



WHAT DRINKING DOES
TO YOUR BRAIN 4



HOW TO AVOID
A MISDIAGNOSIS 6



VITAMIN DEFICIENCY
DO YOU HAVE ONE? 16

bottomline HEALTH

Actionable advice you can trust from top wellness experts

February 2021 Vol 35/No 2 | \$6

STAY MOTIVATED TO STAY WELL

Here's how to stick with your fitness routine in the face of any challenge.



Jillian Michaels
Empowered Media

It can be difficult to stick with a fitness routine in the best of times, but the past year has been unlike any other. Lockdowns, gym closures, and the stress of coronavirus have disrupted many people's exercise schedules and healthy eating habits.

To get tips on how to stay fit in the face of any challenge, *Bottom Line Health* talked to Jillian Michaels, personal trainer, producer of more than 20 exercise videos, star of the television show "The Biggest Loser" and developer of a new app called My Fitness.

Bottom Line Health: Can you share a personal story of a time when you had to overcome obstacles to your own fitness routine?

Jillian Michaels: To be honest, at least half the time, I struggle to make myself train. So, arguably, the answer would be daily. When I'm tired, work is stressing me out, my kids are wearing me down, the day has been particularly crappy, I think to myself that I would rather stick needles in my eyes than exercise. I just want to order a pizza.

But I don't, because I then think about how I would feel after I did that, and, conversely, how I will feel if I do *some* physical activity instead.

continued on page 15 >>



© kali9 | Getty Images



Carrie Ali
Editor

Dear *Bottom Line Health* reader,

If you read on Facebook that a new study found that eating a grapefruit a day reduced the risk of developing Alzheimer’s disease (AD) by 33 percent, you might be tempted to rush to the grocery store. But before you do, it’s a good idea to check the veracity of that claim. Scientific studies can be interpreted—and misinterpreted—in various ways.

Let’s look at where that statistic came from. If you were to read the “Results” section of this imaginary study, you’d see statistics for two groups: 100 people who never eat grapefruit and 100 people who eat it every day. Suppose the researchers found that 3 percent of the first group developed AD, but only 2 percent of the grapefruit eaters did. That’s clearly a 1 percent difference, so where did the 33 percent figure come from? A different calculation.

The 1 percent difference is called *absolute risk difference*, while the 33 percent refers to *relative risk*. Instead of *subtracting* two from three, relative risk is calculated by *dividing* it. The relative risk, then, is 0.66. If the risk of developing AD among people who don’t eat grapefruit is one, and the risk among grapefruit eaters is 0.66, that’s a 33 percent reduction. Both statistics are true, but one makes a better headline.

There are many other important things to look for when putting research findings into perspective. A study with 10 participants, for example, is less compelling than one with 1,000 people. If the Grapefruit Association of America funded the AD study, there’s a conflict of interest: The study results may be selectively presented to boost grapefruit sales.

That’s just the beginning. For a deep dive into the essentials of reading and understanding scientific studies, check out the free course, “Understanding Medical Research: Your Facebook Friend Is Wrong,” on www.Coursera.com. It’s sure to make you 95 percent better at sniffing out junk science.

PURPOSE: To help our readers achieve and maintain health by providing the latest findings from the world’s leading experts in both mainstream and natural/complementary medicine, and guidance through the increasingly complex and often hostile health-care system. *Bottom Line Health* is an independent publication that neither accepts outside advertising nor answers to any institution. **Our only allegiance is to you, our reader.**

Editor: Carrie Ali

Contributing Writers: Julie Davis; Bill Gottlieb; Charles Inlander; David Levine; Jamison Starbuck, ND

Art Director: Mary Francis McGavie

BOTTOM LINE HEALTH publishes the opinions of expert authorities in many fields. These opinions are for educational and illustrative purposes only and should not be considered as either individual advice or as a substitute for legal, accounting, investment, medical and other professional services intended to suit your specific personal needs. Always consult a competent professional for answers specific to your questions and circumstances.

B *Bottom Line Health* USPS 001-537 (ISSN 1092-0129) is published monthly for \$59.90/yr., \$6/issue by Belvoir Media Group, 535 Connecticut Avenue, Norwalk, CT 06854-1713. Periodicals postage paid at Norwalk, CT, and additional mailing offices. Canadian and foreign price \$66.90/yr. (US funds). Canadian GST#: 128044658. Robert Englander, Chairman and CEO; Timothy H. Cole, Chief Content Officer; Philip L. Penny, Chief Operating Officer; Greg King, Chief Marketing Officer; Ron Goldberg, Chief Financial Officer; Tom Canfield, Chief Circulation Officer.

Postmaster: Send address changes to *Bottom Line Health*, P.O. Box 8535, Big Sandy, TX 75755-8535.

Bottom Line Health is a trademark of Belvoir Media Group. Copyright © 2021 by Belvoir Media Group. Express written permission is required to reproduce, in any manner, the contents of this issue, either in full or in part. For more information, write to Permissions, *Bottom Line Health*, P.O. Box 5656, Norwalk, CT 06856-5656. Material may not be reproduced in whole or in part in any form whatsoever. *Editorial questions and comments* should be directed to *Bottom Line Health*, P.O. Box 5656, Norwalk, CT 06856-5656 or emailed to bottomlinehealth@belvoir.com.

Subscription inquiries, payments, changes of address and mailing list removal inquiries should be directed to Subscription Services Department, *Bottom Line Health*, P.O. Box 8535, Big Sandy, TX 75755-8535. To resolve subscription problems quickly, call 800-289-0409 or email us at Customer_Service@BottomLineHealth.info. On occasion, we make our subscribers’ names available to companies with products or services in which you may be interested. If you do not want to be included in these mailings, please notify us in writing.

BOARD OF ADVISERS

BRAIN HEALTH

Dean Sherzai, MD, PhD,
and Ayesha Sherzai, MD
Loma Linda University

CANCER

Richard A. Ehlers II, MD
MD Anderson Cancer Center

CARDIOLOGY

Harlan M. Krumholz, MD
Yale School of Medicine
Barry A. Franklin, PhD
Beaumont Health

DIABETES

George L. King, MD
Joslin Diabetes Center

FITNESS

Carol Krucoff, C-IAYT, E-RYT
Duke Integrative Medicine

GENDER MEDICINE

Marianne J. Legato, MD
*Columbia University College
of Physicians and Surgeons*

INFECTIOUS DISEASE

Rosemary Soave, MD
Weill Cornell Medicine
Miryam Z. Wahrman, PhD
William Paterson University

INTEGRATIVE MEDICINE

Woodson C. Merrell, MD
Mount Sinai Beth Israel

MEN’S HEALTH

Geo Espinosa, ND, LAc, CNS
New York University

NUTRITION

Walter C. Willett, MD, DrPH
*Harvard School of Public
Health*

PAIN

Jane C. Ballantyne, MD
University of Washington

PHARMACOLOGY

Jack Fincham, PhD, RPh
*Presbyterian College School
of Pharmacy*

Heard by Our Editors

Fist bumps are safer than handshakes, but they aren’t risk free, we heard from Joe Graedon, MS.

Researchers contaminated a keyboard with a benign virus and asked volunteers to use it and then shake hands, fist bump, or cruise tap (like a fist bump with just one knuckle) other volunteers.



© Peoplenages | Getty Images

The handshake transferred the most virus at 91 percent, followed by the cruise tap at 70 percent, and the fist bump at 59 percent.

Joe Graedon, MS, adjunct assistant professor, division of pharmacy practice and experiential education, UNC Eshelman School of Pharmacy at Chapel Hill, NC, and president of The People’s Pharmacy.

Americans should be screened for colorectal cancer at age 45 instead of 50, we heard from the U.S. Preventive Services Task Force.

Board member John Wong, MD, explained: “We’re seeing just as much colon cancer newly developing in 45-to-49-year-olds as we used to see in 50-to-54-year-olds.” Under the Affordable Care Act, the task force’s recommendations are used to determine which preventive services insurers must cover.

John Wong, MD, interim chief scientific officer; chief, division of clinical decision making; primary care physician; director, comparative effectiveness research, Tufts Clinical Translational Science Institute; principal investigator, Institute for Clinical Research and Health Policy Studies; Professor, Tufts University School of Medicine, Medford, Mass.

A new technology may be used to objectively measure tinnitus, we heard from Mehrnaz Shoushtarian, PhD.

Using functional near-infrared spectroscopy, a noninvasive technology, researchers found that the brain’s response to auditory and visual stimuli was dampened among those with tinnitus. A computer program was able to analyze patient data and differentiate between mild and moderate or severe tinnitus with 87.32 percent accuracy.

Mehrnaz Shoushtarian, PhD, research & development engineer at Bionics Institute, Melbourne, Australia.

Silent Heart Attacks

Not every heart attack has classic symptoms. Some have no symptoms at all.



Rekha Mankad, MD
Mayo Clinic

When we think of heart attacks, a common image comes to mind: a person clutching his or her chest, doubled over in pain. But it's quite possible to have a heart attack without chest pain. In fact, it's possible to have no symptoms at all.

The lack of symptoms doesn't mean these events are insignificant, though. They can cause long-lasting damage that goes untreated and increases the risk for a second—and potentially fatal—cardiovascular event.

How can it be silent?

Often, people learn they experienced a silent heart attack only when imaging shows evidence of previous heart damage. While some people recall no symptoms at all, others look back and recognize that they felt something—just not a classic heart attack symptom.

They may have felt indigestion, a pulled chest muscle, or flu symptoms. They may have had sweating, lightheadedness, nausea, or shortness of breath. Or they may have had very mild classic symptoms—chest pain and pressure, or pain in the arm, neck, or jaw—that didn't feel severe enough to cause alarm.

Gender differences in silent heart attacks

Women more commonly experience these kinds of nontraditional symptoms, possibly because they are more

likely to have blockages in the smaller arteries that supply blood to the heart, in addition to the main arteries. But while the symptoms of a silent heart attack may be different, the underlying process is the same: Blood flow to the heart is blocked, potentially damaging the heart muscle.

Risk factors

The risk factors for a silent heart attack are no different from a traditional one:

- Advanced age.** Men ages 45 or older and women ages 55 or older are more likely to have a heart attack.

- Excess weight.** Even being somewhat overweight is a risk factor, and the risk rises along with body mass index.

- High blood pressure.** The excess strain from high blood pressure causes the coronary arteries to stiffen and narrow.

- High cholesterol.** Strive to keep your total cholesterol under 200 milligrams per deciliter (mg/dL) and your LDL (“bad”) cholesterol under 100 mg/dL. If you have coronary artery disease, aim for less than 70 mg/dL.

- Lack of exercise.** You need 150 minutes per week of moderate-intensity aerobic activity or 75 minutes per week of vigorous aerobic activity, or a combination of both.

- Tobacco use**

- Family history of heart disease.**

This is a significant risk factor, but

it does not increase the likelihood of symptoms being vague or silent.

- People with diabetes** may have a higher likelihood of silent events, particularly if they also have neuropathy.

Future risk

A person who has experienced a silent heart attack has an elevated risk of having another attack. Because they didn't know they had an event, they had no medical intervention to limit damage to the heart. Further, there are no clues to guide ongoing monitoring. If you are concerned that you may have had a silent heart attack, talk to your doctor about your symptoms to see if you should undergo testing.

Whether that testing reveals a prior heart attack or not, you can immediately begin to lower your risk of a first or subsequent event by following a heart-healthy diet, reducing stress, exercising, losing weight, and managing other conditions like diabetes and high blood pressure.

If you are concerned that you may have had a silent heart attack, talk to your doctor. A medical professional can review your symptoms and health history, and a physical exam can help determine if you need more tests.

Bottom Line Health interviewed Rekha Mankad, MD, a noninvasive cardiologist. She is the director of the women's heart clinic and the director of the cardio-rheumatology clinic at Mayo Clinic in Rochester, Minn.

Alcohol and the Brain

It takes less wine, beer, or liquor than you think to have a deleterious impact.



Bankole Johnson, MD, Dsc
University of Maryland School of Medicine



© Gilaxia | Getty Images

Many people may be surprised to learn that a moderate level of alcohol is just one drink per day for women and two for men. Just eight drinks for women and 15 for men over the course of a week is considered excessive, and research shows that it's associated with a host of illnesses, from gastrointestinal disorders to liver disease, high blood pressure to increased cholesterol, and heart attack to many cancers.

Drinking heavily can affect the part of the brain that is responsible for motivation, appetite, emotions, and memory. Over long periods, it can cause short- and long-term brain damage that manifests as dementia, confusion, visual disturbance, hallucinations, and delusions. It can actually alter brain chemistry, creating psychological conditioning that limits a person's ability to control the desire to drink.

If excessive drinking becomes uncontrollable, it can tip into alcohol use disorder (AUD). People with AUD develop tolerance to the effects of alcohol, suffer from withdrawal symptoms when they are not drinking, and may experience cravings and a compulsion to keep drinking after starting.

In the brain

People drink because it feels good. It can ease stress, lower shyness,

and make things more fun. All of those positive feelings come from an increase in the neurotransmitter dopamine. As the production of dopamine molecules rises, receptors in the brain rush to meet them.

This helps stimulate a system in the brain that governs emotions—the cortico-mesolimbic system. Three structures in this system are crucial elements in producing pleasure and can move some people from casual drinking to AUD.

- **The hippocampus** can remember everything about the experience of drinking alcohol with extreme clarity. It will capture the “high” as well as the people, places, objects, smells, and tastes associated with drinking. When a person drinks, the hippocampus triggers the production of dopamine by firing off another neurotransmitter, glutamate. Glutamate helps the brain receive a signal that it is about to experience something good.

- **The amygdala** then goes into overdrive, producing a strong, emotional response.

- **The insular cortex** plays a role in the way people consciously seek pleasure from food, alcohol, or drugs.

Over time, alcohol can damage this system and other parts of the brain, creating an imbalance between neurotransmitters, like dopamine, and their receptors. The brain's

ability to interpret and respond to dopamine becomes dulled, so the cortico-mesolimbic system responds by demanding more input. For someone with AUD, that can translate to a craving for more alcohol.

Rethinking treatment

Excessive drinking, then, is a brain disorder. The most common approach to treating AUD, however, is based on talk therapy and self-help, which ignores the biological underpinning of the disease. About 60 percent of AUD is biological. The most successful treatments address both biology and psychology with the use of medication.

Naltrexone

Drinking activates opioid receptors, and naltrexone (ReVia, Depide, Vivitrol) is an opioid antagonist. It blocks those receptors and prevents the pleasurable response to drinking. If a person drinks while taking the medication, they simply won't get the high feeling. As a result, naltrexone can help reduce the number of days a person drinks each month, as well as the number of drinks consumed.

A course of the treatment can last three months to one year or longer. With several months of abstinence strung together, naltrexone essentially gives the brain a chance to reconfigure itself, separating good

signals from bad ones and making more logical connections. A person whose life used to revolve around alcohol has an ever-increasing chance of long-term abstinence.

The Combining Medications and Behavioral Interventions for Alcoholism (COMBINE) study showed that a combination of the medication naltrexone and brief counseling curtailed drinking and enhanced abstinence among people with AUD. Side effects can include sleep problems, tiredness, anxiety, headache, joint and muscle pains, abdominal pain and cramps, nausea, and vomiting.

Topiramate

Topiramate (Topamax) was developed to treat epilepsy, and it is approved by the U.S. Food and Drug Administration to prevent migraines. Psychiatrists have used it to treat bipolar disorder and counteract the weight gain associated with some antidepressants. It has also been investigated for use in treating obesity, binge eating, post-traumatic stress disorder, bulimia, obsessive-compulsive disorder,



What's in a drink?

In the United States, one drink contains roughly 14 grams of pure alcohol, which is found in:

- 12 ounces of regular beer
- 8 to 9 ounces of malt liquor
- 5 ounces of wine
- 3 to 4 ounces of sherry or port wine
- 1.5 ounces of distilled spirits
- 2 to 3 ounces of cordial liqueur

For different types of beer, wine, or malt liquor, the alcohol content can vary greatly. Check labels or the bottler's website for specific information.

smoking cessation, cocaine dependence, and AUD.

Topiramate appears to be particularly effective for reducing cravings and increasing abstinence in people who are still drinking. First, it blocks the ability of glutamate to increase dopamine. Since glutamate is involved in the process of long-term memory, blocking it holds back the pleasurable feelings associated with memories of drinking. Second, topiramate enhances the production of gamma-aminobutyric acid, which suppresses dopamine output, reducing the pleasurable effects of drinking.

In two large-scale clinical trials, topiramate helped improve all drinking outcomes. One of the studies reported that heavy drinkers were six times more likely to remain abstinent for a month when taking topiramate even in small doses. Participants taking topiramate had fewer drinks during a drinking day, fewer heavy drinking days, more days abstinent, and were less likely to binge drink when compared with the placebo group. Half of everyone in the topiramate group reported less craving for alcohol.

Topiramate is most effective when it is paired with brief counseling on a weekly basis. Most patients need to be treated for six months to one year to decrease the possibility of full-blown alcohol relapse. Topiramate can have side effects that include weight loss, fatigue, a feeling of pins and needles, mental slowness, and kidney stones.

Ondansetron

Ultra-low-dose ondansetron (AD04, in development) is a serotonin-3 receptor antagonist. Serotonin helps to regulate appetite, sleep, memory, learning, and mood. The serotonin system modulates the effects of other neurotransmitter systems, including the cortico-mesolimbic dopamine system. Many antidepressant drugs act by regulating serotonin levels in the brain.

Blocking serotonin receptors decreases dopamine release and,

as a result, lessens the craving for alcohol. This treatment is targeted for people with a specific genetic composition. It was shown to work for the subpopulation of 35 percent of people of European or Hispanic descent who have a specific genotype of key genes in the serotonin system. In a pivotal phase 2b clinical trial, ultra-low-dose ondansetron reduced the number of drinks per drinking day, increased abstinent days, and decreased the percentage of heavy drinking days in that specific population.

Ondansetron is currently used for the treatment of vomiting, but the lowest dose currently available commercially is 12 times higher than the dose required to treat AUD. That ultra-low dose of ondansetron is not commercially available, but it is in a phase 3 trial that is scheduled to be completed in 2022. Side effects can include headache, constipation, and fatigue.

Acamprosate

Acamprosate (Campral) works as a relapse-prevention drug. The glutamate system remains highly active and seeks out additional stimulation even after alcohol intake stops, causing negative emotions and sometimes withdrawal symptoms. Acamprosate is thought to restore normal glutamate activity in the brain. Acamprosate has been found to be most effective when combined with behavioral interventions focused on preventing relapse.

Side effects can include diarrhea, constipation, nausea, stomach pain, loss of appetite, headache, drowsiness, dizziness, weight changes, muscle/joint pain, change in sexual desire, or decreased sexual ability.

Bottom Line Health interviewed Bankole A. Johnson, MD, DSc, the Dr. Irving J. Taylor professor and chair of the department of psychiatry and the pharmacology director of the Brain Science Research Consortium Unit at the University of Maryland School of Medicine. He is the author of *Six Rings: Preparedness and Restoration: Beyond Imagined Borders of Brain Wellness and Addiction Science*. <https://sixringsbooks.com>.

Don't Be Misdiagnosed

Millions of Americans suffer the consequences of a diagnostic error. Don't be one of them.



David E. Newman-Toker, MD, PhD
Johns Hopkins School of Medicine



© AaronAmat | Getty Images

An 83-year-old woman had diarrhea, which her doctor said was a side effect of her diabetes medication. She was treated with a change in medication and diet but received no further tests. Several years later, she was diagnosed with incurable metastatic colon cancer.

A 36-year-old man suffering from fatigue and lethargy was diagnosed by different doctors with depression and anemia. Months later, an examination showed he had endocarditis, a bacterial infection that had destroyed one wall and two valves of his heart.

A nurse had a severe headache that radiated to her shoulders and waistline. A doctor diagnosed her with a tension headache and prescribed pain medication. She collapsed several days later, after which doctors discovered she had a ruptured blood vessel in her brain.

Defining misdiagnosis

These are true stories of misdiagnosis, or diagnostic error. In general, there are two types of misdiagnoses: Doctors miss the opportunity to treat a dangerous disease, or they mistakenly treat a person for a disease or health problem they don't have. Most diagnostic errors occur in primary care, though some happen at the hospital. And they're very common. Experts say most people will experience at least one diagnostic error in their lifetime.

Different types of harm

Yearly, an estimated 500,000 to 1 million people suffer permanent disability or death because of a misdiagnosis. Millions more aren't disabled

or killed, but they are permanently harmed. Others endure serious short-term suffering, such as ending up in an intensive-care unit for weeks on end. Still others deal with lower levels of suffering for longer periods. For example, a patient of mine suffered from near-constant dizziness. She had seen two neurologists, two ear-nose-and-throat specialists, and two psychiatrists, all of whom concluded that she had psychological problems. But I was able to diagnose her with vestibular migraine, an unusual form of migraine that may cause dizziness without headaches.

There's also psychological harm. As with my patient, many misdiagnosed patients have been told they are imagining it or their problem is all in their head—an insensitive comment that can cause psychological trauma. Patients may lose faith in doctors and the health-care system.

The big three

Health problems that affect tens of millions of people, such as fractures and high blood pressure, are commonly misdiagnosed. But some rare problems are misdiagnosed, too, such as spinal abscess, with 20,000 to 30,000 yearly cases and a misdiagnosis rate of 65 percent; and aortic dissection, with 50,000 to 100,000 yearly cases and a misdiagnosis rate of 25 to 35 percent.

New research by my colleagues at the John Hopkins University School of Medicine and I show that diagnostic errors in three categories of illness generate 50 percent of all disability and death from misdiagnoses. In fact,

just 15 diseases in those three categories are the main causes of serious, permanent harm:

Vascular events, including stroke, heart attack, venous and arterial thromboembolism (blood clots in the legs, feet, arms, or groin), and aortic aneurysm and dissection (a bulge or tear in an arterial lining);

Infections, including sepsis, meningitis, encephalitis, spinal abscess, pneumonia, and endocarditis; and

Cancer, including lung cancer, breast cancer, colorectal cancer, prostate cancer, and melanoma.

Before, during, and after

Avoiding misdiagnoses in these three categories could save 100,000 lives every year, including your own. And you can help your doctor do it by taking three steps:

Come prepared. Before your primary care visit, put together a one-page, easy-to-read list of your symptoms and the timeline during which they occurred. This helps you avoid a common mistake: talking about what previous doctors have said. The executive summary also saves precious time. Instead of the doctor spending 10 to 15 minutes finding out about your symptoms, he or she can spend that time thinking about what caused your problem.

Ask this key question. As a patient, you have to guide the doctor in giving you a detailed explanation about what he or she thinks is going on. To do that, ask this question: "What is the worst problem this could be and why is it not that problem?"

This forces the doctor to give you specific information. For instance, if your major symptom is dizziness, you're hoping to hear something like this: "The pattern of my findings is consistent with vestibular neuritis, an inflammation of a nerve in your ear, which causes dizziness. The problem I'm most worried about is stroke, but there is substantial evidence that my findings in this exam confirm your problem is vestibular neuritis."

This shows that the doctor is thinking clearly and systematically about the problem and can articulate the rationale for the diagnosis. It also shows that he or she is thinking about making sure you don't get harmed by a diagnostic error.

However, if the doctor says something like, "You don't need to worry about that," or "I see a lot of this, and it is very common," you should immediately find another doctor or at least get a second opinion. Research from the Mayo Clinic shows that 87 percent of patients who seek a second opinion leave with a refined or changed diagnosis (66 percent refined, 21 percent changed, and 12 percent confirmed).

Stay vigilant. During your visit, your doctor will give you a treatment plan, such as, "This problem should go away by itself in a week," or "Take this pill, which should solve the problem." However, when things don't go according to plan, patients tend to think they have received the wrong treatment. If you've been given a pill, you might think you need a higher dose or a different medication. But you may not have the wrong treatment for the right disease: You might have the right treatment for the wrong disease.

If you're not getting better, it's time to make sure your diagnosis is correct and to keep the possibility of diagnostic error on the physician's radar by giving the office a call.

Bottom Line Health interviewed **David E. Newman-Toker, MD**, a professor of neurology, ophthalmology, and otolaryngology at the Johns Hopkins University School of Medicine in Baltimore. He is also the director of the Armstrong Institute Center for Diagnostic Excellence at Johns Hopkins, and the president of the Society to Improve Diagnosis in Medicine.



[YOUR ADVOCATE]

Charles B. Inlander

Long-term care: What now?

A reader recently called me with a terrible dilemma. His 89-year-old mother was hospitalized after suffering both a heart attack and a stroke. She was stabilized and well-treated at the hospital, but now had to be moved into some form of long-term care. The reader and his family lived halfway across the country and were unable to care for her extensive needs. The hospital staff recommended three nursing homes as possible placements, but because of COVID-19, the family was not allowed to tour any of them. Instead, the nursing homes sent representatives to the hospital to discuss options. The family did not know what to ask, which is why they called me.

Most COVID-19 deaths in the United States have been in long-term-care facilities, places such as skilled nursing homes, personal care homes, and assisted-living facilities. At various times, most of these facilities have been in some form of lockdown, not allowing family or others to visit. Understanding the fear most of us have, especially these days, of placing a loved one in a long-term care facility, here is what I advised the reader to ask.

Is the facility safe?

Long-term-care facilities have always been risky for residents' health. Any congregate living arrangement makes it easy for viruses and other pathogens to spread. While many outbreaks of diseases, such as influenza, pneumonia, and urinary tract infections, can be controlled or limited by vaccines and good sanitation practices, it is almost impossible to keep immune-compromised residents totally healthy. So, before you place a loved one (or yourself) in any facility, ask these questions:

1. *Are you following the Centers for Disease Control (CDC) COVID-19 and other guidelines?* The CDC has specific guidelines for long-term-care facilities that help limit the spread of COVID-19 and other dangerous pathogens. Ask the facility staff to explain how these guidelines are being implemented.
2. *How many residents and staff have tested positive for COVID-19 and how many residents have died from it?* These are difficult but essential questions to ask. Ask if the rates of infection and death have decreased or increased in the last three months.
3. *Is the facility licensed and does it accept Medicaid and Medicare?* Most long-term-care facilities are licensed by the state. If so, they must be inspected annually for compliance with state regulations, including health and safety. If the nursing home accepts Medicare and/or Medicaid, it is also regulated and inspected by the federal government. Most of these inspection reports are available online.

Consider alternatives

Many people are placed in long-term care because they are unable to care for themselves alone at home or handle their own medicines. But there are alternatives to out-of-home placements, including adult daycare, visiting nursing, and care programs that will help coordinate care. Your local Area Agency on Aging can help you find these programs. If the person has long-term-care insurance, many plans will pay a family member to provide care.

Charles B. Inlander is a consumer advocate and health-care consultant based in Fogelsville, Pa. He was the founding president of the nonprofit People's Medical Society, a consumer-advocacy organization credited with key improvements in the quality of U.S. health care, and is author or coauthor of more than 20 consumer-health books. Please send comments and suggestions for future columns to BottomLineHealth@Belvoir.com.

Talking testosterone

This hormone plays roles in both men's and women's health.



Gary Donovitz, MD
BioTE Medical



© kal19 | Getty Images

With so many supplements on the market being touted for “low T” to restore men’s virility, it’s easy to forget that testosterone plays a wide variety of roles. To learn more, *Bottom Line Health* spoke with Gary Donovitz, MD, author of *Testosterone Matters More: The Secret to Healthy Aging in Women*.

Low T consequences

Many of the signs and symptoms of low testosterone are the same in men and women: lower libido, mood swings, weight gain, problems with sleep, muscle loss, and brain fog. Without adequate levels of testosterone, both men and women are at increased risk of serious conditions:

- **Cognitive decline.** You might experience memory, focus, and concentration issues and, in women in particular, Alzheimer’s disease.
- **Cardiovascular disease.** As testosterone levels decline, systemic inflammation increases, including in coronary arteries. It can also precipitate more plaque deposits in arteries.
- **Osteoporosis-related fractures.** Low testosterone and the resulting loss of bone and muscle mass can lead to frailty, which increases the risk for falls and breaking a bone.
- **Diabetes.** Diabetes, obesity, and low testosterone are dangerously linked, especially in men. A man with diabetes has a 50 percent chance of having

low testosterone. A man with diabetes who is also obese has a greater than 80 percent risk of having low testosterone.

Testosterone and age

For men, testosterone loss starts in the 30s, with levels declining 1 to 1.5 percent every year. Low testosterone likely affects more than one-third of men over age 45.

Testosterone levels in women start to decline as early as age 25. By age 40, they’re half of what they once were. Menopause can simultaneously trigger low testosterone, uncontrolled inflammation, and increased LDL (bad) cholesterol.

Restoring testosterone levels

Low testosterone in men is diagnosed when total testosterone is less than 300 nanograms/deciliter, but many men have signs of testosterone deficiency even above this level.

The optimal range of testosterone levels in women has still not been established. Other than in the area of sexual dysfunction, testosterone’s importance to women isn’t appreciated enough. Restoring testosterone with hormone replacement therapy can mean better energy, sleep, and mood, less depression, and greater sexual satisfaction. Some studies show that it can be protective against cancer, specifically breast and prostate cancers. It can boost brain function,

decrease inflammation and limit plaque buildup, improving blood flow and cardiac function, and increase bone mineral density to a greater degree than bone drugs.

Testosterone therapy

There are various testosterone formulations available, but they aren’t equally effective. The testosterone replacement should be bioidentical, not synthetic. Synthetic testosterone have a different molecular structure and don’t chemically match the hormone as naturally made by the body, so the benefits are never as good and the risks are higher.

Testosterone comes in topicals, such as patches, gels, and creams, but their absorption rates vary, and they can deliver too much or too little testosterone. Pills seem to increase inflammation markers. Pellets provide a more consistent blood level over time as the testosterone is released slowly over a period of weeks or months. This eliminates the roller-coaster effect of symptom relief and resurgence, and reduces the risk of side effects, such as hair thinning in women. Contrary to myth, in the right dose, it does not cause masculine traits like a deep voice.

Men may experience a small—10 to 15 percent—reduction in the size of their testicles, worsened sleep apnea if they already have it, and/or mild and temporary leg swelling.

Hormone optimization

The best results for women come from hormone optimization, which is more than just hormone replacement. It means finding the right hormones—which might include thyroid and/or estrogen for some women—at the right dose for the right person. This is an example of precision medicine. Because testosterone is not commercially available in doses made for women and is used off-label, hormones should be made at a compounding pharmacy so the dose can be individualized.

Bottom Line Health interviewed Gary Donovitz, MD, FACOG, founder of BioTE Medical. His latest book is *Testosterone Matters More: The Secret to Healthy Aging in Women*. <https://www.donovitz.com>

CBD for Pain *Hype or Hope?*

Almost overnight, cannabidiol exploded into a \$1 billion industry. Is it the latest fad or the future of pain relief?

Every day, millions of Americans voluntarily put themselves at risk for headaches, nausea, liver and kidney disease, heart attacks, internal bleeding, addiction, and even death.

They do it by gobbling down more than \$300 billion a year of over-the-counter pain relievers like acetaminophen (Tylenol), ibuprofen (Advil, Motrin), and naproxen (Aleve) and prescription opioids including fentanyl (Duragesic), hydrocodone (Hysingla ER, Zohydro ER), and hydrocodone with acetaminophen (Vicodin).

Why would millions put themselves at such risk? Just one reason—to escape the iron grip that chronic pain holds over their lives. But the days when your only choice is “pain or pills” may finally be coming to an end thanks to a safe, all-natural herbal compound called *cannabidiol*, also known as CBD.

CBD RESEARCH

CBD has been the focus of more than 8,000 published studies showing that it can help with a variety of common health problems, including pain. But

the landmark meta-study from the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine stands out from all the others. In that study, an expert committee considered more than 10,000 scientific abstracts and concluded that for “the treatment for chronic pain in adults” there was “conclusive or substantial evidence” that CBD works. Those are the two very highest levels of certainty in the scientific community.

“CBD can help significantly in the opioid crisis the United States is currently facing.”

—Dr. Sanjay Gupta

PANIC IN PHARMA-LAND

The big pharmaceutical companies aren’t happy about the emergence of CBD because of the threat it poses to their bottom lines. Doctors may be skeptical about CBD simply because it’s new, and they don’t

fully understand it, so they rarely mention it to patients.

However, it seems there’s no stopping CBD’s reputation from spreading rapidly among patients struggling with pain. Stories about CBD are flooding the media—on television, online, and in magazines. People battling chronic pain are seeing the stories and hearing from friends and neighbors who turned to CBD and found relief.

Thanks to all the discussion and all the promise, consumers with chronic pain are eager to try CBD.

But before deciding if CBD is right for you, it’s important to understand more about what it is, where it comes from, and why scientists believe it is so effective for pain.

UNFORTUNATE MYTH

Cannabidiol is a nonpsychoactive herbal compound found in marijuana and marijuana’s botanical cousin, hemp. Because of the marijuana “connection,” much confusion surrounds CBD, and some people in chronic pain are hesitant to use it. They’re afraid that they might get high when all they want is for the pain to go away.

CBD IS NOT MARIJUANA!

While there are grounds for the confusion, it's a fact that *CBD is not marijuana, and it won't give you a buzz.*

How the confusion began:

Cannabis sativa (marijuana) is a complex flowering plant with more than 400 different compounds. It wasn't until recently that about 100 of them were classified as *cannabinoids*, or active compounds.

After much investigation, scientists found that only one of the 100 active compounds in the plant, *tetrahydrocannabinol* (THC), is responsible for marijuana's signature high. So let's call THC the "buzz" cannabinoid.

Eureka! The critical discovery for anyone with chronic pain came when researchers identified a second active compound, *cannabidiol* (CBD), as the cannabinoid responsible for marijuana's well-documented ability to control pain with an anti-inflammatory effect

that is several hundred times more potent than aspirin!

That's a very big deal, because CBD is one of the 99 nonpsychoactive cannabinoid compounds in the *cannabis sativa* plant.

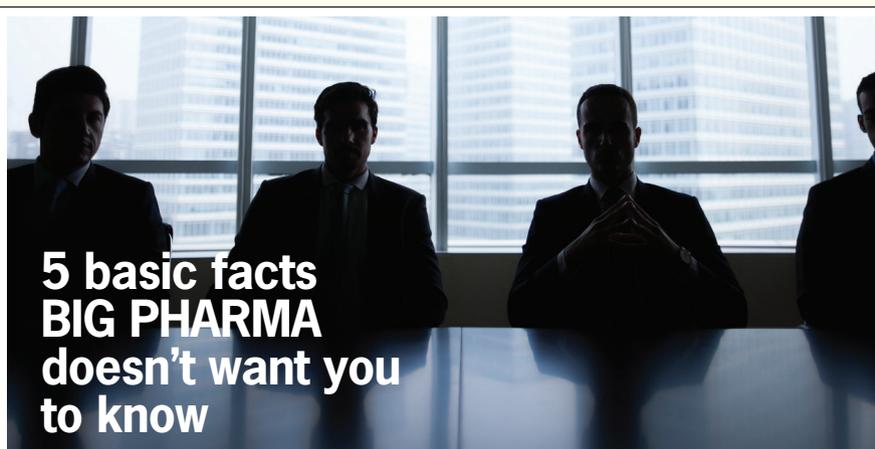
In other words, you can smoke CBD and ingest it all day without any psychoactive effects. You'll remain sharp and sober.

Second source. It turns out CBD is also plentiful in hemp, a plant that is biologically similar to *cannabis sativa* and contains many of the same cannabinoid compounds.

No THC. No buzz. Because hemp has only trace amounts of THC (the "buzz" cannabinoid), it's impossible for hemp-derived CBD to have psychoactive side effects, and that's why it is completely legal across the country.*

Some CBD products have marijuana-derived CBD, and others are made with CBD extracted from hemp. Products derived from hemp are widely available at health stores and online without a prescription. If the CBD in a product is derived from marijuana, it's likely to be available only from dispensaries in states where medical marijuana has been legalized.

Which CBD is better? There has been plenty of subjective discussion around the question of which form of CBD is more effective, but all too often, the opinion being expressed is tainted by a financial interest in one type of CBD product or the other.



With so many billions of dollars on the line, the pharmaceutical giants will do everything in their power to keep you from understanding how and why CBD effectively stops pain!

They don't want you to know...

1. CBD fights pain with an anti-inflammatory effect **several hundred times more potent than aspirin.**
2. **CBD has no dangerous side effects** like those associated with pain pills.

3. **CBD is not addictive.** On the contrary, when used for pain, it delivers bonus health benefits!
4. **More than 8,000 published studies** show that CBD can help with a variety of common health problems, including pain.
5. As a result of the **2018 Farm Bill**, CBD derived from hemp is permitted in every state except South Dakota, where there are still some restrictions.

YOU CAN LIVE PAIN-FREE WITHOUT DANGEROUS PRESCRIPTION DRUGS!

Powered by pure, potent, hemp-derived, broad-spectrum extra-strength CBD oil

100% natural and organic

Fortified with shea butter, arnica, and essential oils

Feel pain instantly melt away!

Call 1-800-980-9337 or online at: bottomlineinc.com/Health

Offer not available in Florida, Hawaii, Idaho, Mississippi, and South Dakota.

500 MG
Extra-strength
Broad-spectrum
100% organic



"If CBD had been found in another plant, it would be considered a miracle cure."

— Mark Blumenthal, executive director
American Botanical Council

What science says: As far as science is concerned, there is a consensus among researchers that a CBD molecule is a CBD molecule, regardless of whether it's found in hemp or marijuana.

*Restrictions apply in Florida, Hawaii, Idaho, Mississippi, and South Dakota.

WARNING!

Before you buy

Whenever there's something as new and effective as CBD on the market, you can bet it will bring a group of fast-buck artists out of the woodwork. That has certainly been the case with CBD.

In addition, because it's so new, there are no FDA guidelines or regulations that apply to CBD.

These two conditions allow swindlers to sell inferior CBD products at sky-high prices, especially on the Internet. Of course, these profiteers will be long gone by the time unsuspecting buyers realize that they've been taken for a ride and the products do nothing for pain.

SCAMMERS EXPOSED

In a November 2017 study reported in the *Journal of the American Medical Association (JAMA)*, 84 CBD products were purchased from 31 different online companies. The scientists took them to the laboratory, analyzed every one of them, and here's what they found:

Just 26 of 84 CBD product samples contained the amount of CBD claimed on the label. That's less than one out of three. A similar FDA study discovered some CBD products sold online had no CBD oil content at all!

Since the therapeutic benefits of CBD will range widely depending on the purity of the CBD being used, it's absolutely critical that you choose CBD products with maximum purity and the stated potency if you want to get the pain-relieving benefits promised by CBD.

However, that doesn't mean all CBD is the same. In fact, there are three different forms of CBD, and it's important you know the difference.

FULL-SPECTRUM CBD oils contain all the cannabinoids, terpenes, and flavonoids found in the cannabis plant, including THC, the cannabinoid that makes you high and leads to failed drug tests. For most people, this is not a desirable form.

CBD ISOLATE is the most basic form of CBD, containing only the CBD molecule. The THC is removed as well as all the other 99+ cannabinoids, flavonoids, and terpenes.

BROAD-SPECTRUM CBD contains everything in full-spectrum CBD except for the THC. As a result, you benefit from what scientists call the "entourage effect." This refers to the synergy achieved as each compound amplifies the therapeutic properties of the others. Researchers now recognize broad-spectrum CBD as the most effective form for pain.

TOPICALS VS. INGESTIBLES. For treating most types of pain, medical practitioners recommend applying a topical formula directly to the area that hurts. That's because the CBD is quickly absorbed through the skin and rushes to the nearby CB1 and CB2. (See "The Simple Science Behind CBD's Painkilling Power".)

OUR UNPRECEDENTED RECOMMENDATION

We have known for a long time that CBD is a potent, natural alternative to pain pills and opioids. We've written extensively about CBD in our *Bottom Line* newsletters, yet we always stopped short of endorsing a specific CBD product for pain.

However, as we have watched the opioid crisis in this country take more and more lives, we realized it was time to do more than write about CBD. We realized the need to take an unprecedented step and find a specific CBD pain product we could recommend to you with total confidence.



THE SIMPLE SCIENCE BEHIND CBD'S PAINKILLING POWER

Scientists have long known about the cannabinoid CBD and its remarkable ability to relieve pain. But until 1992, they were scratching their heads over why CBD is such a powerful pain reliever, and why it works so fast.

Surprise discovery. That's when medical researchers were astonished to discover that your body naturally produces a variety of cannabinoid compounds, including CBD.

They also found humans and other mammals have a complex endocannabinoid system (ECS) made up of CB1 and CB2 receptors embedded within the membrane of virtually every cell type. These receptors are in your brain, nervous system, organs, connective tissue, glands, and immune cells. The ECS helps control your sleep-wake cycle, mood, attention, and other important neurobiological processes, including pain.

In other words: Your body is biologically primed to accept CBD and put it to work. The receptors are in place, many right below the skin's surface. When you apply a CBD pain rub directly on the skin, the CBD is quickly absorbed through the epidermis and pores where the receptors are waiting to use it to fight pain.

Simple summary: When CBD, the cannabinoid that relieves pain, meets the CB1 and CB2 receptors throughout your body, your pain safely and naturally begins to heal. *It's as simple as that!*

We searched and we found. During our extensive research, we came across the good, the not-so-good, and the absolutely useless. We were shocked to discover that some CBD products (often sold online behind a wall of fake credibility) are manufactured in people's homes with no oversight at all!

Long story short—**Windrush CBD Organics Extra Strength Muscle and Joint Rub®** is one of the very few CBD products we are willing to endorse at this time. Windrush Organics is a leader of the hemp CBD revolution and boasts full traceability from seed to shelf. They go the extra mile in every step of the production process.

In fact, we visited the Windrush Organics USDA-certified organic facility to see its quality-control measures for ourselves, and we believe it to be one of the purest, most potent CBD rubs available today.

THE FUTURE

Right now, based on all the new research, it appears CBD may well lead to a future without opioid painkillers or, at the very least, a world in which their use is greatly diminished.

In fact, studies have already shown that in states where CBD sales go up, opioid prescriptions go down. That's strong evidence that CBD is living up to its reputation as "nature's opioid."

Here to stay. With so much positive research and so many miraculous real-life stories, it's clear that the promise of living pain-free without prescription drugs isn't an empty dream or a pie-in-the-sky wish. It's a real possibility, and to that we say, "Thank goodness!"

SUMMARY

More than 8,000 published studies show cannabidiol (CBD) can help

with a variety of common health problems, including pain.

CBD CAN BE EXTRACTED FROM MARIJUANA OR HEMP, a biologically similar plant with no psychoactive effects.

HEMP-DERIVED BROAD-SPECTRUM CBD IS PREFERRED IF YOU WANT TO AVOID MARIJUANA'S "BUZZ."

For treating pain, **TOPICAL CBD RUBS ARE BEST** because they don't need to pass through the digestive system. They are applied to the painful area and quickly absorbed.

MANY CBD PRODUCTS ARE MISLABELED and don't contain the stated CBD potency. Always buy from a trusted source.

BOTTOM LINE EVALUATED MANY BRANDS AND RECOMMENDS WINDRUSH ORGANICS CBD EXTRA STRENGTH MUSCLE AND JOINT RUB.

BUY NOW

EXCLUSIVE SAVINGS FOR BOTTOM LINE READERS

Live pain-free without dangerous drugs!



Welcome to the future of pain relief! Cannabidiol (CBD) is the world's most powerful natural alternative to pain pills and opioids and their dangerous side effects. Now you don't have to risk liver damage, kidney failure, circulatory problems, addiction, and even death to manage chronic pain.

Use **Windrush Organics CBD Extra Strength Muscle and Joint Rub** to relieve:

- Chronic joint and muscle pain
- Severe back, hip, and knee pain
- Throbbing postsurgery pain
- Extreme neuropathic pain
- Acute musculoskeletal pain

Windrush Organics CBD Extra Strength Muscle and Joint Rub

is one of the most powerful CBD pain-relief products in the world, recommended and guaranteed by Bottom Line Wellness Products.

- Powered by pure, potent, hemp-derived, broad-spectrum CBD.
- 0% THC means no unwanted "buzz."
- Safe, nonaddictive, and no dangerous side effects.
- 100% natural, plant-based, and organic.
- Lightly mentholated for extra pain relief.
- Fortified with shea butter, arnica, and essential oils.
- Handmade in small, quality-controlled batches.
- Rub on and feel the pain instantly melt away!

Call **1-800-980-9337** or online at: bottomlineinc.com/Health

Offer Not Available in Florida, Hawaii, Idaho, Mississippi, and South Dakota.

BEL920

Thriving when there is no cure

You can still experience fulfillment and abundant joy despite a chronic illness.



Craig K. Svensson, PharmD, PhD
Purdue University



© adamkaz | Getty Images

I am just one of the millions of people who live with chronic medical conditions. I have lived through the uncertainty of not knowing what was causing my symptoms, the frustration of not being able to find relief, and the fear of losing mobility and independence. Diseases such as systemic lupus erythematosus, fibromyalgia, multiple sclerosis, rheumatoid arthritis, ulcerative colitis, and chronic pain have no cure (yet), but those of us who have them can still thrive and experience fulfillment and joy.

Learn about yourself

When you live with a chronic condition, you need to arm yourself with information. Keep a health diary to become familiar with how the ailment affects your body. What worsens your symptoms? What lessens them? What patterns can you discern?

Next, think about what behaviors you can change to be more comfortable. Do you need to limit the time you sit to avoid aggravating underlying pain? Do you need to limit the number of evening activities in a given week to avoid cumulative fatigue? Do vacation plans need to

account for your heightened sensitivity to heat or cold?

Consider how your illness affects others. Studies have found that the quality of life for spouses and partners is sometimes poorer than the quality of life for a patient with chronic illness. Family and friends want to ease our burden, but don't always know how. Careful reflection and open communication can ease the way.

Learn about the disease

Once you have a diagnosis for your symptoms, the second educational focus is about the disease. How does it manifest in most people? What does normal progression look like? Should you expect a decline in your functioning? What options exist for treatment or symptom relief?

While your primary care physician is a valuable source of information, you may need to dig deeper. A single physician may not have ample experience with your specific condition and may not have all of the answers you need. In many cases, chronic illnesses are misdiagnosed by busy doctors. (Editor's note: See the article "Don't be Misdiagnosed" on page 6.) Furthermore, studies show that patients

who understand diseases such as diabetes, high blood pressure, and asthma have better health outcomes. We have every reason to believe the same to be true for other ailments as well.

While researching, be aware that websites often post bad health information. The Access to Credible Genetics Resource Network has created a helpful tool patients can use to assess the credibility of posted health information. You can find it at www.trustortrash.org.

Disease-specific patient advocacy groups are often valuable for both information and support. The best groups include an expert advisory panel to assess the accuracy of the information provided.

Learn about disease progression

People living with a chronic disease often make two opposing errors. The first is seeing any change in health as a sign of disease progression. The second is ignoring signs that merit attention. It is imperative to learn how to strike the right balance between these two extremes.

Many chronic ailments, even those associated with a progressive decline, wax and wane over

time. You need to identify benchmarks to identify when it's time to self-manage and when it's time to seek a medical expert.

Speak frankly with your health-care providers about how they will assess progression over the years to come. Are there symptoms that suggest a more rapid progression? How will the disease affect functional and cognitive abilities? How might these impact your professional or personal plans?

If you expect a decline in function

While some chronic conditions lead to unrelenting symptoms, others inevitably lead to functional decline. In that latter case, it is wise to consider ways you might change things in your life to accommodate future disability.

- You may be able to make home modifications to accommodate

future mobility challenges. (Editor's note: See the article "Aging in Place" in the January issue of *Bottom Line Health*.)

- If you are very active, it's wise to consider less strenuous activities or hobbies that will still provide fulfillment in your leisure time.
- It may make sense to consider alternative careers and even seek out essential education to prepare for them, if future decline will impair your ability to fulfill your current duties.
- Evaluate your insurance policies and talk with a financial planner about what-if scenarios.
- Discuss with loved ones how to address housing changes, if they become necessary.

Deal with dread

Those living with the progressive deterioration of chronic illness often

live with the dread of becoming confined—to a wheelchair, a home, a bed, or a machine. This can give rise to crippling anxiety. Abraham Lincoln is purported to have said, "If I am killed, I can die but once, but to live in constant dread of it is to die over and over again." Living with the dread of physical decline is to bear its hardship before it even arrives.

Even if your condition is not expected to deteriorate, a chronic disease often causes feelings of shock, disorientation, and sadness. You may mourn for a path you thought you'd travel that may no longer be available, and you may be frustrated, angry, or scared at the loss of control. But while you can't control the future, including the course of your disease, you can control how you respond to the twists and turns that will pop up in your journey.

If you find yourself in a perpetual cycle of worry, sadness, anger, or fear, consider seeking spiritual or professional counsel. Support groups can also help you find others who have traveled down the same road and found ways to overcome the challenges that you face.

Live your life

The foolish but oft-repeated mantra, "If you don't have your health, you don't have anything," represents a depressing and narrow view of life. The truth is, many who suffer from chronic illness have found their life journey to be fulfilling and marked by abundant joy. I am convinced this path is open to all who live with an incurable ailment that leads to chronic suffering. Yes, life is different from before chronic illness. Nevertheless, different can be fulfilling.

Bottom Line Health interviewed Craig K. Svensson, PharmD, PhD, dean emeritus and professor of medicinal chemistry & molecular pharmacology in the Purdue University College of Pharmacy, as well as adjunct professor of pharmacology & toxicology in the Indiana University School of Medicine. Dr. Svensson is the author of *When There Is No Cure*. <https://craigsvensson.com>



© draganad91 | Getty Images

How to Live with Pain

For many people with chronic pain, there comes a point when you must recognize that eradicating pain is an unrealistic near-term goal. That doesn't mean giving in to suffering, but it does mean that you need to establish new goals to enable you to live life to the fullest extent possible.

Identify the most important areas of your life that are disrupted by pain and look for adaptation strategies. For example, I suffer extreme back pain when driving, but I'm not willing to accept drowsiness or dulled cognitive ability to obtain this goal through medication. Ultimately, I purchased an SUV of substantial height that did not require lowering myself into the seat of a car. That purchase did more to improve my pain while driving than any form of physical therapy or medication.

See a pain-management specialist. Unlike a general physician, pain-management specialists have focused their training on the effective management of chronic pain. The growing trend toward telemedicine can make the limited number of pain-management specialists available to people no matter where they live.

Avoid idleness and isolation. When the mind is idle, pain is more noticeable, and we are more prone to brood on thoughts of despair about our plight. Keeping your mind busy with activities and social interaction provides distraction, which actually alters sensory pain signals in the spinal cord, and it gives life more meaning and joy.

Manage stress. People living with chronic pain will often experience increased pain during times of stress. Learning how to reduce stress or to better cope with its presence in our lives can reduce pain. Similarly, anxiety can provoke pain in patients with ailments like trigeminal neuralgia (painful attacks arising from a misfiring of the trigeminal nerve in the jaw). Addressing the underlying causes of anxiety can reduce the episodes of painful attacks in such patients.

I remind myself of all the reasons I work out and how it brings me all the things I care most about: being a good role model to my kids, feeling confident in my own skin, having the peace of mind that my health is good. That said, sometimes I play little tricks with myself. I'll say, "Okay. Just do 15 minutes. Then if you want to stop you can stop." But 99 times out of 100, I end up doing at least 20 minutes, and I never regret it.

BLH: What makes a routine—whether it's exercise or healthy eating—resilient?

JM: Resolve. It starts with your state of mind. If you want it and you have a reason to work for it, then you will do it. That said, there are certain elements that help someone stick with healthy eating and fitness.

Take a balanced approach that is rooted in passionate purpose. Don't be too strict. There's no need to cut out carbs. Don't dramatically reduce calories or starve yourself. The key is simply to not eat more than you burn in a day.

Practice the 80/20 rule. Make 80 percent of your food choices healthy and limit treats to 20 percent. For example, if you eat 1,800 calories a day, allot roughly 400 calories to whatever you like (a slice of pizza, a brownie, a serving of ice cream) and then spend the other 1,400 calories on healthier choices. Go with sashimi and sushi instead of fattening rolls with tons of sauce. Choose the side salad instead of the fries. Order water instead of a soda.

BLH: What do you recommend people do to get exercise when gyms are closed and, in many parts of the country, it's too cold to exercise outdoors?

JM: There are so many solutions. You can get an incredible workout at your home with inexpensive equipment or none at all. You can take classes online if you still pay for a gym

membership, as many gyms are doing this to keep patrons signed up. If you have a trainer, you can do FaceTime training sessions with them. For far more affordable solutions, you can use apps and streaming platforms.

I recently launched my own app, My Fitness (available on Apple and Android devices), that has my entire DVD library, as well as completely customizable programs including yoga, kickboxing, free weights, body-weight training, calisthenics, jump rope, kettlebells, slides, and booty-band workouts.

BLH: What advice do you have for someone who just dislikes exercise?

JM: If you truly have no physical activity you are passionate about, that's fine. Instead, ask yourself what fitness *results* you are excited for? Do you want to walk without feeling breathless? Live to meet your great-grandkids? Feel comfortable in a two-piece instead of a one-piece?

It doesn't matter how superficial or how profound your reasons are, as long as you're passionate about them. If you have that *why*, you can tolerate the *how* (the work associated with the goal). Then from there, remind yourself that four 30-minute sessions a week are a reasonable price to pay for those bigger things you are passionate about attaining.

BLH: For new exercisers, do you recommend jumping right into a challenging plan or easing in gently?

JM: The key with fitness is to build your regimen around three components:

1. What is your fitness goal?
2. What is your current fitness level?
3. Are there any types of workouts you enjoy in particular?

From here, you can choose the program that is right for you. For example, a beginner who wants a walk/jog plan might choose a couch-to-5k program. An intermediate athlete who wants to lose the last 10 pounds might select high-intensity interval training and functional resistance

training. Someone who just wants to improve their fitness and flexibility might choose a yoga program.

When it comes to fitness, find something you like, whether it's hiking, biking, dance workouts, yoga, kickboxing, or anything that gets you moving.

BLH: Challenges arise. What is your advice on how to get back up when we fall off the wagon?

JM: I like to play devil's advocate. What if you just kept up the downward spiral? What if you thought, "Hey I had a piece of pie last night and a couple of glasses of wine. That's it. My health is shot. I'm just going to quit exercising forever and eat terribly." Honestly, think about that. How is that rational?

It's like getting a flat tire and then getting out of your car, slashing all three other tires, and tossing a Molotov cocktail into the driver's side window all because you had a bad meal, day, week, and, yes, even a bad year. It happens. It's never too late. And honestly, there is no other rational alternative than to get back on the horse at some point. Life is full of ups and downs. You simply pick yourself up, dust yourself off, take away a lesson if there is one to be learned, and keep going.

Plus, if you are practicing a more balanced approach, you realize that some days you eat more, and then other days, you can balance it by eating less. You can exercise a bit longer the next day. If you've incorporated treat foods into your regimen, a slip won't trigger you, making you feel a massive pendulum swing that happens when you restrict yourself too intensely.

Bottom Line Health interviewed Jillian Michaels, fitness expert, owner of Empowered Media LLC, and star of the reality television shows *The Biggest Loser* and *Losing It With Jillian*. She holds personal training certificates from the National Exercise Sports Trainers Association, CanFitPro, and the Aerobics and Fitness Association of America. She is certified as a nutrition and wellness consultant with the American Fitness Professionals and Associates. Her diet and exercise app, My Fitness, is available on Apple and Android platforms.

The vitamin deficiency you don't know you have

And how to choose vitamins that actually work.



Sheldon B. Zablow, MD
UC San Diego School of Medicine

Few vitamins are as misunderstood as B₁₂. Considered by patients and doctors alike to be plentiful in the body and a concern only for vegetarians, deficiency in this crucial vitamin, along with its partner folate, is responsible for a vast array of seemingly unrelated—and often misdiagnosed—issues.

People with low levels of B₁₂ and folate (B₁₂/F) have been erroneously treated for multiple sclerosis, Alzheimer's disease, fibromyalgia, Parkinson's disease, dementia, and depression, while their B₁₂/F deficiencies go unnoticed.

Consequences of deficiency

The most well-known sign of B₁₂ deficiency is anemia, but it can also lead to memory problems, fatigue, depression, muscle weakness, poor balance, and permanent nerve damage. Low folate levels have been associated with a poor response to antidepressants, forgetfulness, difficulty concentrating, irritability, depression, behavioral changes, and memory loss.

If the body doesn't have enough B₁₂/F, other vitamins and even medical interventions are less effective. For example, you could have plenty of vitamin D and calcium, but if you don't have enough B₁₂/F, you can still develop osteoporosis. Having ample supplies of B₁₂/F helps reduce

inflammation and plays an essential role in DNA formation, reducing the damage caused by toxins. Studies show that low levels of B₁₂/F are linked to various forms of cancer.

Causes of deficiencies

Deficiencies in B₁₂/F are common. Consider that only 30 to 40 percent of people have enough of the enzyme that efficiently converts the folic acid found in supplements and grain products into folate, the bioactive form used by the body. Similarly, there is plenty of B₁₂ and folate in red meat, but 50 percent of people over the age of 50 can't manufacture enough stomach acid to break down the protein to release these vitamins. Vegetarians are commonly deficient.

A long list of medications can induce deficiency or block enzymatic reactions needed to convert common supplements into usable B₁₂/F, including antacids, anti-inflammatories such as prednisone, nonsteroidal anti-inflammatory drugs like ibuprofen, antibiotics, anticonvulsants, estrogen and estrogen substitutes, nitrous oxide anesthesia, and drugs to treat diabetes, asthma, hypertension, and high cholesterol.

Vitamin vs. Vitamer

In theory, supplementation should be a simple way to boost and maintain

optimal levels of B₁₂/F, but in reality, they often don't help. That's because vitamins come in many forms, and those found in supplements are not necessarily the kind the body uses. Most vitamins are made from inexpensive artificial compounds that are manipulated to improve their shelf life. But before the body can use these compounds, it has to convert them into biologically active structures called vitamers.

The B₁₂ molecule exists in four configurations. Two are vitamers: Adenosylcobalamin (A-B₁₂), found in the body's cells, plays a vital role in providing the energy for reproduction, cell maintenance, and fighting off infection. It also prevents the buildup of a molecule called methylmalonyl acid, which can damage the protective myelin sheath that covers the nerves.

Methylcobalamin (M-B₁₂) circulates in the bloodstream until it's needed. When it's pulled into the cells, it works with folate to convert a waste product called homocysteine into S-adenosyl methionine (SAME). When M-B₁₂ is lacking, homocysteine accumulates in the bloodstream, where it has toxic effects on blood vessels in the heart and brain, increasing the risk of heart attacks, strokes, and dementia.

Taken orally, A-B₁₂ and M-B₁₂ are absorbed quickly and reach all cells in the body. (Your doctor may also give

© Image Source | Getty Images

you B₁₂ injections.) The two other forms of B₁₂ have to be converted through a multi-step process before the body can use them. Hydroxocobalamin (H-B₁₂) is manufactured by bacteria and cyanocobalamin (C-B₁₂) is made in a lab.

If you take a B₁₂ supplement, you most likely take C-B₁₂: It's found in 99 percent of all supplements in the United States. C-B₁₂ requires a multistage conversion process to become usable—a process that can be disrupted by aging, infection, medications, toxins, or drinking alcohol. Because the vitamin is absorbed by passive diffusion, you use only about 1 percent of what the bottle advertises.

Folate

Folate (B₉) is B₁₂'s partner vitamin. They rely on each other to complete a wide variety of cellular tasks. There are several causes of folate deficiency, including medications, alcohol consumption, celiac disease, and obesity. You may consume inadequate amounts via your diet, or your body might absorb the vitamin poorly. If you are fortunate, your body absorbs about 50 percent of the folate you eat, depending on the food (dark leafy greens, peanuts, and liver are good sources), its freshness, and how it is processed, stored, and prepared.

Supplementation: Buyer beware

Supplementation can improve levels of both folate and B₁₂—if you take the right product. Unfortunately, the labels on many supplement bottles do not accurately reflect what's inside the pills.

•**Folate.** While many supplements claim they contain folate, they actually contain folic acid, which is the synthetic form of folate used in food fortification and dietary supplements. As with C-B₁₂, the body must convert the artificial folic acid into folate. The conversion process is genetically impaired in more than 50 percent of the population; therefore, many people don't use sufficient amounts of folate even though they're consuming large amounts of folic acid via fortified foods and vitamin pills.

The U.S. Food and Drug Administration notes that 1 milligram (mg) is the maximum recommended dose of over-the-counter folate, but it turns out that number is probably the minimal optimal daily dose of L-methylfolate for most people. The recommended dose of L-methylfolate is at least 1,000 mg per day, but the hard part is finding a good source. The best bet (for any supplement) is to buy a brand from a reputable manufacturer that you have researched. Consumer Lab (www.ConsumerLab.com) is a reliable, independent source that tests supplements taken off the shelf in stores, rather than bottles provided by the manufacturer.

•**B₁₂.** When it comes to B₁₂, choose a supplement in the vitamin form, either as A-B₁₂ and/or M-B₁₂ in a total dose of at least 2 mg per day. Avoid C-B₁₂. You often have to read labels and ingredient lists carefully to tease out what form of B₁₂ the supplement contains.

Taking your vitamin supplements

Always make sure your physicians know about all supplementation used, to avoid any contraindications with other medications. Once you get the go-ahead, take B₁₂ and folate together on an empty stomach, with 4 ounces of water. The 4 ounces are necessary to fully dissolve the tablet and dilute the ingredients for efficient absorption. Vitamins are sensitive to the presence of other vitamins and minerals (iron), so take them without other supplements or food.

The first thing you may notice is thicker nails and hair as well as skin injuries that heal more quickly. You may have subtle positive changes in your mood, speech, and memory. If you don't notice any benefits after three months, stop taking the supplements for three to four weeks. Sometimes you don't realize how much a supplement has helped until you stop.

Bottom Line Health interviewed Sheldon B. Zablow, MD, assistant professor, department of psychiatry, UC San Diego School of Medicine, and author of *Your Vitamins Are Obsolete: The Vitamin Revolution*. <https://sheldonzablowmd.com/author>

Ask the expert!

My husband kicks his feet in his sleep. If he's dreaming, shouldn't he be unable to move his legs?

Many types of limb movements can occur in sleep, but the most common is caused by periodic limb movement disorder (PLMD). PLMD is characterized by a jerking movement in the legs or arms every 20 to 40 seconds and can last a few minutes or a few hours while asleep. PLMD can occur in any stage of sleep, but it is less common in rapid-eye-movement (REM) sleep, which is when we dream.

PLMD can be caused by iron deficiency, certain psychiatric medications, metabolic disorders such as diabetes or kidney disease, caffeine consumption, or spinal cord injuries. About 80 percent of patients who have restless legs syndrome (an irresistible urge to move the legs while awake) also have PLMD.

Movements that occur in REM sleep can be related to PLMD or they may be REM behavior disorder (RBD). In RBD, people physically act out dreams, causing arm and leg movements. The cause is unclear. Some researchers have associated it with post-traumatic stress disorder and some antidepressants, including fluoxetine (Prozac), venlafaxine (Effexor), monoamine oxidase inhibitors, and tricyclic antidepressants.

Both PLMD and RBD can be diagnosed with an overnight sleep study, where many bodily functions can be monitored. It is important to perform this type of study so that different stages of sleep can be differentiated and more common sleep disorders, such as obstructive sleep apnea, can be ruled out. Treatment for both PLMD and RBD depends on the cause.

Answered by Saira N. Ahmed, MD, CEO and founder of Mediversity Health Center for Restful Sleep, Turnersville, N.J.

Strange sleep disorders

Parasomnias are more common than most people realize.



Carlos Rodriguez, MD
Cleveland Clinic
Sleep Disorders Center



© Deagrez | Getty Images

You wake up to find a stranger standing at the end of your bed. You are terrified but unable to move or cry out. This isn't a nightmare—it's sleep paralysis, a type of sleep disorder called a parasomnia. Night terrors, sleepwalking, and exploding head syndrome may sound like something from a science fiction movie, but they are real disorders that can be simply upsetting or downright dangerous.

NREM Parasomnias

When you first fall asleep, you enter non-rapid-eye-movement (NREM) sleep. Your brain cells march in sync, creating slow brain waves and a deep sleep that is hard to wake from. Parasomnias that occur in NREM sleep are called disorders of arousal. You are not sleeping, but your brain is not fully awake either. You usually have no memory of your actions or experiences during an NREM parasomnia.

•**Sleep terrors** strike about 3 percent of adults and may be triggered by alcohol consumption. They occur when you are suddenly aroused from a deep sleep in a state of fear. You may scream or thrash around in bed. You may be having a fight-or-flight experience with a rapid heartbeat, sweating, and quick breathing. Although your eyes are wide open, you are not fully awake. Sleep terrors usually last a few minutes but can last for up to 40 minutes. When the arousal subsides, the sleeper usually goes back to sleep without

remembering the terror. Trying to wake someone from a sleep terror may prolong it.

•**Confusional arousals** are like night terrors without the terror. You may sit up in bed in a foggy state of mind. Although you may seem to be awake, you respond to questions slowly or weirdly. You may act strangely or have a fit of crying. If someone tries to wake you up, you may lash out violently. Like sleep terror, this arousal may be prolonged if someone interferes.

•**Sleepwalking** includes getting out of bed and walking. Although your eyes are open, you are not awake. Your body is switched on, but your brain is still off. You may walk around the house or even go outdoors. Waking a sleepwalker is not dangerous for the walker, but he or she may strike out at you. Sleepwalking tends to run in families. If sleepwalking includes eating, it is called sleep-related eating disorder, which can lead to weight gain or the consumption of odd or dangerous items. There have been reports of people sleep driving.

REM parasomnias

Later at night, you switch into rapid-eye-movement (REM) sleep, which is when you dream.

Brain waves during REM are similar to awake brain waves because your brain neurons are more active. During REM sleep, your body is mostly paralyzed, except for breathing and eye movements. This is to prevent you

from acting out your dreams. Because your brain is active, it is easy to wake up and remember a REM parasomnia.

•**Nightmares** are different from sleep terrors. Because they occur during REM sleep, they tend to wake you up fully, and you remember them. Although fear is common, nightmares may also cause strong emotions like anxiety or sadness. You may not be able to get back to sleep and may develop insomnia. Frequent nightmares are often a sign of emotional stress or trauma. Repeated nightmares that have the same theme are common with post-traumatic stress disorder (PTSD) and may require treatment with psychotherapy or medication.

•**Sleep paralysis** occurs when REM sleep invades wakefulness and the paralysis of REM sleep invades along with it. In about 50 percent of people, the paralysis also includes a visual hallucination. This parasomnia may be a sign of the disorder called narcolepsy and tends to run in families. Interference from another person with a touch or a noise may help a person break free of this parasomnia.

•**REM sleep behavior disorder** (RBD) may be the most dangerous parasomnia for a sleep partner. RBD occurs when normal sleep paralysis—called atonia—does not prevent you from moving during an action dream. You may act out your dream physically by thrashing, kicking, or punching. RBD may be an early warning of Parkinson's disease. It is more common in people

over age 50 and in smokers. It may also be triggered by the use of antidepressants. RBD can be diagnosed with a sleep study and responds well to medication.

• **Exploding head syndrome (EHS)** is a rare parasomnia that occurs in the twilight zone just before falling asleep or waking up. A very loud sound is imagined, like a gunshot or explosion. EHS often occurs in people who are overly tired or stressed. It is more common in women and people over age 50. EHS often responds to restful sleep or stress reduction, but medication may be needed for people with severe sleep disturbance from EHS.

Getting help

The cause of many parasomnias remains mysterious. Some have a strong genetic component and tend to run in families. Parasomnias are more common if you have a disorder that interferes with sleep like sleep apnea, congestive heart failure, or Parkinson's disease. You may be at higher risk if you drink alcohol, are experiencing emotional stress, or if you are not getting enough sleep. Some sleep medications, such as zolpidem (Ambien), antidepressants, anxiolytic, and antipsychotic medications also increase your risk.

If your sleep partner tells you that you having signs of a parasomnia, take it seriously. Injuries can occur to you or your partner. A parasomnia may also interfere with your ability to get a good night's sleep. These are all good reasons to talk to your doctor. You may need to see a sleep medicine specialist to diagnose your parasomnia and find the right treatment.

Diagnosis may include keeping a sleep diary, getting input from a sleep partner, or having a sleep study. Treatment may include lifestyle changes, creating a safe sleep environment, working with a sleep psychologist, or medications. You may also need to treat an underlying condition like sleep apnea or PTSD.

Bottom Line Health interviewed **Carlos Rodriguez MD**, neurologist and sleep medicine specialist at the Cleveland Clinic's Sleep Disorders Clinic.



[THE NATURAL WAY]

Jamison Starbuck, ND

Focus on Heart Health

February so often brings the heart to mind, doesn't it? Candy hearts, chocolate hearts, broken hearts, and hearts bursting with happiness. In the United States and Canada, February is known as Heart Month, a time to think about the health of our physical hearts and to remember all the things we can do to improve heart health and reduce the risk of cardiovascular disease. There are so many things, but I have room for only a few of my favorites. Happily, some involve chocolate and flowers.

Move. First, for excellent heart health, you have to *move*. Studies show that vigorous endurance exercise (running, swimming, biking, hiking, running stairs, or rowing), done in intervals of 30 to 50 minutes a day for a total of 150 minutes a week, will significantly reduce your risk of cardiovascular disease.

Don't be discouraged if you're not an athlete and won't ever log in that sort of aerobic burn. Recent research in the *Journal of the American Heart Association* also tells us that low-intensity physical activity (walking, biking to work, the bending and stooping of gardening, and walking up and down the stairs in your home) done for at least 60 minutes a day is also associated with a reduced risk for cardiovascular illness. In other words, a healthy heart needs movement, circulation, oxygen from breathing, and your making your muscles, including your heart, work.

Lower stress. Stress is another significant factor in heart disease, and here's where flowers come in. Putting flowers in your home or office, growing them in your yard, or visiting botanical gardens are known to reduce stress and lower blood pressure. Lowering stress decreases your blood cortisol levels, and that diminishes plaque accumulation in your blood-vessel walls.

You can also take heart-healthy medicine made from plants. My two favorites are Linden flowers and Hawthorne flowers and berries. Linden flowers make a pleasant, gently calming tea. Use 2 teaspoons of dried flowers per 10 ounces of boiling water. Steep for five to seven minutes before drinking. Linden is very helpful at bedtime as it can help you relax and fall asleep. Hawthorne flowers and berries are best taken in a tincture or extract form, often dosed at one-quarter teaspoon per day as a cardiovascular tonic. Herbal teas and tinctures should be taken at least 30 minutes away from food for the best benefit.

Healthy diet. As most folks know, food choices affect heart health. Make sure that vegetables—raw, steamed or roasted, not fried—occupy the majority of your plate at both lunch and dinner. Eat purple and red fruit, whole grains, nuts, seeds, olive oil, and plain dark chocolate.

Supplements. My favorite daily heart supplements include magnesium (300 milligrams [mg]), potassium (99 mg), B₁₂ (800 micrograms in sublingual form), and CoQ₁₀ (100 mg). If you take blood pressure medications or heart medications, talk with your doctor before starting a supplement program. If you are on a statin drug, supplementing with CoQ₁₀ is especially important, as statin drugs can cause your body to become deficient in CoQ₁₀.

Be well.

Jamison Starbuck, ND, is a naturopathic physician in family practice in Missoula, Montana, and producer of Dr. Starbuck's Health Tips for Kids, a weekly program on Montana Public Radio, MTPR.org. She is a past president of the American Association of Naturopathic Physicians and a contributing editor to *The Alternative Advisor: The Complete Guide to Natural Therapies and Alternative Treatments*. <http://DrJamisonStarbuck.com>.



© Kateryna Kowarzh | Getty Images

Think Quick



A positive disposition may protect your memory.

Researchers assessed disposition and memory in 991 middle-aged and older adults three times between 1995 and 2014.

They discovered that positive emotions over the years were linked to better word recall, a measure of memory, as the participants aged.

Source: Association for Psychological Science

© adamkaz | Getty Images

BOTTOM LINE HEALTH

Subscription Service Center
P.O. Box 8535
Big Sandy, TX 75755-8535

Moving? Go to BottomLineHealth.com/moving or send the mailing label above with your new address. **Gift Subscription?** Go to BottomLineHealth.com/gifts or send the recipient's name and address along with your check or call 800-289-0409. One year, 12 issues, \$59.90.

Is this normal?

My elderly father has been experiencing confusion and dementia-like symptoms. His doctor suggested that dehydration could be a factor. What is the link between dehydration and dementia?



Betsy Mills, PhD
Alzheimer's Drug Discovery Foundation



© gilaxia | Getty Images

The human body is made up of over 50 percent water, and it requires this water to carry out all of its essential day-to-day functions, including cognitive function. When the brain cells don't have enough water, they have to work harder, so they end up operating at a slower pace, which results in mental fog.

The cognitive symptoms of dehydration differ depending on the age, sex, and overall health of the person. Young, healthy people tend to experience fatigue and irritability, while older individuals are more likely to experience a reduced ability to focus and a slowing of processing speed, which is the time it takes to complete a mental task.

Although both men and women can experience cognitive symptoms of dehydration, they tend to be more pronounced in women. Women and the elderly may be more vulnerable to

the negative effects of dehydration due to decreased muscle mass. Muscle tissue is composed of nearly 80 percent water and can buffer against dehydration by releasing its stored water when fluid levels get low. Therefore, in addition to eating a well-balanced diet containing many water-rich fruits and vegetables, engaging in muscle strength-building exercises is a good way to protect against dehydration.

The effects of dehydration on cognitive function are usually temporary and should resolve once the body is adequately hydrated. However, dehydration is a state of stress for the brain, and if it persists, then the brain cells could sustain long-lasting damage, which can pave the way for permanent cognitive dysfunction. Temporary cognitive dysfunction in response to dehydration is generally not considered a sign of dementia, but dehydration

may exacerbate cognitive symptoms in people with dementia.

Additionally, dehydration can accelerate cognitive decline in individuals with dementia. The sensitivity to thirst declines with age, so elderly individuals, especially those with dementia, may not recognize that they are dehydrated. Since individuals with dementia are more prone to becoming dehydrated, it may be necessary to keep track of their fluid intake. Importantly, the brain can also be harmed by excessive water consumption, because it can lead to a dangerous drop in sodium levels. For more information on brain health and avoiding risks, please visit CognitiveVitality.org.

Answered by **Betsy Mills, PhD**, senior program manager, aging and Alzheimer's prevention, Alzheimer's Drug Discovery Foundation, New York.

Do you have a health issue that's got you—and perhaps even your doctor—stumped? Send your question to BottomLineHealth@belvoir.com, and we'll consult one of our leading experts.