

**TRUTH, LIES, OR MARKETING?**  
*Navigating health information  
in the age of social media*

**LADDERS TO HEALTH**  
*Science-backed steps  
to well-being*

**GREATER EXPECTATIONS**  
*Vaccines and the gift  
of longevity*

**FINDING TRUE NORTH**  
*Confronting barriers to  
patient-centered care*

# Brigham

The Magazine of Brigham  
and Women's Hospital  
**Fall 2024**



## BRIDGING GAPS

*Navigating myths, lies,  
and other health threats*

**PRESIDENT, ACADEMIC MEDICAL CENTERS,  
MASS GENERAL BRIGHAM**  
David F. M. Brown, MD

**PRESIDENT, BRIGHAM AND WOMEN'S HOSPITAL  
EXECUTIVE VICE PRESIDENT,  
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DEVELOPMENT COMMUNICATIONS AND EVENTS**  
Karen Fogarty

**ASSISTANT VICE PRESIDENT, COMMUNICATIONS**  
Susan Watson

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Joy Howard, *Senior Director*  
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**WRITING AND EDITORIAL ASSISTANCE**

Monica Sambataro  
Christine Walsh

**DESIGN**

Steve Habersang/Taylor Design  
Hannah Wool/Taylor Design

**PHOTOGRAPHY**

Stu Rosner

For additional copies of  
Brigham magazine, contact:  
Brigham and Women's Hospital  
Development Office  
263 Huntington Ave, #318  
Boston, MA 02115-4506  
617 424 4300  
magazine@bwh.harvard.edu

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## Inside

Fall 2024

**SCIENCE-BACKED  
HEALTH GUIDANCE**

Patient Val Mayo (left) is getting her health back on track with the support of care providers including Nancy Oliveira, MS, RD, LDN, CDCES (right).



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## 'THE TRUTH MUST DAZZLE GRADUALLY'

I've thought a lot about truth as we confronted myths, lies, and misinformation in health and medicine for this issue of Brigham magazine.

In 1710, the Irish satirist Jonathan Swift wrote, "Falsehood flies, and the Truth comes limping after it; so that when Men come to be undeceiv'd, it is too late; the Jest is over, and the Tale has had its Effect."

Today, falsehoods about medical treatments, vaccines, and health practices erode trust in systems designed to protect and heal us. The effects of these falsehoods make it more challenging than ever to get or provide the right care at the right time.

Our stories examine the Brigham's efforts to combat falsehoods and misinformation through rigorous research, patient education, and community engagement. We highlight the voices of experts

tirelessly working to provide accurate and clear communication, safeguarding the health and well-being of all.

A healthier future demands our dogged efforts to confront, counter, and correct harmful myths, misinformation, and lies. And while Swift's limping Truth may be apt, I prefer Emily Dickinson's perspective, penned 150 years later: "The Truth must dazzle gradually."

The Brigham community's dazzling dedication to truth and the betterment of public health is inspiring. Their work is essential in building a brighter future where health and truth go hand in hand.



**Joy Howard**  
Managing Editor

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**Truth, Lies, or Marketing?**

How health misinformation circulates in the age of social media and how you can protect yourself and combat its spread.

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**Ladders to Health**

Brigham patients and experts share their science-backed steps for sustainable health and well-being in the face of weight stigma, fads, and ultra-processed foods.

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**Greater Expectations**

Vaccines have doubled lifespans in many nations over the past 200 years. Learn how to counter myths, lies, and hesitancy around vaccines.

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**Finding True North**

Navigating healthcare can feel like a winding road. Improving tools and eliminating obstacles provides everyone with better paths to the right care.

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**ON THE COVER**

Brigham experts can help us make evidence-based choices amid an abundance of myths, lies, and other health threats. (Illustration by Davide Bonazzi)

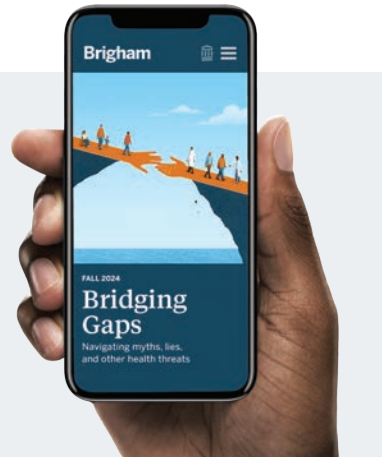


**DON'T MISS OUR WEB EXTRAS**

There's more happening inside our doors! To discover the latest buzz at the Brigham, visit [brighammag.org](http://brighammag.org).

### JOIN THE CONVERSATION

You can read Brigham magazine wherever you go at [brighammag.org](http://brighammag.org). You'll find videos, quizzes, and other bonus content not available in print. Talk to us: [magazine@bwh.harvard.edu](mailto:magazine@bwh.harvard.edu)



#### QUIZ

### DO YOU KNOW?

See if you know the difference between facts and myths, misinformation, and other barriers to health. Hint: You can find the answers in the latest issue of Brigham magazine! [brighammag.org/quiz](http://brighammag.org/quiz)

#### HEAR FROM THE EXPERTS

### BEHIND THE SCENES WITH MGB CANCER LEADERS

Go behind the scenes with experts across the Mass General Brigham system as they craft their vision for global leadership in cancer care, research, and education. Hear from attendees who gathered to collaborate, share insights, and build momentum toward that future. [brighammag.org/mgbcancer](http://brighammag.org/mgbcancer)



#### BRIGHAM STORIES

## Doulas Enhance Pregnancy Outcomes

To help improve pregnancy health, address maternal mortality rates, and close racial gaps, Mass General Brigham launched the Birth Partners Doula project. Learn about the program and the many ways birth doulas support pregnant people. [brighammag.org/doula](http://brighammag.org/doula)

#### HEAR FROM THE EXPERTS



### IN CASE OF EMERGENCY

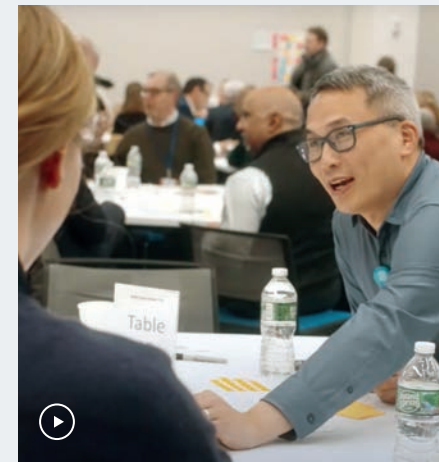
Do you know the signs and symptoms of a heart attack? Or what to do in the event of an accidental poisoning or a snake bite? In this video series, emergency medicine physicians from the Brigham and Mass General Brigham give helpful info and advice for getting through the unexpected. [brighammag.org/emergencyinfo](http://brighammag.org/emergencyinfo)

#### HEAR FROM THE EXPERT



### SLEEP MYTHS, DEBUNKED

Rebecca Robbins, MD, talks with the "Today" show about sleep myths and tips for getting better rest. [brighammag.org/sleepmyths](http://brighammag.org/sleepmyths)



#### HEAR FROM THE EXPERT

### DID YOU KNOW? SKIN CANCER EDITION

Abigail Waldman, MD, FAAD, appears on the Brigham's Instagram to discuss three skin cancer facts people may not know. [brighammag.org/skinfacts](http://brighammag.org/skinfacts)



#### BRIGHAM STORIES

## 'I Was Very Lucky'

Bonnie Slater-Demont suffered a stroke in the middle of the night. From the moment they reached the Brigham, Bonnie and her husband, Richard, trusted she would receive excellent care—and are so grateful that she did. [brighammag.org/bonnie](http://brighammag.org/bonnie)



#### BRIGHAM STORIES

### DRIVING BETTER HEALTH

Mass General Brigham's mobile medical Community Care Vans deliver a broad menu of mobile medical services, including screenings and interventions for chronic health issues like hypertension, diabetes, and substance use disorders. [brighammag.org/carevan](http://brighammag.org/carevan)

TODAY'S TOPIC

## IF YOU COULD ELIMINATE ONE PERSISTENT HEALTH MYTH, WHAT WOULD IT BE?

We asked thought leaders across the Brigham to share their insights and experiences.



**ADD YOUR VOICE**  
Tell us about work that inspires you. Visit us at [brighammag.org/teamboard](http://brighammag.org/teamboard)



**“Myth: Fresh fruits and vegetables are always healthier than frozen or canned.**

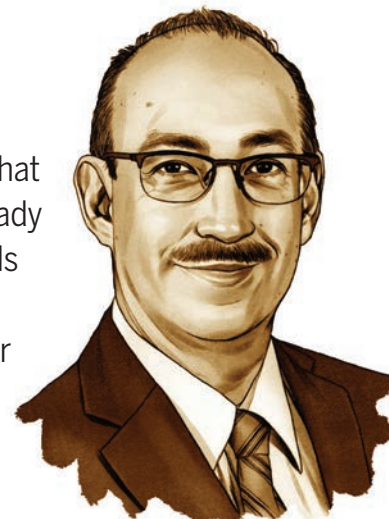
Facts: Fresh produce begins to decay after harvesting, so canned or frozen produce processed immediately after harvesting can contain more nutrients than fresh produce sitting on supermarket shelves or kitchen counters. Since fresh produce can be expensive, frozen and canned produce are budget-friendly, healthy options when packaged without unhealthy additives like sugar and salt. Eat your fruits and veggies!”

**Lisandra Sierra, BSN, RN, staff nurse,**  
Brookside Community Health Center

**“Myth: Type 2 diabetes cannot be prevented.**

Facts: Lifestyle is more important than genetics, even for people with a family history of diabetes. We showed in the Diabetes Prevention Program that when people with overweight or obesity who already have a slight elevation of their blood glucose levels (prediabetes) lose weight, eat healthy foods, and are regularly physically active, they can prevent or delay the appearance of Type 2 diabetes.”

**Enrique Caballero, MD, director of Latino Diabetes Health,**  
Division of Endocrinology, Diabetes and Hypertension;  
associate scientist, Division of Global Health Equity



**“Myth: People with melanin-rich skin don’t need sunscreen.**

Facts: Unprotected skin of every color is at risk for damage and possible skin cancer. Whether you’re indoors, outside, flying in an airplane, or driving a car, remember to apply (and reapply) your sunscreen!”

**Victoria Humphrey, MD, dermatology resident,**  
Department of Dermatology

**“Myth: Lung cancer is a death sentence, so why get screened?**

Facts: For many years, the incidence of lung cancer and the death rate were essentially the same. Today, 60% to 90% of patients with early-stage lung cancer can be cured by surgery alone. People with the highest risks—ages 50-80, who currently smoke or have quit within the last 15 years—should be screened annually.”

**Francine Jacobson, MD, MPH,**  
thoracic radiologist, Department of Radiology



**“Myth: No pain, no gain!**

Facts: Physical therapy may involve discomfort as one regains range of motion, enhances muscular performance, and improves function, but ‘no pain, no gain’ is not the guiding principle. Physical therapists strive to help patients progress safely and effectively to meet their goals. Pushing through excessive pain could lead to further injury.

**Reg B. Wilcox III, PT, DPT, MS,**  
executive director, Department of Rehabilitation Services



**“Myth: Relapses in addiction treatment are due to low willpower and recovery must be defined by abstinence only.**

Facts: Addictive disorders change the neural circuitry governing learning, memory, reward, and stress regulation in ways that can take years to normalize. Relapse is almost always a part of the journey to recovery. Addictions are more like chronic disorders similar to diabetes or COPD: highly treatable, with periods of treatment response and relapse. Addiction patients need the same consistent support, empathy, and access as all our patients.”

**Samata Sharma, MD, director of addiction consult psychiatry,** Department of Psychiatry



**“Myth: Venous blood clots are rare.** Facts: Venous thromboembolic (VTE) diseases are common, potentially life-threatening, and often preventable. VTE is the second most common cause of death in pregnancy, the third most common vascular disease, and one of the most common preventable causes of hospital-associated mortality. Annually, more than 600,000 people have deep vein thrombosis, and over 400,000 have pulmonary embolism. Treatments may include blood thinners and follow-up with specialists, such as vascular medicine, cardiology, hematology, and others.

**Behnood Bikdeli, MD, MS, associate physician,** Division of Cardiovascular Medicine

## Daphne Haas-Kogan, MD, MBA

Chair, Department of Radiation Oncology, Brigham and Women's Hospital and Massachusetts General Hospital  
Chief, Enterprise Radiation Oncology, Mass General Brigham  
Willem and Corrie Hees Family Professor of Radiation Oncology, Harvard Medical School

### On servant leadership, opportunity, and unlikely heroes

#### DEGREES

BSc, Harvard University

MD, University of California, San Francisco

MBA, Massachusetts Institute of Technology

#### AWARDS AND HONORS

Member, Association of American Physicians, 2017

ASTRO Fellow, American Society for Radiation Oncology, 2019

Member, National Academy of Medicine, 2019

#### DESERT ISLAND DIVERSIONS

Music: "All That We Let In" by Indigo Girls

Books: "The History of Love," by Nicole Krauss; "Interpreter of Maladies," by Jhumpa Lahiri

Podcast: Heavyweight

#### HOBBIES

Sewing, hiking, playing the piano, making lasagnas for people I adore, volunteering with Boston Court-Appointed Special Advocates

#### Do you have a favorite quote or mantra?

On the wall in my office, I have this passage from the Talmud, "Whosoever saves a life, it is as though he had saved the entire world." When I see my colleagues, students, and trainees devote themselves to every patient, this passage helps me see each person's singular effort as a filament in the tapestry of our collective dedication to our patients and colleagues. We see so much suffering every day. Nothing is more important than helping others.

#### What have been the greatest surprises in your career?

The humility with which one has to approach medicine is a greater surprise than I could have ever imagined. I feel like I have a certain understanding of a field and a scientific approach, and one of the greatest surprises has been how much my hypotheses or assumptions have been wrong. Another surprise is how important it is to stand up for what's right. As we gain more voice and power, this becomes exponentially more important.

#### What seems brave to one person can look like hubris to another. What helps you stay brave?

Being brave requires constantly reminding myself I am here to serve others. Bravery is knowing that even when I have to take a step that doesn't advance my personal interest, I'm here for the betterment of others.

#### What sorts of concerns weighed on you as you decided to say "yes" to this new role as chief of enterprise radiation oncology?

Structures in the past have limited our abilities to be deeply collaborative across the enterprise. I was worried people would hunker down in our silos because anxieties arise whenever there's change. But I've been deeply inspired by the openness of everyone I've talked to who recognizes our institutions' incredible complementary strengths. Collectively, we have more expertise than any place on the face of the earth. Every time I meet with someone, I walk away inspired and encouraged by their vision, openness, eagerness, and dedication to working together for our patients and each other.

#### What keeps you up at night?

I worry about doing right by the people I lead. I'm exceedingly loyal to the department and the institution. But what does it mean to be loyal? For me, it's less about buildings and brands and more about the people within them and those we serve.

#### What do you look forward to when you wake up?

I love meeting people and hearing their visions, hopes, dreams, anxieties, and insights. I'm starting to formulate how what I'm learning can be brought into a collective vision, and I still have an enormous amount to learn.

#### What do you hope will be your most significant contribution to medical science or human health?

I hope to help us transform cancer care by bringing together the brightest, kindest, most ingenious, innovative, and forward-thinking individuals. I hope we in leadership foster those minds and hearts to think big individually and collectively. And that we work well together, always keeping our eye on the ball: It's not about us; it's about our patients and colleagues.

#### What would you tell your younger self from where you are now?

I would tell her we live in a large, expansive world, and there is a place in it for your genuine self. What's most important is being kind, inclusive, ever-present with one's thoughtfulness and contributing to the wellness of others.

#### Who are some of your heroes? If you could work with them on a project, what would it be?

I would love to teach nursery school with my co-teachers being Marie Curie, Abigail Adams, Dolly Parton, and Sally Ride.

“  
Being brave  
requires  
constantly  
reminding  
myself I am  
here to serve  
others.”





TECH

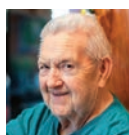
**NEW INGESTIBLE DEVICE COULD BE USED TO DETECT SLEEP APNEA**

What if a patient could have their risk of obstructive sleep apnea measured by swallowing a pill? A new collaborative study from Brigham and Women's Hospital, Massachusetts Institute of Technology, Celero Systems, and West Virginia University evaluated a wireless ingestible device that can accurately report vital signs like heart and respiratory rate. The team tested the device, known as the Vitals Monitoring Pill, in a pilot clinical study of 10 people with sleep apnea. It was also able to detect signs of opioid-induced respiratory depression in a preclinical model. Their results could transform how life-threatening events are monitored and prevented.

Pictured above: The Vitals Monitoring Pill (left) compared to a standard-sized capsule (right).

WEB EXTRA

George Hardy opened his home to video cameras to show how he receives care from Mass General Brigham Home Hospital. He told one of his nurses, "I've had the best care from you people than I've ever had in my life." Visit [brighammag.org/george](http://brighammag.org/george)



PATIENT CARE

**Home Hospital Expands Access**

**Healthcare is reviving a bygone tradition:** house calls. Technology, patient preference, and other factors, including federal legislation set in motion during the COVID-19 pandemic, have spurred a surge in demand for delivering acute, hospital-grade care at home.

Based on pilots started at the Brigham and Massachusetts General Hospital in 2016, Mass General Brigham (MGB) now has one of the largest acute home hospitals in the country. MGB Home Hospital delivers care for patients who would otherwise need to be hospitalized for conditions such as heart disease, chronic obstructive pulmonary disease, infections, and more. Eligible patients receive daily visits from clinicians, 24/7 remote vital sign monitoring, and integrated teamwork through a sophisticated telehealth platform provided by Best Buy Health.

MGB is partnering with Best Buy Health to customize systems and capabilities for Home Hospital patients beyond telehealth, such as remote patient monitoring. The system detects vital signs and falls, and triggers urgent response alerts to care teams, improving coordination among clinicians. Combined with

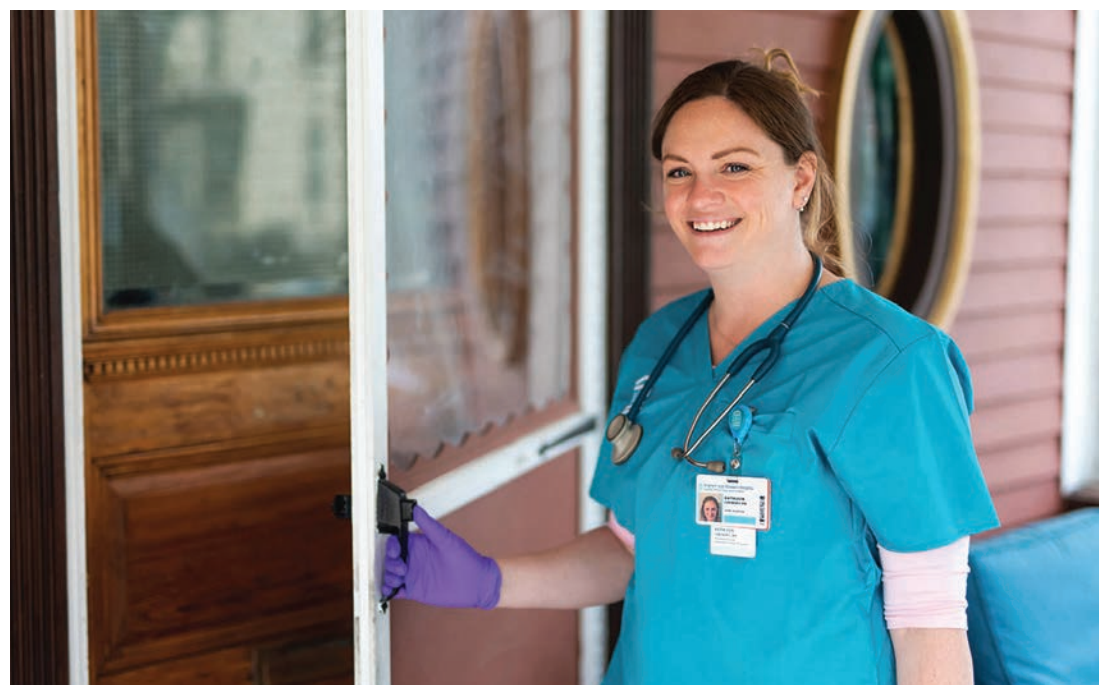
multiple clinical visits each day, remote patient monitoring helps ensure patients are closely connected to the MGB Home Hospital team throughout their stay.

"We're incredibly proud of the impact the Home Hospital has had on our patients, as well as care teams across Mass General Brigham," says Heather O'Sullivan, MS, RN, A-GNP, president of MGB's Healthcare at Home. "This expansion is an exciting opportunity to grow capacity system-wide and provide greater access to our integrated, high-quality care to more patients in our surrounding communities."

DID YOU KNOW?

On average, patients in the MGB Home Hospital program:

- ✓ Have a shorter length of stay
- ✓ Need less physical therapy
- ✓ Use less skilled nursing rehabilitation
- ✓ Report greater satisfaction
- ✓ Have better clinical outcomes
- ✓ More easily transition to life after discharge



Starting at front, third from left, Hadine Joffe, MD, MSc, executive director of the Connors Center, Massachusetts Governor Maura Healey, and Anne Klibanski, MD, president and CEO of Mass General Brigham, are joined by the governor's office staff and Brigham faculty at the press conference.

RESEARCH

**Spotlighting Women's Health Research**

**Women's health research is getting** increasing attention—and funding—at the federal and state level.

In March, President Joe Biden signed a historic executive order providing \$12 billion for women's health research as part of the White House Initiative on Women's Health Research. Launched by the president and First Lady Jill Biden, EdD, the order acknowledges gaps in research and will expand studies of conditions that affect women solely, disproportionately, or differently, such as menopause, Alzheimer's, and heart disease.

In April, Massachusetts Governor Maura Healey came to the Brigham to tour the Connors Center for Women's Health and Gender Biology and to announce \$2.8 million in grants for organizations advancing women's health outcomes. This includes \$250,000 from the First Look Awards, which are administered with the Connors Center to

support early-stage projects addressing unmet women's health needs.

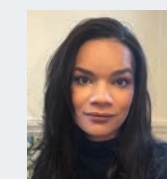
"Women's health research has been brought into the national spotlight in a way it never has been before," says Hadine Joffe, MD, MSc, executive director of the Connors Center. "And in Massachusetts, the governor has decided to invest and bring new science forward to improve the health of women. This decision is an extraordinary recognition of our institution's longstanding work to raise awareness and close the gaps in women's health research."

WEB EXTRA

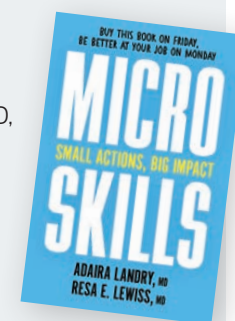
Read "Women ≠ Tiny Men", a Brigham magazine article highlighting Brigham physicians and scientists working to balance the scales for women's health. The article received a 2024 silver writing award from the Association of American Medical Colleges' Group on Institutional Advancement. [brighammag.org/nottinywomen](http://brighammag.org/nottinywomen)

MUST-READ

**MICROSKILLS**



Brigham emergency medicine physician Adaira Landry, MD, MEd, co-authored "Microskills: Small Action, Big Impact", sharing small, learnable skills that can be practiced and incorporated in real time to achieve large goals. An award-winning mentor and educator, Landry writes about the workplace and career development for the popular press, including Harvard Business Review, Forbes, and Fast Company.



RESEARCH

**TRACKING SOCIAL CONNECTION**

When it comes to risk factors for poor health, social isolation is on par with cigarette smoking, hypertension, hyperlipidemia, obesity, and physical inactivity. Researchers in the Department of Neurology developed SocialBit, a smartwatch-based sensor designed to track the number and duration of social connections of the person wearing it.

The team found SocialBit identified social isolation in a sample of stroke survivors as they are being observed in the hospital, which can help healthcare providers intervene to improve stroke recovery.

"SocialBit could be a useful tool for social sensing in individuals with diverse abilities, as well as detecting social isolation in vulnerable individuals with high accuracy," says neurologist Amar Dhand, MD, DPhil, the study's corresponding author. "The algorithm could be used as a basis for social therapeutics and acted on quickly, leading to improved health outcomes."

# On Traveling Together



**Brigham and Women's Hospital and Massachusetts General Hospital** have long been internationally recognized as leaders in care, research, and education. Now, as the Brigham and Mass General move deeper into our shared journey, I am reminded of the proverb: If you want to go fast, go alone. If you want to go far, go together.

Unifying our institutions around the best standards of clinical medicine will ensure that every patient stepping into our system receives the highest level of care, no matter where or who they are. This unity will allow us to channel our resources more effectively to serve our patients and each other.

Like healthcare systems across the country, we face significant headwinds. But while some are stepping back, we are stepping forward. We are deepening our commitments to the unique missions of academic medicine:

- transforming patient care, ensuring that our clinical practices are offering state-of-the-art treatment to those in need today;
- breaking new ground in research, pushing the boundaries of what is possible, and discovering innovations that will expand medical possibilities of the future;
- educating the medical trailblazers of tomorrow, investing in the next generation of clinicians and scientists who will carry forward our excellence; and
- building healthier communities beyond the walls of our hospitals, fostering environments where all people can thrive.

Our integration is a bold testament to our resolve to travel together so we can go farther than either of us can go alone. I look forward to continuing our journey.

**David F. M. Brown, MD**  
*President, Academic Medical Centers  
Mass General Brigham*

“Our integration is a bold testament to our resolve to travel together so we can go farther than either of us can go alone.”

## Features

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Written by **REBEKAH EDWARDS** • Illustration by **DAN BEJAR**

# TRUTH, LIES, OR MARKETING?

*Navigating health information  
in the age of social media*

## PROLOGUE

I fell for it.

At the end of another stressful day, I absentmindedly scrolled through my social media feed. The next thing I knew, I was nodding along to the video of a fitness influencer, as though she were a trusted doctor.

I knew she wasn't a licensed trainer, nutritionist, or physician. Yet with words like "inflammation" and "hormonal imbalance," she convinced me within seconds that my exercise routine was terrible, my diet in shambles, and I needed to click immediately on "Shop now" to buy a protein powder supplement formulated specifically for women that the manufacturer was paying her to promote.

## SELLING FEAR AND SHAME

"Marketing for these products plays on fears: fear of missing out, of inadequacy, of being inferior," says Natalie Dattilo, PhD, clinical psychologist at the Brigham. "These social media trends don't just affect our financial health. They keep us searching for something outside ourselves to fix our problems, which can disempower us and make us feel overly reliant on some unproven supplement or protocol."

With many social media platforms allowing users to purchase products without leaving the app, it's easier than ever to act immediately on impulses.

"It creates an emotional and psychological backlash,"

Dattilo says. "We feel pressure to lean on untested products and methods of health and wellness, when what you really need to do is partner with your doctor."

## THE RISE OF AN INFODEMIC

Health misinformation has always existed. But in 2020, the World Health Organization classified our information environment as an "infodemic"—an overabundance of information that obscures evidence-based guidance. The main driver behind this phenomenon? Social media.

"Social media is a massive amplifier," says Michael Klompas, MD, MPH, a Brigham infectious disease specialist and hospital epidemiologist. "It gives one the capacity to spread fake theories widely and with incredible uptake."

Klompas led the Brigham's Infection Control team during the COVID-19 pandemic and the 2022 mpox outbreak. Both diseases have been targets of misinformation. Some extreme viewpoints about these diseases—and others—have entered the mainstream thanks to social media algorithms and weak content regulation on many platforms.

"There were always people who had outlier opinions, but we never heard them. With social media, all voices can be heard," explains Klompas. "This has increased the credibility of and helped normalize what, in the past, might have been secret beliefs."

## IS IT AN AD?

These questions can help you spot advertising on social media:

1. Is a product or brand the main focus of the post?
2. Does the post contain #ad, #sponsored, or #gifted anywhere?
3. Does the post include a discount or referral code?
4. Does the post link to a product or brand website?

Adapted from ABC News.



**DID YOU KNOW?**

**65%**

At least 65% of Americans search the internet or social media about a health concern before talking to their doctor.

Source: CharityRx News

**COGNITIVE OVERLOAD**

The average person consumes up to 74 gigabytes of information daily, roughly equivalent to watching 16 movies every day. We aren't equipped to process this much information, so we create mental shortcuts to deal with it.

"If something interests us and reinforces our prior beliefs, we pay more attention to it," says K. "Vish" Viswanath, PhD, the Lee Kum Kee Professor of Health Communication at the Harvard T.H. Chan School of Public Health. "For example, if someone is anti-vaccine, they are more sensitized to misinformation about vaccines."

Health and wellness influencers play into these sensitivities every day, using personal anecdotes to connect with and draw in followers.

"When you relate to the character or situation, you get so absorbed by the story that you let down your defenses and forget to counterargue," explains Viswanath. "And the anecdote's ability to transport you into its world makes it more likely that you will remember it later."

Further complicating matters, the design of social media algorithms exploits these psychological tendencies by promoting content similar to what you've shown interest in previously. For example, once you've searched the internet for how to sleep better, social media algorithms will ensure you receive a steady stream of content with tips, tricks, and ads for sleep enhancements.

"It's unrelenting," says Klompas. "When I see the same message repeated 100 times a day, it makes it seem like the number of people who believe it is large, which makes it feel more acceptable."

**THE NETWORK EFFECT**

When it comes to health misinformation, social media magnifies concerns by bombarding consumers with urgent fitness, diet, and other wellness-related messages such as "Try reformer Pilates!" "Thicken your hair with these gummy vitamins!" "Balance your hormones with this recipe!" And endless networks of influencers and social media users echoing the same worries create a feedback loop based on misinformation.

"We understand the world and make decisions in dialogue with other people," says Amar Dhand, MD, DPhil, a Brigham neurologist and network scientist who studies how social networks impact health. "Your social network members present 'the truth' to you, so it matters who they are and how diverse their perspectives are."

Rather than expanding our worlds, Dhand explains that our social networks can create limitations in our perceptions of the world, known as horizons of observability.

"If someone has an insular social circle, their horizon of observability is going to be less because everyone in the network confirms each other's vision of the world," he says.

**KNOW YOUR BIASES**

**Confirmation bias:** seeking out and favoring information that reinforces existing beliefs, whether consciously or not

**Familiarity bias:** gravitating toward familiar ideas, products, or people

**Placebo effect:** a beneficial health outcome resulting from the belief that an intervention worked

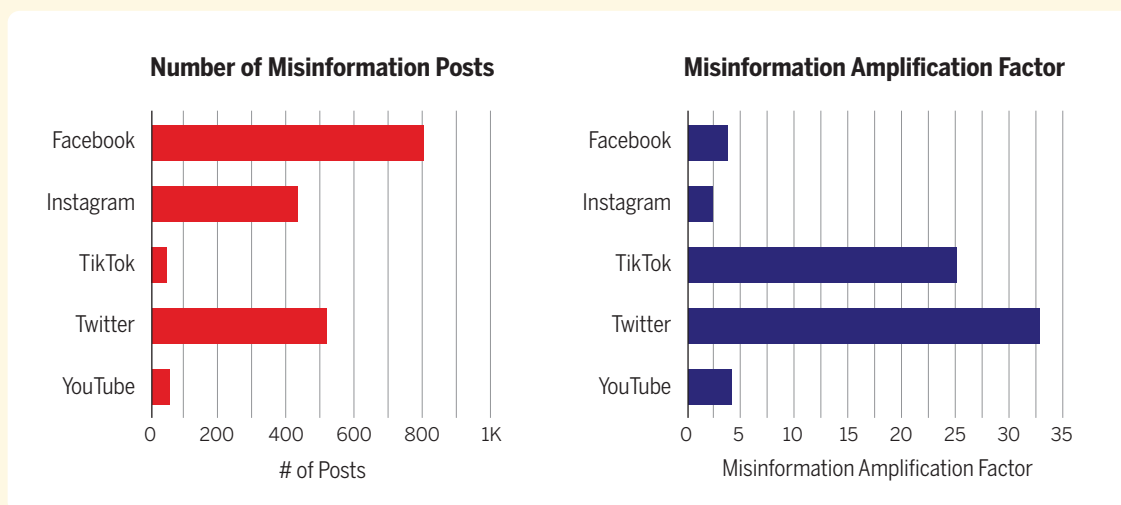
**INSTANCES OF AND TENDENCY TO AMPLIFY MISINFORMATION**

**BY SOCIAL MEDIA PLATFORM**

In 2022, the Integrity Institute found the most instances of information on Facebook and X (formerly Twitter), with approximately 80% and 52% of posts containing misinformation.

The sharing mechanisms and algorithms of X and TikTok were the greatest amplifiers of misinformation, allowing it to spread faster and further on those platforms.

Source: Integrity Institute



From the Integrity Institute MAF Tracking Dashboard



**"Social media is a massive amplifier. It gives one the capacity to spread fake theories widely and with incredible uptake."**

Michael Klompas, MD, MPH

"Social media enhances this effect because one tends to click on content from like-minded individuals."

One common and enduring fitness theory on social media is the weight loss strategy known as spot reduction, the goal of reducing fat on a specific spot of the body. Scientific evidence and medical research show it is impossible to lose fat on a specific part of the body. But despite this lack of evidence, influencers often promote "the perfect workout to reveal abs by summer" or "how to get rid of stubborn arm fat fast"—which aligns with what the consumer wants to be true. When the echo chamber of viewers raves about how it worked for them, it's easy to internalize unsubstantiated health theories.

**THE NEW CELEBRITY**

Interacting with more communities through social media also increases opportunities for social comparison. We can compare ourselves instantly to countless people online who share only the most flattering versions of themselves. This social comparison often crystallizes around celebrities.

"Social media influencers are pseudo-celebrities. They are highly relatable, which has a huge psychological influence because being like them feels attainable," Dattilo explains. "It's probably not—but it feels like it."

Influencers are aspirational yet authentic; they seem like they could be your best friend. In addition to promoting products, they showcase enviable lifestyles while positioning themselves as confidantes. Influencers gushing about the life-changing powers of trendy green powders don't tell their followers they can obtain the same—or better—health benefits simply by eating a varied diet, because they don't get paid for that.

They produce a huge amount of health and wellness content online, but their motivations for doing so run the gamut and can be hard to identify.

"In many cases, people are trusting content creators more than traditional sources of information," says Amanda Yarnell, senior director of the Harvard Chan School's Center for Health Communication. "These content creators are consumer-focused in a way that public health institutions aren't."

**MONETIZING MISINFORMATION**

More than 320 million Americans used social media last year. Companies have noticed and are recruiting popular influencers to leverage misinformation to sell bogus health and wellness products on every social media platform.

"Some creators are motivated by mission, while others are motivated by financials," says Yarnell. "And there's everything in between."

Viswanath adds, "Some companies provide selective information and make misleading claims that foster misperceptions in a very sophisticated way. This kind of advertising started with 18th-century snake oil salesmen who sold their medicines as a panacea."

When social media platforms started gaining popularity nearly two decades ago, most people used them to connect with and socialize with other users. Today, these platforms are massive marketing vehicles, with influencers, celebrities, and brands using them to sell products and services. Social media feeds once full of photos of friends and family are now often dominated by ads for products that algorithms decide you should see based on posts you've previously clicked on, all professing to "support," "improve," or "kickstart" something.

"I've noticed the use of scientifically sounding terms to support product claims lately," says Dattilo. "It's called 'scienceploitation.' Terms like 'medical grade' or 'hormone balance enhancement' make it seem like products are backed by science when they aren't."

There are no FDA guidelines or standards for what makes a product medical grade, and hormone-balancing products rely on pseudoscience and ancient misconceptions that the female body is unstable and overly hormonal. And when someone likable and familiar endorses unproven products, their testimonials help legitimize sketchy marketing claims.

**SOWING DISTRUST**

The impact of social media influencers varies widely, ranging from nonexistent to dangerous. Influencers promoting back-to-nature health trends, for example, often peddle ineffective but harmless products and services, like

**DID YOU KNOW?**

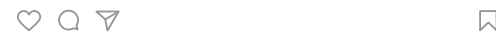
The World Health Organization found misinformation across social media sites in:

- 60% of posts about pandemics
- 51% of posts about vaccines
- 29% of posts about COVID-19

Source: World Health Organization

“Some companies provide selective information and make misleading claims that foster misperceptions in a very sophisticated way. This kind of advertising started with 18th-century snake oil salesmen who sold their medicines as a panacea.”

K. “Vish” Viswanath, PhD



paraben- and aluminum-free cosmetics and “clean” eating programs. Others sell potentially harmful products, like detox teas and activated charcoal cleanses. Still others use them to drive the demonization of scientifically proven treatments like hormonal birth control and vaccines by amplifying rare catastrophic side effects.

“These messages are emotive drivers, not based on facts, reasoning, mathematics, or statistics,” says Klompas. “Therefore, it’s very difficult to counter them with facts, reasoning, mathematics, or statistics.”

It can also be difficult to identify our biases, which can allow misinformation to sink in, whether monetized or not. And misinformation often connects with negative medical experiences and past traumas, which can sow discomfort and distrust in the healthcare system. This is especially true in communities where discomfort and distrust already exist, such as marginalized communities and communities of color.

“For groups facing discrimination and racism within the healthcare system, misinformation can reinforce those experiences and widen health disparities,” Viswanath explains.

Increased health disparities have serious, even deadly, consequences on individual and population levels.

“The biggest danger is that people are not taking evidence-based, lifesaving measures like vaccines,” says Klompas. “We’ll pay a price, and that’s sad because we shouldn’t have to.”

### (RE)BUILDING TRUST

For people who have had negative healthcare experiences or who feel like physicians have not listened to them, seeking out medical information from alternative sources reflects a need to feel heard. To counteract the effects of the health misinformation crisis, many Brigham practitioners are looking for ways to build and restore patients’ trust in the medical system.

“It’s important to always hear patients out first,” says Paige Wickner, MD, MPH, a Brigham allergist-immunologist. “After that, I share my perspective and the evidence my specialty uses. The goal is shared decision-making.”

Wickner also personalizes the medical encounter to show patients the human side of healthcare and that they’re in this together.

“It’s about being humble and empathetic,” she says. “Every doctor will tell you to eat better and exercise more, but those things can be hard. I find it helps to bring in my own experience and share my struggles with things like getting 150 minutes of exercise a week.”

### BRIDGING THE GAP

With nearly 3 in 10 Americans putting off seeking healthcare last year, how can institutions ensure people who aren’t visiting the clinic receive accurate medical information? Mass General Brigham and the Harvard Chan School are looking to bridge that gap through social media.

“We’re trying to combat online misinformation with the help of our experienced physicians,” says Nicole McNeill, social media manager at Mass General Brigham. “We’re in the beginning stages of assembling an influencer base at the Brigham, including people across the hospital who are my go-to experts in areas like skin care and nutrition.”

McNeill and her team track popular health topics and trends so the Brigham can respond to misinformation as it appears with engaging, accessible, and accurate content.

“As an academic medical center, we’re always trying to create educational opportunities around topics where there’s debate,” McNeill says.

At the Harvard Chan School, Yarnell is collaborating with influencers who share the school’s vision and values to help counter misinformation and deliver high-quality information directly to their followers.

“Many content creators have figured out how to amass large audiences in today’s media ecosystem, some of which we struggle to reach,” explains Yarnell. “I’m proposing we consider them trusted messengers in their online communities in the way we consider barbershops, church leaders, or local physicians trusted messengers in their communities.”

Last year, Yarnell and her team piloted a partnership with influencers to disseminate evidence-based information about mental health on social media. After demonstrating that

### READ MORE

about the collaboration between the Harvard Chan School and mental health influencers at [brighammag.org/chancollab](https://brighammag.org/chancollab)

the partnership successfully increased the spread of accurate mental health information on TikTok, they are scaling up the program and expanding influencer access to their mental health resources. In the future, Yarnell hopes to provide influencers in other health niches with accurate information to package in a way that resonates with their audiences.

“Many creators want to connect their followers with good health information,” says Yarnell. “This is a long-term play to empower them to serve people better and build long-lasting collaborations that could bring medical research into the real world.”

### A WAY FORWARD

The future of social media and its long-term impact on our health are unclear. But positive change might be on the horizon, given the recent groundswell of content creators who are “de-influencing” questionable products and debunking health myths, along with users demanding more robust content moderation and advertising regulations.

“Right now, we have to live with the tension that having more conversations about particular topics makes us susceptible to misinformation about those topics,” says Dattilo. “But in the grand scheme, we’re moving in the direction of better information.”

And within this boundless exchange of information—both good and bad—social media creates more opportunities to engage with health topics that often have been gatekept, silenced, or considered taboo, such as menstruation, menopause, neurodiversity, and eating disorders.

“More awareness tends to promote more knowledge, even if there’s a gap in that knowledge for a period of time,” says Dattilo.

In the meantime, Brigham experts recommend being vigilant and skeptical while consuming health and wellness content on social media. Health misinformation often traffics in secrets, quick fixes, and cure-alls, capitalizing on our desire to be healthier. Avoiding misinformation can be as simple as finding and sticking with evidence-based strategies to improve our health.

“Most of us are just trying to feel, look, and perform better,” Dattilo says. “Tried-and-true approaches can be hard, but it’s important to remember, I’m worth the time and effort that it takes to do things that work. I’m worth more than a quick fix.”

### EPILOGUE

It remains challenging to sift through the multitude of health and wellness content creators on social media. But after I fell for the fitness influencer advertising protein powder, I changed some of my social media habits—starting with unfollowing influencers who use deception, shame-shilling, and fearmongering to profit off their followers’ health concerns.

I occasionally still fall for dubious claims and advertisements masquerading as facts. But I mostly avoid sensationalized advice by remembering that wellness rarely looks like how it’s portrayed on social media and doesn’t require trendy supplements.

In my experience, people worth following on social media make you feel good about yourself, share information from credible sources, and empower you with strategies to be healthier long after you scroll past them. ✨

## HOW TO FACT-CHECK EFFECTIVELY

This checklist offers ways to evaluate health information for credibility and accuracy:

### ❑ Slow your scroll

Pausing for a few moments to intentionally consider the content of a post can help you recognize misinformation—and avoid sharing it with others.

### ❑ What’s the tone?

Is the post’s tone objective, balanced, and respectful, or is it biased, sensational, or inflammatory?

### ❑ Compare perspectives

Is there consensus, diversity, or controversy about the post’s topic? Does the poster acknowledge their limitations or biases?

### ❑ Who says?

Is the post from a verified account, a reputable organization, or a well-known expert? Do they have any credentials, affiliations, or endorsements?

### ❑ Be skeptical

Approach information on social media with skepticism. Check in with your own biases, assumptions, and emotions that may influence your judgment. When in doubt, always check with your healthcare provider.

### ❑ Verify, verify, verify

Is the post based on facts, evidence, or research, or is it an opinion, rumor, or speculation? Is it consistent with reliable sources, or does it contradict them?

Adapted from LinkedIn.



### WEB EXTRA



### CONVERSATIONS ABOUT CONTRACEPTION

Over the past few years, Deborah Bartz, MD, MPH, analyzed the content, tone, and accuracy of social media posts related to contraception. Her findings can help clinicians better navigate conversations about birth control in today’s climate. [brighammag.org/birthcontrol](https://brighammag.org/birthcontrol)

“We feel pressure to lean on untested products and methods of health and wellness, when what you really need to do is partner with your doctor.”

Natalie Dattilo, PhD





Written by JENNIFER REARDON • Illustration by BETH GOODY

# LADDERS to HEALTH

*Science-backed steps  
to well-being*

**L**Imagine taking a monthlong retreat where your focus is to eat regularly available foods selected and prepared for you by dietitians. In 2019, 20 healthy volunteers—10 men and 10 women of roughly the same age and body mass index (BMI)—did this for a study at the U.S. National Institutes of Health.

For two weeks, half the group received three meals per day of ultra-processed foods such as potato chips, sugar-sweetened drinks, French fries, and processed meats, including bacon, sausage, and cold cuts. The other half ate three meals a day of minimally processed foods such as vegetables, fruits, nuts, whole grains, milk, eggs, fish, and meat.

Each group then switched menus to spend the next two weeks on the opposite diet. Dietitians carefully calibrated both diets to contain identical amounts of calories, sugars, fiber, fat, salt, and carbohydrates. The groups had up to 60 minutes to eat as much as they wanted of each meal.

The results: participants presented with ultra-processed foods ate more, consumed more calories per day, and gained weight. When presented with minimally processed foods, participants felt full sooner, ate less, consumed fewer calories, and lost weight. This small but significant randomized controlled trial provided the first scientific confirmation of what observational studies suggested for years: ultra-processed foods cause people to eat more calories and gain weight.



**“The biggest misconception with obesity is that weight is a matter of willpower.”**

CAROLINE APOVIAN, MD



**WEB EXTRA**



**A life-changing experience**

A retired Brigham nurse says the care she receives from obesity medicine specialist Mehmet Furkan Burak, MD (pictured), has helped her completely

turn around her physical and mental health. [brighammag.org/life-changing](http://brighammag.org/life-changing)

**OUR FATTENING FOOD SUPPLY**

“Highly processed food is so palatable; it makes us crave it,” says Caroline Apovian, MD\*, co-director of the Brigham’s Center for Weight Management and Wellness. “Our genes didn’t change in the last 50 years, but our environment certainly did—the industrialization of our food supply.”

The food industry is all in on ultra-processed foods, which now make up 60% of what most people eat daily in the U.S. From sweets and sodas to many pantry staples including cereals and breads—ultra-processed foods are altered with additives, preservatives, and other ingredients to make them pleasing in taste and appearance. In addition to evidence these foods drive weight gain, they are linked with increased rates of type 2 diabetes, heart disease, and cancer.

Apovian says emerging evidence also suggests ultra-processed foods may make the brain resist leptin, a hormone that causes feelings of fullness when eating.

“We think there’s inflammation that occurs and causes a defect in the pathway that blocks leptin,” she says. “Then we have leptin resistance, which makes us hungry, so we eat more and gain weight.”

For years, food companies have branded products as low-fat, low-carb, or other labels to appeal to consumers and increase sales. A 2023 joint investigation by The Washington Post and The Examination revealed a new tactic used by food companies: paying dietitians who collectively have millions of social media followers to promote sugary products on social media, with many distorting the Health at Every Size movement using the hashtags #HealthAtEverySize and #AntiDiet.

According to the investigation led by journalists Anahad O’Connor, Caitlin Gilbert, and Sasha Chavkin, “The analysis of thousands of posts found that companies and industry groups paid dietitians for content that encouraged viewers to eat candy and ice cream, downplayed the health risks of highly processed foods, and pushed unproven supplements—messages that run counter to decades of scientific evidence about healthy eating.” (For more information on social media’s influence on health, read “Truth, Lies, or Marketing?” on page 12.)

**DIET CULTURE**

Both the body acceptance movement and the U.S. weight loss industry emerged in the 1960s. By the 1970s, ads promoting thin bodies and diets filled magazines targeted at women, and what we know today as “diet culture” took off. Over time, the weight loss industry’s profits soared, raking in \$135.7 billion in 2023 alone.

Kathy McManus, MS, RD, LDN, director of the Brigham’s Department of Nutrition, disputes the myth that thin equals healthy. “Losing weight alone doesn’t improve your overall health,” she notes. “But companies put millions of dollars into marketing, and their messages are convincing, whether it’s for diets, supplements, or food products. It’s easy to be susceptible.”

In 2020, a survey published by the U.S. Centers for Disease Control and Prevention (CDC) reported nearly 17% of Americans ages 20 and older were on a diet to lose weight or for other health reasons. On any given day, approximately 45 million adults are dieting. And there are countless diets to try, such as ketogenic or juice diets that eliminate specific food groups like carbohydrates or fats—or fads that involve severely restricting calories and nutrients.

“Whether you’re 20 or you’re 80, people want a quick fix,” McManus says. “But fad diets rarely work long term because they are not sustainable. And they can have negative side effects, from nutrient deficiencies and dehydration to nausea and headaches or worse.”

McManus’s colleague, Nancy Oliveira, MS, RD, LDN, CDCES, manager of the Nutrition and Wellness Service, says, “Patients often turn to fad plans and products in sincere attempts to feel better. It’s important for us as dietitians to listen, educate, and build trust so patients turn to us for guidance.”

Oliveira adds, “I encourage our dietitians to understand what is trending and to talk about potential effects of a certain supplement or dietary strategy.”

**BREAKING THROUGH STIGMAS**

One of Oliveira’s patients, Val Mayo, will never forget when she went to a weight-loss clinic on Newbury Street in Boston decades ago.

“The woman weighing me said, ‘I know you want to lose weight because you’re really unhappy with yourself,’” Mayo recalls. “I thought, ‘No, I’m not!’”

These stinging remarks were the opposite of what Mayo was seeking: support, accountability, and help to improve her health.

On her journey to better health, she tried liquid diets, calorie counting, and prepared meal plans, as well as a diabetes prevention program. But after years of trial and error—coupled with a sedentary job—she steadily gained 5 to 10 pounds a year.

When a visit to her primary care doctor showed she had developed a few health conditions, Mayo sought help from medical professionals. Her physician referred her to Oliveira, which set her on a path to a healthier lifestyle.

**THE COMPLEXITIES OF OBESITY**

Mayo is one of more than 130 million adults across the U.S. with obesity. According to the CDC, 14.3% of American adults had obesity or severe obesity in the early 1960s, while 51.6% of adults are affected now, per the measurements used.

BMI—which estimates excess body fat using a ratio of weight to height—has become a standard measure, indicating that a person with obesity has a BMI of 30 or higher. However, BMI does not account for muscle mass, bone density, racial and sex differences, or the location of body fat such as abdominal fat, which is associated with health risks.

“I strongly encourage physicians not to tell a patient they need to lose weight solely because their BMI is 30 or higher,” says Oliveira. “The conversation needs to be much more nuanced.”

McManus notes there are many other indicators and approaches for measuring unhealthy



**FOOD TERMS TO KNOW**

**Ultra-processed foods and beverages**

Industrially formulated and made from extracted foods (such as oils and sugar), derived from food constituents (such as hydrogenated fats) or synthesized in laboratories with flavor enhancers, colors, and food additives

Examples: Packaged breads, many cereals, flavored yogurts, cookies and other sweets, crackers, processed lunch meats, carbonated beverages, sports drinks, sweetened juices

**Processed foods**

Products manufactured with salts, sugars, oils, or other substances added to natural or minimally processed foods to preserve them or enhance flavor

Examples: Canned or bottled vegetables, canned fish such as sardine and tuna, tomato pastes, freshly made cheese

**Whole foods or minimally processed foods**

Natural foods obtained directly from plants or animals, or processed from their original form (including cleaning, cooling, grinding) without added substances such as oil, sugar, or salt

Examples: Eggs, nuts, natural or frozen vegetables and fruits, fresh or dried herbs and spices, fresh, chilled, or frozen meat, poultry, fish, and seafood

Source: The NOVA food classification system groups foods by the amount of industrial processing and was developed at the University of Sao Paulo, Brazil, School of Public Health.



**“Whether you’re 20 or you’re 80, people want a quick fix. But fad diets rarely work long term because they are not sustainable.”**

KATHY MCMANUS, MS, RD, LDN

## DID YOU KNOW?

The Mediterranean diet provides a 23% reduction in all-cause mortality risk for U.S. women, based on recent results of a long-term Brigham-led study.



### WEB EXTRA



#### Nutrition hype: Reading between the lines

Deirdre Tobias, ScD, an obesity and nutritional epidemiologist at the Brigham, offers commentary on the food industry and tips to decipher between sensationalized and accurate nutritional information. [brighammag.org/nutritionhype](https://brighammag.org/nutritionhype)

## WHAT DOES A HEALTHY DIET LOOK LIKE?

Tips for a healthy, balanced diet from Nancy Oliveira, MS, RD, LDN, CDCES, manager of the Brigham's Nutrition and Wellness Service and the primary science writer for The Nutrition Source website run by the Harvard T.H. Chan School of Public Health:

1

### EAT A PLANT-RICH DIET WITH A DIVERSITY OF FIBERS.

**Why?** Eating a diversity of fibers from fruits, vegetables, whole grains, and nuts supports a healthy gut microbiome, the complex microorganisms in our bodies that help us digest food, synthesize vitamins, regulate metabolism, and strengthen the immune system. A balanced gut microbiome supports brain health, protects against infection, reduces inflammation, and lowers chronic disease risk, such as diabetes, obesity, and cardiovascular conditions.

**What?** Meal-planning guidelines from the Healthy Eating Plate and Mediterranean diet are 75% plant-based.

2

### LIMIT LOW-NUTRIENT ULTRA-PROCESSED FOODS WITH ADDED SUGARS, SALTS, OR FATS.

**Why?** Research associates ultra-processed foods with overeating and weight gain. Their high-calorie content tends to fill us up, leaving less room for plant-rich foods that support optimal health.

**What?** Focus on ultra-processed foods with high nutritional content, including low-sugar Greek yogurt and whole grain breads. Avoid ultra-processed snacks such as chips, candies, energy drinks, sodas, and processed meats.

3

### THE BEST HEALTHY DIET IS ONE YOU ENJOY.

**Why?** You are more likely to follow a healthy eating pattern if it fits with your lifestyle and culture, and features foods you like.

**What?** Some people do well with lower carbohydrate while others prefer to include more complex carbohydrates. Some feel best on a vegetarian plan, while others thrive on a Mediterranean diet. Work with a dietitian to figure out what healthy diet works best for you.

body fat, including waist circumference, waist-to-hip ratio, and waist-to-height ratio. "BMI or weight is just one piece of getting healthy," she says. "No single measurement should stand alone."

Just over a decade ago, in 2013, the American Medical Association recognized obesity as a treatable disease that increases people's risk for cardiovascular diseases, cancers, diabetes, sleep apnea, and osteoarthritis.

### 'FOOD IS MEDICINE'

With Oliveira's help, Mayo began tackling aspects of her lifestyle, including improving her sleep, increasing exercise to four days a week, and shifting her eating habits.

"Growing up, my mother used to say, food is medicine," Mayo says. "But before meeting Nancy, I did not realize the amounts of calories in different foods. After logging my foods every day with an app, I started to understand what nutrient-filled foods looked like."

Oliveira, McManus, and the Brigham nutrition team encourage patients to embrace a permanent, sustainable shift toward healthier eating habits backed by years of studies. They promote evidence-based foods and dietary plans shown to significantly decrease the risk of cardiovascular disease, diabetes, some cancers, and other conditions, including potentially lowering the risk of dementia. Three eating plans consistently ranked highest by scientific

research for flexible, balanced approaches are the Mediterranean diet, the heart health-focused DASH diet, and the brain health-focused MIND diet. In fact, the Brigham was a primary site for randomized clinical trials of DASH (Diet Approaches to Stop Hypertension).

"Our goal is to support individuals in every way we can using research," McManus says. "As clinicians, we want to emphasize the positives about foods we want you to eat versus saying 'don't eat this or that.' We design meal patterns to help reduce patients' risk for chronic disease."

For Mayo, Oliveira recommended a list of foods to eat weekly, including leafy greens and vegetables, nuts, beans, and fish. Foods once rare for Mayo became her new norm—from avocados to cottage cheese to smoothies.

McManus adds, "We help people with expectations and to work through long-established habits so, over time, they can reshape some of their behaviors and begin feeling better about lifestyle choices they're making."

### SEEKING MEDICAL SUPPORT

During her first year working with Oliveira, Mayo made gradual changes and slow progress toward her health goals. When she asked for additional support to move forward faster, Oliveira referred her to an obesity medicine specialist in the Center for Weight Management and Wellness.

Her physician suggested weight loss surgery or a medically supervised weight loss plan,

Patient Val Mayo, left, has been pursuing long-term changes to her nutrition with the support of Nancy Oliveira, MS, RD, LDN, CDCES, right.



and at first Mayo rejected both options. After learning more about Ozempic, she decided to try it. Approved in 2017 by the U.S. Food and Drug Administration (FDA), the weekly injectable medication containing semaglutide treats type 2 diabetes and prevents major cardiovascular problems. It belongs to a class of drugs that mimics the body's GLP-1 hormone, which reduces a person's appetite and causes feelings of fullness faster.

"I was skeptical at first, but these medications are groundbreaking," Mayo says. "They can be helpful as long as people receive a lot of support and nutritional guidance at the same time."

Apovian explains, "The biggest misconception with obesity is that weight is a matter of willpower. This bias makes people with obesity feel it's somehow their fault and wonder what is wrong with them if they have difficulty losing weight with diet and exercise alone."

Over time, Mayo's health continued to improve, and she met her goal to get two knee replacement surgeries last year to boost her mobility, an essential step to becoming more physically active.

Adds Apovian, "A myth is that you don't have to worry about healthy diet and exercise if you take these medications. But if you are not physically active and eat poorly, it's bad for your health. Any kind of exercise is important, especially as you age."

This comprehensive care helps Mayo embrace a multifaceted approach. "Having a

team of people help me tweak my eating habits and give me advice and support has helped so much," she says. "It provides accountability and keeps me on track. I'm invested in living a healthier life."

### ISSUES OF ACCESS

While Ozempic has supported patients like Mayo, the newest classes of drugs containing semaglutide or tirzepatide are not a panacea.

When word quickly got out about these medications' effectiveness for weight loss through the media and celebrities, demand skyrocketed, causing shortages. Obesity medicine specialists continue to have long waiting lists, leaving patients looking for alternative ways to find these drugs.

Apovian says some people have resorted to compounding pharmacies, which combine, mix, or alter ingredients to create custom-made medications for individual patients. Compounding pharmacies nationwide are selling semaglutide formulated with B12 vitamin at a cheaper price than the scarce prescription drugs.

"The FDA has no jurisdiction over compounded products, and we don't know what's in them," she says.

Other people have turned to weight-loss clinics or telehealth programs providing brief appointments and semaglutide prescriptions with minimal guidance.

Another barrier to access is the expense. Most insurance plans do not cover these drugs, so cost can be prohibitive.

*"I was skeptical at first, but these medications are groundbreaking... as long as people receive a lot of support and nutritional guidance."*

VAL MAYO, PATIENT



### WEB EXTRA



#### Hands-on grocery tips

Jaclyn Lerner, RD, LDN, a community nutritionist at the Brigham's Brookside Community Health Center, leads grocery store tours to help people make informed decisions about purchasing foods on a budget. [brighammag.org/grocery](https://brighammag.org/grocery)

## TAKING AIM AT STIGMA

To reduce anti-fat bias in medical care, three members of the Brigham community—Janet Rich-Edwards, ScD, MPH, Mara Hampson, and Chioma Tomlinson, PA-C—are spearheading a project called “Stop the Stigma! Trauma-Informed Care for Patients with Large Bodies.” The trio won the Brigham’s 2023 BRight Futures Prize, a \$100,000 award to develop a course on fat stigma for healthcare workers and patients to improve care for people with large bodies.

“Anti-fat bias is widespread and can cause lifelong trauma,” says Rich-Edwards, director of research for the Division of Women’s Health. “Unwittingly, medicine can retraumatize individuals living in larger bodies, leading to poor clinician-patient communication, inadequate care, avoidance of healthcare, and poor health outcomes.”

With this funding and the input of clinicians, community members, and fat advocates, the team is creating an e-course for clinicians, clinic staff, and patients to raise awareness about anti-fat bias in society and teach a weight-inclusive approach to care. They will test the course with Harvard Medical School students and in primary care clinics and make this resource freely available on an open-source portal.

**“A bright future is where weight stigma has no place in the exam room, where all patients feel safe to access care.”**

**CHIOMA TOMLINSON, PA-C**

improve patients’ ability to meet their healthcare goals without subjecting them to traumatizing experiences or prejudice,” says Hampson, an administrative assistant in the Division of Women’s Health.

Tomlinson, a physician assistant in primary care who also practices obesity medicine, notes the Brigham’s commitment to health equity is a driving factor in this work. She says, “A bright future is where weight stigma has no place in the exam room, where all patients feel safe to access care.”



Chioma Tomlinson, PA-C, Mara Hampson, and Janet Rich-Edwards, ScD, MPH, won the Brigham’s BRight Futures Prize to develop an e-course for providers and patients to reduce fat stigma.

### PROCEEDING WITH CAUTION

These weight loss drugs also come with several potential side effects, including nausea, vomiting, and diarrhea, which often get better over time or with dose changes. More rare but serious risks include intestinal obstruction and severe gastroparesis, a paralysis of the stomach muscles. People with a family history of conditions such as thyroid cancer are cautioned against these drugs.

“These medications have been game changers for patients who have been unable to lose weight successfully, but it’s still early,” says Oliveira, noting one of her patients developed new severe gastroparesis after starting the drug prescribed by her primary care physician. “In my opinion, patients should only start these medications under close guidance by an experienced weight management physician.”

Studies are also showing that patients need to stay on these medications indefinitely to continue regulating appetite hormones.

“These are lifesaving drugs,” says Apovian, “but obesity is a chronic disease. Just like with hypertension, you may need to increase your dose or add other drugs over time.”

McManus advises, “While medications are an effective tool, what sometimes gets missed from the healthcare side and the patient side is they’re just one tool.”

### NO SINGLE SOLUTION

Whether a person’s health goals are to prevent or manage chronic conditions, lose weight, or increase energy or strength, McManus says, “evidence shows many factors affect our overall health—the quality of our food, sleep, physical activity, and activities that reduce stress.”

Recognizing the societal influences of easily available convenience foods and unreliable claims of influential health marketing, McManus suggests seeking the support of a clinician to address health goals and concerns, rather than going it alone or seeking answers online only. The teams at the Brigham help to personalize each person’s treatment plan based on their needs, she notes.

“There’s no quick fix to achieving good health,” McManus says. “The key is to focus on developing a sustainable approach that supports the endgame—our overall health, wellness, and longevity.”



## 3 HEALTHY EATING PLANS

Scientific studies show three dietary patterns are most effective in decreasing the risk of chronic conditions—including heart disease, diabetes, some cancers, and depression—and in older adults, reduced risk of frailty and cognitive decline.

The three plans here—Mediterranean, DASH, and MIND—all include an abundance of plant foods but differ in servings per week and other recommendations. The Brigham’s director of the Department of Nutrition, Kathy McManus, MS, RD, LDN, says the best way to incorporate these foods is to make one change to your current eating habits every week, starting with those easiest for you.

#### Practical tips in adopting these plans:

- Add extra servings of vegetables to lunch and dinner.
- Add whole-grain bread or other whole grains, such as bulgur, barley, farro, couscous, and whole-grain pasta.
- Save red meat for occasional consumption or use meat as a condiment, such as in stews, stir-fries, and soups.
- Replace soda and juices with water.
- Seek the best quality food available. Try farmer’s markets for locally grown seasonal foods.

### 1. MEDITERRANEAN DIET

Inspired by foods available in countries bordering the Mediterranean Sea, including vegetables, fruit, fish, and whole grains, this eating pattern became known for its health benefits based on a multinational study led by an American scientist in the 1960s.

Numerous studies since have corroborated health advantages, including research reported in May 2024 by the Brigham that greater Mediterranean diet intake was linked to a 23% lower risk of all-cause mortality among U.S. women. The investigation followed more than 25,000 initially healthy participants for up to 25 years, showing the diet’s connections with lower cancer and cardiovascular mortality. Brigham researchers detected changes in biomarkers of metabolism, inflammation, insulin resistance, and more.

### 2. DASH DIET

DASH—Dietary Approaches to Stop Hypertension—was released by the National Heart, Lung, and Blood Institute in 1997 to prevent and treat high blood pressure. Subsequent studies have validated this approach for heart health, with findings that it is highly effective at lowering both blood pressure and cholesterol. The diet’s core principles are to reduce sodium and increase foods high in potassium, calcium, and magnesium.

### 3. MIND DIET

A mash-up of the two diets above, MIND stands for Mediterranean DASH Intervention for Neurodegenerative Delay. Introduced in 2015 by scientists at RUSH University and Harvard University, it contains foods rich in certain vitamins, carotenoids, and flavonoids believed to protect the brain by reducing oxidative stress and inflammation, and cites specific foods to limit.

#### LEARN MORE

Visit [brigham.org/eatingplans](https://brigham.org/eatingplans) for recommended servings per day of specific foods for each of these dietary patterns.



# GREATER EXPECTATIONS

## *Vaccines and the gift of longevity*

Written by **JOY HOWARD** • Illustration by **DAN PAGE**

In a small U.S. town of 10,000 people, 250 residents will die each year and 100 of those will be children under 5 years old. Few people in the town will live beyond 50 years old. Of all the children born there, 10% will die before their first birthday and 24% before their 5th birthday.<sup>1</sup>

This town is not the setting of a dystopian novel or film. Instead, it describes the average mortality rate and life expectancy in the United States in 1900. In that year, five infectious diseases—pneumonia, influenza, tuberculosis,

gastrointestinal infections, and diphtheria—caused more than one-third of all deaths, and vaccines existed for only smallpox and rabies.

In its 12,000 years of circling the globe, smallpox alone is estimated to have killed hundreds of millions, including as many as half a billion people worldwide in the 20th century alone. However, the smallpox vaccine was so effective the World Health Organization (WHO) launched its Smallpox Eradication Program in 1959. By 1980, the WHO declared smallpox eradicated worldwide—the only infectious human disease successfully extinguished.

Despite the effectiveness of local and global smallpox inoculation campaigns, for decades, the vaccine provoked fear, ignorance, apathy, and resistance—opposition that continues today against vaccines of all kinds.

<sup>1</sup> <https://budgetmodel.wharton.upenn.edu/issues/2016/1/25/mortality-in-the-united-states-past-present-and-future/>;  
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4829a1.htm>



Gillray, James, Artist. The cow-pock - or - the wonderful effects of the new inoculation / Js. Gillray, del. & ft. Great Britain, 1802. [London: publ. by H. Humphrey, th] Photograph. <https://www.loc.gov/item/94509853/>.

### ECHOES OF OLD FEARS

Throughout the smallpox epidemics of the 19<sup>th</sup> and 20<sup>th</sup> centuries and the vaccination campaigns that accompanied them, opponents of the smallpox vaccine objected to the threats to their personal autonomy and religious beliefs. They railed against perceived governmental and medical tyranny. They created vivid illustrations warning people about one of the imagined dangers of the vaccine: transforming people into part human and part cow.

“The misinformation has been here all along, and it’s never been confined to vaccines,” says Gerald Pier, PhD, a microbiology and molecular genetics researcher in the Division of Infectious Diseases. “The issue of vaccine denial is newsworthy and prominent, but general denial of the utility of modern medicine has been around a long time.”

Today, in addition to denial, fear, and misinformation, apathy is at play.

“Getting a vaccine isn’t always compelling to people who are generally healthy, especially for the flu or COVID,” says Daniel Solomon, MD, an infectious diseases clinician and educator at the Brigham. “Often, they’d rather take their chances of getting infected. However, infection always comes with the risk of complications.”

### SEEING IS BELIEVING

Another factor contributing to vaccine apathy is that many vaccines work by erasing the evidence of their usefulness. People in previous centuries were stalked by pandemics and epidemics of visibly devastating diseases. Smallpox was horribly disfiguring. Diphtheria often strangled children to death while family members watched helplessly. Polio was more unpredictable in its destruction.

“Polio terrified my grandparents’ and parents’ generations,” says Stephen Walsh, MD, an infectious diseases researcher at the Brigham. “They saw firsthand how healthy kids could suddenly be paralyzed or die—and how vaccines changed that profoundly.”

While polio causes mild or no symptoms in most people, one in 200 infections leads to irreversible paralysis. Of those, 5 to 10% die when paralysis makes it impossible to breathe. At its peak, polio killed thousands of people each year and caused more than 15,000 cases of paralysis annually.

“It’s easier to be in an information bubble about many vaccine-preventable diseases today because we’re not seeing lots of kids with leg braces and crutches,” says Walsh. “It reminds me of the cartoon character Homer Simpson complaining about his daughter, ‘We’re always buying Maggie vaccinations for diseases she doesn’t even have!’”

### MANAGING EXPECTATIONS

The overwhelming success of vaccines in preventing some diseases—such as smallpox, polio, diphtheria, and measles—can make it seem like other vaccines are flawed if they mostly mitigate rather than prevent disease. But mechanisms of vaccine protection vary depending on several factors, including:

- the diseases or pathogen(s) they target,
- the immune response(s) they stimulate,
- how widespread the targeted disease or pathogen is in a vaccinated person’s community, and
- additional health issues a vaccinated person might have.

### DID YOU KNOW?

#### One dose of MMR vaccine is:

- 93% effective against measles
- 78% effective against mumps
- 97% effective against rubella

#### Two doses of MMR vaccine are:

- 97% effective against measles
- 88% effective against mumps
- 99% effective against rubella

“It’s important to be honest about what vaccines can and can’t do,” says Solomon. “Some will not prevent you from ever getting infected, so it’s essential to be honest and match the intervention with each patient’s context.”

For example, the vaccine for measles,

mumps, and rubella (MMR) is highly effective against all three diseases. Even so, a small percentage of people may still get one of those diseases after a vaccination or previous infection, especially if they:

- live in an area experiencing an outbreak of one of those diseases,
- have compromised immune systems due to conditions such as HIV, cancer treatment, an organ transplant, or
- are no longer protected by either vaccination or infection and recovery.

Different vaccines have different goals, Solomon explains. The goal for the annual flu vaccine is to prevent influenza in 40 to 60% of the people who receive the annual flu shot, set by the U.S. Centers for Disease Control and Prevention.

“This doesn’t mean the flu vaccine doesn’t work,” says Solomon. “The data show, overwhelmingly, when you get the flu shot, you are much less likely to die or end up in the hospital with the flu or any related complications. Preventing *severe* illness is an important goal for all vaccines.”

### THE QUEST FOR IMMUNITY

Protecting against severe illness is an essential component in building herd, or community, immunity.

Community immunity is when a significant portion of a population is immune to or protected against a disease through vaccination or infection and recovery. The threshold for community immunity varies by virus or bacteria, with highly contagious diseases requiring higher thresholds of immunity within the community. For example, community

immunity from measles requires at least 95% of the community to be protected by vaccination or previous infection. For polio, the community immunity threshold is about 80%.

However, community immunity is not achievable for all infectious diseases. Factors working against this include:

- Viruses that change or mutate frequently (such as influenza, HIV, and coronaviruses, like the one that causes COVID-19).
- Diseases that can be spread by people who are contagious but asymptomatic or pre-symptomatic (such as COVID-19, HIV, and tuberculosis).
- Short-lived protection from previous infection or a vaccine (such as influenza, coronaviruses, norovirus, RSV, and rotavirus).

Even for diseases that elude community immunity, vaccines save hundreds of thousands of lives and millions of dollars in healthcare expenses and lost wages each year by reducing the severity of infection, particularly among the most vulnerable.

### CONVINCING THE HESITANT

Like other clinicians focused on infectious diseases, Solomon also has a front-row seat for worst-case scenarios, which helps him provide a broader perspective to vaccine-hesitant patients.

“Given the successes of cancer and HIV treatments, organ and tissue transplants, and increased longevity, we are surrounded by people whose immune systems are compromised. So, I try to encourage a broader focus beyond the personal, to imagine a friend or relative you can help protect by getting a vaccine.”

Solomon increasingly relies on one of the main tools used by opponents of vaccines: storytelling.

“So much hesitancy is driven by personal stories, ranging from direct experiences to celebrity testimonies,” he says. “As a doctor, data really speaks to me. But stories speak louder than data for many people. I try to share stories about my experiences with people who had severe outcomes because they contracted vaccine-preventable diseases. ‘Here’s what we know and what we don’t know, based on my experience caring for patients like you.’”



### WEB EXTRA



### IS MEASLES MAKING A COMEBACK?

Despite a highly effective vaccine, measles cases in the U.S. have more than tripled this year compared to 2023. Learn more at [brighammag.org/measlestopday](https://brighammag.org/measlestopday)

## HOW HERD IMMUNITY WORKS

INFECTIOUS AGENT **PASSES FREELY** FROM CONTAGIOUS TO SUSCEPTIBLE



CONTAGION **CANNOT FREELY PASS** VIA IMMUNIZED TO SUSCEPTIBLE



When the immunity threshold is reached, susceptible individuals are protected from infection because ongoing spread of disease is limited.



## RISKS IN PERSPECTIVE

Compare the occurrence of a serious side effect of measles, mumps, and rubella vaccination with accidental deaths.



Source: Centers for Disease Control and Prevention. Possible Side-effects from Vaccines. <http://cdc.gov/vaccines/vac-gen/side-effects.htm#mmr>

### ADDRESSING RISKS AND SAFETY

Some people express fear or skepticism about the ingredients in vaccines (see “What’s in vaccines?” on page 31). However, Walsh notes that all medications undergo rigorous safety testing before being released for public use.

For example, he points to the concept of patient years, commonly used in cardiovascular research to explain the massive amount of safety data gathered for the COVID vaccines.

“Patient years may not be intuitive because, for each of us, one year is one year,” says Walsh. “But if we study 100 people for one year, researchers consider that to be 100 patient years of experience and data. With COVID vaccines, we went from 30,000 patient years in December of 2020 to hundreds of millions of people worldwide who have had mRNA vaccines over the past few years. That enabled us to gather millions of patient years of experience and data really quickly.”

Clinical trial veterans know that when testing a vaccine or other drug candidates against placebos, side effects or adverse events can often be higher in the placebo group than in the vaccine or drug group.

“The first COVID vaccine trial in the summer of 2020 was a 30,000-person study, where 15,000 people got the vaccine and 15,000 got the placebo,” says Lindsey Baden, MD, infectious diseases specialist and vice president of clinical research at the Brigham. “We had 30 serious illnesses and one death in the placebo group and none in the vaccine group. With so much COVID around in 2020, this information signaled how effective the vaccine could be.”

### WHAT ABOUT SIDE EFFECTS?

A professor at Harvard Medical School and deputy editor of The New England Journal of Medicine, Baden is a highly respected expert in developing new therapeutics and vaccines. During the COVID-19 crisis, Baden was the co-principal investigator for the Phase 3 vaccine trial, conducted in part at the Brigham, which led to the unprecedentedly rapid global use of those highly effective vaccines. Baden’s decades of experience with vaccine clinical trials has given him an insider’s view of side effects.

“Every drug has side effects,” Baden says. “We still use antibiotics, even though there are side effects such as with penicillin. Some side effects with vaccines have a mechanism we can identify and that are common when an immune response is provoked: fever, headache, soreness at the site of an injection. These side effects are transient and have to be balanced with the severity of the illness associated with infection. Vaccine science allows us to continually learn to improve efficacy and safety for each vaccine thus rebalancing the risk-benefit ratio for a given vaccine over time.”

And because each person’s context is different, what makes sense to one person may not make sense to another.

“Some people feel entitled to their own facts,” says Pier. “So we have to emphasize that any vaccine recommendation is based on a preponderance of evidence, which is collected first in trials and continues to be gathered after vaccines are manufactured and distributed.”

Pier adds, “Without even thinking about it, people routinely engage in behaviors more risky than getting a vaccine: driving in a car being a prime example.”

### STAYING CURIOUS

When meeting with patients who are hesitant about vaccines, Brigham infectious diseases physician Mary Montgomery, MD, leads with curiosity. Her years of working with HIV patients have shown how shame and stigma undermine trust and make people reluctant to seek the care they need.

In her work as an instructor at Harvard Medical School, Montgomery teams with social workers to create simulations for medical students, allowing them to experience firsthand how judgment and shame erode communications between physicians and patients.

“In one exercise, the social worker tells the medical students, ‘Close your eyes and think of a time you did something you’re ashamed of. Maybe you cheated or lied or stole something,’” Montgomery recalls. “When everyone indicates they’ve thought of something, she says, ‘Okay, now Dr. Montgomery is going to walk around, and if she taps you, we want you to share your moment with everyone in the class.’ Everybody’s eyes always fly open at that point, and they often gasp.”

Montgomery continues, “Then the social worker will say, ‘It’s okay, Dr. Montgomery isn’t tapping anyone. But what just happened? How did it feel when you thought you might get tapped?’”

While empathy and curiosity are building blocks for trusting relationships, shame and stigma can be life-threatening when it comes to getting the right healthcare at the right time.

“I know our students will learn all the medical stuff,” says Montgomery. “We’re teaching them to ask questions out of curiosity rather than judgment. When we can teach them how to have difficult conversations with patients, that’s my highest achievement.”

### NEW VACCINES FOR THIS CENTURY’S SCOURGES?

Remember our small U.S. town of 10,000 people where infectious diseases were among the top 10 causes of death in 1900? Let’s revisit it after more than a century of scientific advancement and vaccine development.

In 2023, only 92 residents in this town died, compared to 250 in 1900. Only two or three of the dead were children under 5 years old, compared to 100 in 1900. Most people in the town will live into their mid- to late-70s, nearly 30 years longer than in 1900. Fewer than 1% of the children born there will die before their 5th birthday, compared to 24% in 1900. Over the intervening 123 years, heart disease, cancer, and COVID-19 have replaced pneumonia, influenza, tuberculosis, gastrointestinal infections, and diphtheria in the top 10 causes of death. In fact, COVID-19 was the only infectious disease among the top 10 causes of death in 2023.

“We have entire buildings dedicated to treating cardiovascular diseases, cancer, and neurologic diseases,” says Baden. “But we can only treat those now because people aren’t dying much earlier in life from smallpox, measles, or diphtheria.”

Advances in medical technologies and the successes of vaccines continue to inspire new ideas in vaccine research and testing for some of this century’s most lethal diseases. As of July 2024, there were 400 clinical trials underway nationwide for cancer vaccines. At least seven clinical trials are testing vaccines against Alzheimer’s disease, including a Phase 3 trial at the Brigham, the last stage of clinical research before applying for approval from the U.S. Food and Drug Administration.

Additionally, evidence increasingly shows that keeping current with all recommended vaccines helps protect the cardiovascular system from inflammation and other stresses, reducing risks of heart attacks and stroke.

“Vaccines are one of the best public health interventions ever created,” says Baden. “Vaccines and sanitation, including hand washing, are probably the main contributors to doubling our life expectancy over the past 200 years.”

Photo by Len Rubenstein

## WHAT’S IN VACCINES?

Many people hesitate to receive vaccines due to their ingredients, particularly those added to preserve and stabilize them, including formaldehyde, aluminum, and mercury. These fears often lack context for how prevalent the ingredients are in our daily lives. Additionally, some questioned ingredients are mistaken for similarly named highly toxic ingredients.

For example, did you know there is 60 times more formaldehyde in a pear than in a single dose of vaccine? Or that babies consume far more aluminum in their diets in the first six months of their lives than they receive in vaccines? Or that only a few adult vaccines contain thimerosal, an ethylmercury-based preservative that does not accumulate in the body? Unlike ethylmercury, methylmercury naturally occurs in fish, animals, and humans and is toxic at high levels.

### VACCINES ARE SAFE

#### COMPARING AMOUNTS OF FORMALDEHYDE



There is about 60 times more formaldehyde in a 100-gram pear than in a vaccine.



There is at least 10 times more formaldehyde naturally circulating in an infant’s body than in a vaccine.



Any trace amount present in the vaccine is safe and does not exceed 0.1 mg.

#### COMPARING AMOUNTS OF ALUMINUM

During the first six months of life, babies receive more aluminum in their diet than from all vaccines combined.



38 mg

Babies receive about 38 milligrams of aluminum in infant formula during the first 6 months of life.



7 mg

Babies receive about 7 milligrams of aluminum in breast milk during the first 6 months of life.



3 mg

Babies receive about 3 milligrams of aluminum from all vaccines combined during the first 6 months of life.

Source: <https://immunizebc.ca/vaccine-safety/ingredients>



**“Vaccines are one of the best public health interventions ever created.”**

LINDSEY BADEN, MD



Written by LAUREN THOMPSON • Illustration by MICHAEL AUSTIN

*Finding*  
**TRUE NORTH**

*Confronting barriers to  
patient-centered care*

**W**hen Jane\* arrived at the hospital at 6am for her surgery, she felt she had already conquered an obstacle course. “First, I completed this long pre-surgery checklist,” Jane says. “Then I downloaded and signed a bunch of waivers and disclosure forms from the patient portal. I called the health insurance company to make sure they’d cover it. I arranged for time off from work. Finally, I convinced my sister to drive me an hour to and from the hospital and stay with me for a few days after to help me recover.” Jane glanced at other people in the waiting room, then whispered to her sister, “I’m exhausted, and I’m lucky enough to figure this out. What if I didn’t have your help or transportation? Or a flexible job? Or housing? What if I was disabled, or if I couldn’t read or speak English?”

**LEARNING THE LINGO**  
Across the U.S., healthcare can be confusing and overwhelming. Even well-resourced and supported patients like Jane can struggle to find, understand, and use information and tools to navigate their medical care. For some, entering healthcare systems feels like being conveyed through a well-oiled machine of structure, protocols, and predictable steps. For others, getting healthcare is an anxiety-provoking and befuddling maze. “Most of us are not seasoned medical advocates,” says Sylvia Baedorf Kassis, MPH, who directs the Health Literacy Program at the Multi-Regional Clinical Trials Center of Brigham and Women’s Hospital and Harvard (MRCT Center). “As healthcare professionals, we can sometimes have a hard time remembering what we didn’t know and what it’s like walking in patients’ footsteps.”

\*Name changed to protect privacy.

12%

According to the National Assessment of Health Literacy, only 12% of U.S. adults have proficient health literacy skills: the ability to interpret and act on information to make health-related decisions, such as following a checklist or prescription instructions.

According to the National Assessment of Health Literacy, only 12% of U.S. adults have proficient health literacy skills: the ability to interpret and act on information to make health-related decisions, such as following a checklist or prescription instructions. Meanwhile, 35% (tens of millions of Americans) are estimated to have basic or below basic health literacy. Low health literacy also makes people more vulnerable to health myths and misinformation that travel online and in social circles.

The National Institutes of Health recommends materials intended for patients and families be written at the sixth-grade level. However, medical information is often presented at a 10th, 12th, or higher-grade reading level. Some materials use jargon, unfamiliar acronyms, or complex phrases perplexing to people with no medical background or with limited English proficiency.

“Many people come into this large institution because they are dealing with something scary related to their health,” says Baedorf Kassis. “We need to reduce their cognitive load while they are trying to process complex or worrisome terms and information. We need to help people preserve their energy to deal with what matters most.”

#### LEAVE NO ONE BEHIND

Baedorf Kassis is passionate about health literacy and improving patient communication, inspired by her experience as a volunteer in the Brigham’s Emergency Department. Today, her work at the MRCT Center tackles this problem in clinical research—an environment full of technical language meant for scientific experts, not the public (see “Removing barriers to research” on page 37).

“While individual health literacy and a person’s ability to understand the medical system are important, healthcare organizations have a responsibility to be more patient-centered,” she explains.

“While individual health literacy and a person’s ability to understand the medical system are important, healthcare organizations have a responsibility to be more patient-centered.”

SYLVIA BAEDORF KASSIS, MPH

To help people make sense of the medical system, virtually every department at the Brigham is improving the user-friendliness of its services, policies, and messaging to ensure no one gets left behind.

Baedorf Kassis adds, “There’s a lot of work being done, but we have a long way to go to make our healthcare environment equitable, where everyone gets what they need and feels welcomed and heard.”

#### DECIPHERING DIGITAL TOOLS

Not long ago, digital tools like telehealth, electronic health devices, and online patient portals were considered add-ons to traditional in-person care. Initially, these tools mainly benefitted people who were already comfortable with technology.

“Then the pandemic hit,” says Jorge Rodriguez, MD, a hospitalist at the Brigham. “The push to deliver more remote care and create efficiencies in the system made it necessary for all patients to connect to digital platforms—many for the first time.”

Rodriguez is one of the Brigham’s leading digital health investigators. He is especially interested in digital health equity, recognizing that people with limited English proficiency, fewer financial resources, disabilities, and other circumstances can have more trouble accessing technology.

Across Mass General Brigham (MGB), the online portal called Patient Gateway is the digital home for everything related to a patient’s care: scheduled appointments, test results, messages with clinicians, visit summaries, billing statements, and even their complete health records.

Giving patients a comprehensive view of their medical information, available anytime in a secure digital space like Patient Gateway, has many benefits. But what if a patient doesn’t have reliable internet, a computer or smartphone, or the ability to navigate the user enrollment process?



Pictured left to right: Ariel Gonzalez, Anaam Husein, Carla Flores, Janelle Vargas, Sheriden Hu, Christen Wilson (no longer at MGB), Jessica Batista, Janine Mendy, Claudia Garcia, Carlos Rodriguez, and Lovely Merdelus

What if they can’t troubleshoot a virtual visit that isn’t launching correctly?

“Today, virtual visits and Patient Gateway are the digital front door to a person’s healthcare experience,” says Rodriguez. “The problem is many people trying to open that digital front door discover they don’t have the keys.”

Lee Park, MD, MPH, is the chief patient experience officer at MGB. She, Rodriguez, and others across the system see a gap between patients who use the portal and those who do not.

“A higher percentage of white patients are on Patient Gateway compared with Black and Hispanic patients,” Park says. “The gap has narrowed over time, but we continue to look for ways to close it.”

#### GETTING CONNECTED FOR GOOD

Under MGB’s United Against Racism initiative, Park and her colleagues took a multi-pronged approach to address gaps and barriers patients face. They translated Patient Gateway into the top six languages spoken by MGB patients in addition to English: Arabic, Chinese, Haitian Creole, Portuguese, Russian, and Spanish. They are also training digital access coordinators to help patients use the tools and receive devices and internet access as needed.

Digital access coordinators help patients across the MGB system get connected, whether signing into Patient Gateway or using a wireless blood pressure cuff for hypertension management, either over the phone or by training patients in clinic waiting rooms.

Even with all these resources and supports, Rodriguez cautions that technology deployed equitably cannot eliminate all disparities.

“Health disparities are driven by many big-picture things going on in a person’s life,” Rodriguez says. “Sometimes, we have to step back and ask if more technology is always the right solution. A patient who solves their technology access issue may also be living with food or housing insecurity. As a system, we need to continue listening to patients to find the right balance of resources that will be meaningful for them.”

#### WHEN A HOUSING CRISIS THREATENS HEALTHCARE

For many people in the Boston area, the crisis of housing insecurity or loss can make it impossible to tend to health concerns—especially a critical illness.

“It is tough to get a patient’s blood pressure under control if they are worried about where they are going to sleep,” says MaryCatherine Arbour, MD, MPH, medical director of the Primary Care Social Care Team. “A person’s health is extremely at risk if their housing is unstable. Since the pandemic, there has been an enormous increase in housing needs.”

“We’re seeing as many as 500 referrals in a month for patients experiencing housing insecurity,” says Dolores Ortiz, director of the Social Care Team. “The need is overwhelming.”

Ortiz recalls one patient who was in the middle of cancer treatment and newly using a wheelchair when her landlord terminated her lease. The landlord cited a technicality in the rental agreement, but the underlying motivation was to avoid installing a ramp or paying for other improvements to make the apartment accessible.

“It is awful that patients facing eviction are forced to contend with that over a serious health situation they might also be dealing with,” Ortiz says. “And when discrimination is at work, many patients and families don’t have the resources to fight it.”

#### SPRINGING TO ACTION

The Social Care Team has been working overtime to ensure patients at imminent risk of being unhoused get the support they need to maintain or secure safe, affordable housing. The team has dedicated advocates who help patients navigate complex processes like securing legal counsel, mediating with landlords, applying for rental assistance or reasonable accommodations, and connecting to other resources.

“Partnering with agencies and organizations across the city of Boston is crucial because they are highly specialized in dealing with the specific housing issues people face—we become the connector,” Ortiz says.

“We urge all clinicians to screen their patients for

“Many people trying to open that digital front door [to healthcare] discover they don’t have the keys.”

JORGE RODRIGUEZ, MD



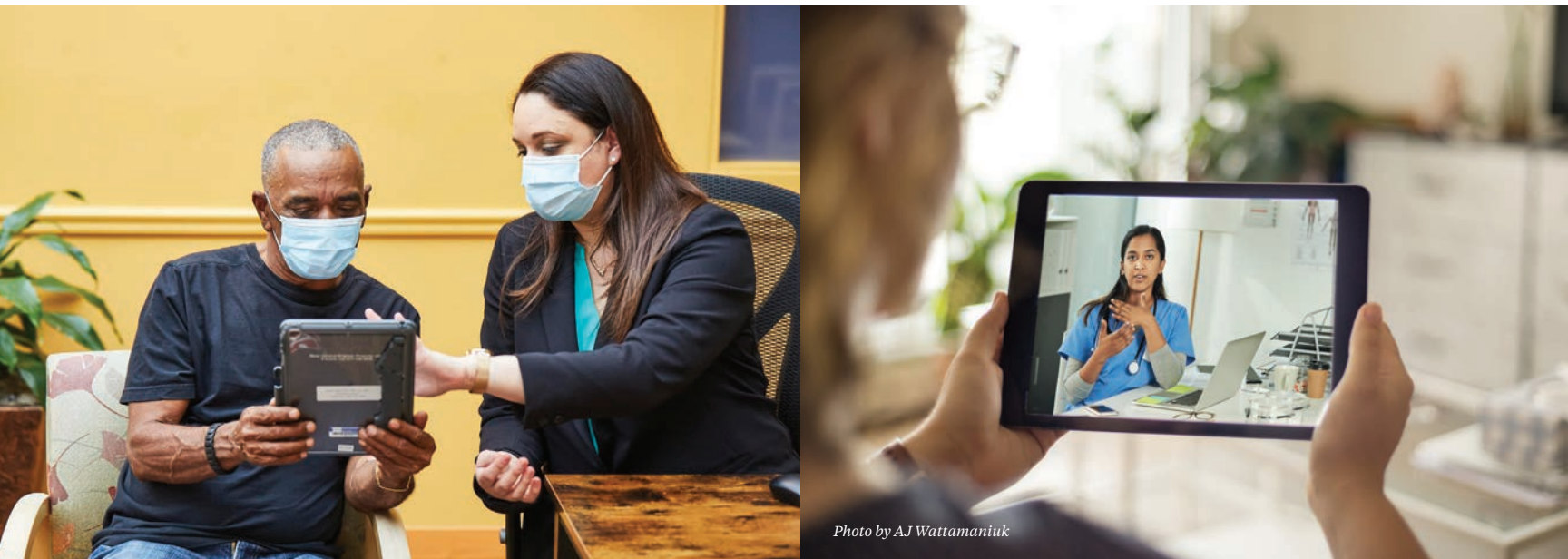


Photo by AJ Wattamaniuk

social determinants of health, including housing needs,” she notes. “That first step sets everything in motion and helps us make a difference in patients’ lives.”

The Social Care Team is also building evidence that health outcomes improve when screenings for social determinants of health identify needs for housing interventions. Led by Arbour, primary care investigators found patients who were unhoused, facing eviction, or living in unsafe housing conditions and who then received integrated support from the Social Care Team had fewer outpatient visits, reported better physical and mental health, and felt more connected to their healthcare clinic and clinical team.

“Our housing advocates are amazing,” Arbour says. “Their ability to connect with patients in very stressful situations and provide them with empathy, respect, and compassion makes a big difference.”

#### INVITING PATIENTS’ EXPERTISE

Human connection is essential to addressing the specific needs of patients and their families.

“People sometimes feel alone dealing with healthcare situations, but it is important for them to know they are not alone,” says Lynne Blech, senior manager of Patient and Family Relations. “As a Brigham community, how can we work collectively to improve patients’ experiences and help them feel empowered instead of overwhelmed?”

Blech’s team is on the front line of gathering patients’ feedback—positive and negative.

“We are constantly learning from our interactions with patients,” she says. “We always want to be open and honest—whether over the phone, in letters, or in family meetings between staff, patients, and their loved ones. We are there to answer any question and do everything we can to address and respond to concerns.”

Blech emphasizes that any genuine effort toward patient-centered care hinges on the core principles of encouraging dignity and respect, participation, collaboration, and transparent information sharing. Patients and families must have a seat at the table in conversations about improving their healthcare experiences.

“Every patient comes into the system with a PHD: a personal history of their disease or lived experience,” adds Martie Carnie, a senior patient advisor and co-chair of the Brigham’s Patient and Family Advisory Council Steering Committee. “We may not be familiar with medical jargon, and some of us can be intimidated coming into this world of healthcare professionals, but our stories and narratives have value.”

Carnie has helped steer many patient-driven improvements over her 30 years as a patient advisor to the Brigham—including health literacy projects in clinical research. She and other advisors have spearheaded changes across the hospital, including improving the Emergency Department’s registration experience during surges, supporting screening for intimate partner violence during telehealth visits, and helping design more inclusive crib cards in the NICU.



**“As a Brigham community, how can we work collectively to improve patients’ experiences and help them feel empowered instead of overwhelmed?”**

LYNNE BLECH, SENIOR MANAGER OF PATIENT AND FAMILY RELATIONS

The Brigham is working to establish Patient and Family Advisory Councils in all clinical areas to ensure patient perspectives are represented everywhere they go.

“We remind them that their voices matter and they can make a difference,” Carnie says. “I have faith and hope we can move forward with all these lessons we’ve learned through the pandemic to serve our community in more meaningful ways.”

#### RESPONSES MATTER

While MGB and the Brigham are sprawling systems, they are fueled by human experiences. Blech says everyone who walks through the systems’ doors brings a unique personality, lens, and understanding of health situations.

“And when patients can’t speak for themselves, their loved ones become critical care team members,” she adds. “Our true north is respecting everyone’s perspective.”

This abundance of viewpoints and mounting pressures across the healthcare industry suggest hospital and system improvements can emerge by staying open during difficult situations. Blech notes the fervent desire among Brigham staff to be proactive in finding ways to make patients’ experiences easier.

“Responding to challenges requires hearing and understanding all points of view,” she says. “In our Brigham community, we do that with respect, neutrality, and without judgment. And we always lead with curiosity.” ❖



## REMOVING BARRIERS TO RESEARCH

Only 5% of the U.S. population has ever enrolled in a clinical study, driven by a widespread sense that research is inaccessible, hard to understand, or too burdensome of a commitment. The Multi-Regional Clinical Trials Center of Brigham and Women’s Hospital and Harvard (MRCT Center) is partnering with academic institutions, industry, nonprofits, governments, and patient advocacy groups to make research more patient-centered.

#### IN PLAIN LANGUAGE, PLEASE

One of the center’s health literacy projects is a plain-language Clinical Research Glossary: a free online resource that Sylvia Baedorf Kassis, MPH, her colleagues, and a diverse workgroup of representatives from across the industry have been developing after finding nothing like it in the clinical research landscape. For study participants who don’t know what a double-blind, randomized control trial is—or study designers who aren’t sure how to explain this concept simply—the glossary defines it with examples and illustrations.

Translated versions of the glossary’s entries are available through AI-enabled translation into 55 languages. While not yet validated by native speakers, communicating users’ preferred language is an area of active work by the MRCT Center and Mass General Brigham.

“Research is essential to making progress with treating, ameliorating, and preventing disease,” says Barbara Bierer, MD, faculty director of the MRCT Center. “As researchers, we can’t continue ignoring communications and access issues causing so many people to be underrepresented in research and, consequently, underserved in healthcare.”

Historically, clinical trials have also been geographically exclusionary, Bierer notes. Most people nationwide receive care in community-

based hospitals and clinics, yet studies that might benefit them are usually based in large, urban academic medical centers.

“We haven’t had a good system for communicating with patients about opportunities to participate in clinical studies,” she adds. “Patients usually learn about a trial through an intermediary, like their healthcare provider, who likely also doesn’t have easy access to a list of additional trials patients might be interested in or qualify for.”

#### BRINGING RESEARCH WITHIN REACH

Without clear recruitment strategies, unintentional biases can make research participation less likely for individuals of color and those with limited English proficiency, lower health literacy, socioeconomic hardships, and disabilities.

As the MRCT Center’s Diversity, Equity, and Inclusion program director, Willyanne Decormier Plosky works with her team to develop evidence-based toolkits and checklists to help study designers, funders, and regulators be more proactive in including patients who are underserved in research.

“The key points we emphasize to researchers are to make sure they have direct communication lines with patient communities,” she says. “Then, put things in plain language—with translation—and make participation financially possible. Finally, ensure that traditionally underrepresented people are at the table throughout the trial planning and reporting process.”

Clinical study participants can be surprised when they never hear about study results. To address this, the MRCT Center encourages researchers to provide plain-language summaries to participants and simplify the technical language in abstracts they submit to medical journals.

**“Can you imagine if we had simple, plain-language summaries across all scientific publications? How amazing would that have been during COVID for people who don’t have an infectious disease or epidemiology background?”**

WILLYANNE DECORMIER PLOSKY, MRCT CENTER’S DEI PROGRAM DIRECTOR

“Can you imagine if we had simple, plain-language summaries across all scientific publications?” DeCormier Plosky says. “How amazing would that have been during COVID for people who don’t have an infectious disease or epidemiology background?”

Making research more equitable and inclusive helps everyone involved, she says.

“Curb cutouts in sidewalks were installed to help people using wheelchairs safely maneuver into the street, but those ramps help all kinds of people—from parents with strollers to skateboarders and bikers,” says Decormier Plosky. “When you plan for universal design in your communication and physical environments, everyone benefits.”



#### WEB EXTRA

Access the Clinical Research Glossary at: <https://mrctcenter.org/glossary>

COLUMN

# Facts About Dietary Supplements



By JoAnn Manson, MD, MPH, DrPH, chief of the Division of Preventive Medicine; Michael and Lee Bell Professor of Women's Health

**Nearly 58% of adults and 35% of children in the U.S. take dietary supplements, spending more than \$50 billion each year.** Many myths about supplements fuel their popularity. While they are beneficial in some cases, most people do not need them. Our research team has led several of the nation's largest randomized clinical trials of supplements, including vitamin D, omega-3 fatty acids, and multivitamins to determine when supplements can be useful.

**1 NOT ALL SUPPLEMENTS ARE NATURAL AND SAFE.** Unlike prescription medications, the U.S. Food and Drug Administration does not regulate dietary supplements for safety or effectiveness, and most haven't been rigorously tested for either. Some supplements are synthetic and are neither natural nor safe. To ensure quality-control testing of a supplement, check the label for seals of approval from U.S. Pharmacopeia, National Science Foundation, or ConsumerLab.com, which indicate they have the nutrient dose noted on the label and are free of microbes and heavy metals.

**2 SUPPLEMENTS ARE NO SUBSTITUTE FOR A HEALTHY DIET AND LIFESTYLE.** Many chronic diseases are largely preventable, and the best strategies are to follow a healthy and balanced diet, be

physically active, don't smoke, control blood pressure and cholesterol, and stay socially and cognitively engaged.

**3 MOST PEOPLE WITH HEALTHY, BALANCED DIETS DO NOT NEED SUPPLEMENTS.** Studies show certain supplements are helpful during particular life stages, such as pregnancy and at older ages, or for those with specific health conditions, such as malabsorption, celiac disease, Crohn's disease, pernicious anemia, or macular degeneration.

**4 SOME SUPPLEMENTS CAUSE NEGATIVE INTERACTIONS.** Tell your doctors about all supplements you take. Prior to any lab test, procedure, surgery, or new prescription (especially blood thinners), ask whether you should stop taking them.

**5 MEGA-DOSING OF SUPPLEMENTS CAN CAUSE HARM.** Too much vitamin A can damage your liver, weaken bones, affect vision, or lead to birth defects in newborns. Excess vitamin B6 can cause nervous system damage. Excess vitamin D can cause high calcium in the blood and urine, as well as kidney problems, and excess vitamin E can cause bleeding.



MISINFORMATION

## All Physical Activity Counts

**Benefits of physical activity include reducing anxiety and blood pressure, improving sleep, and lowering risks of type 2 diabetes, heart disease, and some cancers.**

- Yet, misconceptions abound:
- "Physical activity needs to be long in duration to be effective."
  - "I have to take 10,000 steps a day to be physically fit."
  - "It's too late in life to be physically active."
  - "I feel discouraged. I'm active but my weight hasn't changed."



I-Min Lee, MBBS, MPH, ScD

I-Min Lee, MBBS, MPH, ScD, an epidemiologist in the Brigham's Division of Preventive Medicine, has published more than 450 scientific articles on how physical activity influences chronic diseases and enhances longevity.

Recent research using wearable devices shows all physical activity is valuable, including cleaning, gardening, or walking short periods.

"All activity counts, no matter what it is," Lee says. "You can add up bits of activity to achieve at least 150 minutes a week of moderate-intensity activity, such as brisk walking, or 75 minutes a week of more vigorous exercise, such as jogging or running, plus muscle-strengthening activity at least two days a week."

One of Lee's studies debunked the 10,000 steps-per-day myth. For women 60 or older, health benefits taper off around 7,500 steps; even 4,400 steps improves longevity. A meta-analysis of several studies found benefits tapering between 7,000 to 9,000 steps for those younger than 60.

Since people tend to put on weight with age, physical activity becomes even more important.

"For two people with the same high body fat and body weight, the person who is physically active is healthier than the person who is not," she says. "Some exercise is better than none, even if it doesn't lead to a difference on the scale. Research shows it's never too late to start being active."

**For women 60 or older, health benefits taper off around 7,500 steps; even 4,400 steps improves longevity.**

POLICY

## KRAFT CENTER CELEBRATES EXPANDED ELIGIBILITY OF LGBTQ+ BLOOD DONORS

Stephen Gisselbrecht, a research specialist in the Division of Genetics, first donated blood when he was in high school in the 1980s. But when he attempted to donate again in college, the situation had changed: After coming out as gay, he was no longer eligible because of his sexuality.

In May 2023, the U.S. Food and Drug Administration dropped its 40-year exclusion of sexually active gay and bisexual men as eligible blood donors.

"This policy change has been long overdue in welcoming everyone who wishes to contribute to our collective humanitarian mission," says Sean Stowell, MD, PhD, medical director of the Kraft Family Blood Donor Center, vice chair of the Division of Transfusion Medicine, and medical director of the Transfusion Service at the Brigham.

"We're proud to join blood banks across the country in treating all potential blood donors with equity and respect while ensuring a safe, sufficient blood supply for patients in need."

Gisselbrecht, who became the center's first new donor under the expanded criteria, says, "I'm just happy to be able to help out. I hope it makes people feel less stigmatized and that it increases the blood supply."

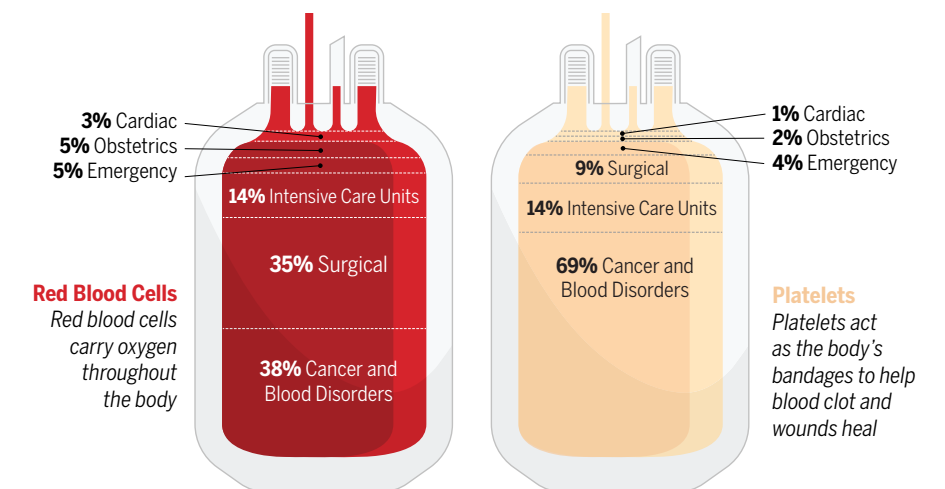
With the revised guidance, the center screens all eligible donors through an individual risk-based questionnaire, regardless of sexual orientation, sex, or gender. To arrange to give blood or platelets, call 617 632 3206 or email [blooddonor@partners.org](mailto:blooddonor@partners.org).



Stephen Gisselbrecht gives a thumbs up as donor technician Don Marks (right) assists with a platelet donation.

DID YOU KNOW?

## Where Blood and Platelet Donations Go



Source: Brigham Blood Bank



**Groundbreaking Partnership for the Future of Healthcare**

In January, Bloomberg Philanthropies committed \$37.8 million to Mass General Brigham (MGB), the parent organization of Brigham and Women's Hospital, to create a new healthcare career preparatory curriculum at the Edward M. Kennedy Academy of Health Careers (EMK) School, the city of Boston's health career-focused public high school.

The Brigham has a long history of partnering with Boston Public Schools to provide students with on-site training

opportunities and career preparation. Since 2000, the Brigham's Student Success Jobs Program has provided year-round internships to hundreds of Boston high school students—with students working with mentors 10 hours each week as fully onboarded Brigham employees. The new partnership with MGB, Bloomberg, and EMK will expand on this foundation.

Read more about this program at [brighammag.org/emk](http://brighammag.org/emk)

 **Brigham and Women's Hospital**  
Founding Member, Mass General Brigham

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*“The issue of vaccine denial is newsworthy and prominent, but general denial of the utility of modern medicine has been around a long time.”*

**GERALD PIER, PHD, DIVISION OF INFECTIOUS DISEASES,  
BRIGHAM AND WOMEN'S HOSPITAL**

