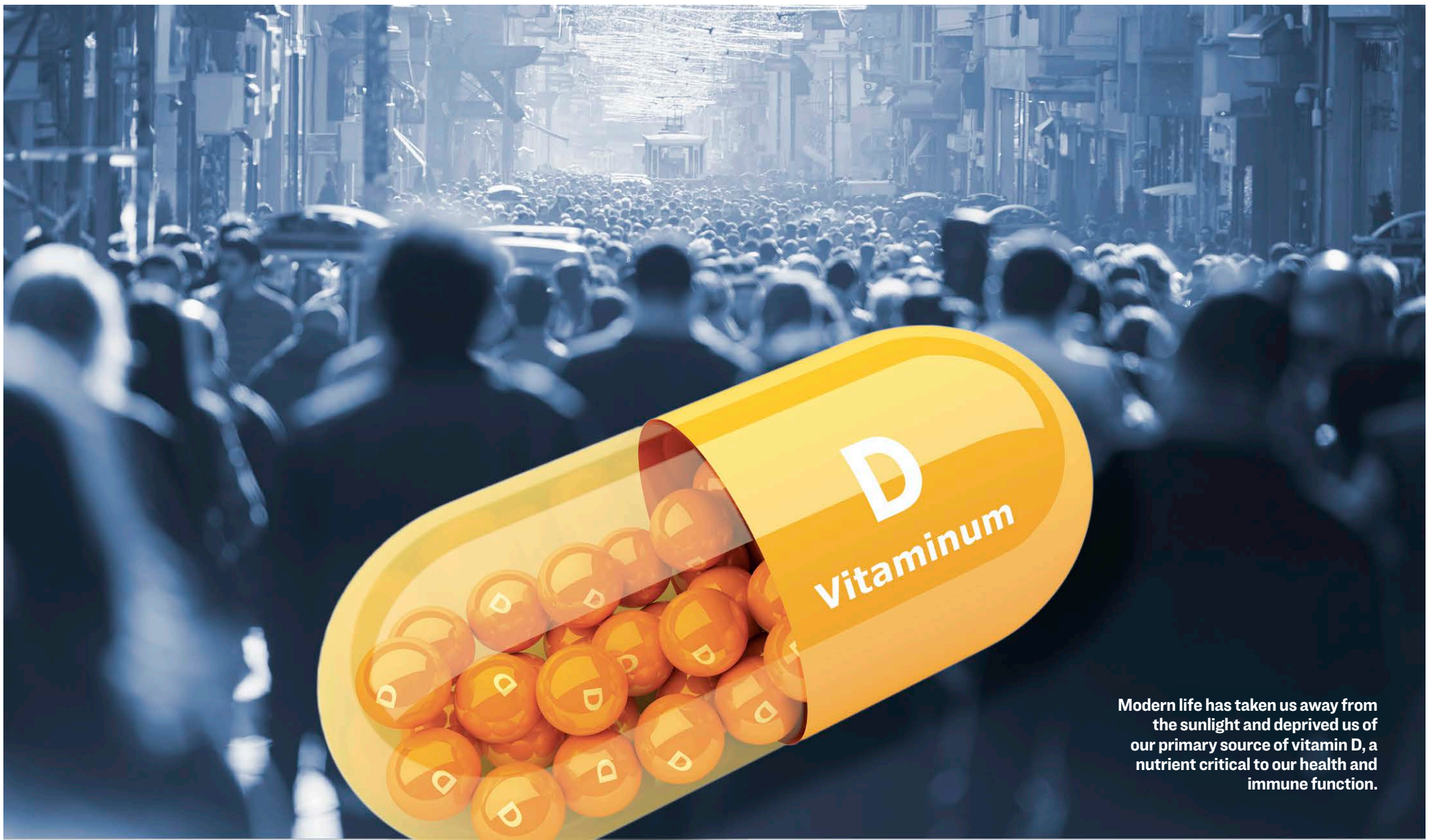


# MIND & BODY

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Modern life has taken us away from the sunlight and deprived us of our primary source of vitamin D, a nutrient critical to our health and immune function.

## Could Most COVID-19 Deaths Have Been Prevented?

Mounting research on vitamin D's effects on COVID-19 have more clinicians and researchers calling for its wider use

JOSEPH MERCOLA

In recent weeks and months, there's been an upshot of studies demonstrating the benefits of vitamin D against COVID-19. The evidence is so compelling, more than 200 doctors, scientists, and leading authorities have signed an open letter calling for increased use of vitamin D in the fight against COVID-19.

"Research shows low vitamin D levels almost certainly promote COVID-19 infections, hospitalizations, and deaths. Given its safety, we call for immediate widespread increased vitamin D intakes," the letter states.

"Vitamin D modulates thousands of genes and many aspects of immune function, both innate and adaptive," it states, before listing some of the validated find-

ings on vitamin D.

The authors note that higher vitamin D blood levels are associated with lower rates of SARS-CoV-2 infection and a lower risk of a severe case (hospitalization, ICU, or death).

Vitamin D's effectiveness is also shown in intervention studies, they say, adding that many research papers reveal several biological mechanisms by which vitamin D influences COVID-19.

The letter recommends taking enough vitamin D to achieve a blood level of at least 30 ng/mL (75 nmol/L). The authors urge testing all hospitalized COVID-19 patients and adding vitamin D to the treatment protocol for any patient whose level is below 30 ng/mL.

*Continued on Page 4*

**Higher vitamin D blood levels are associated with lower rates of SARS-CoV-2.**

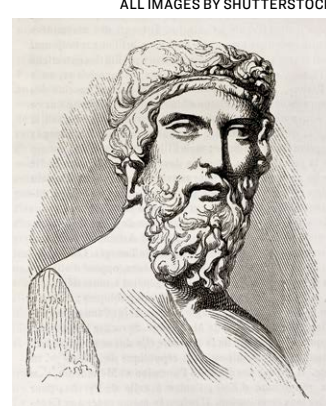
## The Fascinating Story of Placebos

Placebos have a long history; new research suggests doctors should use them more often.

JEREMY HOWICK

According to "Plato in Twelve Volumes" published by Harvard University Press, for headaches, Plato prescribed "a certain leaf, but there was a charm to go with the remedy; and if one uttered the charm at the moment of its application, the remedy made one perfectly well; but without the charm, there was no efficacy in the leaf."

We would now call Plato's "charm" a placebo. Placebos have been around for thousands of years and are the most widely studied treatments in the history of medicine. Every time your doctor tells you that the drug you take has been proven to work, they mean that it has been proven to work



The power of placebos has been known for since antiquity. Even Plato prescribed placebo remedies.

better than a placebo.

Despite their importance, doctors are not allowed to use placebos to help patients (at least, officially), and there are debates about whether we still need them in clinical trials. Yet the science of placebos has evolved to the point where our views should—but haven't—changed our prejudice against placebos in practice and the privileged position of placebo controls in clinical trials.

In this whistle-stop tour of the history of placebos, I will show what progress has been made and suggest where knowledge of placebos might go in the near future.

*Continued on Page 6*



Placebos work particularly well for some conditions.







# Strategies for Cultivating Hope This Year

Hope is built from a planning for success and nurtured with attention, community, and evidence

JACQUELINE S. MATTIS

The raging coronavirus pandemic, along with political turbulence and uncertainty, have overwhelmed many of us.

From almost the start of 2020, people were faced with bleak prospects as illness, death, isolation, and job losses became unwelcome parts of our reality.

Indeed, all through these times, both the dark and bright sides of human nature were evident as many people engaged in extraordinary compassion and courage when others were committing acts of violence, self-interest, or greed.

As a research scientist whose work focuses on positive psychology among people facing challenges, I am deeply aware that if ever there were a time for a conversation about hope, it is now.

## Hope Versus Optimism

First, let's understand what hope is. Many people confuse optimism with hope.

Charles R. Snyder, author of "The Psychology of Hope," defined hope as the tendency to see desired goals as possible, and to approach those goals with "agency thinking," a belief that you or others have the ability to achieve the goals. He also defined hope as "pathways thinking," a focus on mapping routes and plans to achieve those goals.

Optimism is different. Psychologist Charles Carver defines optimism as a general expectation that good things will happen in the future. Optimists tend to seek out the positive and, at times, deny or avoid negative information. In sum, optimism is about expecting good things; hope is about how we plan and act to achieve what we want.

Here are five key strategies to cultivate hope in these trying times:

### 1. Do Something—Start With Goals

Hopeful people don't wish—they imagine and act. They establish clear, achievable goals and make a clear plan. They believe in their agency—that is, their capacity to achieve the outcomes. They recognize that their path will be marked by stresses, roadblocks, and failure. According to psychologists such as Snyder and others, people who are hopeful are able to "anticipate these barriers" and they "choose" the right "pathways."

Further, hopeful people adapt. When their hopes are thwarted, they tend to become more focused on doing things to achieve their goals.

As psychologist Eddie Tong writes, "Hopeful people tend to think that desired goals are attainable even if personal resources are exhausted." In other words, people of hope persist even when prospects may not be so favorable.

Importantly, evidence suggests that the belief that one is capable of achieving



Optimism is the expectation that good things will happen; hope is the expectation that you can make them happen.

**Sustaining hope depends, in part, on the company we keep.**

For people working to bring social change, relationships and community can provide the reason for hope.



one's goals may be more important for hope than knowing how to achieve those goals.

### 2. Harness the Power of Uncertainty

Several researchers have argued that, for hope to arise, individuals need to be able to perceive the "possibility of success."

Research shows that many of life's uncertainties could help people cultivate hope in difficult times. For example, a 2017 study showed that parents of children diagnosed with multiple sclerosis used the fact that so little is known about the condition in childhood to fuel and sustain their sense of hope. Parents reasoned that since it is so hard to accurately diagnose childhood multiple sclerosis and prognosis is so varied, there was a chance that their children were misdiagnosed and they could recover and live normal lives.

In sum, a future that is uncertain holds lots of possibilities. As such, uncertainty is not a reason for paralysis—it is a reason to hope.

### 3. Manage Your Attention

Hopeful and optimistic people show similarities and differences in the kinds of emotional stimuli they pay attention to in the world.

For example, psychologist Lucas Kelberer and his colleagues found, through using eye-tracking technology, that optimists tended to seek out positive images, such as that of happy people, and avoid images of people who seem depressed.

Hopeful people didn't necessarily seek out emotionally positive information.

However, people high on hope spent less time paying attention to emotionally sad or threatening information.

In a world in which we are overwhelmed with options for what we read, watch, and listen to, maintaining hope may not require us to go after positive information, but it does require that we avoid negative images and messages.

### 4. Seek Community—Don't Go It Alone

Hope is hard to sustain in isolation. Research demonstrates that for people working to bring social change, particularly anti-poverty activists, relationships and community provided the reason for hope and ignited their conviction to keep fighting.

Connection to others allowed activists to feel a sense of accountability, to recognize that their work mattered, and that they were part of something bigger than themselves.

Relationships are important, but health research also suggests that sustaining hope depends, in part, on the particular company we keep. For example, parents of chronically ill children often maintained hope by withdrawing from or avoiding interactions with negative people who challenged their efforts to seek positive ends. We can stay hopeful if we connect with others who hold us accountable and remind us of why our struggles matter.

### 5. Look at the Evidence

Hope also requires trust. Hopeful people stake their trust in data, particularly in the evidence of history. Research demonstrates, for example, that anti-poverty activists drew hope from knowing that, historically, when people joined together in resistance, they were able to create change.

Cultivating and sustaining hope, then, requires that we gather evidence from our own lives, history, and the world at large and use that evidence to guide our plans, pathways, and actions.

Hope also requires that we learn to use this data to effectively calibrate progress—no matter how small.

Jacqueline S. Mattis is the dean of faculty at Rutgers University—Newark. This article was originally published on *The Conversation*.

MINDSET MATTERS

# How to Accept What We Really Don't Want to Accept

Why acceptance is the hardest and most important practice of them all

**Acceptance isn't an act of passivity, but rather an act of wisdom. It means agreeing to start our efforts from where we actually are what reality actually is.**

When we try to fight against reality, reality always wins.



NANCY COLIER

Right now there's something going on in my life that's very difficult. I definitely wish it wasn't part of my life, and yet it's clear my wishing has done nothing to change it.

As is always the case: Fight with reality, reality wins.

And so it occurred to me (brilliantly) that this might be an auspicious time to practice acceptance.

When investigating an idea or practice, I like to start with what the thing is not. In this case, what are the myths and misconceptions about acceptance that get in the way of our being able to do it?

**MYTH NO. 1** We're OK with what's happening. We can agree with it.

The biggest misunderstanding about acceptance is that it means that we're OK with the thing we're accepting, that we've somehow gotten on board with this situation that we don't want.

**REALITY** Acceptance does not require that we're OK with what we're accepting. Acceptance doesn't imply that we now want what we don't want. It doesn't include feeling good or peaceful about what we're accepting. It doesn't mean we now agree with it.

**MYTH NO. 2** Acceptance means we stop trying to change it.

We believe that acceptance is synonymous

with agreeing to be passively surrendering all efforts to make things different. Acceptance is saying we agree that this situation will go on forever. It's deciding to pull the covers over our head.

**REALITY** Acceptance doesn't mean suspending efforts to change what is. Acceptance doesn't imply that we're giving up on reality becoming different. Acceptance is all about now and has nothing to do with the future. Furthermore, acceptance isn't an act of passivity, but rather an act of wisdom. It means agreeing to start our efforts from where we actually are and considering what actually is.

Continued on Page 10

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# How Engineering Can Help Reimagine Public Health Care

Health care engineering is a new interdisciplinary field focused on the widest scope of health care delivery

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## WOODROW W. WINCHESTER III

Of the many things that COVID-19 has made abundantly clear to us, surely one of them is a newfound realization that public health has become increasingly complex. Understanding the challenges to public health—that is, the task of guarding the well-being of the U.S. population—is more essential now than ever.

As an engineer, design futurist, and graduate program director, I have seen how COVID-19 has transformed how public health preparedness is viewed and understood. Some say the pandemic has made reimagining public health an urgent matter.

From problems in producing personal protective equipment that demonstrate the vulnerabilities in critical supply chains, to solutions in vaccine distribution challenges that leverage innovative public-private partnerships, new perspectives and approaches to public health are necessary.

## The time is ripe for evolving the field of public health systems engineering.

One way to accomplish this is by using health care engineering, or more specifically, the application of systems engineering in health care.

“Researchers in health care systems engineering seek to increase efficiency, reduce errors, and improve access and overall quality of health care,” notes a description on the Mayo Clinic website.

Systems engineering is defined as an interdisciplinary approach and means to enable the realization of successful systems. It is the combination of engineering and engineering management that focuses on how to design, integrate, and manage

complex systems over their life cycles. These could include such complex systems as aircraft and spacecraft systems.

Already, this concept is flourishing. Research centers throughout the United States, including those at the Mayo Clinic and Northeastern University’s Health-care Systems Engineering, suggest challenges such as patient safety could be made better by applying systems engineering principles and techniques through more holistic and human-centered approaches to systems design.

These efforts have proven helpful to health care delivery in response to COVID-19. But more is required, particularly in the use of systems engineering in informing public health responses and interventions. A field of public health systems engineering is needed.

Its intent: to develop and apply systemic and integrated approaches to understanding and solving public health problems. Formalizing a field of public health systems engineering—focused on health care at the population level—offers the needed research and educational pathways to advance this work.

### The Systems Engineering Imperative

Examples of systems engineering include designing and developing personal protective equipment, repairing the vulnerabilities in the food supply chain, and grappling with vaccine logistics. COVID-19 has made clear the growing interconnected, interdisciplinary, and multifaceted nature of public health’s future. In partnering with public health, systems engineering can mature mindsets (systems thinking) and practices that can aid in meeting this future.

Illustrating this notion are efforts by Pinar Keskinocak, the co-founder and director of the Center for Health and Humanitarian Systems at Georgia Institute of Technology, and her colleagues. In a recent interview, Keskinocak said: “Whenever there is a complex problem, it needs serious analysis or technology and that’s where an engineer comes in.



Effective health care requires a broad overview too often missing from current approaches but systems engineering may help change that.

This is exactly the situation now, very complex, dynamic, and uncertain. It’s difficult to understand what’s going on or make decisions just by sitting around a table and discussing. We need expertise in engineering.”

And it’s not just technical or technological concerns. Human systems integration or human factors considerations are equally central in systems engineering approaches. For example, building trust with black Americans is vital to the success of contact tracing. Public health systems engineering could advance efforts to develop more equitable practices that could improve black participation. An example is works that further the development of requirements elicitation techniques such as storytelling that provide a more comprehensive understanding of users and their context of use. These more inclusive practices would consider historical context and support more community-led public health design engagements.

### A ‘Test We Cannot Fail’

COVID-19 has often been called a stress

test for public health. COVID-19 will not be our last or worst pandemic; our emerging understanding of the public health implications of climate change further spotlights this growing need.

As the future of public health is likely to become increasingly digital, the technical understanding and holistic approach offered by systems engineering will begin to fill this critical public health knowledge gap. Fortunately, efforts are emerging in meeting these needs. Emory University’s Health DesignED, the Design Institute for Health at the Dell Medical School, Vanderbilt’s Medical Innovators Development Program, and recent initiatives such as those at Johns Hopkins are examples. The time is ripe for evolving the field of public health systems engineering. It is something the U.S. public health system desperately needs.

Woodrow W. Winchester III is a graduate program director of professional engineering programs at the University of Maryland–Baltimore County. This article was first published on *The Conversation*.

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