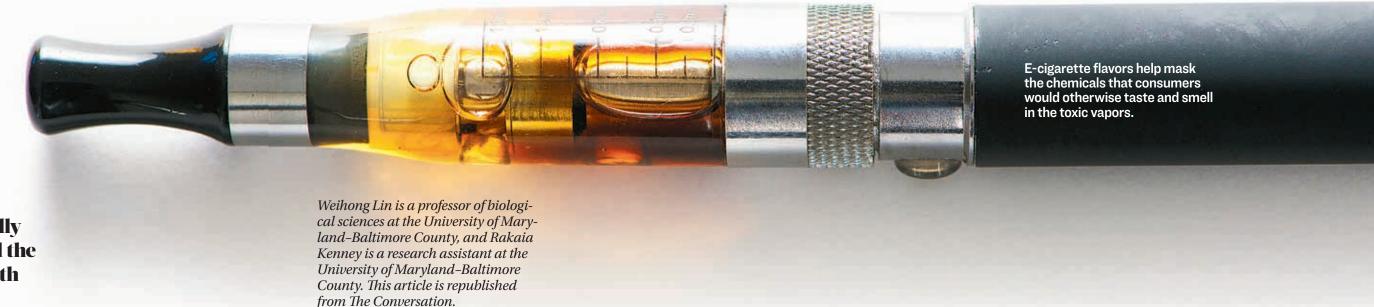
But now that flavorings in e-cigarette mask the warning signals, many consumers have been lulled into believing vaping is benign. They rate mint flavors as safer, though they are not. And instead of irritation from the e-cigarette prompting a cough—an action that removes harmful stimuli from the airway-the flavorings instead dampen the user's sensory alarms and protective reactions. The risk of chemically induced injury, along with nicotine abuse, is increased.

How Flavors Themselves May Be Toxic Although the U.S. Food and Drug Administration has acknowledged some flavorings as "safe for consumption," its label dodges a critical distinction. Safe for consumption does not mean safe for inhalation. While scientists still haven't confirmed the inhalation toxicity for all flavorings, the latest research reveals some disturbing evidence. Many of the most common flavorings can Many of the most common flavorings can cause inflammation, cell death, free radical formation, and DNA damage when present at high levels.



Flavorings in e-cigarette mask the chemicals that consumers would've tasted and smelled in the toxic vapors.

> Long-term research is needed to fully comprehend the adverse health effects.



# **Sparkling Water's Little Known Effect on Your Teeth**

Sugar drinks are well known for causing cavities but fewer people know what carbonated drinks do

#### **NICOLA INNES & SUZANNE ZAREMBA**

For many people, the start of a year is a time for new health resolutions—be it eat more vegetables, consume less sugar or drink more water.

Keeping hydrated is essential for body functions such as temperature regulation, transporting nutrients and removing waste. Water even acts as a lubricant and shock absorber for joints.

But while most people know they should drink more water, it can be a bit boring. So what about sparkling water as an option to liven things up a bit? After all, sparkling water is just as good as normal water, right? Not quite.

#### **Fizzy Fluids**

Sparkling water is made by infusing water with carbon dioxide. This produces carbonic acid with a weak acidic pH of between three and four. That "feel good" mouth sensation you get after sipping a carbonated drink is in fact the chemical activation of pain receptors on your tongue responding to this acid, giving a pleasing taste. And here's part of the problem, because acid in drinks can harm our teeth.

The outer layer of our teeth, dental enamel, is the hardest tissue in the body. It is made of a mineral called hydroxyapatite that contains calcium and phosphate. Saliva is mainly water but also contains calcium and phosphate.

There is normally a balance between tooth minerals and the minerals in saliva. The mouth and saliva normally have (a pH of six to seven), but when this drops below five and a half, calcium and phos-

phate molecules move out of the teeth and into saliva. This can happen because of the carbonic acid in fizzy drinks.

#### **Bad for Teeth?**

This demineralization creates tiny pores in the tooth mineral and the enamel starts to dissolve. Initially, the pores are microscopic and can still be plugged by putting calcium or phosphate back in, or by replacing calcium with fluoride-this is how fluoride in toothpaste works to protect teeth. But once the amount of lost tooth mineral reaches a certain level, the pores can no longer be plugged and the tooth tissue is lost for good.

If teeth are bathed in acid from carbonated drinks frequently, more minerals can be dissolved out than get put back in, and there is more risk of tooth wear or erosion So although plain sparkling water is better for your teeth than flavored sodas (diet or regular) which have a lower pH, still water is best—it has a pH of around seven. Incidentally, club soda is not only carbonated but has some "minerals" added for flavor. These may include sodium, so if you are watching your salt intake you also need to be mindful of this.

#### Pure Water

It's also worth pointing out that sparkling water is not an appetite suppressant. Despite what you might read online, there is no strong scientific evidence to suggest that drinking sparkling water will make you feel fuller or curb your appetite. Yes, drinking carbonated water will fill up your stomach (probably making you belch too) but it won't stay in your stomach any longer than still water.

Even when sparkling water is drunk alongside food or meals, there is no difference in how quickly the stomach will empty compared to still water. Scientifically, it is difficult to measure hunger and fullness, which means that studies investigating these are based on, or influenced by, people's personal feelings—and naturally us humans are all very different. In fact, the European Food Safety Authority, which provides independent scientific advice on food safety, doesn't endorse any health claims related to foods or drinks said to increase satiety.

Health agencies advice drinking between six to eight glasses of fluid per day. As well as water, this can also include lower fat milk and sugar-free drinks, along with tea and coffee. Water is a healthy and cheap choice for quenching your thirst at any time. It has no calories, is free and contains no sugars that can damage teeth—unlike the myriad of sports, energy and carbonated drinks that flood supermarket shelves. Of course, if you are swapping sugary soft drinks with sparkling water then this is a step in the right direction. Indeed, soft drinks are estimated to contribute to approximately 25 percent of sugar intake in adults and increase oral acidity. Most sparkling waters do not have added sugars, though some do, so always read the label. So when it comes to trying to increase your fluid intake, still water is still the preferred option. But if a glass of water is not really your thing, sparkling water can help you stay hydrated and can be a tasty alternative to plain water—but just be mindful of how frequently you drink it for your dental health.



That "feel good" mouth sensation you get after sipping a carbonated drink is in fact the chemical activation of pain receptors on your tongue responding to this acid, giving a pleasing taste.

Nicola Innes is a professor of pediatric dentistry at the University of Dundee in the United Kingdom, and Suzanne Zaremba is a lecturer in nutrition at the Centre for Public Health Nutrition Research at the University of Dundee. This article is republished from The Conversation.

ALL PHOTOS BY SHUTTERSTOCK

# They Also Add Toxic Chemicals

lightheadedness (27.1 percent), headache or migraine (21.9 percent), or shortness of breath (18.1 percent).

Similar health problems have been reported by patients with chemically induced sick building syndrome. This implies that e-cigarette users share common health problems with those suffering from chemical exposure.

#### What About Long-Term Vaping?

Ongoing chemical exposure, especially at high doses, can cause olfactory dysfunction, including a reduced sense of smell. This encourages chronic e-cigarette users to choose stronger-flavored e-liquids to receive a sufficient buzz. In turn, more potent e-liquids generate more irritation and damage to the nose, lungs and lower airway.

The health effects of e-cigarette exposure go beyond the sensory and respiratory systems. Mint and candy flavors are more than chemical accessories that enhance a harmless experience. They shape our behavior, perhaps for a lifetime.

Our government is making progress towards keeping teens away from e-cigarettes. Now, long-term research is needed to fully comprehend the adverse health effects and toxicity of flavorings and other chemical substances in the e-cigarette vapor to prevent the potentially catastrophic effects of vaping.



When it comes to vaping, for kids much of the allure is flavor.

### Yes, You Should Wash Fruits and Vegetables Your produce has been through a lot of hands before it landed in your crisper

#### **LISA ROTH COLLINS**

As a child. I used to pick and eat vegetables straight out of our family garden—red juicy tomatoes, crisp green beans, and sweet corn-but today we are all urged to wash fruits and vegetables before we eat them. This tip is true even if you are eating organic produce. So what's the deal?

#### Why Is It Important to Wash **Fruits and Vegetables**

You should wash all of your fruits and vegetables, including organics, to help remove any bacteria, including Escherichia coli (e. coli), from the surface of the produce. The majority of the bacteria reside in the soil that is attached to the fruit and vegetables, so washing it away is important.

Although buying or growing organic food reduces your exposure to harmful pesticides and other chemicals that are typical in conventionally farmed produce, contamination is always possible. One form of contamination is drift from conventional farms in the area of the organic farm. Contamination also can occur while the produce is in transit, when it is stored, and even when it is on the shelves, as customers have a habit of touching lots of different produce

while they are shopping. Unless you are completely confident about the integrity of your homegrown fruits and vegetables and the soil and water you are using to grow them, taking a few moments to

wash the fruits of your labors is a good idea.

It's important to wash loose produce versus pre-packaged items because they are more likely to have soil attached to them. Vegetables with lots of nooks and crannies—such as lettuces and other greens-are especially prone to hold onto

their dirt. It's probably not necessary to rewash pre-washed or triple-washed greens or other lettuce combinations. However, if you do, be sure not to contaminate them with any surfaces that have touched meat, dairy, or other foods.

#### Is It Really

**Effective?** I have often wondered whether it is really effective to wash fruits and vegetables. According to the Centre for Science and Environment, washing produce with a 2 percent salt solution will eliminate most of the pesticide residues that typically appear on the surface of fruits and vegetables. About 75 to 80 percent of residues are removed when you wash produce with cold water. Some fruits and vegetables

hold onto their soil and pesticides a little better than others. When washing your produce, pay special attention to apples, grapes, greens, guava, mangoes, peaches, pears, plums, and

#### tomatoes. How to wash your fruits and

vegetables You have various ways to wash fruits and vegetables—using one of several DIY approaches or a commercial produce wash.

You should wash all of your

fruits and vegetables, includ-

ing organics, to help remove

any bacteria, including

Escherichia coli (e. coli), from

the surface of the produce.

The water rinse approach can

be used for all fruits and vegeta-

bles, although some vegetables

Water Rinse

that have lots of hiding places for soil and require some ad-

Use cool or cold water and a colander to rinse your fruits and vegetables. You may need scrub produce such as melons, any difficult to remove microorganisms. Dry your produce after washing with a clean towel. This

greens Place your fruits or vegetables

#### Salt Soak

You can add 1 to 2 teaspoons of salt to the soaking water. This method is good for all varieties of fruits and vegetables. Rinse the produce well after soaking.

#### Vinegar Soak

Prepare a solution of 90 percent water and 10 percent white vinegar in a basin or bowl. Soak your fruit or vegetables in the mixture for 5 to 15 minutes, stir them around, and then rinse thoroughly before using.

This approach can remove pesticides and reduce bacteria. However, a vinegar soak may affect the taste and texture of some fruits and vegetables, so be sure to thoroughly rinse off the vinegar-water.

#### **Commercial Wash**

You can purchase fruit and veggie wash from many grocery and health food stores. A variety of brands are available, some as a spray and others as a soak. Sprays are typically better for "harder" fruits and vegetables, such as apples, pears, tomatoes, potatoes, and carrots. Soaks are great for "soft" produce or produce that has a lot of crevices such as greens, broccoli and cauliflower, strawberries and other berries, and grapes.

#### **Bottom Line**

You want the cleanest, safest produce for you and your family. That means even if you always buy organic fruits and vegetables—and sometimes that's a real challenge-it's still good to clean them properly.

Lisa Roth Collins is a registered holistic nutritionist and the marketing manager at Naturally-Savvy.com, which first published this article.

ditional attention.

to use a vegetable brush to cucumbers, carrots, turnips, potatoes, and winter squash. Brushing helps to eliminate

will remove any remaining bacteria. A water soaking method also is effective. Fill a basin or sink with enough cool water to soak the produce. This approach is especially helpful for fruits and veggies that have a lot of surfaces, such as berries, broccoli, and leafy

in the water and swish them around so the water can reach all of the crevices. Soak and swish for about 2 minutes. You will need to separate the individual leaves of leafy greens to get them clean.

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NATASHA BREEN/SHUTTERSTOC

Researchers found that the positive and negative effects of the diet both relate to immune cells called gamma delta T-cells, tissue-protective cells that lower diabetes risk and inflammation.



Trendy high-fat, high-protein diet may offer greatest health benefits if practiced only short term

#### **BRITA BELLI**

A ketogenic diet—which provides 99 percent of calories from fat and protein and only 1 percent from carbohydrates—produces health benefits in the short term, but negative effects after about a week, research in mice shows.

The results offer early indications that the keto diet could, over limited time periods, improve human health by lowering diabetes risk and inflammation. They also represent an important first step toward possible clinical trials in humans.

The keto diet has become increasingly popular as celebrities, including Gwyneth Paltrow, Lebron James, and Kim Kardashian, have touted it as a weight-loss regimen—at least for periods of time.

In the study, researchers found that the positive and negative effects of the diet both relate to immune cells called gamma delta T-cells, tissue-protective cells that lower diabetes risk and inflammation.

A keto diet tricks the body into burning

fat, said lead author Vishwa Deep Dixit, professor of comparative medicine and of immunobiology at the Yale University School of Medicine. When the body's glucose level goes down due to the diet's low carbohydrate content, the body acts as if it is in a starvation state—although it is not—and begins burning fats instead of carbohydrates. This process in turn yields chemicals called ketone bodies as an alternative source of fuel. When the body burns ketone bodies, tissue-protective gamma delta T-cells expand throughout the body.

This reduces diabetes risk and inflammation, and improves the body's metabolism, said Dixit. After a week on the keto diet, he said, mice show a reduction in blood sugar levels and inflammation.

But when the body is in this "starving-not-starving" mode, fat storage is also happening simultaneously with fat breakdown, the researchers found. When mice continue to eat the high-fat, low-carb diet beyond one week, Dixit said, they consume more fat than they can burn, and develop diabetes and obesity.

"They lose the protective gamma delta T-cells in the fat," he said.

Long-term clinical studies in humans are still necessary to validate the anecdotal claims of keto's health benefits.

"Before such a diet can be prescribed, a large clinical trial in controlled conditions is necessary to understand the mechanism behind metabolic and immunological benefits or any potential harm to individuals who are overweight and prediabetic," Dixit said.

There are good reasons to pursue further study: According to the Centers for Disease Control, approximately 84 million American adults—or more than one out of three—have prediabetes (increased blood sugar levels), putting them at higher risk of developing type 2 diabetes, heart disease, and stroke. More than 90 percent of people with this condition don't know they have it.

"Obesity and type 2 diabetes are lifestyle diseases," Dixit said. "Diet allows people a way to be in control." With the latest findings, researchers now better understand the mechanisms at work in bodies sustained on the keto diet, and why the diet may bring health benefits over limited time periods.

"Our findings highlight the interplay between metabolism and the immune system, and how it coordinates maintenance of healthy tissue function," said Emily Goldberg, the postdoctoral fellow in comparative medicine who discovered that the keto diet expands gamma-delta T cells in mice.

Dixit said it will be good news if later studies discover the ideal length of the keto diet for health benefits is relatively short.

"Who wants to be on a diet forever?" The research was funded in part by grants from the National Institutes of Health. The research appears in Nature Metabolism.

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