Will COVID-19 Change Medicine?
The past year has already reshaped how health care is practiced, perceived and paid for. Which of these shifts will endure? p10

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on the cover
A pandemic, a racial reckoning and a political shift have transformed medicine’s landscape. How will these forces shape the profession in the decade to come? // Illustration by Kingsley Nebechi

proto: a prefix of progress, connoting first, novel, experimental. Alone, it conjures an entire world of the new: discoveries, directions, ideas. In taking proto as its name, this magazine stakes its ground on medicine’s leading edge—exploring breakthroughs, dissecting controversies, opening a forum for informed debate.
THIS HOSPITAL COMMUNITY—just like staff in hospitals across the nation—will always remember the year just past. We have all been, at times, pushed to our limits. We have all, I hope, felt pride in the service rendered to our patients and pride in the stunning research that moved along at record speed, propelled by urgency. I hold up our community’s work as a personal reaffirmation of why I went into medicine and the honor I feel at being part of this incredible organization. For all of us, COVID-19 cannot help but leave an indelible and emotional impression.

This issue of Proto asks a related question—what mark will COVID-19 leave on us as practitioners? The changes in our routines were seismic even in the first days and weeks of the pandemic. We saw transformations in nearly every practice area, in supply lines and job descriptions, in the way we work, the places we work, in unexpected collaborations and in the newfound speed and agility of innovation. Which of these will endure?

In these pages, 10 MGH clinicians and alumni offer their predictions. David Blumenthal, once the chief health information and innovation officer at the hospital and now president of the Commonwealth Fund, wonders what the extraordinary economic challenges posed by the pandemic might mean for smaller practices and national health care policy. Bruce Walker, founding director of the Ragon Institute of MGH, MIT and Harvard, sees new promise in the spirit of collaboration that was allowed to grow among institutions that normally compete in less dire times.

Several of the essayists reflect on how we will be shaped by this critical moment in the battle for racial and social justice—so inextricable from the inequalities laid bare by the pandemic. As telemedicine gains ground, can we ensure that all groups make equal use of it? How can we keep antiquated thoughts about race and disease from infiltrating algorithms that increasingly make up our diagnostic and treatment tools?

Personal losses of health care workers are also at an inflection point, as some writers note. MGH pediatrician Hemal Sampat observes the need for more of us to become full-time advocates for science, as the wide spread of misinformation has become a tragic, parallel “info-demic.” The pandemic has been a flashlight in the problem of clinician burnout, and we have seen the beginning of a national shift in the conversation about how institutions can protect their practitioners.

I personally believe that the changes coming out of our encounter with COVID-19 will be positive ones. We have all learned so much. In the name of those who have fought and those we have lost, we must use the lessons of this pandemic to become nimble, more resilient and wiser in facing the challenges yet to come.

Peter Slavin notes that he is currently on the board of Amwell, a publicly traded telemedicine company.
The Year of the Nurse

The World Health Organization gave Elizabeth Iro the job of advocating for nurses everywhere.

Before the pandemic hit, the World Health Organization had chosen 2020 as the International Year of the Nurse and Midwife. Instead of attending symposia and celebrations, however, most nurses faced the most brutal months of their careers. In large countries and small, nurses offered hands-on care in the face of a new virus, attending to the health of their patients even when it meant risking their own safety and that of their families.

Elizabeth Iro, who was named the first chief nursing officer of the WHO in 2017, is making sure that the importance of nurses is amplified, not overshadowed, by the encounter with COVID-19. Iro served WHO in 2017, is making sure that the importance of nurses is amplified, not overshadowed, by the encounter with COVID-19. Iro served

Q: How did you find yourself taking on a series of leadership roles?
A: I’ve always kept my focus on my work, which is to look after people. That mission is a common thread among all nurses. I think. And like most nurses, I found myself running into certain frustrations. I started to look for ways to make a better argument, to advocate more convincingly for the people under my care.

That led me to read up on civil law and produce a few research papers, and then I did a master’s degree in health science and also an MBA. All of that allowed me to see other sides of the problem. It also showed me how issues affecting nurses could be elevated by approaching ministers and other people in power with sound, evidence-based arguments.

Q: Can you elaborate on those “certain frustrations”?
A: One thing was not having enough staff. Nurses were being let go with no one coming in to replace them, yet we were expected to continue delivering the same care. But at the forefront of the response you come to understand how exhaustion becomes the norm, how absenteeism rises because of overburdened and burnt out. We’ve seen nurses who have been overworked, seen them stigmatized because of their work and hands-on proximity to the sick. We’ve seen them be stigmatized because of their work and hands-on proximity to the sick. We’ve seen them on the receiving end of shortages in equipment that jeopardize their health. These aren’t new issues, but the pandemic brought them into sharp focus.

Going forward it is important that government responds not just with applause and saying thank you. What’s needed is for them to look seriously into the investment in health care workers. And one of the best ways is to incorporate nurses into decision-making. Health care systems around the world can be strengthened by having a nursing and midwifery perspective in their planning and in their policies.

Q: How have the responsibilities of nurses changed?
A: There has been a huge shift over the past 25 years. Nursing has evolved into a profession with rigorous academic requirements. There has been a proliferation of accreditations, and of course in many countries now, nurses have become autonomous and specialist practitioners.

Current global health crises have also shaped what we do. Noncommunicable diseases—I’m thinking particularly of obesity—are a primary challenge around the world. Nurses have been the ones responding to the lifestyle and health maintenance needs of patients with obesity in a major way. It is the same with other conditions. With all of these changes, the profession is able to make a profound impact, especially in settings where health workers are limited. Nurses are often, de facto, primary caregivers. We know that if nurses are allowed to work to the full scope of their licenses, the benefits are enormous.

Q: What has the COVID-19 crisis meant for nurses?
A: The pandemic has exposed issues we have been trying to address. One is the shortage of nurses that I mentioned. We’ve seen nurses who have been overworked, overburdened and burnt out. We’ve seen them be stigmatized because of their work and hands-on proximity to the sick. We’ve seen them on the receiving end of shortages in equipment that jeopardize their health. These aren’t new issues, but the pandemic brought them into sharp focus.

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BY THE NUMBERS

Short Staffed

16.5

Percentage of U.S. hospitals that expected critical staffing shortages in February 2021.

1:1

The ideal nurse-to-patient ratio in the ICU. Making nurses responsible for even one more patient can invite burnout and medical errors.

$50.7

Billions in estimated monthly losses for America’s hospitals and health care systems early in the pandemic. The Coronavirus Aid, Relief, and Economic Security (CARES) Act allocated some of these financial woes.

8

Percentage of physicians who closed practices because of COVID-19. Another 43% have cut staff and 72% report reductions in income.

209

U.S. counties that led its Implement crisis strategies to staff ICU units in April 2021. A dashboard from George Washington University updates this number weekly and serves as a new tool for an increasingly chronic problem.

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What Is a Collaborative Community?

An unconventional new model makes industry meetups a key part of medical device regulation. by Timothy Gower

Biopises are still mostly read under a microscope by a human pathologist. The diagnostic process can be a painstaking endeavor and often renders an up-or-down opinion: cancer or no cancer, for example. Digitizing this work would not only speed up processing but, coupled with artificial intelligence, might give more accurate information—a 90% chance a tissue specimen is malignant and the patient will respond to treatment considerations. The same story is echoed across many new areas where device innovation moves quickly but expertise is limited to a small circle of specialists.

The alliance formed working groups to address common concerns. Members often have strikingly different interests, so conversations can get lively. “Our diverse motivations actually help because it makes for a more robust discussion,” says Laura Lasiter, director at the nonprofit Friends of Cancer Research.

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One spring morning in 1902, E. Edwin Spencer, the city physician of Cambridge, Massachusetts, visited the home of Henry Jacobson, a local Lutheran preacher. Spencer had the vaccination for smallpox. Jacobson refused it for both himself and his family. The standoff between the two men would lead to what historian Michael Willrich called “the seminal case in modern American public health law.”

The Boston area was then experiencing what would be its last smallpox epidemic, which killed approximately 270 people over three years. At the time, smallpox—a highly contagious virus—was a leading cause of death around the world. Victims were diagnosed by telltale pustules, and during some outbreaks, as many as one in three infected people died.

The board of health in Cambridge, led by Spencer, had launched a citywide vaccination drive. In February 1902, “anti-vaccinators” had lined up at the Massachusetts State House to vociferously describe how vaccines had harmed them—one citing the loss of feeling in one arm, and another saying that a five-year-old child died of lockjaw after receiving the vaccine.

In Cambridge, Spencer was an improbable enforcer. Before attending medical school in Worcester, he had studied alternative medicine at the Eclectic Medical Institute in Cincinnati. He preferred botanical solutions to chemical cures. After refusing from Jacobson—an imposing figure with thick eyebrows and a goatee—he notified the preacher of his fine and left.

Just before the pandemic began, a group from Northwestern University and the University of Chicago wrapped up one of the first major studies to describe physician experiences with online harassment. In the offline world, health care jobs are among the most dangerous, and hospital workers face four times the risk of violence as people in other industries ("When Healers Get Hurt," Winter 2019). The study, published in JAMA Internal Medicine early in 2021, found that this danger exists online as well, with one in four physicians reporting a personal attack on social media. Top reasons for attacks included the doctors’ advocacy of vaccines, gun control and access to abortion. But there were also personal attacks based on the doctor’s religion and race, and one in six female physicians faced online sexual harassment.

The problem has almost certainly escalated since the onset of COVID-19. The pandemic triggered a tide of medical misinformation, which health care workers have been on the front lines of correcting. In return, they have received threats of assault and death. The research team from the JAMA study expects to find that online violence against physicians has increased in a new, larger study it has launched. "These issues aren't going away," says Vint E. Arora, a co-author of the study who is the assistant dean for scholarship and discovery at the University of Chicago Pritzker School of Medicine.

What are the solutions? Ali Raja, a physician and executive vice chairman of the Department of Emergency Medicine at Massachusetts General Hospital, says he and many other health care workers have chosen a reduced social media presence. Raja says he only posts content on his Twitter account that is impersonal and professional and he uses a pseudonym on Facebook to limit the chances of becoming a target. "All it takes is one threat to be real," he says. "We deal with violent patients every day, and I'm definitely worried that people might find me or my family outside the emergency department."

Others are experimenting with ways to fight back. Todd Wolyn, a Pittsburgh-based pediatrician, was bullied online for his pro-vaccination views and saw his practice rating go down to one star online. In response, Wolyn co-founded Shots Heard Round the World, which now has 1,000 pediatricians united to combat anti-vaccine attacks. Participants are alerted by email to post supportive and factual content to drown out the misinformation. "We're the rapid response digital cavalry," Wolyn says. The network has been successful in countering more than 100 attacks against advocates so far.

Arora is a founding member of a similar effort, the Illinois Medical Professionals Action Collaborative Team, launched in 2020. Participants provide support to those on the receiving end of online attacks. "It's easier to advocate on social media as part of a group," Arora says. "We can be part of a louder voice that supports them."
It is slowly becoming possible, after a herculean public health effort, to imagine a post-pandemic world. What will health care look like on the other side? Ten voices offer their takes.
to understand their illnesses, help them make choices or just get to know one another. Before the pandemic, we worried that technology in medicine would increasingly come between providers and patients. Instead, it has opened the door to intimacy and connection.

With so many people cut off from seeing each other and making human connections, mental health has suffered greatly. Yet virtual care has made behavioral health specialists more available than ever before, while reducing the stigma of seeking care. It has also made it possible to offer services in communities that lack local providers.

While the massive adoption of virtual care during COVID-19 has shown us what is possible, many barriers still exist. With waivers of geographic, licensure and reimbursement restrictions expiring soon, it’s likely there will be a rethunking of how to offer services in communities that lack local providers.

Of course, not all medical care can be distributed through online systems. They have also been left behind in digitally disconnected were unable to access care. They have also been left behind in a troubling mark in this pandemic. When in-person visits were largely unavailable, the digitally disconnected were unable to access any care. They have been left behind in securing COVID-19 vaccine appointments distributed through online systems.

The one’s affected are often vulnerable in other ways. One study published in JAMA last December showed that patients of older age, non-English language preference, Asian race and with Medicaid insurance were less likely to use telemedicine visits. Other studies have identified older patients, women and those in the Black and Latinx communities as less likely to participate in video visits. We cannot afford to shut these groups out.

And yet it’s important to also recognize how telehealth can help with reaching vulnerable populations. I have had video chats with patients as they sat in parked cars or break rooms, using their break time to fit in a quick follow-up for high blood pressure. Many of my lower-income patients are more willing to pursue specialty consultation by telehealth as opposed to an in-person visit, which requires time-intensive transportation into the city and expensive parking. Recently, one of my patients with newly diagnosed metastatic cancer was able to receive a second opinion regarding his therapeutic options from the comfort of his home and in the presence of his two children.

The pandemic should teach us that we need to embrace telehealth in a way that promotes equity rather than worsens disparities. This will take work. We will need to track race, ethnicity, language and income so we can understand who is left behind, shift our strategies and monitor our improvements. Health care systems and providers must advocate for universal broadband access and recognize that access to computers, tablets and smartphones is a social determinant of health.

Our health systems can also employ multisodal technology streams, rather than constraining all communication to our user-unfriendly online portals. A program at Mass General Brigham, for instance, used a texting option to successfully communciate key COVID-19 messaging in multiple languages to its patients. This program improved access to important information for many, including those with low English proficiency. Those without regular access to a computer or email and those without an account on our online portal.

Continued reimbursement for telephone visits in addition to video visits will be crucial to promote equity, given that access to computer and video platforms is not open to everyone. As telemedicine leaped ahead, let’s remember to meet patients with the technology they have and know how to use today as we also work to expand everyone’s digital tools and expertise.

LEE SCHWAM // director of the Center for TeleHealth at MGH and vice president for virtual care at MGH Digital Health

LEE SCHWAM // vice president for virtual care at Center for TeleHealth at MGH and

THE CRACKS IN WALLS THAT DIVIDE US

On March 2, 2020, within days of the first reported cases of COVID-19 in the United States, a group of about 100 physicians and scientists gathered at Harvard Medical School to discuss the gathering storm. The meeting was notable in that it reached beyond institutional walls. It included not only people from Harvard, but also from the University of Massachusetts, MIT, Boston University, Tufts and all the teaching hospitals. It included local biotechnology firms, including Moderna, and the Massachusetts Department of Public Health. Via video hookup, we had collaborators from the heart of the epidemic in China.

From this daylong meeting ensued a remarkable collaborative effort, the Massachusetts Consortium on Pathogen Readiness (MassCPR). Working groups were established that very day and centered around different aspects of the coming crisis: patient care, epidemiology, diagnostics, pathogenesis, treatment and vaccines. Within a month, sufficient philanthropic support had been raised to release funds for more than 60 separate support services and collaborative grants to benefit the more than 500 scientists and clinicians involved.

The past year has seen the worldwide biomedical community unite against a global health crisis with an unprecedented degree of data sharing and collaboration. This cannot
help but have an enduring, catalytic effect on confronting the challenges ahead. Collectively, MassCPR and the network of similar efforts have created an enduring collaborative community. Humanity will be the better for it.

The impact of the novel coronavirus pandemic on the U.S. health system won’t be fully understood for years, but some of its implications are already becoming apparent. Despite the heroic responses of health professionals and hospitals, we learned that our delivery system is not prepared for professionals and hospitals, we learned for years, but some of its implications are electronic public health information systems, created on the fly. The nation also lacks an ing supplies, beds and personnel had to be established mechanisms for collaboration during competitive health care system lacks establishment and streamlined supply chains. That efficiency, we have reduced hospitals’ reserve capacity and streamlined supply chains. That leaves the hospital sector with very little ability to expand services rapidly to meet a surge in demand. For many hospitals, the only way to make room for COVID-19 patients was to stop elective care. That created economic problems for facilities and health problems for patients. Meanwhile, just-in-time supply protocols caused shortages in vital medi- cines and equipment.

A further problem is that our decentralized, competitive health care system lacks establishment of local health care facilities, protocols for crises—and regular drills to test these protocols—as well as exchanges in provider payment, with greater use of so-called “prospective payment,” through which health care facilities receive payments in advance for the number of patients they serve rather than the number of services they provide. Also critical: national and local electronic public health information systems that permit real-time data sharing to track the response to pandemic threats. The recently enacted American Rescue Plan Act could support the reforms suggested above. But change will ultimately fall to lead- ers of our private health care institutions, which are on the front lines of preventing and combating illness in the United States. Let’s hope we can prepare for future health threats to our national wellness as well as we do for military ones.

With strong public health leadership and the miracle of vaccines, we hope the worst of the pandemic will be behind us by late summer or fall. Humans being humans, most of us will then feel an overwhelming urge to return to “normal.” For health care, that will probably mean pre-COVID business as usual, though perhaps with a couple of tweaks.

In the most likely scenario, our system will continue to rely on fee-for-service payment and remain unprepared to collaborate during public health emergencies. In addition, pre-pandemic trends toward consolidation in the health care sector are likely to accelerate, as providers severely weakened by the pandemic either go out of business or are acquired by stronger survivors.

An alternative, and perhaps less likely, scenario would see a thorough reevaluation of pandemic preparedness and require a private-public plan for pandemic resiliency. There would be financing of surge capacity for local health care facilities, protocols for sharing supplies and personnel during health crises—and regular drills to test these protocols—as well as changes in provider payment, with greater use of so-called “prospective payment,” through which health care facilities receive payments in advance for the number of patients they serve rather than the number of services they provide. Also critical: national and local electronic public health information systems that permit real-time data sharing to track the response to pandemic threats.

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BRUCE WALKER | founding director of the Ragon Institute of MGH, MIT and Harvard.

4. HARD LESSONS IN HEALTH CARE ECONOMICS

In the summer of 2020, physi- cians from Massachusetts General Hospital made their way to the State House in protest of the police killings of George Floyd and Breonna Taylor. As we look at the past year, we remember that it held a reckoning with what many have called “twice pandemic”. COVID-19 and systemic racism. COVID-19 was new but it laid bare the long- standing, stark realities of racial injustice in our country.

In the medical field, this has partly meant revisiting fundamental questions about race and ethnicity. We commonly use race clini- cally, but our latest insights from population genetics have demonstrated convincingly that race is a poor proxy for genetic differ- ence; studies have repeatedly shown that greater genetic variation exists within racial groups than between them. Race is a perva- sive social construct, but biologically and medically it is less useful. Categories like “Black” or “white” are exceedingly unlikely to represent meaningful genetic differences between individual patients.

Medicine is still behind the curve in updating its practices to reflect this under- standing. Our tools often use race as a proxy for true biological difference. Concerningly, many of these tools even use such variables to interpret neurocognitive testing in Black players earning concussion settlements. But in the future, we must use other approaches. Darshali vyas designed to address root causes rather than defaulting to building these inequities into predictive tools. Once we see racism as the risk factor for poor health outcomes instead of race, our interventions can be designed to address specific inequities rather than perpetuating inequities.

DARSHALI VYAS | clinical fellow in Medicine at MGH.

5. A TURNED PAGE ON RACIALIZED MEDICINE

In March, the American Society of Nephrol- ogy and National Kidney Foundation task force announced its official recommendation to end race adjustment in the widely used algorithm for kidney function called the esti- mated glomerular filtration rate (eGFR). The Maternal Fetal Medicine Unit Network also announced the development of a new tool for predicting successful vaginal birth after cesarean without race correction. This debate even reached the NFL, where a concussion lawsuit cast new light on a race correction used to interpret neurocognitive testing in football players. Different cutoffs for non-black and white players effectively lowered the chance of Black players earning concussion settlements compared with white players.

As medicine moves increasingly toward computerized models of risk assessment, the creation of best practices for the use of race correction becomes more urgent. It is crucial to understand that this does not suggest the adoption of race-blind medicine. Racism continues to have pernicious effects on health outcomes. But in the decade ahead, we must do the difficult work of recognizing those effects and addressing their causes, rather than defaulting to building these inequities into predictive tools. Once we see racism as the risk factor for poor health outcomes instead of race, our interventions can be designed to address specific inequities rather than perpetuating inequities.

DARSHALI VYAS | clinical fellow in Medicine at MGH.

Risk scores that predict lower rates of frac- ture in Black patients could delay therapy for osteoporosis.

This year, critique of these practices gained new ground. Academic scholarship shed light on the widespread and often harmful practice of “race correction” in medical algorithms. Traction on this issue reached the federal level, and the chairman of the House Ways and Means Committee asked professional medical colleges to account for their use, and many have assembled task forces.

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A future informed by gender-affirming care

In 2020, systemic inequalities in health care and American life became so acute that they led millions to march and demand racial justice. An overlooked phenomenon is that the crisis has been transformative in the lives of transgender Americans as well.

When unemployment hit more than 21 million workers, transgender Americans were predicted to fare the worst, especially transgender people of color and those who live in rural areas. Because the U.S. Census doesn’t specifically track LGBTQ+ Americans, the government could not measure and respond to the full impact of the pandemic on this population. We do know, however, that state legislatures used this time to forward bills that would make providing health care to transgender minors a felony. Transgender Americans are not new to this kind of attack from the government, and we have learned only too well the connection between policy and health. We know that transgender rights are a patchwork across the United States and this means not everyone has equal access to care. We know that access to gender-affirming health care means access to our very identity, and that denying our medical rights are at a crisis point—and, we hope, an inflection point. Despite hostile legislation, we have also seen an increased political will for expanded LGBTQ+ rights, such as the landmark Equality Act currently before Congress and moves to reverse discriminatory rule changes authorized by the Trump administration.

The national explosion of telehealth offers new possibilities for helping those who live far from gender-affirming care centers. Before the pandemic, several new virtual care startups were created to meet the specific needs of transgender people. The largest, Folx, raised $25 million in funding in the thick of the COVID-19 crisis.

Our victories, if they come, can have effects that extend far beyond our own community. Gender-affirming care offers a model for all health care. It is an excellent expression of patient-centered care, one intimately based on patients’ identity and culture, and driven by the story of their lives. In this and other ways, transgender people have been on the frontier of exploration and expansion.

Transgender people have also had to learn, by necessity, to be active, informed and vocal patients—not only in their own care, but in the political and economic systems that govern it. In the coming year, the whole country will need to learn to follow our example: to become engaged in the shape of our health care system, to turn the challenges of the moment to our advantage. Transgender Americans, especially in the time of COVID-19, are showing what health care can be.

A reckoning for nurses and nursing

Nurses are no strangers to crisis. We dedicate ourselves to supporting people when they are at their most fragile and often sit with them in the last moment of their lives. The next day we come back, to offer our care and expertise for whoever comes through the door. But this pandemic brought new levels of crisis and uncertainty. Many of us were working outside of our specialties. The number of clinicians who could interact with a COVID-19 patient in isolation was limited. More often than not, that clinician was one of us. We would enter a room filled with a new pathogen and be the hospital’s lifeline to a patient. And we would also be that patient’s lifeline to the world. We documented symptoms, administered experimental drugs and adjusted to unfamiliar equipment. But we also did our best to act as translators and go-betweens, to be IT consultants when a patient’s phone or other digital lifeline got buggy. We became an all-too-rare source of touch and human contact. And when we could, we tried to answer the questions of why and how and how long.

As we think about future health crises, we need to remember those demands and their lessons. A study from late October found that one in four health care workers was experiencing PTSD, and in a separate survey, eight out of 10 nurses reported disturbances in mental health. Talking among ourselves, we know this experience has, in a profound way, made us reevaluate our attitudes toward stress and burnout. We’ve gotten more serious about self-care, both individually and as institutions. Together, we’ve become stronger and more confident. We are learning to take our pain seriously. We are learning to open up with colleagues about our families.

But what we hope we’ve also learned—as a hospital, as a profession—is how important it is for all parts of the care team to listen to one another. From that vantage point, we’re not just about one patient’s room, not just about the country and not just about the world. We’re part of a global family of health care workers who have a keen attention to the welfare of our patients, and when we are invited to identify problems and help find solutions, everyone benefits.

We all hope to never see another event like this, in our generation or the next. But if it happens, we will be ready to help, ready to listen, ready to share. Above all, we will be ready to stand with our teams and help our patients in the ways that serve them best.

Kristin Edan / nurse in the Surgical ICU department at MGH. Alyssa Marchant and Jessica O’Neil / nurses in the Pediatric Surgical Unit at MGH. Lisa McNeil / nurse in the Post-Surgical ICU at MGH.
The COVID-19 pandemic has only exacerbated another public health crisis that had already reached epidemic proportions. Physician burnout is a syndrome characterized by depersonalization, emotional exhaustion and a low sense of personal accomplishment. It’s extremely common, afflicting about one in two physicians in the United States. Burnout is extremely common, afflicting about one in two physicians in the United States. Burnout is extremely common, afflicting about one in two physicians in the United States. Burnout is extremely common, afflicting about one in two physicians in the United States. Burnout is extremely common, afflicting about one in two physicians in the United States.

In particular, our work attempted to home in on the systems issues that drive burnout, rather than focusing solely on the impact on individual physicians. But COVID-19 changed everything. Not only were we suddenly facing incredible systemic challenges, but we also had to find ways to support a population of clinicians who were being stretched in ways they had never encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before. Suddenly everyone was working long hours, often in unfamiliar clinical areas, on a disease no one had ever encountered before.

The MGPO’s efforts centered on transparent communication, providing a leadership presence in clinical units, ensuring adequate supplies of personal protective equipment and facilitating active listening to identify needs. In practice, that meant several daily, organization-wide communications with the latest information about the hospital’s evolving COVID-19 response. To support personal resilience, we helped make sure clinicians’ basic needs—for food, shelter, safety, child care, transportation—were met while also providing up-to-date education on the virus, training and guidance on using PPE, instruction on how to protect yourself and your family, and strategies for connecting to others. We offered space for reflection and processing as well as mindfulness and stress-reduction programs and expanded access to mental health services. Virtual care platforms helped enhance practice efficiencies as we also supported new COVID-related workflows and clinician training to provide care outside usual practice spaces.

The impact of the COVID-19 pandemic on clinician burnout will continue to be felt for years to come, and we’ll have to do even more to understand and meet needs that existed pre-pandemic, have arisen because of it and are yet be identified. But we have learned how important it is to focus on burnout not only among physicians but also to include clinicians of all kinds. The challenges have been undeniable, and defeating burnout won’t come easily. Yet the innovations we have witnessed—efforts that transcend ordinary divisions among generations and kinds of providers—offer hope for the future.

MEDICINE AFTER COVID

9. MEDICAL EDUCATION WILL BE TRANSFORMED

After all of the disruptions that the COVID-19 pandemic forced on traditional medical school and graduate medical education in the past year, can anything be gained? We now have a unique opportunity to transform medical education and ensure that we equip the next generation of physicians with the tools to fulfill the social compact of medicine.

In March 2020, the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education both called a halt to in-person educational and clinical activities for medical students, residents and fellows. With a sense of urgency brought by the pandemic, educators rapidly deconstructed traditional models of medical education that required physical contact, replacing them with alternatives that could prepare trainees to graduate on time without compromising standards of education and care.

As challenging as it was, the necessity of this change led to many innovations. Residents and fellows benefited not only from observing local clinicians, they could also watch lecturers from across the nation via video-based platforms. Virtual chalkboards, which let remote users collaborate digitally, and other technologies provided a canvas for innovative, engaging ways of teaching. Asynchronous learning experiences meant lectures and presentations could be prerecorded, supplemented with other digital materials, and then viewed and responded to when it fit students’ schedules. All of these changes came at the cost of social interaction and personal contact among teachers and learners. Yet much was gained, especially for digitally native
During these uncertain times, medical education has remained robust and grounded in the values of compassion, professionalism and excellence in patient care. The pandemic has taught us to embrace change and to be agile and adaptable. We are finding ways to incorporate novel technology to meet the needs of learners and to engage in scholarly work that informs and enhances the delivery of care to all patients equitably and without barriers. Curricular changes that incorporate health care disparities and structural racism increase trainees’ awareness of these urgent problems that need rapid solutions. Lectures now incorporate clinical photos and findings representing racially diverse patients; highlight disparities in health care access, quality and outcomes by race or socioeconomic status; and show how current clinical decision tools, metrics and guidelines may perpetuate racism.

As we emerge from the COVID-19 pandemic, we must remain committed to the ongoing redesign of educational programs that benefit students and trainees while putting the patient in the center of these efforts. We must learn the lessons of this past year and move forward with the same flexibility, freedom and creativity that helped us adapt on the fly, yielding continuous quality improvement of medical education throughout the spectrum of training. We should learn from the current moment and each commit to being more vocal in our communities. We all need to be out there—on social media, on the local news, in op-eds. People may not trust the voice of a public health official they’ve never met, but the community doctor they know can change minds and, in the process, save lives. To make sure we’re communicating effectively, we absolutely must enhance communication education. It is a skill that needs to be systematically taught—in medical school, in residency and in continuing medical education. Effective communication with patients and the public should not just be a gift that some health professionals have and some don’t. It is, now more than ever, our duty to society. Our patients are going to be hearing information from somebody. We need to make sure they trust what they hear from us.

DOSSIER
Covid-19—Implications for the Health Care System,” by David Blumenthal et al., The New England Journal of Medicine, October 2020. The paper explores four intertwined health care crises that came into play over the course of the pandemic, and outlines a number of policy ideas that could begin to address them.

Hidden in Plain Sight—Reconsidering the Use of Race Correction in Clinical Algorithms,” by Darshali Vyas et al., The New England Journal of Medicine, August 2020. The authors outline a number of diagnostic and predictive algorithms that use race as a factor, sometimes to the detriment of minority patients, and call for a reevaluation of such practices.
For decades, a tiny encampment of researchers has held that statin treatment is a hoax. In a time when contrarian views roar to life on social media, how can medicine keep minority opinions from doing irreparable harm?

By Anita Slomski

Cardiologist Steven Nissen, chief academic officer of the Heart and Vascular Institute at the Cleveland Clinic, delights in the reputation he has earned among his critics. One prized possession is a photograph digitally doctored to show him wearing a tinfoil dunce cap, with the headline, “Steven Nissen goes full quack.” The image appeared on the home page of Natural News, a website that promotes fringe theories about vaccines and other practices of conventional medicine. “Those guys call me the statinator,” Nissen says, a testament to his passionate advocacy of statin drugs—a tool to prevent heart attacks and strokes by reducing high levels of low-density lipoprotein cholesterol (LDL-C).

Nissen certainly isn’t alone in advocating statins. They are one of the most prescribed drugs in the United States and the best available tool to fight heart disease, the country’s leading cause of death. But Natural News isn’t the only statin detractor, either. The International Network of Cholesterol Skeptics (THINCS) has, since 2003, been a gathering place for clinicians, researchers and science writers who question the accepted theory on cholesterol—that it contributes to heart disease, and that statins can help prevent heart attacks and strokes. Even some prominent mainstream physicians—including, perhaps most notably, cardiologist and JAMA Internal Medicine editor Rita Redberg—question the science that has established high cholesterol as a medical problem that must be treated. “We are telling people to take a daily drug for 20 to 30 years, and we have no trial that follows people for more than five years,” Redberg says.
Longstanding debates in medicine are nothing new, and sometimes outsider theories have led to valuable insights. Such camps can trade volleys for decades—many arguments from the “cholesterol deniers” are variations on themes from 10 or 20 years ago. What has changed, perhaps dangerously, is the degree to which these views can catch on in the public media landscape and exist, unchallenged, in the walled-off information silos of the 21st century.

Indeed, minority viewpoints have always been more likely to be reported than mainstream views, and the same is true for the cholesterol debate. Journal articles from cholesterol contrarians make their way into the press far more often than those that extol statins’ virtues. One study found that news stories about statins in the British press were twice as likely to be negative as positive. “The stream views, and the same is true for the cholesterol debate. Journal articles from cholesterol contrarians make their way into the press far more often than those that extol statins’ virtues. One study found that news stories about statins in the British press were twice as likely to be negative as positive. “The media publish articles that people will click on, and it’s intriguing to read an article that says you don’t have to take a very common medication or that you can live a less healthy lifestyle,” says Ann Marie Navar, associate professor of cardiology at the University of Texas Southwestern Medical Center, who serves on the American Heart Association’s Council on Cardiovascular Disease in Women.

These views can catch on in the public media landscape and exist unchallenged. But it is perhaps naive to think that disagreements among researchers will not be politicized by the general public. The problem of minority viewpoints spreading virally became critically dangerous during the COVID-19 crisis and its concurrent “infodemic”—the spread of fake news and the promotion of unorthodox theories. Former Stanford University radiologist Scott Atlas, who served on the White House coronavirus task force during the Trump administration, challenged the use of masks to prevent the spread of COVID-19. Physician Jane Orient, executive director of the Association of American Physicians and Surgeons, was one of many prominent figures to promote the anti-malarial drug hydroxychloroquine to treat COVID-19; clinical trials ultimately showed the medication to be ineffective and sometimes harmful. Both ideas still echo in online communities, hindering efforts to control the pandemic.

For statins, with so many lives on the line, is it time to step ignoring the dangerous views of a small but vocal group of cholesterol deniers? “The whole point of science is to refute accepted theories and hypotheses,” says Donald Lloyd-Jones, chair of the Department of Preventive Medicine at the Northwestern University Feinberg School of Medicine and president-elect of the American Heart Association. “But there comes a point—and I think cholesterol reached that point long ago—where this kind of debate creates harm and does not advance the knowledge of science.”

At about the time the famed Framingham Heart Study commenced in 1948, researchers began to pay serious attention to cholesterol and its effect on arteries. Along with other epidemiological studies, Framingham established high cholesterol as a risk factor for cardiovascular disease, adding to a list that also includes hypertension, smoking, obesity, diabetes and lack of exercise. By 1984, the National Institutes of Health had asserted that “it has been established beyond a reasonable doubt that lowering blood levels of low-density lipoprotein cholesterol will reduce the risk of heart attacks due to coronary heart disease.” People with high cholesterol were advised to modify their diets, and it was recommended that all Americans reduce the amount of fat they consumed. Yet dietary changes usually resulted in only minor improvements, and the few drugs available then to reduce LDL cholesterol weren't very effective, says cardiologist Christopher Labos, associate in the Office for Science and Society at McGill University in Montreal.

The following year, Michael Brown and Joseph Goldstein won a Nobel Prize for their discovery that familial hypercholesterolemia—a condition in which people are born with extremely high levels of LDL-C and have an elevated risk of premature heart attacks—is caused by mutations in the gene that encodes the LDL receptor responsible for clearing LDL-C from the blood. “That discovery confirmed that LDL cholesterol is a key target for reducing future cardiovascular disease,” says Pradeep Natarajan, director of preventive cardiology at Massachusetts General Hospital.

Lloyd-Jones considers it indisputable that LDL-C is the primary culprit in creating atherosclerotic plaques. “That is simply the biology,” he says. “Under the microscope, you can see LDL particles eliciting an inflammatory response from the body and doing direct damage to artery walls. Humans need only a small amount of
LDL cholesterol to make hormones and for cellular repair, and any excess creates arte- rial plaques, Lloyd-Jones says. “LDL chole- sterol is the primary cause of a causal risk factor, and if the LDL level is high enough, it causes atherosclerosis,” he says.

The vast majority of cardiologists and primary care physicians agree with that assessment. “Only a few completely deny the role of cholesterol in causing cardiovascular disease,” says Mason Freeman, chief of the Lipid Metabo- lism Unit at MGH. He estimates that the vast majority of interventional cardiologists over 40 who work in cardiac catheterization labs take statins themselves. “I don’t think there is a higher endorsement for the benefits of statins than that the doctors who under- take the procedure,” he says.

Statins are effective in reducing LDL-C, Freeman says, with many attacks or stroke. “In vascular events, such as a heart attack on statin therapy can still have atheroscle- rosis,” he says. “The science is crystal clear that statins improve outcomes in nearly all patients with vascular disease, whether it’s heart disease or stroke.”

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Freeman says that the majority of cardiologists and primary care physicians who have had heart attacks or strokes take statins. “It’s not a decision we make lightly,” he says. “We aren’t trying to prevent cardiovascular disease. We are trying to reduce the risk of clinical adverse events.”

Statins reduce the risk of cardiovascu- lar disease by 15% to 30%, and they’ve greatly contributed to the dramatic drop in deaths from atherosclerotic vascular disease,” says Freeman. “This is one of the biggest stories of the last 20 years.”

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“This is misleading, Navar says. While not all statin trials show a reduction in deaths, a five-year trial can’t reflect statins’ true power. “We aren’t trying to prevent cardiovascular events in the next five years with a statin,” he says. “The goal is to provide protection over the next 15 to 30 years. The longer you take a statin, the more benefit you get by preventing plaque from building up in your arteries.”

In addition, not dying after a heart attack isn’t the only outcome that matters to patients, Navar says. “People today survive heart attacks and strokes but may face severe disabilities and poor quality of life.”

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One response has been to point fingers at online places where the stories live. Physicians who doubt the conventional wisdom about cholesterol and statins hold a range of views, but those from THINCS members tend to be the most extreme. In an essay published in a medical journal article, THINCS director Uffe Ravnskov, a nonpract- izing Danish physician and independent researcher, and David Diamond, a cognitive neuroscientist at the University of South Florida, dismissed almost all of what the medical mainstream believes about chole- sterol and statins. They concluded from a meta-analysis of randomized trials that high LDL-C live just as long as, or in most cases, longer than those with normal or low LDL-C. Ravnskov also argued that infec- tions are a common cause of cardiovascular disease and that LDL-C plays an important role in the body’s immune response against harmful pathogens. In line with these claims, they found that with European guide- lines on managing heart disease and diabe- tes, which recommend prescribing statins as part of treatment to cut levels of LDL-C. Diamond says he believes statins may have a small benefit in preventing heart attacks and strokes, but he asserts that results show the drugs’ ability to reduce inflammation and blood clotting.

Retired cardiologist Robert DuBroff, who taught at the University of New Mexico, says some patients with high LDL-C may benefit from statins. But he thinks it’s time for physicians to acknowledge that random- ized controlled trials have at times produced inconsistent and contradictory evidence about the benefits of cholesterol reduction. “In my view,” he says, “there is no association between LDL chole- sterol and heart disease, but it’s very weak and it’s certainly not causal.”

Some of those who question the evidence of statins’ benefit point to the lack of trans- lation of the way much of so-called primary prevention, taking a statin may be worth it, and that statins are a major reason why the risk of heart disease is so much lower today. “Statins reduce the risk of cardiovascular disease,” he says. “The cause of atherosclerosis is far from a simple answer, but the role of statins in reducing the risk of cardiovascular disease is undeniable.”

Redberg says she believes there are mini- mal benefits in taking a statin to prevent a heart attack or stroke for someone who hasn’t had a previous heart attack or stroke. “There is no real benefit to starting statins for primary prevention, only two will avoid a heart attack, which means that 98 won’t get any benefit from the statins, but up to 20% will have adverse effects and none will live longer,” she says.

But Redberg’s advice about statins is differ- ent from that of other researchers. Redberg has had a heart attack or stroke. For so-called secondary prevention, taking a statin may be worth- while because the cardiovascular risk is so much higher, she says. “Everyone who has had a heart attack gets a statin, regardless of their cholesterol level, because they are much more likely to have a second heart attack after your first one,” Redberg says. “If your risk of having a second heart attack is 20%, a statin may cut that risk by 25%.” In contrast, a healthy person with high cholesterol may have a 1% chance of having a heart attack, and taking a statin reduces that risk by a mere 0.1%. This is accurate, according to Labos. “The higher your risk, the more likely it will be that treatment, which is pretty standard in all fields of medicine,” he says.

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In 1931: “There is some conspiracy theory promoted by anti-statin clinicians. He notes that most of the thousands of physicians who have worked on statin trials over the years are not members of the CTT, and those researchers do make their data available to other scientists. In addition, Virani says, the U.S. Food and Drug Administration reviews all relevant trial data before approving a statin, and if statisticians were attempting to conceal dangerous side effects, it would be discovered during those regulatory reviews. “These conspiracy theories have definitely cost lives by convincing patients not to take statins,” he says.

Clinicians will have to make their case person by person, engaging in detailed discussions.

Statin use doesn’t begin when it’s prescribed but rather when a patient decides to take it. The lopsided coverage of the cholesterol debate outside of medical journals can play into that patient decision in a potentially deadly way, Labs says. “There is a real danger that misinformation causes people to stop taking their medications”—or not to start in the first place. In Australia, for example, a 1% increase in cardiovascular deaths would occur if those patients who conduct statin trials have compiled. Secrecy about statin trial results undercuts the “deep flaws in our current system for evaluating medicines and guiding clinical decisions.” The BMJ editors recently wrote.

But Baysho’s Salim Virani thinks the focus on the CTT Collaboration is just one more conspiracy theory promoted by anti-statin clinicians. He notes that most of the thousands of researchers who have worked on statin trials over the years are not members of the CTT, and those researchers do make their data available to other scientists. In addition, Virani says, the U.S. Food and Drug Administration reviews all relevant trial data before approving a statin, and if statisticians were attempting to conceal dangerous side effects, it would be discovered during those regulatory reviews. “These conspiracy theories have definitely cost lives by convincing patients not to take statins,” he says.

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Every nation has had its own experience of COVID-19. The stories of Denmark, a model of socialized care, and Rwanda, a bright spot among developing nations, both hold wider lessons for the world.

In spring 2020, when the COVID-19 pandemic was first raging through sub-Saharan Africa, Hassan Nsabimana was among countless truck drivers who continued to work transporting essential cargo to Rwanda from neighboring countries. In a phone conversation last May from Tanzania, Nsabimana told his eldest son, Faycal Hassan Tuyishime, that he wasn’t feeling well and was heading home. “In his voice, you could tell he was critically ill,” Tuyishime says.

It was their last conversation. Nsabimana, 65, was tested for the virus at a border checkpoint, then rushed by ambulance to Rwanda’s main COVID-19 treatment center in Kigali, the capital. By then, he was having trouble breathing and was put on a ventilator in intensive care. He died two days later and was the country’s first fatality linked to the virus. His death was widely reported in Rwanda—in part because at the time, COVID-19 was still relatively rare in the nation of some 13 million people. In late May, the country had fewer than 400 confirmed cases.

That Rwanda has continued to fare relatively well by the grim statistical measures used to gauge the impact of COVID-19 most likely came as a surprise to much of the global public health community. Most of Africa, which had been ravaged by AIDS, Ebola and other contagions, was thought to be ill prepared for a pandemic. In the 2019 Global Health Security Index, which assessed 195 nations’ preparations for the kind of global outbreak that would begin a year later, the United States ranked highest, followed closely by the United Kingdom and other developed countries. China ranked 51st, and most African countries were at the bottom.

Rwanda is one of the world’s poorest countries, with annual per capita income, adjusted for cost of living, of just $2,000.
Menelas Nkeshimana, a physician at the University of Kigali Hospital and vice chair of the Rwanda Medical Association. The nation’s best chance, Nkeshimana says, was to keep the new disease from becoming widespread. “Preparedness was vital to us,” he says. So in January, many weeks before the first coronavirus case was detected, the government formed a joint task force for COVID-19.

Researchers at the University of Rwanda devised a system for pool testing, which enabled two dozen tests to be processed in one batch. If infection was detected, the 100 technicians went back and tested each sample. Pool testing proved faster and cheaper, and by August, Rwanda was conducting 10,000 tests a day.

At the outbreak escalated, a small army of newly trained contact tracers was deployed, and anyone who had come into contact with an infected person was called or visited and had to quarantine until a COVID-19 test could be administered. At the COVID-19 task force command post, computer dashboards displayed real-time data pinpointing the government instituted a national stay-at-home order, closed borders to all but essential goods and cargo and suspended commercial air travel. It was one of the first lockdowns in Africa.

From the beginning, testing was widespread, and health authorities didn’t wait for people to come to them. Instead, medics in protective gear stopped people randomly on the streets to offer tests, then sent samples to labs that in many cases repurposed equipment designed to detect HIV infection.

Then there were the robots. On May 19, at the COVID-19 Treatment Centre in Kanyina, Health Ministry officials introduced five human-sized robots manufactured by a Belgian company that were designed to reduce human interactions and the risk of viral transmission. They could screen more than 50 people per minute for common virus symptoms—fevers, dry coughs—as well as deliver food and medication to patients. One robot was deployed at Kigali International Airport to screen incoming passengers, and the others were sent to treatment centers and out onto the streets, where they could detect people without masks or who were wearing them incorrectly and instruct them in proper usage. At treatment centers in Gatina and Kanyina, the availability of the robots has cut the exposure of healthcare providers to infected patients almost in half.

At the end of the pandemic’s first year, the World Health Organization applauded Rwanda “for instituting a strong system” that enabled the country to “effectively confront” the COVID-19 pandemic. And in January 2021, Rwanda’s decision to “effectively confront” the COVID-19 pandemic. And in January 2021, Rwanda’s
One of Denmark's main advantages in confronting the pandemic is the country's social cohesion. According to the Euro-

pean Values Study, which maps attitudes, beliefs and behaviors in European coun-

tries, Danes have the continent’s highest level of social trust in one another. They also believe in Denmark’s government-run health care system, which is free for everyone and is considered one of the best in the world. There’s high regard for science, and some Danish habits, such as not typically hugging

Perhaps Denmark’s biggest edge comes from being one of the most digitized countries in the world.

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ral social distancing.

But perhaps Denmark’s biggest edge comes from being one of the most digitized coun-

tries in the world. Every citizen has a 10-digit personal identification number linked to a central national registry, and that electronic infrastructure proved crucial in supporting the country’s COVID-19 testing and detection strategies and enabling detailed epidemiolog-

ic research throughout the pandemic. As with other countries, Denmark also closed its borders, shuttered schools and public institutions and banned public gatherings of more than 10 people. But the govern-

ment didn’t restrict travel inside the country, and during that first week of April, when 535 patients in the northern hospital in Århus, Denmark’s second-largest city, were suspected of having COVID-19, however, it was setting up a secure email system to allow the anonymous reporting of anyone who came near someone infected with the virus despite lacking certain resources.

In both of these countries, like every-

where else in the world, the battle against COVID-19 has not quite ended. Yet even now, as the United States, under a new administration, looks at home and abroad for insights into what did and didn’t work in combating this pandemic—and how to better prepare for future viral omdents—

the experiences of Rwanda and Denmark may offer strategies disproportionate to their small geographic footprints.

A central pillar of Denmark’s contain-

ment strategy has been free COVID-19 test-

ing available to everyone, and whenever someone tested positive for COVID-19, that anonymized result was recorded in the national system, with information about where and when it occurred. “We can detect what the transmission patterns look like in real time, says Jens Lundgren, professor of infectious disease at the University of Copenhagen and Rigshospitalet.

Users of the mobile app were also authorized to provide GPS data about the nearby contact of someone tested positive for COVID-19, that anonymized result was recorded in the national system, with information about where and when it occurred. “We can detect what the transmission patterns look like in real time,” says Jens Lundgren, professor of infectious disease at the University of Copenhagen and Rigshospitalet.

That strategy worked during the summer months, when several small local outbreaks were identified and contained. But in early August, infections surged in Århus, Denmark’s second-largest city. Hundreds of new infections were detected, particularly within the Somali community, with contact tracing linking many of those cases to a single funeral. Testing through the fall, in Århus and much of the rest of the country, revealed a second wave of the pandemic.

During the summer, the Danish track-

ing system showed a surprising source of new infections. It was discovered that mink could become ill with COVID-19 and could spread the virus to humans. When mink-linked human infections climbed to more than 200 cases by November, health authorities quar-

antined workers and conducted extensive testing of more than 280,000 people. In late November, the government dictated that all of the mink on 289 farms where infections had been documented, as well as those on 53 other farms, would be killed. That added up to 17 million animals.

Lundgren believes mink-sourced infections contributed to the fall surge of the disease. A small economic dependency on foreign trade, the population—facilitated the world’s first large-

scale study of COVID-19 reinfection rates. The findings confirmed that most people who have had COVID-19 are protected from catching it again for at least six months, although older patients are more prone to reinfection.

Denmark has been a pioneer in tracking COVID-19 mutations through genomic sequencing of positive tests, and concerns about virus variants, including the B.1.1.7 variant first detected in the U.K., have risen. Moreover, a renewed lockdown implemented at the end of 2020 was only starting to be eased four months into the new year. But the rollout of COVID-19 vaccinations was proceeding, and the government hoped to have the entire population inoculated by July.

Rwanda, experiencing its own wave of infections in early 2021, imposed another lockdown in the capital, banned move-

ment among regional districts and length-

ened curfew hours. But as numbers of new cases and deaths fell by half, some restric-

tions were eased. By early April, just under 400,000 vaccine doses had arrived, and the government said it hoped to provide shots to about a third of Rwanda’s population by the end of the June. But those being two-thirds getting vaccinated in 2022.

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where else in the world, the battle against COVID-19 has not quite ended. Yet even now, as the United States, under a new administration, looks at home and abroad for insights into what did and didn’t work in combating this pandemic—and how to better prepare for future viral outbreaks—the experiences of Rwanda and Denmark may offer strategies disproportionate to their small geographic footprints.
I couldn’t scream because I knew it would hurt my throat. But there was something in the sound of things shattering—a white dinner plate, a salt shaker—that was like language for me. I put down the baseball bat and picked up a sledgehammer. It was surprisingly heavy, but hefting it up felt as if a weight had been lifted off my shoulders. “This is my toast to you, 2020,” I said, and I smashed a wine glass.

Rage rooms have been around for several years, but it took the pandemic for me to find one. The name tells you all you need to know. Sign a waiver, and you’re allowed to go into a metal cage and demolish objects to your heart’s desire. That might be figurines, coffee mugs or, for the big spenders, entire cars. While you let loose, you can blast your favorite music over the Bluetooth speakers. I went with ‘90s pop-rock.

Of course, you have to wear protective gear. But the black coveralls, face shield and sneakers they had me put on were a nice change. For the past few years, I’d too often been in hospital gowns, masks and surgical booties.

Three years ago, an upper respiratory infection took a bad turn and became an irritating tingling sensation. By April 2019, the tingling turned to nerve pain. I was unable to speak, eat or laugh without pain—a burning coupled with the feeling of 1,000 knives stabbing every inch of tissue. If you’ve ever had strep throat, imagine that in a super mega size that never goes away.

The next few years had me seeing scores of doctors. Eventually a team of otolaryngologists, gastrointestinal specialists and neurologists gave me a diagnosis: atypical glossopharyngeal and vagal neuropathy. Glossopharyngeal neuropathy is sometimes nicknamed the suicide disease because it is unrelenting and difficult to treat. I had never been depressed, but for months after my diagnoses, I called the suicide hotline and begged my parents to end my suffering if I couldn’t somehow manage it.

I stayed focused on ways to feel better. I received ketamine infusions, nerve blocks, three procedures that used pulsed radiofrequency and tried having exosomes injected into the glossopharyngeal and vagus nerves. Relief was hard to come by, and frankly, the medical journey was exhausting in itself. While some doctors were empathetic, one “top” neurosurgeon asked if I’d tried throat lozenges or weed yet. Another doctor mentioned euthanasia. After a visit, I’d often feel like a brittle and disposable object—the kind I was now beating to pieces.

At the start of 2020, I got the bright idea of trying to improve my mental health through adrenaline. I tried activities like skiing and parasailing. In some way they helped, allowing me to get out of my skin for a minute. But then COVID hit, a week after my 28th birthday. The isolation was another source of pain, as it was for so many people with chronic conditions, who were kept from the simple joys and connections so vital to our mental health. That felt like another door slammed shut.

Sweating, standing in the middle of the chaos, I realized that the rage room had been a eureka moment. Throughout my treatment journey, why hadn’t I thought of just getting angry? I was safely distanced from anyone—who would get near a 5’3” brunette woman with a sledgehammer?—and I let it swing as Meredith Brooks wailed, “I’ve been numb, I’m revived, can’t say I’m not alive.”

I can’t say that the moment washed everything away, but it was freeing. For a second, I could let go of the frustration, fear and sadness. Seconds are so important to me now. For years now I’ve had to hold it all together. This was a place to let loose.

The rest of the night I couldn’t stop smiling, but I can’t say I found the answer in rage. Not long after, though, I did find a course on retraining the brain’s responses. I spent 15-hour days learning about neuroplasticity and how to use my mind differently. I went from breaking inanimate objects to, finally, a kind of breakthrough: laughing and taking deep breaths without pain.
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